



HONGFA RELAY

ISO9001 IATF16949 ISO14001 OHSAS18001 IECQ QC080000 CERTIFIED



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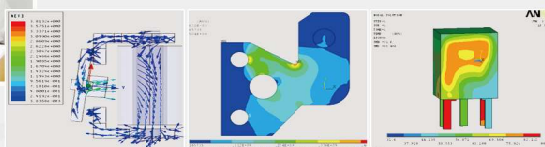
PRODUCT GUIDE



RoHS compliant

ISO9001 IATF16949 ISO14001 OHSAS18001 IECQ QC080000 CERTIFIED

PROFESSIONAL RELAY MANUFACTURER





COMPANY INTRODUCTION

HONGFA

HONGFA (Stock code: 600885, SSE) always conforms to its business philosophy -- "Never rest on our laurels, make more progress" and uses this philosophy as the basis of its operational policy -- "Market-oriented concept, win by high quality". The following companies are fully or partially owned by HONGFA--Zhangzhou Hongfa, Jinhai, Xi'an Hongfa, Hongyuanda, Hongfa Automotive Electronics, Hongfa Signal Electronics, Hongfa Power Electronics, Hongzhou, Hongfa Wufeng, Hongfa Electrical Safety & Control, Hongfa Electric, Jinyue, Jinbo, Jinghe, Hongfa Industrial Robot, Hongfa Precision Machinery, Shanghai Hongfa, Beijing Hongfa, Sichuan Hongfa (Sales), Hongfa Hongkong, Hongfa Europe GmbH, Hongfa America Inc., KG Technologies Inc. HONGFA products include as relays, low-voltage devices, switchgears, precise parts, automatic equipment, etc..

HONGFA is now the leading relays sellers and manufacturer in China and is ranked No. 1 in the industry for overall economic efficiency. From 1995, HONGFA has continuously ranked among 'China Top-100 Electronic Components Enterprises' with a current position of the 9th and has received many awards: HONGFA has recognized as one of the China Top 100 Enterprises Of Electronic Information for the first time as the first finalist in relay, in 2014. HONGFA is authorized as "the Advanced Enterprise to implement High Technology in Torch Plan" by the Ministry of Science and Technology of PRC. HONGFA has been awarded "National foreign trade transforming and upgrading base (Automotive Components)" by the Ministry of Commerce of PRC and National Development and Reform Commission. HONGFA is the only company being awarded this honor in the Chinese relay industry.

HONGFA has a full set of quality assurance systems including ISO9001, ISO/TS16949, ISO14001, OHSAS18001, GJB9001A, IECQ QC 080000. HONGFA has also been honorably awarded "High Quality Product exempt from National Inspection". HONGFA products are UL/CUL, VDE, TÜV, CQC and CCC approved. With high performance, top quality, competitive price and excellent technical services, HONGFA Relays have become the most perfect choice for the customers.

Since the establishment, HONGFA has been focusing on technology innovation. The technology and the equipment of all the mould tooling, parts manufacturing and products assembly and the production environment are in the leading position in Chinese relays industry. HONGFA Testing Centre is the biggest relays testing and analyzing laboratory with the most advanced technology in China, which is approved by CNAS, approved by America UL as a CTDP lab, and approved by Germany VDE as a TDAP lab -For VDE's TDAP lab, there is only one in China and only six in the world. Hongfa is able to supply to the customers accurate, credible and authorized inspection data and test reports.

HONGFA has a wide range of relays, including Signal relays, Power relays, Automotive relays & modules, Latching relays, HVDC relays, Industrial relays, Safety relays. The company has the annual production capacity of 2.8 billion pieces of relays.

Now HONGFA has become the world leading relays research and manufacturing base. Hongfa people are looking forward to growing, developing and prospering with all the partners and customers worldwide together.

PERSEVERE FOR PROGRESS, 
STRIVE FOR EXCELLENCE!

WE ARE CONTROL EXPERT

Hongfa is a professional relay manufacturer and has a wide range of relays. Hongfa relays are UL/CUL, VDE, TÜV, CQC and CCC approved. They are widely used in those fields like industrial control, automotive, telecom equipment, home appliances, metering instruments, security and alarm systems, medical appliances and aviation.

HONGFA PRODUCTS:



Signal Relay



Power Relay



Automotive Relay & Module



Latching Relay



Green Energy Relay



Industrial Relay



Safety Relay



Low-voltage Device



Switchgear



Automatic Equipment



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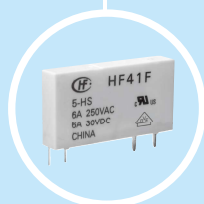
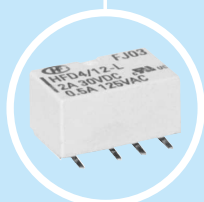
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SIGNAL & POWER SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current											[A]
PCB	QC	Plug-in	Other	DC	AC				0	5	10	15	20	25	30	40	60	80	100	200
						HF23	1A (SPST-NO)	17												
						HF49FD		23												
						HF46F		23												
						HF32FA		25												
						HF32FA-T		25												
						HF32FV		26												
						HF32F		28												
						HF33F		29												
						HF5F		27												
						HF41F		23												
						HF171F		28												
						HF8		31												
						HF118FK		36												
						HF118F		36												
						HF163F-L		35												
						HF46F-G		24												
						HF32FA-G		25												
						HF32FV-G/HF32FV-T		26												
						HF32F-G		28												
						HF36F		29												
						HF36FD		30												
						HF162F		30												
						HF3FA/HF3FA-T		31												
						HF3FD		32												
						HF3FF		32												
						HF3F-L		33												
						HF7FF		33												
						HF115F-H		37												
						HF115F-TH		37												
						HF14FF		42												
						HF33F-G		29												
						HF39F		27												
						HF158F-V 1 pole(DC)		41												
						HF158F-V 1 pole(AC)		41												
						HF3FF-M		33												
						HF21FF		34												
						HF3FA-M		31												
						HF32FV-16		26												
						HF7FD		34												
						HF115F		36												
						HF115F-A		37												
						HF115F-T		39												
						HF115F-I		38												
						HF115F-S		39												
						HF115F-L 1 pole		39												
						HF115F-LS		39												
						HF115FK		40												
						HF115FK-A		41												
						HF115FK-T		40												
						HF158F		41												
						HF62F		43												
						HF84F		59												
						HF94F		59												
						HF78F		59												

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance, coil voltage, terminal style, etc.).

SIGNAL & POWER SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]										
PCB	QC	Plug-in	Other	DC	AC				0	5	10	15	20	25	30	40	60	80	100	200

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance, coil voltage, terminal style, etc.).

SIGNAL & POWER SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
☐	☐	☐	☐	☐	☐	HF140FF	2A	43	10	
☐	☐	☐	☐	☐	☐	HF30F		27	10	
☐	☐	☐	☐	☐	☐	HF175F		42	15	
☐	☒	☐	☐	☐	☒	HF116F-1		54	25	
☐	☐	☐	☐	☐	☐	HF116F-2		54	25	
☐	☐	☐	☐	☐	☐	HF116F-3		55	25	
☐	☐	☐	☐	☐	☐	HF177F		46	25	
☐	☐	☐	☐	☐	☐	HF92F		58	30	
☐	☐	☐	☐	☐	☐	HF170F		50	40	
☐	☐	☐	☐	☐	☐	HF116F-G		55	45	
☐	☐	☐	☐	☐	☐	HF185F		56	45	
☐	☐	☐	☐	☐	☐	HFD23	1C (SPDT)	17	2	
☐	☐	☐	☐	☐	☐	HF32FA		26	3	
☐	☐	☐	☐	☐	☐	HF32F		28	4	
☐	☐	☐	☐	☐	☐	HF46FB		24	5	
☐	☐	☐	☐	☐	☐	HFD16		17	5	
☐	☐	☐	☐	☐	☐	HFD17		17	5	
☐	☐	☐	☐	☐	☐	HF5F		27	5	
☐	☐	☐	☐	☐	☐	HF41F		23	6	
☐	☐	☐	☐	☐	☐	HF8		31	6	
☐	☐	☐	☐	☐	☐	HF171F		28	7	
☐	☐	☐	☐	☐	☐	HF3FA-W		32	8	
☐	☐	☐	☐	☐	☐	HF33F		29	10	
☐	☐	☐	☐	☐	☐	HF36F		29	10	
☐	☐	☐	☐	☐	☐	HF3FA/HF3FA-T		31	10	
☐	☐	☐	☐	☐	☐	HF3FD		32	10	
☐	☐	☐	☐	☐	☐	HF3FF		32	10	
☐	☐	☐	☐	☐	☐	HF3F-L		33	10	
☐	☒	☐	☐	☐	☐	HF7FF		33	10	
☐	☐	☐	☐	☐	☐	HF21FF		34	10	
☐	☐	☐	☐	☐	☐	HF7520		35	10	
☐	☐	☐	☐	☐	☐	HF118F		36	10	
☐	☐	☐	☐	☐	☐	HF115F-H		37	10	
☐	☐	☐	☐	☐	☐	HF115F-TH		37	10	
☐	☐	☐	☐	☐	☐	HF14FF		42	10	
☐	☐	☐	☐	☐	☐	HF3FF-M		33	15	
☐	☐	☐	☐	☐	☐	HF3FA-M		31	15	
☐	☐	☐	☐	☐	☐	HF7FD		34	15	
☐	☒	☐	☐	☐	☐	HF84F		59	15	
☐	☐	☐	☐	☐	☐	HF152F		34	15	
☐	☐	☐	☐	☐	☐	HF115F		36	15	
☐	☐	☐	☐	☐	☒	HF115F-A		37	15	
☐	☐	☐	☐	☐	☐	HF115F-T		37	15	
☐	☐	☐	☐	☐	☐	HF115F-I		38	15	
☐	☐	☐	☐	☐	☐	HF115F-L 1 pole		39	15	
☐	☐	☐	☐	☐	☒	HF115FP		40	15	
☐	☐	☐	☐	☐	☐	HF115FK		40	15	
☐	☐	☐	☐	☐	☐	HF115FK-T		40	15	
☐	☐	☐	☐	☐	☒	HF115FK-A		41	15	
☐	☐	☐	☐	☐	☐	HF158F		41	15	
☐	☐	☐	☐	☐	☐	HF152FD		34	15	
☐	☒	☐	☐	☐	☐	HF94F		59	15	

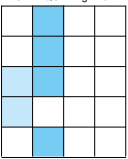
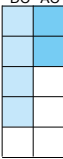
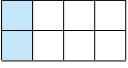
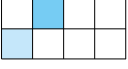
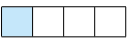
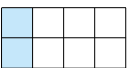
How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance, coil voltage, terminal style, etc.).

SIGNAL & POWER SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
						HF14FW	1C (SPDT)	42		
						HF165FD		48		
						HF105F-1		51		
						HF105F-2		51		
						HF105F-4		52		
						HF105F-5		52		
						HF2100		52		
						HF2110/HF2120		53		
						HF2150/HF2151		53		
						HF2160		53		
						HF7FD(Special cod: 530)		34		
						HF178F		47		
						HFD31	2C	20		
						HFD4-V		21		
						HFD27		18		
						HFD4		20		
						HFD43		22		
						HFD45		22		
						HFD32		22		
						HFD5		21		
						HFD2		18		
						HFD4-I		20		
						HFD3		18		
						HFD42		21		
						HFD3-V		19		
						HFD3-VI		19		
						HFD3-I		19		
						HF115F		36		
						HF115F-A		37		
						HF115F-L 2 pole		39		
						HF115FP		40		
						HF115FK		40		
						HF115FK-A		41		
						HF140FF		43		
						HF175F		42		
						HF92F		58		
						HF118F	1B (SPST-NC)	36		
						HF115F-H		37		
						HF21FF		34		
						HF165FD		48		
						HF105F-1		51		
						HF105F-2		51		
						HF105F-4		52		
						HF105F-5		52		
						HF2100		52		
						HF2110/HF2120		53		
						HF2150		53		
						HF2160		53		
						HF115F		36		
						HF115F-A		37		

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance, coil voltage, terminal style, etc.).

SIGNAL & POWER SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
						HF84F	1D (SPST-NO)	59	15	
						HF94F		59	18	
						HF115F-Q		38	20	
						HF14FW		42	20	
						HF8565		60	42	
						HF115F	2B	36	8	
						HF115F-A		37	8	
						HF94F	1A+1D	59	18	
						HF166F		46	25	
						HF180F	2A+2B	47	25	
						HF190F	1A1A+1B	51	30	
						HF189F		50	42	
						HF170F	2A12A+1B	50	40	
						HF187F	4A1A+1B	50	40	

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS** (for instance, coil voltage, terminal style, etc.).

INDUSTRIAL & SAFETY RELAY SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
						HF49FD	1A (SPST-NO)	23	5	
						HF41F		23	5	
						HF118F		36	10	
						HF14FF		42	10	
						HF13F		61	15	
						HF14FW		42	15	
						HF115F		36	15	
						HF115F-A		37	15	
						HF118F	1B (SPST-NC)	36	10	
						HF115F		36	15	
						HF115F-A		37	15	
						HF14FW		42	15	
						HF41F	1C (SPDT)	23	5	
						HF118F		36	10	
						HF14FF		42	10	
						HF157F		61	12	
						HF13F		61	15	
						HF115F		36	15	
						HF115F-A		37	15	
						HF115FP		40	15	
						HF3701	2A (DPST-NO)	66	5	
						HF115F		36	10	
						HF115F-A		37	10	
						HF13F		61	10	
						HF140FF		43	10	
						HF115F	2B	36	10	
						HF115F-A		37	10	
						HFA2	2Z	63	5	
						HF18FZ		62	5	
						HF18FF/HF18FH		61	5	
						HF157F		61	5	
						HF115F		36	5	
						HF115F-A		37	5	
						HF115FP		40	5	
						HF140FF		43	5	
						HF10F		62	5	
						HF13F		61	5	
						HF18FF-G/HF18FH-G		61	5	

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance, coil voltage, terminal style, etc.).

INDUSTRIAL & SAFETY RELAY SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
						HF18FF/HF18FH	3Z	61		
						HF10F		62		
						HF18FF/HF18FH-G		61		
						HF3701	4H	66		
						HF18FZ	4Z	62		
						HF18FF/HF18FH		61		
						HFA2	1H+1D	63		
						HF3701		66		
						HFA2B		63		
						HFA3B	2H+1D	63		
						HFA4	2H+2D	64		
						HFA4G		65		
						HFA4B		64		
						HFA4A		64		
						HFA4	3H+1D	64		
						HF3701		66		
						HFA4B		64		
						HFA4A		64		
						HFA6	3H+3D	65		
						HFA6A		65		
						HFA6	4H+2D	65		
						HFA6A		65		
						HFA6	5H+1D	65		
						HFA6A		65		

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS** (for instance, coil voltage, terminal style, etc.).

LATCHING RELAY SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
☐	☐	☐	☐	☐	☐	HFE60/60P	1A(SH)/1B(SD)(SPST-NO/SPST-NC)	67	10	
☐	☐	☐	☐	☐	☐	HFE62		68	10	
☐	☐	☐	☐	☐	☐	HF163F-L		68	10	
☐	☐	☐	☐	☐	☐	HF163F-L16		69	20	
☐	☐	☐	☐	☐	☐	HFE20		69	20	
☐	☐	☐	☐	☐	☐	HFE15		70	25	
☐	☐	☐	☐	☐	☐	HFE15L		70	25	
☐	☐	☐	☐	☐	☐	HFE10		71	40	
☐	☐	☐	☐	☐	☐	HFE10-50		71	40	
☐	☐	☐	☐	☐	☐	HFE10-70		71	60	
☐	☐	☐	☐	☐	☐	HFE10-90		72	80	
☐	☐	☐	☐	☐	☐	HFE10-L		72	60	
☐	☐	☐	☐	☐	☐	HFE66		72	60	
☐	☐	☐	☐	☐	☐	HFE66(661)		73	100	
☐	☐	☐	☐	☐	☐	HFE66-100		73	100	
☐	☐	☐	☐	☐	☐	HFE53		73	100	
☐	☐	☐	☐	☐	☐	HFE19-60		74	60	
☐	☐	☐	☐	☐	☐	HFE69		74	80	
☐	☐	☐	☐	☐	☐	HFE19-90		74	80	
☐	☐	☐	☐	☐	☐	HFE19(661)		75	80	
☐	☐	☐	☐	☐	☐	HFE19(SH)		75	80	
☐	☐	☐	☐	☐	☐	HFE19-100		76	100	
☐	☐	☐	☐	☐	☐	HFE50		76	100	
☐	☐	☐	☐	☐	☐	HFE76		76	100	
☐	☐	☐	☐	☐	☐	E29(864)/HFE29		77	100	
☐	☐	☐	☐	☐	☐	HFE12		77	100	
☐	☐	☐	☐	☐	☐	HFE21		78	100	
☐	☐	☐	☐	☐	☐	HFE61		78	100	
☐	☐	☐	☐	☐	☐	HFE51		78	150	
☐	☐	☐	☐	☐	☐	HFE31		79	200	
☐	☐	☐	☐	☐	☐	HFE60/HFE60P	1A+1B	67	10	
☐	☐	☐	☐	☐	☐	HFE62		68	10	
☐	☐	☐	☐	☐	☐	HFE70		68	10	
☐	☐	☐	☐	☐	☐	HFE39		69	20	
☐	☐	☐	☐	☐	☐	HFE52		74	100	
☐	☐	☐	☐	☐	☐	HFE20	1C	69	15	
☐	☐	☐	☐	☐	☐	HFE15		70	20	
☐	☐	☐	☐	☐	☐	HFE10		71	20	
☐	☐	☐	☐	☐	☐	HFE10-70		71	40	
☐	☐	☐	☐	☐	☐	HFE33	2A(2SH)/2B(2SD)	67	10	
☐	☐	☐	☐	☐	☐	HFE60/HFE60P		67	10	
☐	☐	☐	☐	☐	☐	HFE70		68	10	
☐	☐	☐	☐	☐	☐	HFE62		68	10	
☐	☐	☐	☐	☐	☐	HFE39		69	10	
☐	☐	☐	☐	☐	☐	HFE39-40		70	40	
☐	☐	☐	☐	☐	☐	HFE63		79	80	
☐	☐	☐	☐	☐	☐	HFE68		79	100	
☐	☐	☐	☐	☐	☐	HFE37		80	100	
☐	☐	☐	☐	☐	☐	HFE25		80	200	
☐	☐	☐	☐	☐	☐	HFE65		80	200	
☐	☐	☐	☐	☐	☐	HFE32	3H(3SH)/3D(3SD)	81	80	
☐	☐	☐	☐	☐	☐	HFE45		81	80	
☐	☐	☐	☐	☐	☐	HFE75		81	100	
☐	☐	☐	☐	☐	☐	HFE16		82	100	
☐	☐	☐	☐	☐	☐	HFE23		82	100	

How to use the table: Please select the CONTACT FORM. Then choose the relay according to SWITCHING CURRENT and OTHERS (for instance, coil voltage, terminal style, etc.).

HVDC RELAY SELECTION GUIDE

Direct current relay series

Load Terminal Structure	Optional Rated Voltage[V]	Relay Model	Contact Form	Page	Contact Rating	[A]
QC Female Male Other	≤200 450 750 1000 1500				0 100 200 300 400 500 600 700 800 900 1000	
Vehicle:						
		HFE82V-20	1A	83		
		HFE82V-40		83		
		HFE82V-60		84		
		HFE82V-60B		84		
		HFE82V-100D		84		
		HFE82V-150D		85		
		HFE82V-150F		85		
		HFE82V-200B		85		
		HFE82V-200D		86		
		HFE82V-200W		86		
		HFE82V-250		86		
		HFE82V-250C		87		
		HFE82V-300C		87		
		HFE82V-400M		88		
		HFE82V-600		88		
		HFE82V-1000		88		
		HFE85V-300M	1A	87		
		HFE80V-20B	1A	89		
		HFE80V-20C		89		
		HFE80V-20D		89		
		HFE80V-40		90		
		HFE80V-60		90		
		HFE80V-200		90		
PV and energy storage:						
		HFE82P-20	1A	91		
		HFE82P-60B		91		
		HFE82P-200B		91		
		HFE82P-250		92		
		HFE82P-250C		92		
		HFE85P-150		92		
		HFE85P-250		93		
		HFE85P-300		93		
		HFE88P-150		93		
		HFE88P-250		94		
		HFE88P-350		94		

Remarks:

- 1) In the "Load Terminal Structure", "Female" means the female screw, "Male" means male screw, "other" means please refer to the product specification of the model in the following page.
- 2) "Optional Rated Voltage" refers to the optional voltage of each model of product under standard configuration. If other rated voltage is required, special order is allowable. Please contact Hongfa for specific solutions.

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS** (for instance, coil voltage, terminal style, etc.).

HVDC RELAY SELECTION GUIDE

Epoxy sealed series

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current																		[A]		
PCB	QC	Plug-in	Other	DC	AC				0	5	10	20	40	60	80	100	150	200	250	300									
						HFZ16V-30	1A(Double-contact)	95																					
						HFZ16V-50		95																					
						HFZ16V-50P		97																					
						HFZ17V-50		95																					
						HFZ16V-100		96																					
						HFZ16V-100P		97																					
						HFZ18V-100P		99																					
						HFZ16V-150		96																					
						HFZ16V-150P		98																					
						HFZ18V-150P		99																					
						HFZ20V-150P		100																					
						HFZ16V-200		96																					
						HFZ16V-200P		98																					
						HFZ20V-200P		100																					
						HFZ16V-250		97																					
						HFZ16V-250P		98																					
						HFZ16V-300P		99																					

How to use the table: Please select the **CONTACT FORM**.Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance,coil voltage, terminal style,etc.).

AUTOMOTIVE SELECTION GUIDE

Terminals			Coil		Relay Type	Contact Form	Page	Switching Current											[A]
PCB Plug-in	Other		DC	AC				0	5	10	15	20	25	30	40	60	80	100	200
☐	☐	☐	☐	☐	HFKM	1A (SPST-NO)	101												
☐	☐	☐	☐	☐	HFKC / HFKC-T		101												
☐	☐	☐	☐	☐	HFV6V		106												
☐	☐	☐	☐	☐	HFV9		110												
☐	☐	☐	☐	☐	HFV11		110												
☐	☐	☐	☐	☐	HFK9-TC		105												
☐	☐	☐	☐	☐	HFKA/ HFKA-T ⁽¹⁾		101												
☐	☐	☐	☐	☐	HFKAH-T		102												
☐	☐	☐	☐	☐	HFKH		103												
☐	☐	☐	☐	☐	HFKW		103												
☐	☐	☐	☐	☐	HFK7-T		104												
☐	☐	☐	☐	☐	HFK9-T		105												
☐	☐	☐	☐	☐	HFV26		111												
☐	☐	☐	☐	☐	HFV6		106												
☐	☐	☐	☐	☐	HFV6-G		106												
☐	☐	☐	☐	☐	HFV9-G		110												
☐	☐	☐	☐	☐	HFKT/ HFKT-T		103												
☐	☐	☐	☐	☐	HFKT-L/ HFKT-LT		104												
☐	☐	☐	☐	☐	HFV15		107												
☐	☐	☐	☐	☐	HFV15-L		107												
☐	☐	☐	☐	☐	HFV15N		108												
☐	☐	☐	☐	☐	HFV15A		108												
☐	☐	☐	☐	☐	HFV4		108												
☐	☐	☐	☐	☐	HFKP		104												
☐	☐	☐	☐	☐	HFV16		109												
☐	☐	☐	☐	☐	HFV16-L		109												
☐	☐	☐	☐	☐	HFV7		109												
☐	☐	☐	☐	☐	HFV20-150		111												
☐	☐	☐	☐	☐	HFV12		111												
☐	☐	☐	☐	☐	HFKM	1C	101												
☐	☐	☐	☐	☐	HFKC / HFKC-T		101												
☐	☐	☐	☐	☐	HFKW		103												
☐	☐	☐	☐	☐	HFV6		106												
☐	☐	☐	☐	☐	HFV9		110												
☐	☐	☐	☐	☐	HFKF /HFKF-T ⁽¹⁾		102												
☐	☐	☐	☐	☐	HFKA/ HFKA-T ⁽¹⁾		101												
☐	☐	☐	☐	☐	HFKAH-T		102												
☐	☐	☐	☐	☐	HFKH		103												
☐	☐	☐	☐	☐	HFK9-T		105												
☐	☐	☐	☐	☐	HFV6-G		106												
☐	☐	☐	☐	☐	HFV9-G		110												
☐	☐	☐	☐	☐	HFV15		107												
☐	☐	☐	☐	☐	HFV4		108												
☐	☐	☐	☐	☐	HFKP		104												
☐	☐	☐	☐	☐	HFKA/HFKA-T ⁽¹⁾	2A	101												
☐	☐	☐	☐	☐	HFKAH-T		102												
☐	☐	☐	☐	☐	HFKF/HFKF-T ⁽¹⁾	2C	102												
☐	☐	☐	☐	☐	HFKA/HFKA-T ⁽¹⁾		101												
☐	☐	☐	☐	☐	HFKAH-T		102												

Note: 1) HFKA / HFKA-T/HFKF / HFKF-T refers to motor locked load 25A.

How to use the table: Please select the **CONTACT FORM**.Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance,coil voltage, terminal style,etc.).

AUTOMOTIVE SELECTION GUIDE

Terminals		Coil		Relay Type	Contact Form	Page	Switching Current	[A]									
PCB Plug-in Other		DC	AC				051015202530406080100200										
				HFKM	1D	101											
				HFKM (SD)	SH/SD/BZ/SZ	101											
				HFKW-SH		103											
				HFKM (SH)		101											
				HFKM (SZ)		101											
				HFKF/HFKF-T(BZ) ¹⁾		102											
				HFKF/HFKF-T(BZ) ¹⁾		102											
				HFKJ/HFKJ-T(BZ) ¹⁾		102											
				HFK8-T(SH)		105											
				HFK9-T(SH)		105											
				HFK10/HFK10-T(SH)		105											

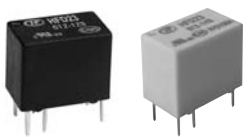
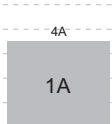
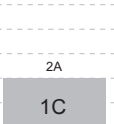
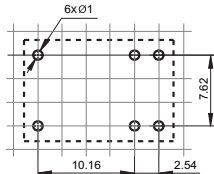
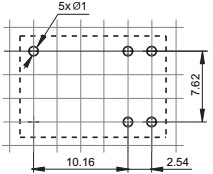
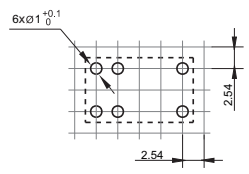
Note: 1) HFKF / HFKF-T/HFKJ / HFKJ-T refers to motor locked load 25A.

2) HFK15-SH Wiring method a:(Double acting closing contact mode) 12VDC Resistive load 25Ax2.

Wiring method b:(Bridge type of one way normally open contact)48VDC Resistive load 25A.

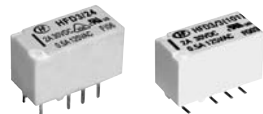
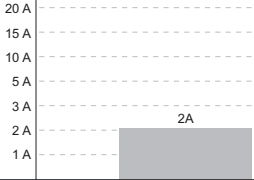
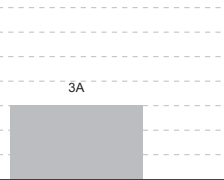
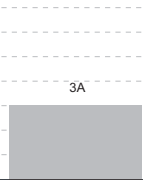
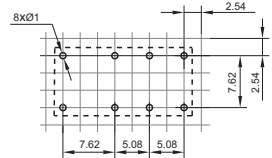
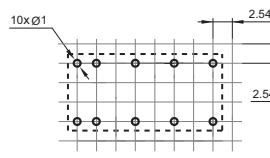
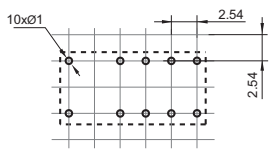
How to use the table: Please select the **CONTACT FORM**.Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance,coil voltage, terminal style,etc.).

SIGNAL RELAY SELECTION CHART

Type	HFD16		HFD17		HFD23	
Appearance						
Dimensions(L x W x H) mm	15.7 x 10.6 x 12.0		15.7 x 10.6 x 12.0		12.5 x 7.5 x 10.0	
Features	• 8A switching capability • UL insulation system: Class F available • Plastic sealed and flux proofed types available • Standard PCB layout • Product in accordance to IEC 60335-1 available		• 8A switching capability • UL insulation system: Class F available • Plastic sealed and flux proofed types available • Standard PCB layout • Product in accordance to IEC 60335-1 available		• Max.4A switching capability • High sensitive: 150mW • Plastic sealed type available	
Contact Ratings						
Contact Form	1C		1C		1A	1C
Contact Material	AgNi, AgSnO ₂		AgNi, AgSnO ₂		AgNi + Au plated	
Max. Switching Current (Res. load)						
Max. Switching Voltage	250VAC / 220VDC		250VAC / 220VDC		125VAC / 60VDC	
Max. Switching Power	750VA / 90W		750VA / 90W		125VA / 60W	62.5VA / 30W
Rated Load (Resistive load)	3A 30VDC 5A 125VAC 3A 250VDC		3A 30VDC 3A 250VAC		1A 125VAC 2A 30VDC	0.5A 125VAC 1A 30VDC
Coil Ratings						
Rated Voltage	2.4VDC to 24VDC		2.4VDC to 24VDC		1.5VDC to 24VDC	
Nominal Operating Power	0.15W,0.2W		0.15W,0.2W		0.15W, 0.2W	
Specifications						
Insulation Resistance	1000MΩ		1000MΩ		1000MΩ	
Dielectric Strength (Between coil and contacts)	1100VAC		1500VAC		1000VAC	
Ambient Temperature	-40°C to 85°C		-40°C to 85°C		-40°C to 70°C -40°C to 90°C(high temperature)	
Operate / Release Time max.	5ms / 5ms		5ms / 5ms		5ms / 5ms	
Mechanical Endurance min.	1 x 10 ⁷ OPS		1 x 10 ⁷ OPS		1 x 10 ⁷ OPS	
Electrical Endurance min.	1x10 ⁵ OPS(NO:3A 30VDC) 1x10 ⁴ OPS(NO:5A 125VAC)		1 x 10 ⁵ OPS(NO:3A 30VDC) 5 x 10 ⁴ OPS(NO:3A 250VDC)		9 x 10 ⁴ OPS (1C: 0.5A 125VAC 1A: 1A 125VAC)	
Layout (Bottom view)						
Terminal Type	PCB (DIP)		PCB (DIP)		PCB (DIP)	
Approved Standards	UL/CUL TÜV CQC		UL/CUL TÜV CQC		UL/CUL CQC TÜV	
File No.	E133481 R50374275 CQC21002319156		E133481 R50431434 CQC21002319158		E133481 R50306254 CQC09002035070	
Cross Reference	OMRON: G2E SONGCHUAN: 842 FUJITSU: FBR211 TE: OUA		FUJITSU: MZ AXICOM: V23101 HKE: HRS1K SANYOU: SYS1K		OMRON: G5V-1 PANASONIC: HY FUJITSU: SY NEC: TY TE: V23111	

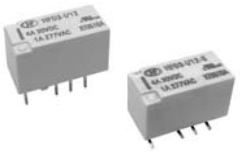
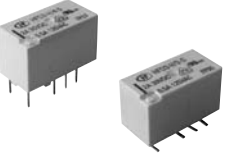
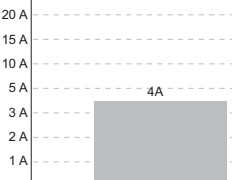
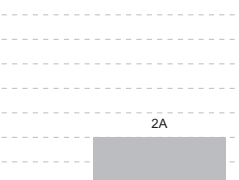
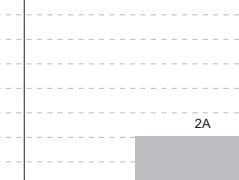
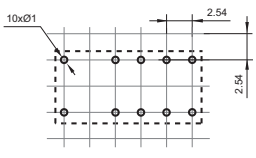
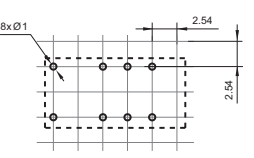
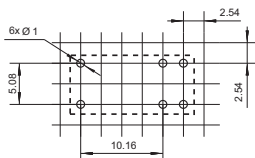
Note: Specification and dimensions in this catalog are subject to change without notice.

SIGNAL RELAY SELECTION CHART

Type	HFD27	HFD2	HFD3
Appearance			
Dimensions(L x W x H) mm	20.2 x 10.0 x 11.5	20.2 x 10.2 x 10.6	15.0 x 7.5 x 9.0
Features	• High switching capacity: 125VA/60W • Matching 16 pin IC socket • Epoxy plastic sealed for automatic wave soldering and cleaning • Bifurcated contacts	• High sensitive: 150mW • High switching capacity: 90W/125VA • Epoxy plastic sealed for automatic wave soldering and cleaning • Matching standard 16 pin IC socket • Bifurcated contacts • Single side stable and latching types available	• Meets EN60950/EN41003 • Surge voltage up to 2500VAC, meets FCC Part 68 and Telecordia • 2.5kV dielectric strength (between coil and contacts) • Bifurcated contacts • Single side stable and latching types available
Contact Ratings			
Contact Form	2C	2C	2C
Contact Material	AgNi + Au plated	Ag+Au plated, AgPd+Au plated	AgNi + Au plated
Max. Switching Current (Res. load)			
Max. Switching Voltage	240VAC / 120VDC	250VAC / 220VDC	277VAC / 220VDC
Max. Switching Power	125VA / 60W	125VA / 90W	62.5VA / 90W
Rated Load (Resistive load)	1A 125VAC 2A 30VDC	1A 125VAC 2A 30VDC 3A 30VDC	0.5A 125VAC 2A 30VDC 3A 30VDC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	3VDC to 48VDC	1.5VDC to 48VDC
Nominal Operating Power	0.15W to 0.58W	0.075W, 0.1W, 0.15W, 0.2W	0.1W, 0.14W, 0.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	1500VAC	1500VAC (1 coil) 1000VAC (2 coil)	2000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	7ms / 4ms	4.5ms / 3.5ms	4ms / 4ms
Mechanical Endurance min.	1 x 10 ⁸ OPS	1 x 10 ⁸ OPS	1 x 10 ⁸ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (at 1A 125VAC)	5 x 10 ⁴ OPS (at 2A 30VDC)	1 x 10 ⁵ OPS (at 0.5A 125VAC)
Layout (Bottom view)			
Terminal Type	PCB (DIP)	PCB (DIP)	PCB (DIP, SMT)
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL VDE CQC
File No.	E133481 R50316277 CQC09002033393	E133481 R50306253 CQC13002095175(Latching) CQC13002095174(Single side stable)	E133481 40018867 CQC14002107409
Cross Reference	OMRON: G5V-2 PANASONIC: DS2Y FUJITSU: FBR244/FTR-C2/RV NEC: MR62 AXICOM: V23105/D2N	OMRON: G6A PANASONIC: DS2E FUJITSU: RA NEC: MR82 TE: V23042 / AXICOM: MT2	OMRON: G6S PANASONIC: TX FUJITSU: NA/BA NEC: EC2/ED2 AXICOM: P2/V23079

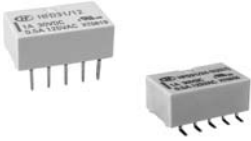
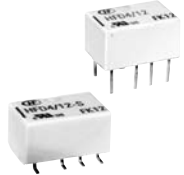
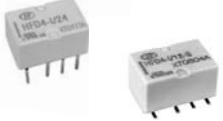
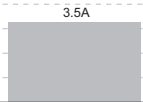
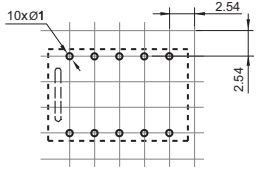
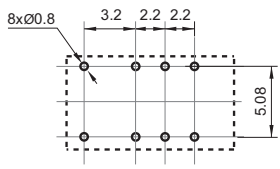
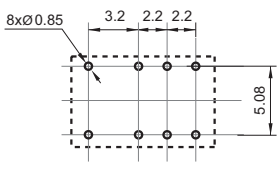
Note: Specification and dimensions in this catalog are subject to change without notice.

SIGNAL RELAY SELECTION CHART

Type	HFD3-I	HFD3-V	HFD3-VI
Appearance			
Dimensions(L x W x H) mm	15.0 x 7.5 x 9.0	15.0 x 7.5 x 9.2	15.0 x 7.5 x 9.2
Features	- Third generation Signal relay - High contact switching capacity - Withstand inrush current at 7.5A (Effective value) - SMT and DIP types available - Single side stable and latching types available	- Third generation Signal relay 3kV dielectric strength (between coil and contacts) - Surge withstand voltage up to 6000VAC, meets FCC Part 68 and Telecordia - Between coil and contact: Creepage ≥ 2.5mm, Clearance ≥ 2.0mm 2 pairs of NO contacts connected in series with contact gap ≥ 1.5mm, product in accordance to IEC60776 available. - Meets EN60950 / EN41003 - SMT and DIP types available - Bifurcated contacts - Single side stable and latching types available	- Third generation Signal relay 2 Form A and 2 Form C configurations - High contact switching capacity: 10mA 1000VDC/1500VDC - SMT and DIP types available - Single side stable and latching type available 6kV dielectric strength (between coil and contacts) - Meet ITU-T K.21 requirement contact gap ≥ 1.5mm, product in accordance to IEC62776-1 available.
Contact Ratings			
Contact Form	2C	2C	2A/2C
Contact Material	Ag Alloy + Au plated	AgNi+Au plated	AgNi+ Au plated
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC / 220VDC	1000VAC / 1500VDC (2 pairs of NO/NC contacts connected in series)	1100VAC/1500VDC (2 sets of open contacts in series)
Max. Switching Power	277VA / 120W	277VA / 60W	277VA / 60W
Rated Load (Resistive load)	4A 30VDC 2A 30VDC 1A 277VAC	0.5A 125VAC 2A 30VDC 1A 277VAC 10mA 1000VDC	2A 30VDC 1A 277VAC 10mA 1500VDC 10mA 1000VDC
Coil Ratings			
Rated Voltage	1.5VDC to 24VDC	1.5VDC to 24VDC	1.5VDC to 24VDC
Nominal Operating Power	0.1W, 0.14W, 0.2W	0.14W, 0.2W	0.14W, 0.2W, 0.28W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	2000VAC	3000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C, 40°C to 105°C
Operate / Release Time max.	4ms / 4ms	6ms / 6ms	6ms / 6ms
Mechanical Endurance min.	1 x 10 ⁷ ops	1 x 10 ⁷ ops	1 x 10 ⁷ ops
Electrical Endurance min.	1 x 10 ⁵ ops (at 1A 277VAC)	1 x 10 ⁵ ops (at 0.5A 125VAC)	1 x 10 ⁵ ops (at 2A 30VDC)
Layout (Bottom view)			
Terminal Type	PCB (DIP, SMT)	PCB (DIP, SMT)	PCB (DIP, SMT)
Approved Standards	UL/CUL TUV CQC	UL/CUL VDE CQC	UL/CUL TÜV CQC
File No.	E133481 R50433438 CQC21002321392	E133481 40018867 CQC14002107409	E133481 R50433438 CQC19002231071
Cross Reference	PANASONIC :TX-TH	PANASONIC: TXD2 FUJITSU: FTR-C1	

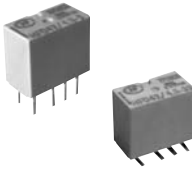
Note: Specification and dimensions in this catalog are subject to change without notice.

SIGNAL RELAY SELECTION CHART

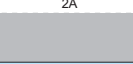
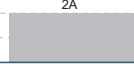
Type	HFD31	HFD4	HFD4-I
Appearance			
Dimensions(L x W x H) mm	14.0 x 9.0 x 5.0	10.0 x 6.5 x 5.4	10.0 x 6.5 x 5.65
Features	- Surge voltage up to 1500VAC, meets FCC Part 68 and Telecordia - High contact capacity: 2A 30VDC - Single side stable and latching types available	- Offers excellent board space savings - Surge withstand voltage up to 2500V, meets FCC Part 68 and Telecordia - Meets EN60950/EN41003 - SMT and DIP types available - Single side stable and latching type available	- Surge withstand current up to 3.5A(Valid value) - Available in accordance with IEC 60335-1 - Low power consumption - Single side stable and latching type available
Contact Ratings			
Contact Form	2C	2C	2C
Contact Material	AgNi+Au plated	AgNi+Au plated	Ag Alloy+Au plated
Max. Switching Current (Res. load)			
Max. Switching Voltage	250VAC / 220VDC	250VAC / 220VDC	250VAC / 220VDC
Max. Switching Power	62.5VA / 60W	62.5VA / 60W	125VA / 90W
Rated Load (Resistive load)	0.5A 125VAC 1A 30VDC 2A 30VDC	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 125VAC 2A 30VDC 3A 30VDC
Coil Ratings			
Rated Voltage	1.5VDC to 24VDC	1.5VDC to 24VDC	1.5VDC to 24VDC
Nominal Operating Power	0.1W, 0.14W, 0.2W	0.1W, 0.14W, 0.2W	0.1W, 0.14W, 0.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	1500VAC	1600VAC	1600VAC
Ambient Temperature	-40°C to 70°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	3ms / 3ms	3ms / 3ms	3ms / 3ms
Mechanical Endurance min.	1 x 10 ⁸ OPS	1 x 10 ⁸ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (at 0.5A 125VAC)	1 x 10 ⁵ OPS (at 0.3A 125VAC)	1 x 10 ⁵ OPS(at 2A 30VDC)
Layout (Bottom view)			
Terminal Type	PCB (DIP, SMT)	PCB (DIP, SMT)	PCB (DIP, SMT)
Approved Standards	UL/CUL	UL/CUL	UL/CUL TÜV
File No.	E133481	E133481	E133481 R50333270
Cross Reference	OMRON: G6H PANASONIC: TQ FUJITSU: A NEC: EA2/EB2 AXICOM: FP2	OMRON: G6K PANASONIC: AGQ AXICOM: IM FUJITSU: FTR-B3 NEC: UC2/UD2	PANASONIC: AGQ-TH AXICOM: IM-D,IM-I

Note: Specification and dimensions in this catalog are subject to change without notice.

SIGNAL RELAY SELECTION CHART

Type	HFD4-V	HFD42	HFD5
Appearance			
Dimensions(L x W x H) mm	10.0 x 6.5 x 5.65	10.6 x 5.7 x 9.0	9.0 x 4.8 x 4.9
Features	- Subminiature high dielectric strength signal relay - Surge withstand voltage up to 2500V - Meets EN60950/EN41003 - gap between open contacts $\geq 0.4\text{mm}$ - Low power consumption - Single side stable and latching type available	- Surge withstand voltage up to 2500V, meets FCC Part 68 and Telecordia - Meets EN60950/EN41003 - SMT and DIP types available - High contact capacity 2A 30VDC - Single side stable and latching type available	- The world's first 5th generation signal relay - Low coil power at 50mW. Coil (5V) operating current $\leq 10\text{mA}$. Can be directly driven by microprocessor. - Bifurcated contacts - Products compliant with IEC 60079 or IEC 60335-1 available - Both DIP & SMT types available - Single side stable and latching type available

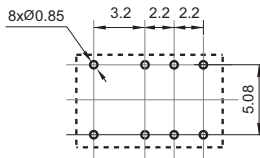
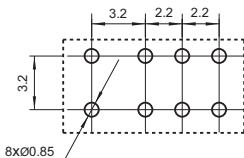
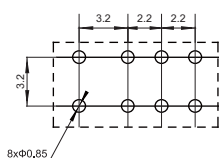
Contact Ratings

Contact Form	2C	2C	2C
Contact Material	AgNi+Au plated	AgNi+Au plated	AgNi+Au plated
Max. Switching Current (Res. load)			
Max. Switching Voltage	425VAC / 600VDC	250VAC / 220VDC	250VAC / 220VDC
Max. Switching Power	62.5VA / 60W	125VA / 120W	62.5VA / 60W
Rated Load (Resistive load)	0.3A 125VAC 1A 30VDC	0.5A 125VAC 1A 30VDC 1A 125VAC 2A 30VDC	1A 30VDC 2A 30VDC 0.3A 125VAC 0.5A 125VAC

Coil Ratings

Rated Voltage	1.5VDC to 24VDC	1.5VDC to 24VDC	1.5VDC to 12VDC
Nominal Operating Power	0.14W, 0.2W	0.1W, 0.12W 0.14W, 0.23W	0.05W

Specifications

Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	1600VAC	1500VAC	1500VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	3ms / 3ms	3ms / 3ms	2ms / 2ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁸ OPS	1 x 10 ⁸ OPS
Electrical Endurance min.	1 x 10 ⁵ ops (1A 30VDC) 1 x 10 ⁵ ops (0.3A 125VAC) 1 x 10 ⁵ ops (0.01A 600VDC)	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS (1A 30VDC)
Layout (Bottom view)			
Terminal Type	PCB (DIP, SMT)	PCB (DIP, SMT)	PCB (DIP, SMT)
Approved Standards	UL/CUL VDE	UL/CUL TÜV	UL/CUL TÜV
File No.	E133481 40048125	E133481 R50317623	E133481 R50522293
Cross Reference		OMRON: G6J PANASONIC: AGN AXICOM: IM FUJITSU: FTR-B4 NEC: UA2/UB2	

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HIGH-FREQUENCY RELAY SELECTION CHART

Type	HFD43	HFD45	HFD32
Appearance			
Dimensions(L x W x H) mm	10.4 x 6.9 x 6.1	10.4 x 6.9 x 6.1	14.7 x 9.5x 6.5
Features	- Excellent high-frequency characteristics at 1GHz: Insertion loss $\leq 0.2\text{dB}$, Isolation: between open contacts $\geq 20\text{dB}$, between contact sets $\geq 30\text{dB}$ 2 Form C configuration - Single-side stable and latching types available - SMT type available - Small product size	- Excellent high-frequency characteristics at 3GHz: Insertion loss $\leq 0.4\text{dB}$, VSWR ≤ 1.2 Isolation: between open contacts $\geq 18\text{dB}$, between contact sets $\geq 25\text{dB}$ 2 Form C configuration - Single-side stable and latching types available - SMT type available - Small product size	- Excellent radio-frequency characteristics - Supports 50Ω And 75Ω impedance applications - Up to 10W RF load switching capability - Low mounting height to save board spacing - SMT type available

HIGH-FREQUENCY CHARACTERISTICS

frequency	1GHz	3GHz	1GHz
Isolation (between open contacts)	$\geq 20\text{dB}$	$\geq 18\text{dB}$	$\geq 20\text{dB}$
Isolation (between contact sets)	$\geq 30\text{dB}$	$\geq 25\text{dB}$	$\geq 30\text{dB}$
Insertion loss	$\leq 0.2\text{dB}$	$\leq 0.4\text{dB}$	$\leq 0.3\text{dB}$
V.SWR	≤ 1.2	≤ 1.2	≤ 1.2
Through maximum power	3W	3W	10W

Contact Ratings

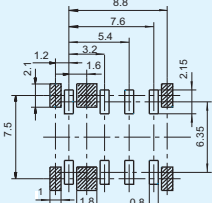
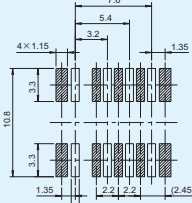
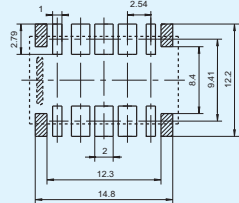
Contact Form	2Z	2Z	2Z
Contact Material	AgNi+Au plated	AgNi+Au plated	AgNi+Au plated
Max. Switching Current (Res. load)	20 A 15 A 10 A 5 A 3 A 2 A 1 A	20 A 15 A 10 A 5 A 3 A 2 A 1 A	20 A 15 A 10 A 5 A 3 A 2 A 1 A
Max. Switching Voltage	125VAC / 30VDC	125VAC / 30VDC	125VAC / 30VDC
Max. Switching Power	37.5VA / 30W /1W 1GHz	37.5VA / 30W /1W 3GHz	62.5VA / 60W /10W 1GHz
Rated Load (Resistive load)	1A 30VDC, 0.3A 125VAC	1A 30VDC, 0.3A 125VAC	0.5A 125VDC, 1A 30VAC
High frequency load	1W 1GHz	1W 3GHz	3W 1GHz

Coil Ratings

Rated Voltage	1.5VDC to 24VDC	1.5VDC to 24VDC	1.5VDC to 48VDC
Nominal Operating Power	0.1W, 0.14W, 0.2W	0.1W, 0.14W, 0.2W	0.1W, 0.14W, 0.2W, 0.3W

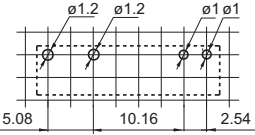
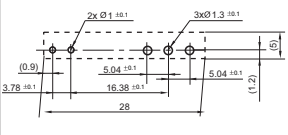
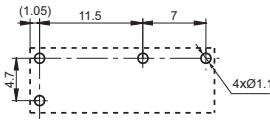
Specifications

Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	750VAC	750VAC	1000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	3ms / 3ms	3ms / 3ms	3ms / 3ms
Mechanical Endurance min.	5 x 10 ⁷ OPS	5 x 10 ⁷ OPS	1 x 10 ⁸ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS(1W 1GHz)	1 x 10 ⁵ OPS(1W 3GHz)	1 x 10 ⁵ OPS

Layout (Bottom view)			
Terminal Type	PCB (SMT)	PCB (SMT)	PCB (SMT)
Approved Standards			
File No.			
Cross Reference	OMRON:G6K-2F-RF(-S)	OMRON:G6K-2F-RF-T	PANASONIC ARA

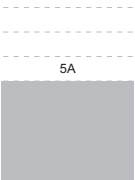
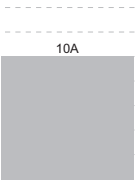
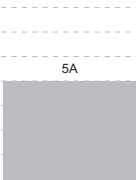
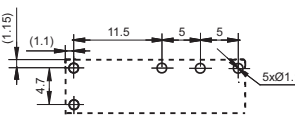
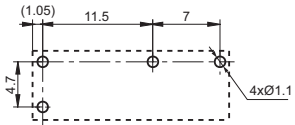
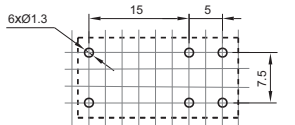
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF49FD	HF41F	HF46F
Appearance			
Dimensions(L x W x H) mm	20.0 x 5.0 x 12.5	28.0 x 5.0 x 15.0	20.5 x 7.0 x 15.3
Features	• 5A switching capability • 3kV dielectric strength (between coil and contacts) • Surge voltage up to 6kV (between coil and contacts) • Slim size (width 5mm, height 12.5mm) • High sensitive: 120mW	• Slim size (width 5mm) • 4kV dielectric strength (between coil and contacts) • Surge voltage up to 6kV (between coil and contacts) • High sensitive: 170mW	• 5A switching capability • 10kV impulse withstand voltage (between coil and contacts) • Meets VDE 0631 reinforce insulation • Highly efficient magnetic circuit for high sensitivity: 200mW • Extremely small footprint utilizing PCB area
Contact Ratings			
Contact Form	1A	1A, 1C	1A
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi
Max. Switching Current (Res. load)			
Max. Switching Voltage	250VAC / 125VDC	400VAC / 125VDC	277VAC / 30VDC
Max. Switching Power	1250VA / 150W	1500VA / 180W	1385VA / 150W
Rated Load (Resistive load)	5A 250VAC 5A 30VDC	6A 250VAC 6A 30VDC	3A 250VAC/30VDC 5A 250VAC/30VDC
Coil Ratings			
Rated Voltage	5VDC to 24VDC	5VDC to 60VDC	3VDC to 24VDC
Nominal Operating Power	0.12W to 0.18W	0.17W (except 48VDC)	0.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	3000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	10ms / 5ms	8ms / 4ms	10ms / 10ms
Mechanical Endurance min.	2 x 10 ⁷ OPS	1 x 10 ⁷ OPS	5 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (at 3A 250VAC/30VDC)	1A: 6 x 10 ⁴ OPS (at 85°C) 1C: NO: 3 x 10 ⁴ OPS (at 85°C) NC: 1 x 10 ⁴ OPS (at 85°C)	1.2 x 10 ⁵ OPS (at 3A 250VAC/30VDC)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E133481 R50149334 CQC17002175722	E133481 40020043 CQC17002175724	E134517 40025215 CQC17002168380
Cross Reference	OMRON: G6DN PANASONIC: PA FUJITSU: MY/NY SCHRACK: PCN	PANASONIC: PF FUJITSU: FTR-LY SCHRACK: V23092/SNR FINDER: 34.51	OMRON: G5NB/G5T PANASONIC: LD FUJITSU: FTR-F3

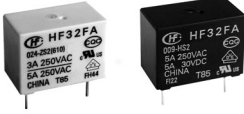
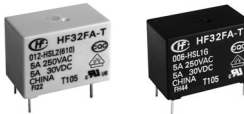
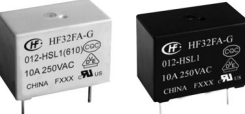
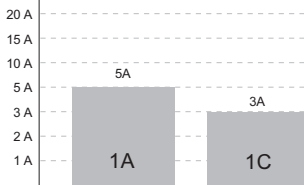
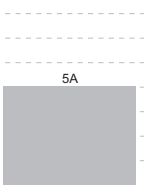
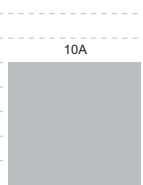
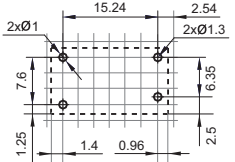
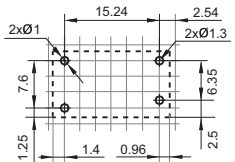
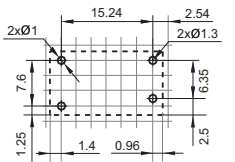
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF46FB	HF46F-G	HF42F
Appearance			
Dimensions(L x W x H) mm	23.4 x 7.0 x 15.3	20.5 x 7.0 x 15.3	24.4 x 12.8 x 24.8
Features	• 5A switching capability • 8kV impulse withstand voltage (between coil and contacts) • Meets reinforce insulation • width 7mm, Suitable for PCB intensive installation • UL insulation system: Class F	• 10A switching capability • 10kV impulse withstand voltage (between coil and contacts) • Meets VDE 0631 reinforce insulation • Highly efficient magnetic circuit for high sensitivity: 200mW • Extremely small footprint utilizing PCB area	• 5A switching capability • TV-3 125VAC approved by UL standard • 2 Form A slim configuration
Contact Ratings			
Contact Form	1C	1A	2A
Contact Material	AgNi	AgSnO ₂ , AgNi	AgSnO ₂ , AgCdO
Max. Switching Current (Res. load)			
Max. Switching Voltage	250VAC	277VAC / 30VDC	250VAC / 30VDC
Max. Switching Power	1250VA	2770VA / 300W	1250VA / 150W
Rated Load (Resistive load)	5A 250VAC	7A 250VAC/30VDC 10A 250VAC/30VDC	5A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	3VDC to 24VDC	3VDC to 24VDC	5VDC to 48VDC
Nominal Operating Power	0.36W	0.2W	0.53W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 105°C (AgNi contacts) -40°C to 85°C (AgSnO ₂ contacts)	-40°C to 70°C
Operate / Release Time max.	10ms / 10ms	10ms / 10ms	15ms / 10ms
Mechanical Endurance min.	5 x 10 ⁶ OPS	5 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS	6 x 10 ⁴ OPS(AgNi contacts), 5 x 10 ⁴ OPS(AgSnO ₂ contacts)	5 x 10 ⁴ OPS (at 5A 250VAC)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL TÜV CQC
File No.	E134517 40049080 CQC18002202623	E134517 40025215 CQC17002168380	E133481 R50278397 CQC09002034521/CQC16002159853
Cross Reference	FUJITSU: FTR-F3	OMRON: G5NB/G5T PANASONIC: LD FUJITSU: FTR-F3	OMRON: G5PA-2 PANASONIC: LA FUJITSU: FTR-F4 NEC: CN OEG: OSA/PCI

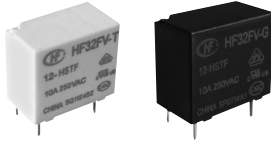
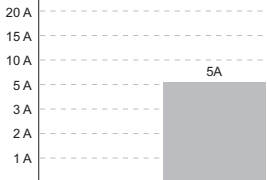
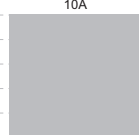
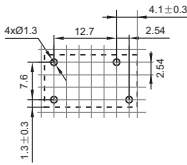
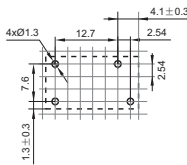
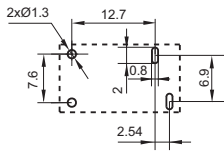
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF32FA	HF32FA-T	HF32FA-G
Appearance			
Dimensions(L x W x H) mm	17.6 x 10.1 x 12.7	17.6 x 10.1 x 12.7	17.6 x 10.1 x 12.7
Features	• 5A switching capability • Creepage/clearance distance>8mm • 5kV dielectric strength (between coil and contacts) • 1 Form A meets VDE 0700/0631 • 1 Form C meets VDE 0631	• High temperature: 105°C • 5A switching capability • Creepage/clearance distance>8mm • 5kV dielectric strength (between coil and contacts) • Meets VDE 0700/0631 reinforce insulation	• 10A switching capability • Creepage/clearance distance>8mm • 5kV dielectric strength (between coil and contacts) • Meets VDE 0700/0631 reinforce insulation
Contact Ratings			
Contact Form	1A, 1C	1A	1A
Contact Material	AgNi	AgNi	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC
Max. Switching Power	1250VA / 150W	1250VA / 150W	2500VA
Rated Load (Resistive load)	1A: 5A 250VAC/30VDC 1C: 3A 250VAC/30VDC	5A 250VAC 5A 30VDC	10A 250VAC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	3VDC to 24VDC	3VDC to 48VDC
Nominal Operating Power	0.2W, 0.45W	0.2W	0.23W, 0.45W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 105°C	-40°C to 85°C
Operate / Release Time max.	8ms / 4ms	8ms / 4ms	8ms / 4ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS (at 5A 250VAC)	1.5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E134517 40006182 CQC17002175721	E134517 40006182 CQC17002175721	E134517 40006182 CQC17002175721
Cross Reference	FUJITSU: JV OEG: OJ/OJE P&B: T77	FUJITSU: JV OEG: OJ/OJE P&B: T77	FUJITSU: JV OEG: OJ/OJE P&B: T77

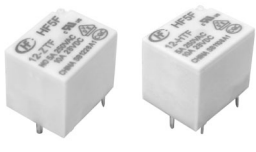
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POWER RELAY SELECTION CHART

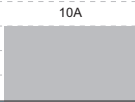
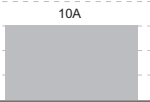
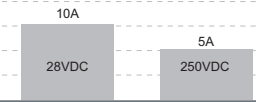
Type	HF32FV	HF32FV-G/HF32FV-T	HF32FV-16
Appearance			
Dimensions(L x W x H) mm	18.4 x 10.2 x 15.5	18.4 x 10.2 x 15.5	18.4 x 10.2 x 15.5
Features	• 5A switching capability • Dielectric strength 4kV (between coil and contacts) • Relow soldering version available • Halogen-free products are available • Product in accordance to IEC60335-1 available • Meet reinforce insulation • UL insulation system: Class F	• 10A switching capability • Dielectric strength 4kV (between coil and contacts) • TV-5 products are available • Relow soldering version available • Halogen-free products are available • Product in accordance to IEC60335-1 available • Meet reinforce insulation • UL insulation system: Class F	• 16A switching capability • Dielectric strength 4kV(between coil and contacts) • 1 Form A configuration • UL insulation system: Class F • Product in accordance to IEC 62368-1 available • Product in accordance to TV-10 62368-1 available
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂ , AgCdO, AgNi	AgSnO ₂ , AgCdO, AgNi	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC / 30VDC	277VAC	277VAC
Max. Switching Power	1250VA / 150W	2770VA	4000VA
Rated Load (Resistive load)	5A 250VAC / 30VDC L type: 3A 250VAC / 30VDC	10A 250VAC 8A 250VAC	16A 250VAC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	3VDC to 48VDC	3VDC to 48VDC(0.2W,0.4W) 12VDC ,24VDC(0.8W)
Nominal Operating Power	0.2W, 0.45W	0.2W,0.45W	0.8W, 0.4W(Sensitive Type) 0.2W(Super Sensitive Type)
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 105°C	-40°C to 105°C	-40°C to 85°C
Operate / Release Time max.	8ms / 5ms	8ms / 5ms	10ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	See "CONTACT DATA"	1 x 10 ⁴ OPS(at 16A 250VAC,General use) 5 x 10 ³ OPS(at 16A 250VAC,Resistive load)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E134517 40012204 CQC14002120720	E134517 40012204 CQC14002120720	E134517 40012204 CQC14002120720
Cross Reference	FUJITSU: JV OEG: OJ/OJE P&B: T77	FUJITSU: JV OEG: OJ/OJE P&B: T77	OEG: OJT GOODSKY:GQ

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF30F	HF39F	HF5F
Appearance			
Dimensions(L x W x H) mm	20.5 x 12.7 x 15.7	20 x 8.5 x 12.5	15.6 x 12.4 x 13.6
Features	• 10A switching capability • 4.0kV dielectric strength (between coil and contacts) • Contact arrangement: 2 Form A • UL insulation system: Class F • IEC60335-1 compliant products are available • TV-5 compliant products are available	• 10A switching capability • creepage distance and air distance: >8mm • Dielectric strength (between coil and contacts): ≥5000VAC • TV-8 compliant products are available • UL insulation system: Class F	• 5A switching capability • contact arrangement: 1 Form A 1 Form C • UL insulation system: Class F • TV-5 compliant products are available

Contact Ratings

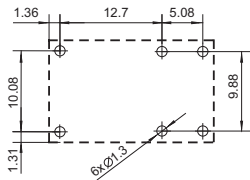
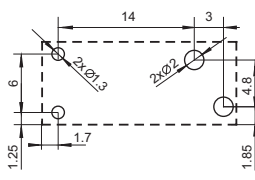
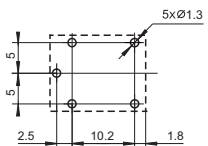
Contact Form	2H	1H	1H
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC	277VAC	277VAC
Max. Switching Power	2770VA	2770VA	1385VA / 280W
Rated Load (Resistive load)	10A 250VAC	10A 250VAC	5A 250VAC 10A 28VAC

Coil Ratings

Rated Voltage	3VDC to 48VDC	3VDC to 48VDC	3VDC to 48VDC
Nominal Operating Power	0.4W	0.3W	0.45W

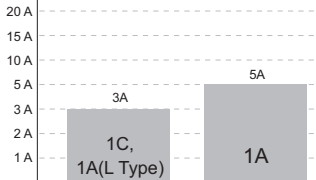
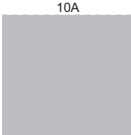
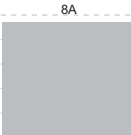
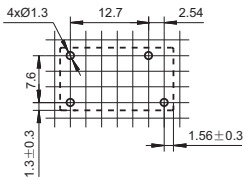
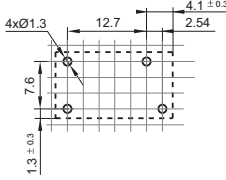
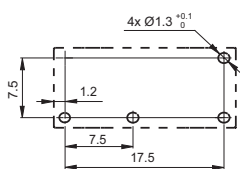
Specifications

Insulation Resistance	1000MΩ	1000MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	5000VAC	1500VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	8ms / 5ms	8ms / 4ms	10ms / 5ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	5 x 10 ⁴ OPS	5x10 ⁴ OPS

Layout (Bottom view)			
Terminal Type	PCB		PCB
Approved Standards			UL/CUL VDE CQC
File No.			E133481 40054965 CQC21002311603
Cross Reference			

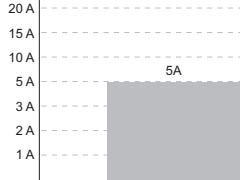
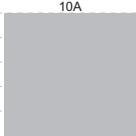
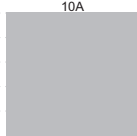
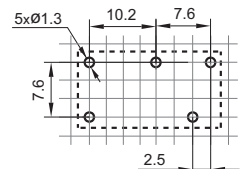
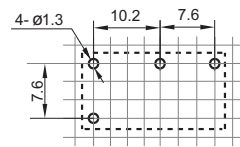
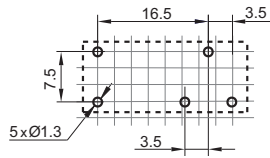
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF32F	HF32F-G	HF171F
Appearance			
Dimensions(L x W x H) mm	18.4 x 10.2 x 15.5	18.4 x 10.2 x 15.5	20.0 x 10.0 x 10.6
Features	• 1 Form A and 1 Form C configurations • Subminiature, standard PCB layout • Plastic sealed and flux proofed types available • UL insulation system: Class F • Product in accordance to IEC 60335-1 available	• 10A switching capability • 1 Form A configurations • Subminiature standard PCB layout • Plastic sealed and flux proofed types available	• 8A switching capability • 1 form A and 1 form C configurations • High sensitivity 200mW • Creepage/clearance distance:>6mm, meets VDE 0631reinforce insulation • 5KV dielectric between coil to contacts • Class F insulation
Contact Ratings			
Contact Form	1A, 1C	1A	1A, 1C
Contact Material	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂ , AgNi
Max. Switching Current (Res. load)			
Max. Switching Voltage	250VAC / 30VDC	250VAC / 30VDC	30VDC / 277VAC
Max. Switching Power	1250VA / 150W	2500VA / 300W	1662VA / 180W
Rated Load (Resistive load)	1A: 10A 125VAC 5A 250VAC/30VDC L Type: 3A 250VAC/30VDC 1C: 3A 250VAC/30VDC	10A 250VAC 10A 30VDC	1A:6A 250VAC/30VDC 1C:NO:6A 250VAC/30VDC NC:5A 250VAC/30VDC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	3VDC to 48VDC	3VDC to 48VDC
Nominal Operating Power	0.2W, 0.45W	0.45W	0.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	2500VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	8ms / 5ms	8ms / 5ms	8ms / 5ms
Mechanical Endurance min.	5 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC		UL/CUL VDE CQC
File No.	E134517 40012204 CQC12002076528 CQC16002148335	E134517 40012204 CQC12002076528 CQC16002148335	E133481 40048577 CQC17002177419
Cross Reference	FUJITSU: JV OEG: OJ/OJE P&B: T77	FUJITSU: JV OEG: OJ/OJE P&B: T77	

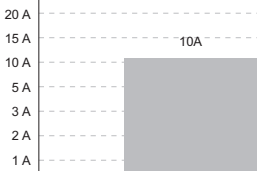
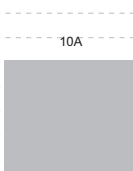
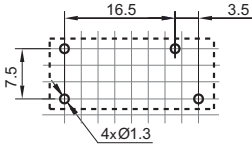
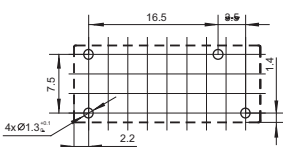
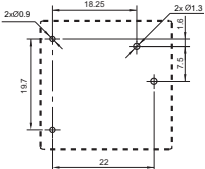
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF33F	HF33F-G	HF36F
Appearance			
Dimensions(L x W x H) mm	20.5 x 10.2 x 15.7	20.5 x 10.2 x 15.7	24.5 x 10.5 x 24.5(Plastic sealed) 23.8 x 9.5 x 24.5(Flux proofed)
Features	- Creepage distance:8mm (both for 1 CO and NO) - Clearance distance: NO type 4.5mm; NC type 4mm - Plastic sealed and flux proofed types available	10A switching capability - Creepage distance: 8mm - Clearance distance: NO type 4.5mm 1 Form A configurations - UL insulation system: Class F - Product in accordance to IEC 60335-1 available - Shape and Pin compatible with HF33F	10A switching capability - TV-5 125VAC approved by UL standard (only for 1 Form A) 1 Form A and 1 Form C configurations - Plastic sealed and flux proofed types available
Contact Ratings			
Contact Form	1A, 1C	1A	1A, 1C
Contact Material	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂	AgSnO ₂ , AgCdO
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC / 30VDC	277VAC	250VAC / 30VDC
Max. Switching Power	1250VA / 150W	2770VA	2500VA / 300W
Rated Load (Resistive load)	NO: 10A 125VAC 5A 250VAC/30VDC NC: 3A 250VAC/30VDC	10A 250VAC	10A 250VAC/30VDC TV-5 125VAC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	3VDC to 48VDC	5VDC to 48VDC
Nominal Operating Power	0.2W, 0.45W	0.2W, 0.45W	0.25W, 0.53W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC (NO), 3000VAC (NC)
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 70°C
Operate / Release Time max.	8ms / 5ms	8ms / 5ms	15ms / 5ms
Mechanical Endurance min.	5 x 10 ⁶ OPS	5 x 10 ⁶ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	5 x 10 ⁴ OPS (at 10A 250VAC)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC		UL/CUL TÜV CQC
File No.	E134517 125661 CQC12002076530		E134517 R50356442 CQC180021999811CQC16002159838
Cross Reference	OMRON: G5SB/G5Q PANASONIC: JQ/PQ FUJITSU: JY SCHRACK: RE/REL OEG: PCH		OMRON: G5PA-1 PANASONIC: LK FUJITSU: FTR-H2/F2 NEC: CK OEG: SDT

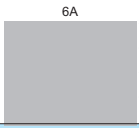
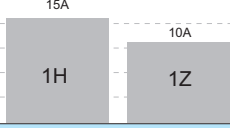
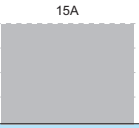
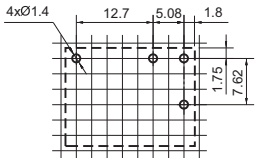
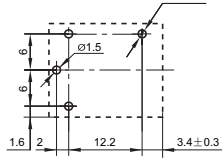
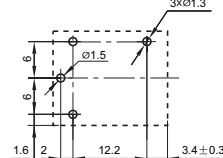
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF36FD	HF36F-20	HF162F
Appearance			
Dimensions(L x W x H) mm	23.8 x 9.5 x 24.5	24.5 x 10.5 x 24.5	26.3 x 26.1 x 10.0
Features	10A switching capability - TV-8 125VAC approved by UL standard(118A inrush current) - Ideal for device power reduction	10.5mm wide slim relay 20A switching capability - High sensitivity.Coil power consumption is only 0.53W - High surge current resistance:TV-8 - Insulation distanced$\geq$6.1mm - Surge voltage between coil contacts 10KV - Optional explosion-proof specifications	- High inrush current: TV-8 125VAC (117A inrush current) - Low height, only 9.3mm (excluding buttons) - High sensitivity: 250mW
Contact Ratings			
Contact Form	1A	1H	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	250VAC / 30VDC	277VAC	277VAC
Max. Switching Power	2500VA / 150W	5540VA	2216VA
Rated Load (Resistive load)	10A 250VAC 5A 250VAC/30VDC TV-8 125VAC	20A 277VAC	10A 125VAC 8A/5A 277VAC TV-8 125VAC 3A/100A 250VAC (Capacitive) (Standard type)
Coil Ratings			
Rated Voltage	5VDC to 48VDC	5VDC to 48VDC	3VDC to 24VDC
Nominal Operating Power	0.25W, 0.53W	0.53W	0.25W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 70°C	-40°C to 85°C	-40°C to 70°C
Operate / Release Time max.	15ms / 5ms	15ms / 5ms	15ms / 5ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	2 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS (at 10A 250VAC)	5 x 10 ⁴ OPS	5 x 10 ⁴ OPS (at 10A 125VAC)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL VDE CQC
File No.	E134517 R50356444 CQC18002199980/CQC16002159846	E134517 R50263288 CQC21002316568	E133481 40032669 CQC10002050942
Cross Reference	OMRON: G5PA-1 PANASONIC: LK NEC: CK OEG: SDT	OMRON: G5PZ-1A-E	OMRON: G5PF PANASONIC: LK-F

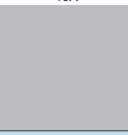
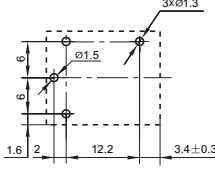
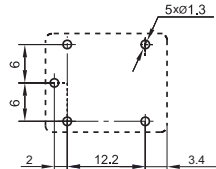
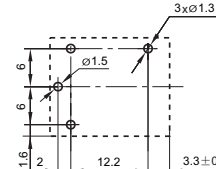
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF8/HF8A	HF3FA/HF3FA-T	HF3FA-M
Appearance			
Dimensions(L x W x H) mm	21.3 x 16.2 x 14.9	19.0 x 15.2 x 15.5	19.0 x 15.2 x 15.5
Features	- Sub miniature, high sensitive, Standard PCB layout 1 Form A and 1 Form C configurations - Plastic sealed type for automatic wave soldering	15A 125VAC;10A 250VAC switching capability - TV8 @ 120Vac (for version 590) - Flammability class according to UL94, V-0 - Product in accordance to IEC 60335-1 available - Subminiature, standard PCB layout - Plastic sealed and Flux proofed types available - UL insulation system: Class F	15A switching capability - Subminiature, standard PCB layout 1 Form A and 1 Form C configurations - Plastic sealed and Flux proofed types available
Contact Ratings			
Contact Form	1A, 1C	1A, 1C	1H, 1Z
Contact Material	AgNi	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	300VAC / 30VDC	277VAC / 28VDC	30VDC
Max. Switching Power	1800VA / 300W	2770VA / 280W	300W
Rated Load (Resistive load)	HF8: 6A 300VAC/28VDC HF8A: 6A 277VAC/30VDC	1A: 10A 277VAC/10A 28VDC 1C: NO: 10A 277VAC/10A 28VDC NC: 5A 250VAC	NO: 15A 14VDC NC: 5A 14VDC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	3VDC to 48VDC	9VDC to 24VDC
Nominal Operating Power	0.33W, 0.45W, 0.6W	0.36W	0.45W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ(500VDC)
Dielectric Strength (Between coil and contacts)	2000VAC	2500VAC	2000VAC
Ambient Temperature	-55°C to 90°C	-40°C to 105°C	-40°C to 85°C
Operate / Release Time max.	6ms / 3ms	10ms / 5ms	10ms / 4ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1H:1 x 10 ⁵ OPS (10A 250VAC) 1Z:5 x 10 ⁴ OPS (NO:5A/NC:5A 250VAC)	1 x 10 ⁵ OPS (NO,15A 14VDC)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE	UL/CUL VDE CQC	
File No.	E134517 40025189	E134517 40023708 CQC12002076529	
Cross Reference	FUJITSU: LZ P&B: T73 OEG: OUDH	OMRON: G5LA SCHRACK: T7S SONG CHUAN: 833H	SCHRACK: T72N OMRON: G8SN

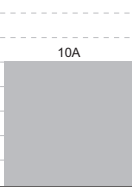
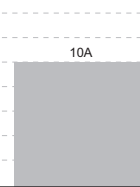
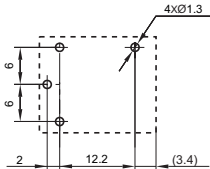
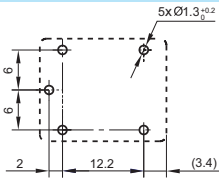
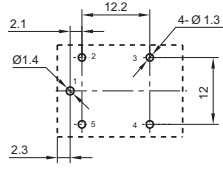
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF3FA-W	HF3FD	HF3FF
Appearance			
Dimensions(L x W x H) mm	19.0 x 15.2 x 16.1	19.0 x 15.2 x 15.5	19.0 x 15.2 x 15.5
Features	• 10A switching capability • Flammability class according to UL94, V-0 • Product in accordance to IEC 60335-1 available • Plastic sealed and flux proofed types available • Subminiature, standard PCB layout • UL insulation system: Class F	• 15A switching capability • Subminiature, standard PCB layout • Flammability class according to UL94, V-0 • Plastic sealed and flux proofed types available	• 15A 125VAC, 10A 250VAC switching capability • Subminiature, standard PCB layout • 1 Form A and 1 Form C configurations • Plastic sealed and flux proofed types available
Contact Ratings			
Contact Form	1C	1A, 1C	1A, 1C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ , AgCdO
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC / 36VDC	277VAC / 30VDC	277VAC / 28VDC
Max. Switching Power	2770VA/360W	2770VA / 300W	2770VA / 280W
Rated Load (Resistive load)	NO: 8A 277VAC/10A 24VDC NC: 5A 250VAC	1A: 10A 250VAC 1C: NO: 10A 250VAC NO/NC: 5A/5A 250VAC	10A 277VAC 10A 28VDC
Coil Ratings			
Rated Voltage	5VDC and 48VDC	3VDC to 48VDC	5VDC to 48VDC
Nominal Operating Power	0.8W	0.36W	0.36W(48VDC: 0.51W), 0.45W
Specifications			
Insulation Resistance	100MΩ(500VDC)	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	2000VAC	1500VAC
Ambient Temperature	-40°C to 85°C	-40°C to 105°C	-40°C to 105°C
Operate / Release Time max.	10ms / 5ms	10ms / 5ms	10ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (NO, at 10A 36VDC)	5 x 10 ⁴ OPS (NO, at 10A 250VAC)	5 x 10 ⁴ OPS (NO, at 10A 250VAC)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL VDE TÜV CQC
File No.	E134517 40023708 CQC12002076529	E134517 40014057 CQC14002114760	E134517 40025218 R50148356 CQC13002098175
Cross Reference	GOLDEN:GH-1C	OMRON: G5LB(White) PANASONIC: JS SCHRACK: T7S SONG CHUAN: 899	OMRON: G5LB(Black) PANASONIC: JS P&B: T72 OEG: PCE/ORWH FINDER: 36.11 SONG CHUAN: 833

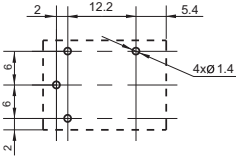
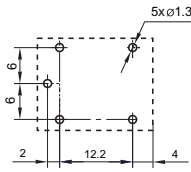
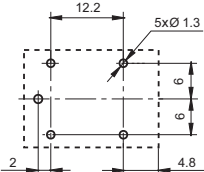
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF3F-L	HF3FF-M	HF7FF
Appearance			
Dimensions(L x W x H) mm	19.0 x 15.2 x 15.5	19.0 x 15.2 x 15.5	22.5 x 16.5 x 16.5
Features	• Subminiature high power latching relay • Low coil power • 15A switching capability • 1 Form A and 1 Form C configurations • Subminiature, standard PCB layout • Plastic sealed and flux proofed types available	• 15A switching capability • Subminiature, standard PCB layout • Plastic sealed and Flux proofed types available • RoHS & ELV compliant	• 10A switching capability • Low cost, small package • 1 Form A and 1 Form C configurations • Plastic sealed and flux proofed types available
Contact Ratings			
Contact Form	1A, 1C	1A, 1C	1A, 1C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ , AgCe
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC / 30VDC	30VDC	250VAC / 30VDC
Max. Switching Power	2770VA / 300W		2500VA / 280W
Rated Load (Resistive load)	10A 277VAC	1A: 15A 13.5VDC 1C: NO: 15A 13.5VDC NC: 5A 13.5VDC	10A 250VAC/28VDC 5A 250VAC/30VDC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	9VDC to 24VDC	3VDC to 48VDC
Nominal Operating Power	0.4W, 0.8W	0.45W, 0.64W, 0.80W	0.36W (48VDC: 0.51W)
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	2000VAC	1500VAC	1500VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 70°C
Operate / Release Time max.	8ms / 5ms	10ms / 10ms	10ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC		UL/CUL CQC
File No.	E134517 40040757 CQC18002201451		E134517 CQC09002028260
Cross Reference		OMRON: G8SN PANASONIC: JSM SCHRACK: T72N	OMRON: G5LC/G5LE PANASONIC: JSM FUJITSU: CS SCHRACK: T7N OEG: PCE

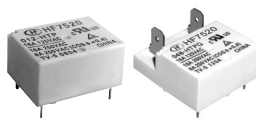
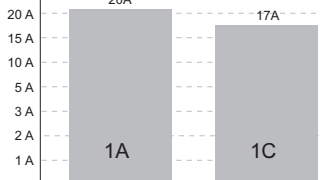
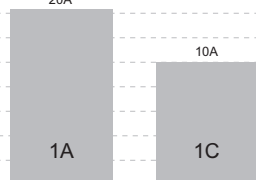
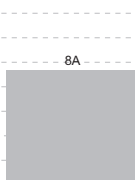
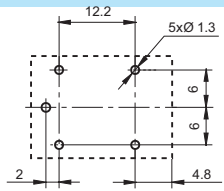
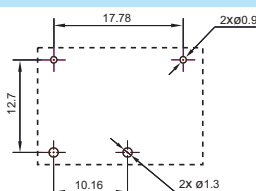
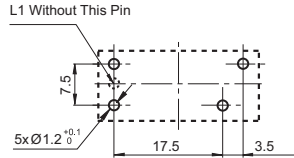
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF7FD	HF21FF	HF152F
Appearance			
Dimensions(L x W x H) mm	22.0 x 16.0 x 16.6	20.2 x 16.5 x 20.2	21.0 x 16.0 x 20.6
Features	• 20A switching capability • TV-12 load capability • 2kV dielectric strength (between coil and contacts) • Ambient temperature meets 105°C • Product in accordance to IEC 60335-1 available • Double pins type available • 1 Form A and 1 Form C configurations • UL insulation system:Class F	• 15A switching capability • 1 Form A, 1 Form B and 1 Form C configurations • Standard PCB layout • Plastic sealed and flux proofed available	• 20A switching capacity • Surge voltage up to 6000VAC (between coil and contacts) • 1 Form C and 1 Form A configurations • Plastic sealed and dust protected types available
Contact Ratings			
Contact Form	1A, 1C	1A, 1B, 1C	1A, 1C
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂	AgSnO ₂ , AgNi
Max. Switching Current (Res. load)			
Max. Switching Voltage	277VAC / 28VDC	120VAC	1A: 400VAC / 1C: 400VAC(NO)
Max. Switching Power	5000VA / 280W	1800VA	1A: 4700VA / 1C: 4000VA
Rated Load (Resistive load)	HF7FD:16A 250VAC, 20A 250VAC HF7FD-T:16A 250VAC, 17A 125VAC	1A: 15A 120VAC 1C: 10A 120VAC 1B: 15A 120VAC 1800VA(Ballast)	1A: 20A 125VAC / 17A 277VAC 7A 400VAC 1C: 16A 250VAC NO: 7A 400VAC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	5VDC to 48VDC	3VDC to 48VDC
Nominal Operating Power	0.36W	0.36W (48VDC: 0.53W)	0.36W
Specifications			
Insulation Resistance	100MΩ	1000MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	2000VAC	1500VAC	2500VAC
Ambient Temperature	-40°C to 105°C	-40°C to 70°C	-40°C to 105°C (HF152F-T)
Operate / Release Time max.	10ms / 5ms	10ms / 5ms	10ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS(1A)	1 x 10 ⁵ OPS	1A: 1 x 10 ⁵ OPS / 1C: 5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE TÜV CQC	UL/CUL	UL/CUL VDE CQC
File No.	E134517 40008374 50457893 CQC16002153649	E133481	E134517 40017837 CQC09002034520
Cross Reference	PANASONIC: AJS SONGCHUAN:812H SANYOU:SRDH	OMRON: G5L SCHRACK: LN/41896 OEG: SRUDH/SRUUH	OMRON: G5LE-VD PANASONIC: JSM

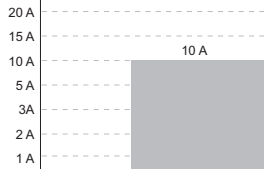
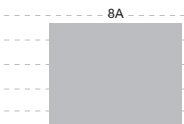
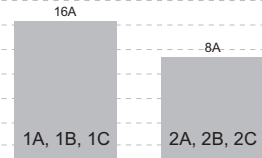
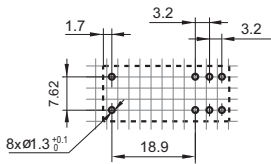
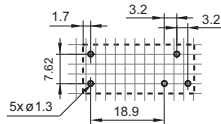
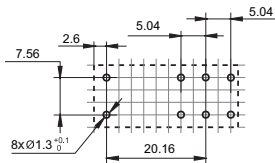
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF152FD	HF7520	HF163F-L
Appearance			
Dimensions(L x W x H) mm	21.2 x 16.0 x 20.6	22.0 x 16.0 x 10.5	24.0 x 10.0 x 18.8
Features	• 20A switching capability • Ambient temperature meets 105°C • High temperature load: 17A 277VAC at 105°C • 1 Form C & 1 Form A configurations available • Product in accordance to EN 60335-1 available	• Low height, flat construction • 20A switching capability • High sensitive 200mW • PCB & QC terminals available • Plastic sealed and flux proofed types available (with vent-hole cover)	• Latching relay • High sensitive • Breakdown voltage (between contact and coil): 5,000 V • High switching capacity: 8A 250VAC • Surge breakdown voltage(between contact and coil): 12,000 V • Reflow soldering available
Contact Ratings			
Contact Form	1A, 1C	1A 1C	1A
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	400VAC	277VAC / 30VDC	250VAC / 30VDC
Max. Switching Power	4700VA	5000VA/480W 2500VA/1500VA	2500VA/150W
Rated Load (Resistive load)	1A: 7A 400VAC 17A 277VAC 20A 125VAC 1C: NO:17A 277VAC NC:10A 277VAC	1A: 16A 125/250VAC 10A 250VAC/30VDC TV-5 1C: NO/NC:10A/6A 250VAC	8A 250VAC 5A 30VDC
Coil Ratings			
Rated Voltage	3VDC to 48VDC	5VDC to 48VDC	3VAC to 24VAC / 3VDC to 24VDC
Nominal Operating Power	0.36W	0.2W, 0.4W	0.2W, 0.4W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	2500VAC	5000VAC
Ambient Temperature	-40°C to 105°C	-40°C to 105°C	-40°C to 85°C
Operate / Release Time max.	10ms / 5ms	15ms / 5ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1A: 1 x 10 ⁵ OPS / 1C: 5 x 10 ⁴ OPS	5 x 10 ⁴ OPS	5 x 10 ⁴ OPS (at 8A 250VAC)
Layout (Bottom view)			
Terminal Type	PCB	PCB, QC	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL TÜV CQC	UL/CUL VDE
File No.	E134517 40031203 CQC12002083404	E133481 R50351269 CQC09002034524	E134517 40039460
Cross Reference	OMRON: G5LE-VD PANASONIC: JSM SCHRACK: LN-H	OMRON: G5CA PANASONIC: JV/JVN NEC: CQ OEG: PCD	PANASONIC: DW

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

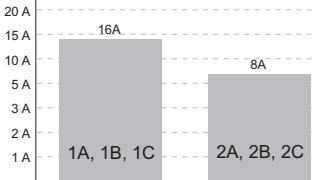
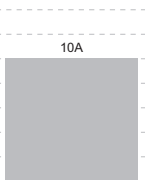
Type	HF118F	HF118FK	HF115F
Appearance			
Dimensions(L x W x H) mm	28.5 x 10.1 x 12.5	28.5 x 10.1 x 12.5	29.0 x 12.7 x 15.7
Features	• 10A switching capability • 5kV dielectric strength (between coil and contacts) • Low height: 12.5 mm • Creepage distance(VDE0435/0631/0700) • Product in accordance to 60335-1 available	• 8A switching capability • 5kV dielectric strength (between coil and contacts) • Low height: 12.5 mm • Creepage distance >8mm • Meeting VDE 0700, 0631 reinforce insulation • Product in accordance to IEC 60335-1 available • Flux proofed types • Through-Hole Reflow Version available	• Low height: 15.7 mm • 16A switching capability • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Meet VDE0435/0631/0700 • Product in accordance to IEC 60335-1 available
Contact Ratings			
Contact Form	1A, 1B, 1C	1H, 1Z	1A, 1B, 1C 2A, 2B, 2C
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi, AgCdO
Max. Switching Current (Res. load)			
Max. Switching Voltage	440VAC / 125VDC	440VAC / 125VDC	440VAC / 300VDC
Max. Switching Power	2500VA/300W	2000VA/240W	3000VA/4000VA 2000VA
Rated Load (Resistive load)	10A 250VAC 10A 30VDC	8A 250VAC 8A 30VDC	16A 250VAC 12A 250VAC 8A 250VAC
Coil Ratings			
Rated Voltage	5VDC to 60VDC	5VDC to 60VDC	5VDC to 110VDC
Nominal Operating Power	0.22W to 0.29W	0.22W to 0.29W	0.4W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	10ms / 5ms	10ms / 5ms	15ms / 8ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (at 8A 250VAC)	1 x 10 ⁵ OPS	1 pole:1x10 ⁵ OPS;2 pole:5x10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E134517 40010480 CQC18002206322 CQC09002035071	E134517 40010480 CQC09002035071 CQC18002206322	E134517 116934 CQC17002168381
Cross Reference	OMRON: G6RN FUJITSU: JS SCHRACK: RYII	OMRON: G6RN FUJITSU: JS SCHRACK: RYII	OMRON: G2RL PANASONIC: LZ SCHRACK: RT FUJITSU: FTR-K1 FINDER: 41 SERIES RELPOL: RM84/85

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF115F-A	HF115F-T/TH	HF115F-H
Appearance			
Dimensions(L x W x H) mm	29.0 x 12.7 x 15.7	29.0 x 12.7 x 15.7	29.0 x 12.7 x 15.7
Features	• AC coil voltage type • 16A switching capability • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Meet VDE0700/0631 • Product in accordance to IEC 60335-1 available	• High temperature: 105°C • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Meet VDE0700/0631 • Product in accordance to IEC 60335-1 available	• High sensitive: 0.25W • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Meet VDE0700/0631 • Product in accordance to IEC 60335-1 available

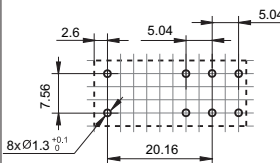
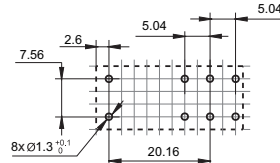
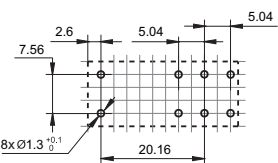
Contact Ratings

Contact Form	1A, 1B, 1C	2A, 2B, 2C	1A, 1C	1A, 1B, 1C
Contact Material	AgSnO ₂ , AgNi, AgCdO		AgSnO ₂ , AgNi, AgCdO	AgSnO ₂ , AgNi, AgCdO
Max. Switching Current (Res. load)				
Max. Switching Voltage	440VAC / 300VDC		440VAC / 300VDC	440VAC / 300VDC
Max. Switching Power	3000VA/4000VA	2000VA	HF115F-T: 4000VA HF115F-TH: 2500VA	2500VA
Rated Load (Resistive load)	16A 250VAC 12A 250VAC	8A 250VAC	HF115F-T: 16A 250VAC HF115F-TH: 10A 250VAC	10A 250VAC

Coil Ratings

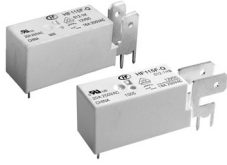
Rated Voltage	24VAC, 115VAC, 230VAC	5VDC to 60VDC	5VDC to 60VDC
Nominal Operating Power	0.75VA	0.25W, 0.4W	0.25W

Specifications

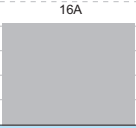
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 70°C	-40°C to 105°C	-40°C to 85°C
Operate / Release Time max.		15ms / 8ms	15ms / 8ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS	5 x 10 ⁴ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E134517 116934 CQC17002176311	E134517 116934 CQC17002168381	E134517 116934 CQC17002168381
Cross Reference	OMRON: G5RL-AC SCHRACK: RT RELPO: RM84/85	SCHRACK: RTH105 16A P&B: RT FUJITSU: FTR-K1	SCHRACK: RT1 Sensitive P&B: RT FUJITSU: FTR-K1

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF115F-I	HF115F-Q	HF115F-25
Appearance			
Dimensions(L x W x H) mm	29.0 x 12.7 x 15.7	Vertical: (41.0 x 12.7 x 15.7) Horizontal: (45.0 x 12.7 x 15.7)	29.0 x 12.7 x 16.5
Features	• High inrush: 120A 20ms • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Meet VDE0700/0631 • Product in accordance to IEC 60335-1 available	• Ambient temperature up to 125°C • 5kV dielectric strength (between coil and contacts) • Creepage distance >8mm • Meet VDE0700/0631 • UL94, V-0 flammability class • Product in accordance to IEC 60335-1 available	• 25A switching capability • Low height: 16.5 mm • Creepage distance and air distance: 10mm/10mm • Meeting reinforce insulation • IEC60335-1 compliant products are available • UL insulation system: Class F • Meets the requirement of ambient working temperature 105°C

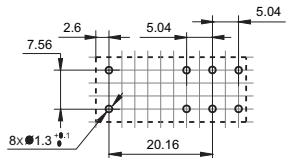
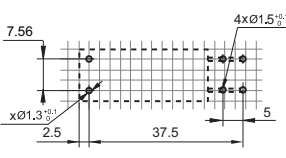
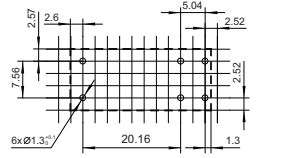
Contact Ratings

Contact Form	1A,1C	1A, 1B	1H
Contact Material	AgSnO ₂	AgSnO ₂ , AgNi	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	440VAC / 300VDC	440VAC / 300VDC	277VAC
Max. Switching Power	4000VA	5000VA	6925VA
Rated Load (Resistive load)	1A: 16A 250VAC	20A 250VAC	23A 277VAC

Coil Ratings

Rated Voltage	5VDC to 110VDC	5VDC to 60VDC	5VDC to 48VDC
Nominal Operating Power	0.4W	0.4W	0.4W

Specifications

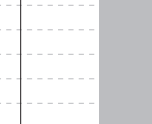
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 125°C	-40°C to 105°C
Operate / Release Time max.	15ms / 8ms	15ms / 8ms	15ms / 8ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	7.5 x 10 ⁴ OPS	3 x 10 ⁴ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB, QC	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL TUV CQC
File No.	E134517 116934 CQC17002168381	E134517 116934 CQC17002168381	E133481 R 50523670 CQC21002322054
Cross Reference	SCHRACK: RT1 Inrush P&B: RT FUJITSU: FTR-H1	SCHRACK: RF/41063 125°C	G2RL

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF115F-S	HF115F-L	HF115F-LS
Appearance			
Dimensions(L x W x H) mm	29.0 x 12.7 x 15.7	29.0 x 12.7 x 15.7	29.0 x 12.7 x 15.7
Features	• Special contact struction • Incandescent lamp load: 3000W 230VAC • Inrush current: 165A/ 20ms; Electronic ballast:492A/1.5ms • 5kV dielectric strength(between coil and contacts) • Creepage distance: 10mm • Product in accordance to IEC 60335-1 available • Plastic sealed and flux proofed types available	• Latching relay • 20A switching capability • 5kV dielectric strength (between coil and contacts) • Creepage distance: 11mm-NO/10mm-CO version • Meeting VDE 0700, 0631 reinforce insulation • Product in accordance to IEC 60335-1 available	• Latching relay • Incandescent lamp load: 3500W 277VAC • 5kV dielectric strength (between coil and contacts) • Creepage distance: 11mm • Low height: 15.7 mm • Meeting reinforce insulation

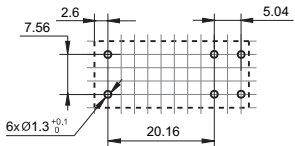
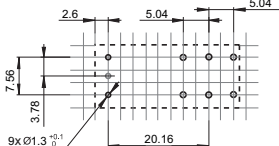
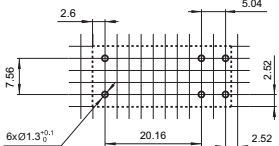
Contact Ratings

Contact Form	1A	1A, 1C	2A, 2C	1A
Contact Material	W+AgSnO ₂	AgSnO ₂		W + AgSnO ₂
Max. Switching Current (Res. load)				
Max. Switching Voltage	440VAC	440VAC / 300VDC		440VAC
Max. Switching Power	4000VA	4000VA	2000VA	4000VA
Rated Load (Resistive load)	Resistive:16A 250VACs	16A 250VAC	8A 250VAC	16A 250VAC

Coil Ratings

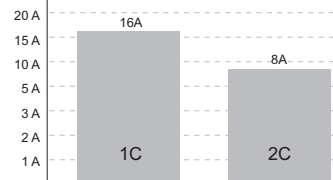
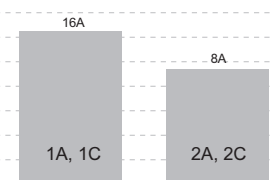
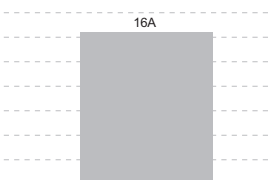
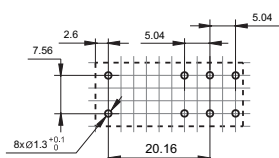
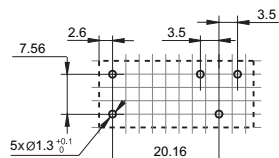
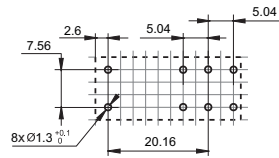
Rated Voltage	5VDC to 110VDC	5VDC to 24VDC	5VDC to 24VDC
Nominal Operating Power	0.4W	0.4W, 0.6W	0.4W, 0.6W

Specifications

Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	10ms / 5ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	5 x 10 ⁶ OPS	2 x 10 ⁶ OPS	2 x 10 ⁶ OPS
Electrical Endurance min.	1.2 x 10 ⁴ OPS (Incand escentlamp load)	5 x 10 ⁴ OPS	1.2 x 10 ⁴ OPS (Incand escentlamp load)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E134517 116934 CQC08002028130	E134517 116934 CQC17002176310	E134517 116934 CQC14002104529
Cross Reference	TE: RTX	PANASONIC: DJ SCHRACK: RT1 bistable FUJITSU: FTR-K1L	TE: RTX/RTS3T

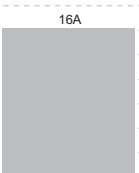
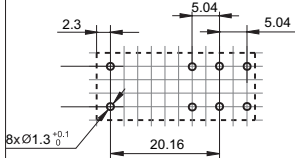
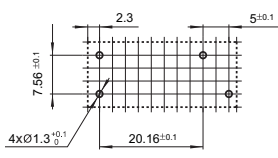
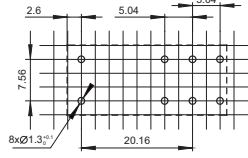
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF115FP		HF115FK		HF115FK-T	
Appearance						
Dimensions(L x W x H) mm	29.0 x 13.0 x 25.5		29.0 x 12.7 x 15.7		29.0 x 12.7 x 15.7	
Features	- Manual test device,Type with mechanical indicator / electrical indicator 5kV dielectric strength (between coil to contacts) - Creepage distance:8mm - Meet VDE0700/0631 - Sockets available		- Low height: 15.7 mm 16A switching capability 5kV dielectric strength (between coil and contacts) - Creepage distance: 10mm - Meeting reinforce insulation - Product in accordance to IEC 60335-1 available		- High temperature: 105°C - Low height: 15.7 mm 16A switching capability 5kV dielectric strength (between coil and contacts) - Creepage distance: 10mm - Meeting reinforce insulation - Sockets available	
Contact Ratings						
Contact Form	1C 2C		1A, 1C 2A, 2C		1A 1C	
Contact Material	AgNi		AgSnO ₂ , AgNi		AgSnO ₂	
Max. Switching Current (Res. load)						
Max. Switching Voltage	440VAC		400VAC		400VAC	
Max. Switching Power	4000VA	2000VA	2500VA/3000VA /4000VA	2000VA	4000VA	
Rated Load (Resistive load)	16A 250VAC	8A 250VAC	12A/16A 250VAC 10A 250VAC	8A 250VAC	16A 250VAC	
Coil Ratings						
Rated Voltage	24VAC to 230VAC / 12VDC to 110VDC		5VDC to 48VDC		5VDC to 48VDC	
Nominal Operating Power	0.75VA, 0.4W		0.4W, 0.53W		0.4W	
Specifications						
Insulation Resistance	1000MΩ		1000MΩ		1000MΩ	
Dielectric Strength (Between coil and contacts)	5000VAC		5000VAC		5000VAC	
Ambient Temperature	-40°C to 70°C		-40°C to 85°C		-40°C to 105°C	
Operate / Release Time max.	15ms / 8ms (DC)		10ms / 5ms		10ms / 5ms	
Mechanical Endurance min.	DC type: 5 x 10 ⁶ OPS AC type:1 x 10 ⁶ OPS		1 x 10 ⁷ OPS		1 x 10 ⁷ OPS	
Electrical Endurance min.	3 x 10 ⁴ OPS,5 x 10 ⁴ OPS		5 x 10 ⁴ OPS		3 x 10 ⁴ OPS	
Layout (Bottom view)						
Terminal Type	PCB		PCB		PCB	
Approved Standards	UL/CUL VDE		UL/CUL VDE CQC		UL/CUL VDE CQC	
File No.	E133481 116934		E134517 116934 CQC17002176308		E134517 116934 CQC17002176308	
Cross Reference	SCHRACK: XT		OMRON: G2RL FUJITSU: FTR-K1 PANASONIC: LZ SCHRACK: RZ		P&B: RT SCHRACK:RZ FUJITSU: FTR-K1	

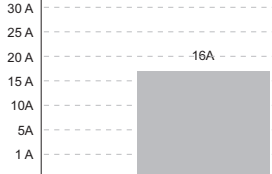
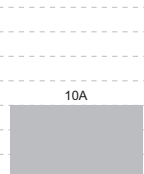
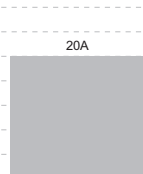
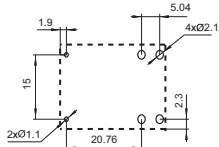
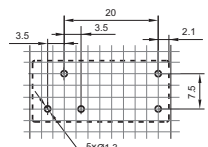
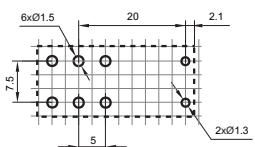
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF158F	HF158F-V(1 pole)	HF115FK-A
Appearance			
Dimensions(L x W x H) mm	29.0 x 12.7 x 15.7	29.0 x 12.7 x 20.0	29.0 x 12.7 x 15.7
Features	• 20A switching capability • Low height: 12.5 mm • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Product in accordance to IEC 60335-1 available	• 10A 300VDC high-voltage switching capability • 5kV dielectric strength (between coil and contacts) • Creepage distance:10mm • Product in accordance to IEC60335-1 available	• AC coil specification • 16A switching capability • Low height: 15.7 mm • 5kV dielectric strength (between coil and contacts) • Creepage distance:10mm • Meeting reinforce insulation • IEC60335-1 compliant products are available • Sockets available • UL insulation system:Class F
Contact Ratings			
Contact Form	1A, 1C	1A	1H, 1Z 2H, 2Z
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂	AgSnO ₂
Max. Switching Current (Res. load)			
Max. Switching Voltage	440VAC	420VDC/300VAC	440VAC/300VDC
Max. Switching Power	5000VA	3000W/3324VA	3000VA/4000V
Rated Load (Resistive load)	16A 250VAC	10A 300VDC 12A 277VAC	16A 250VAC 8A 250VAC
Coil Ratings			
Rated Voltage	5VDC to 48VDC	5VDC to 24VDC	24, 115, 230VAC
Nominal Operating Power	0.4W	0.4W	0.75VA to 0.9VA
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 70°C
Operate / Release Time max.	15ms / 8ms	10ms / 5ms(Rated Voltage)	-
Mechanical Endurance min.	2 x 10 ⁷ OPS	2 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁴ OPS	H3T: 7.5 x 10 ⁴ OPS 2H4T: 5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E134517 40032833 CQC17002176312	E134517 40032833 CQC17002176312	E134517 116934 CQC17002176308
Cross Reference	OMRON: G2RL SCHRACK: RT PANASONIC: LZ RELPOL: RM85 FINDER: 41 SERIES FUJITSU: FTR-K1		

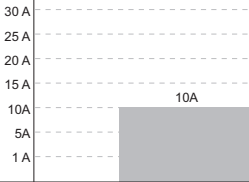
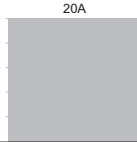
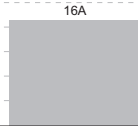
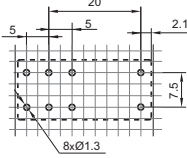
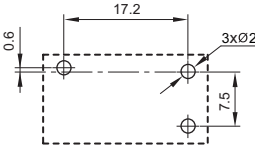
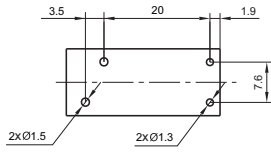
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF175F	HF14FF	HF14FW
Appearance			
Dimensions(L x W x H) mm	29.0 x 19.6 x 15.7	29.0 x 13.0 x 26.0	29.0 x 13.0 x 26.5
Features	• 2 Form A and 2 Form C configurations • Low height, only 15.7mm • 5kV dielectric strength (between coil and contacts) • Creepage/clearance distance > 10mm. Meets reinforce insulation • Product in accordance to IEC 60335-1 available • UL insulation system: Class F	• 10A switching capability • 5kV dielectric strength (between coil and contacts) • 1 Form A and 1 Form C configurations • Plastic sealed and flux proofed types available	• 20A switching capability • 4kV dielectric strength (between coil and contacts) • Plastic sealed and flux proofed types available
Contact Ratings			
Contact Form	2A, 2C	1A, 1C	1A, 1B, 1C
Contact Material	AgSnO ₂	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC	277VAC / 30VDC	277VAC / 30VDC
Max. Switching Power	4432VA	2770VA / 300W	5540VA / 480W
Rated Load (Resistive load)	16A 277VAC	10A 277VAC/30VDC TV-5 120VAC	Resistive: 16A 277VAC/24VDC Motor: 1HP 240VAC TV-8 125VAC (NO contact)
Coil Ratings			
Rated Voltage	5VDC to 48VDC	3VDC to 60VDC	5VDC to 110VDC
Nominal Operating Power	0.8W	0.53W	0.53W, 0.72W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 70°C	-40°C to 85°C
Operate / Release Time max.	10ms / 5ms	15ms / 5ms	15ms / 5ms
Mechanical Endurance min.	5 x 10 ⁶ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL VDE CQC
File No.	E133481 R50412801 CQC18002196447 CQC18002202622	E134517 R50140759 CQC10002046169	E134517 40023508 CQC10002046170
Cross Reference		OMRON: G2R PANASONIC: JR1/JR1A FUJITSU: VS NEC: CH P&B: RKA/RKS	OMRON: G2R PANASONIC: JR1AF FUJITSU: FBR610 P&B: RKA/RKS

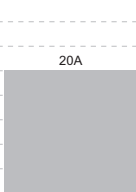
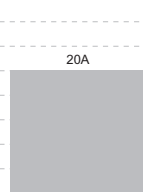
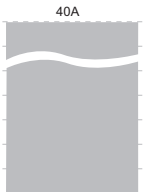
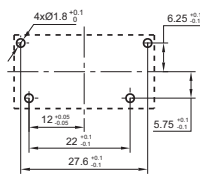
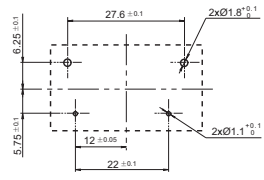
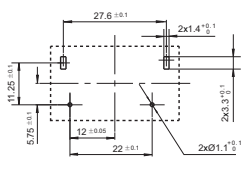
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF140FF	HF25F	HF62F
Appearance			
Dimensions(L x W x H) mm	29.0 x 13.0 x 26.3	22.8 x 12.3 x 24.4	29.0 x 12.6 x 24.4
Features	• 10A switching capability • 5kV dielectric strength (between coil and contacts) • 2.0mm contact gap available • Plastic sealed and flux proofed types available	• 20A switching capability • 5kV impulse withstand voltage (between coil and contacts) • small and for microwave oven • PCB & QC layouts • Flux proofed types available	• 20A switching capability • 5kV dielectric strength (between coil and contacts) • 10kV impulse withstand voltage (between coil and contacts) • creepage distance: 8mm
Contact Ratings			
Contact Form	2A, 2C	1A	1A
Contact Material	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂	AgSnO ₂
Max. Switching Current (Resistive load)			
Max. Switching Voltage	250VAC / 30VDC	250VAC / 30VDC	277VAC / 30VDC
Max. Switching Power	2500VA / 240W	5000VA / 480W	4000VA / 480W
Rated Load (Resistive load)	5A 250VAC 10A 250VAC 8A 30VDC	20A 250VAC Motor: 1.5HP 250VAC	16A 250VAC/30VDC
Coil Ratings			
Rated Voltage	3VDC to 110VDC	5VDC to 24VDC	5VDC to 48VDC
Nominal Operating Power	0.53W, 0.8W, 1.4W	0.5W	0.54W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	15ms / 5ms	15ms / 5ms	20ms / 10ms
Mechanical Endurance min.	Standard: 1 x 10 ⁷ OPS W Type(1.5mm): 5 x 10 ⁵ OPS W Type(2.0mm): 3 x 10 ⁵ OPS	2 x 10 ⁶ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	Standard: 1 x 10 ⁵ OPS W Type(1.5mm): 1 x 10 ⁵ OPS W Type(2.0mm): 3 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB, QC	PCB, QC
Approved Standards	UL/CUL TÜV CQC	UL/CUL VDE TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 R50149131 CQC09002030294	E134517 40026917 R50207576 CQC09002028692	E133481 R50147086 CQC09002028470
Cross Reference	OMRON: G2R/G2RG PANASONIC: JR2/JR2A FUJITSU: FBR-F1/VS NEC: TP P&B: RKA/RKS	OMRON: G5G PANASONIC: LE	OMRON: G5J PANASONIC: JR1AF-TMP FUJITSU: VR OEG: OMIF

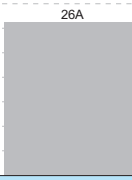
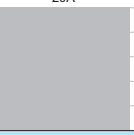
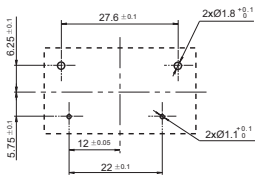
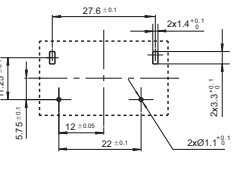
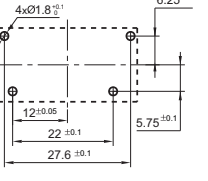
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF102F	HF161F	HF161F-40
Appearance			
Dimensions(L x W x H) mm	30.5 x 16.0 x 23.5	30.4 x 15.9 x 23.3	30.4 x 15.9 x 23.3
Features	- Heavy load up to 5000VA - Ideal for motor switching - Withstand inrush current of 80A - PCB & QC layouts available	4.5kV dielectric strength (between coil and contacts) - Heavy load up to 6250VA - Ideal for motor switching - PCB layouts available	40A 277 VAC loading current capability - Applicable to variable frequency air conditioning used for soft start - Class F insulation system - Products compliant with IEC 60079 available
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO	AgSnO ₂
Max. Switching Current (Resistive load)			
Max. Switching Voltage	250VAC	250VAC	277VAC
Max. Switching Power	6250VA	6250VA	11080VA
Rated Load (Resistive load)	20A 250VAC Motor: 2HP 240VAC	20A 250VAC Motor: 2HP 240VAC	Making 20A 100ms, loading 40A 300ms, breaking 20 A, 277VAC, Resistive
Coil Ratings			
Rated Voltage	5VDC to 48VDC	5VDC to 48VDC	5VDC to 48VDC
Nominal Operating Power	0.9W	0.9W	0.9W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4500VAC	4500VAC	4500VAC
Ambient Temperature	-25°C to 85°C	-40°C to 85°C	-40°C ~ 85°C
Operate / Release Time max.	20ms / 10ms	20ms / 10ms	20ms / 10ms
Mechanical Endurance min.	2 x 10 ⁶ OPS	2 x 10 ⁶ OPS	2 x 10 ⁶ 次
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ 次
Layout (Bottom view)			
Terminal Type	PCB, QC	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL TUV CQC
File No.	E134517 40024142 CQC13002098165	E134517 40031410 CQC10002050943 CQC18002203499	E134517 R 50475730 CQC20002246447
Cross Reference	OMRON: G4A PANASONIC: LF OEG: PCFN	OMRON: G4A PANASONIC: LF OEG: PCFN	BR-401L

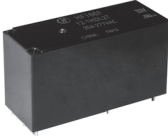
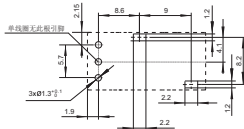
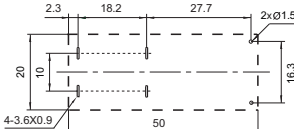
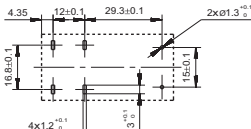
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF161F-W	HF161F-40W	HF160F
Appearance			
Dimensions(L x W x H) mm	30.4 x 15.9 x 23.3	30.4 x 15.9 x 23.3	30.4 x 15.9 x 25.4
Features	• 31A switching capable • Applicable to inverter used for photovoltaic power generation systems • Ideal for UPS • 1.5mm contact gap (compliant to European Photovoltaic Standard VDE0126) • The clearance distance between contact and coil is bigger than 6.4mm, the creepage distance is bigger than 8mm.	• Applicable to inverter used for photovoltaic power generation systems • Ideal for UPS • 43A 277VAC switching capability • Contact gap 2.0 mm, 1.8 mm is optional • Low coil holding voltage contributes to saving energy of equipment • Class F insulation system	• 4.5kV dielectric strength (between coil and contacts) • Heavy load up to 6250VA • Ideal for motor switching • PCB & QC layouts
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC	277VAC	250VAC
Max. Switching Power	7750VA	11911VA	6250VA
Rated Load (Resistive load)	Resistive: 26A 250VAC Inductive: 31A 250VAC	Making 20 A loading 40 A breaking 20 A, 277VAC, Resistive	20A 250VAC Motor: 2HP 240VAC
Coil Ratings			
Rated Voltage	9VDC to 24VDC	6VDC to 24VDC	5VDC to 48VDC
Nominal Operating Power	1.4W	1.6W, 3.8W	0.9W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4500VAC	4500VAC	4500VAC
Ambient Temperature	-40°C to 85°C (Apply holding voltage to coil, which is 45% to 80% that of rated voltage)	-40°C to 85°C (Apply holding voltage to coil)	-40°C to 85°C
Operate / Release Time max.	20ms / 10ms	20ms / 10ms	20ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁵ OPS	2 x 10 ⁶ OPS
Electrical Endurance min.	3 x 10 ⁴ OPS	5 x 10 ⁴ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB, QC
Approved Standards	UL/CUL VDE CQC	UL TUV CQC	UL/CUL VDE CQC
File No.	E134517 40031410 CQC10002050943 CQC18002203499	E134517 R 50475730 CQC20002246447	E134517 40024142 CQC12002072207 CQC18002206453
Cross Reference	PANASONIC: LF-G OEG: PCFN SOLAR	AZSR143	OMRON: G4A PANASONIC: JM FUJITSU: FTR-K3/VH OEG: PCF

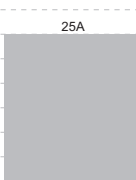
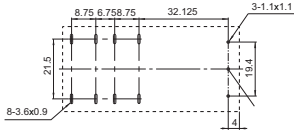
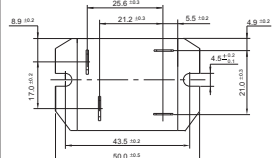
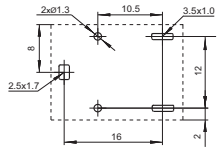
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF182F-L	HF166F	HF177F
Appearance			
Dimensions(L x W x H) mm	22.0 x 10.0 x 14.0	50.0 x 27.0 x 20.0	50.0 x 25.0 x 31.0
Features	- Latching relay - High capacity:20A 277VAC - High surge current capacity:370A - Meeting reinforcement insulation - Dielectric strength: Between coil & contacts≥ 5000VAC - High temperature resistance:105°C - Meet IEC62368-1 - TV-10 240VAC Capability	- Latching relay 4mm contact gap available 25A switching capability 5kV dielectric strength (between coil and contacts) - Creepage distance between coil and contacts:10mm	- In series connection 10kA/in parallel connection 20kA lightning-proof current. 2 form A in series 300VDC 25A switching capability. 2 form A in series 400VDC 14A switching capability. 2.6mm contact gap 10kV dielectric strength(between coil and contacts) - UL insulation system:class F available
Contact Ratings			
Contact Form	1A	1A+1B	2A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current (Resistive load)			
Max. Switching Voltage	480VAC	277VAC	400VDC
Max. Switching Power	5540VA	6925VA	7500W
Rated Load (Resistive load)	20A 277VAC	25A 277VAC	2 form A in series:25A 300VDC 2 form A in series:14A 400VDC
Coil Ratings			
Rated Voltage	3VDC to 24VDC	5VDC to 48VDC	6VDC to 48VDC
Nominal Operating Power	1 coil latching:Approx.0.53W 2 coils latching:Approx.0.8W	1.2W, 2.4W	4.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C (Apply holding voltage to coi)
Operate / Release Time max.	10ms / 10ms	25ms / 25ms	20ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	6 x 10 ⁵ OPS	2 x 10 ⁶ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS	3 x 10 ⁴ OPS	1 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV	UL/CUL TÜV CQC
File No.	E133481 R50455116 CQC19002234396	E133481 R50280244	E133481 R 50440159 CQC19002230667
Cross Reference			SONGCHUAN 118

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

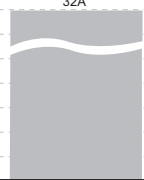
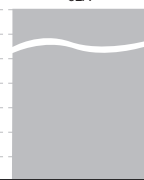
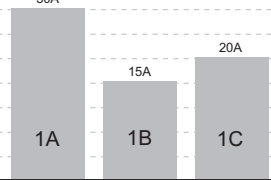
Type	HF180F	HF37F	HF178F
Appearance			
Dimensions(L x W x H) mm	63.6 x 38.0 x 30.0	35.2 x 32.2 x 24.0	21.5 x 16.0 x 20.6
Features	• Latching relay, Zero consumption at standby. • 2 Form A+ 2 Form B contact arrangement. • General for ac/dc load. • Supports multiple voltage energize, quick switch between contact sets. • Contact gap ≥ 3mm. • Creepage ≥ 4mm, Clearance ≥ 3mm (between contact set).	• 30A switching capability • 1 Form A configuration • 70A withstands inrush current • TV-15(at 120VAC) available	• 32A switching capability. • 4kV dielectric strength (between coil and contacts) (for type 1 PCB layout) • Flux proofed type
Contact Ratings			
Contact Form	2A+2B	1A	1A, 1C
Contact Material	AgSnO ₂	AgSnO ₂ , AgCdO	AgSnO ₂
Max. Switching Current (Resistive load)			
Max. Switching Voltage	410VDC/290VAC	277VAC	277VAC
Max. Switching Power	10250W/7250VA	7500VA	8864VA
Rated Load (Resistive load)	25A 410VDC/290VAC	30A 250VAC	32A 277VAC(at 85°C) 25A 277VAC(at 105°C)
Coil Ratings			
Rated Voltage	5VDC to 24VDC	5VDC to 60VDC	12VDC to 48VDC
Nominal Operating Power	Single coil latching: Approx. 2.0W Double coil latching: Approx. 4.0W	1.2W	1.67W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	4000VAC	Type 1: 4000VAC Type 2: 2500VAC
Ambient Temperature	-40°C to 85°C	-40°C to 70°C	-40°C to 105°C
Operate / Release Time max.	20ms / 20ms	20ms / 5ms	15ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	5 x 10 ⁶ OPS	3 x 10 ⁵ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	1 x 10 ⁵ OPS	1 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	QC	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL VDE CQC	UL/CUL TÜV CQC
File No.	E133481 R 50430279 CQC19002213614 CQC19002214098	E134517 40025378 CQC13002102287	E133481 R 50440273 CQC19002230674
Cross Reference		FUJITSU: VF	SONGCHUAN: 207 series/110 series HASCO: HPK series

Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF178F-T	HF179F/HF179F-W	HF165FD
Appearance			
Dimensions(L x W x H) mm	21.5 x 16.0 x 20.6	21.5 x 16.0 x 20.6	32.2 x 27.5 x 20.4
Features	- High Temperature:105°C 4kV dielectric strength (between coil and contacts) (for type1 PCB layout) - Flux proofed type	32A switching capability. - Ambient temperature up to 105°C 4kV dielectric strength (between coil and contacts) (for type 1/3 PCB layout) 1.8mm and 2.4mm contact gap available - Flux proofed type	30A switching capability 4kV dielectric strength (between coil and contacts) - Creepage distance: 5.5mm - Product in accordance to IEC 60335-1 available - UL insulation system: Class F

Contact Ratings

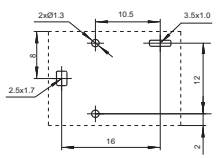
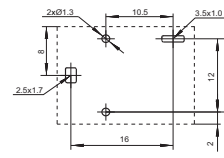
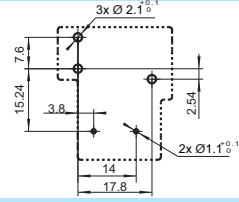
Contact Form	1A	1A	1A, 1B, 1C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC	600VAC	277VAC
Max. Switching Power	8864VA	Standard:8864VA High Sensitive Type:7202VA	8310VA / 4155VA
Rated Load (Resistive load)	32A 250VAC(at 85°C) Making 5A loading 32A breaking 5A 277VAC(at 105°C)	Standard:32A 277VAC High Sensitive Type:26A 277VAC	1A: 30A 277VAC 1B: 15A 277VAC 1C: 20A 277VAC/10A 277VAC

Coil Ratings

Rated Voltage	12VDC to 48VDC	5VDC to 48VDC	5VDC to 110VDC
Nominal Operating Power	Standard:1.67W; High Sensitive Type:1.2W	Standard:2.8W; High Sensitive Type:1.67W	0.9W

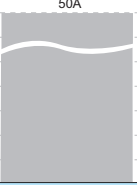
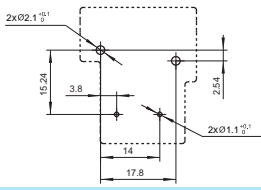
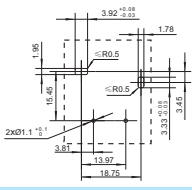
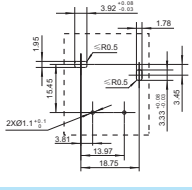
Specifications

Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	Type 1:4000VAC Type 2:2500VAC	Type 1/3:4000VAC Type 2/4:2500VAC	4000VAC
Ambient Temperature	-40°C to 105°C	-40°C to 105°C	-40°C to 85°C
Operate / Release Time max.	15ms / 10ms	15ms / 10ms	15ms / 10ms
Mechanical Endurance min.	3 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	Standard:1 x 10 ⁵ OPS; High Sensitive Type:3 x 10 ⁴ OPS	1 x 10 ⁵ OPS

Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL VDE CQC
File No.	E133481 R 50440273 CQC19002230674	E133481 R 50463696 CQC20002242160	E134517 40043143 CQC15002130956
Cross Reference	SONGCHUAN:207 series/110 series HASCO:HPK series	SONGCHUAN:207 series/110 series HASCO:HPK series	OMRON: G8P PANASONIC: JTN/JTV OEG: ORU P&B: T9A/T90 SONGCHUAN:832A

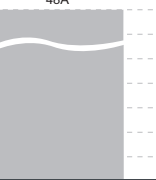
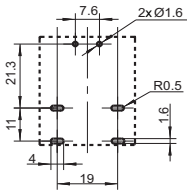
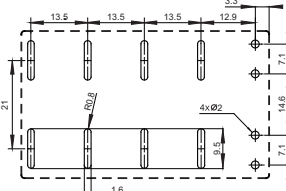
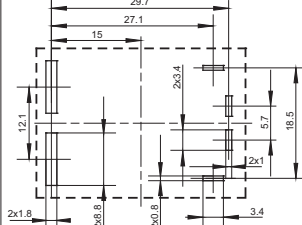
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF165FD-G	HF165F	HF165F-50
Appearance			
Dimensions(L x W x H) mm	32.2 x 27.5 x 20.4	32.2 x 27.4 x 19.4	32.2 x 27.4 x 19.4
Features	• 40A switching capability • 4kV dielectric strength (between coil and contacts) • Creepage distance: 5.5mm • Product in accordance to IEC 60335-1 available • UL insulation system: Class F	• 35A switching capable • Applicable to inverter used for photovoltaic power generation systems • Ideal for UPS • 1.8mm contact gap(compliant to European Photovoltaic Standard VDE0126) • Low coil holding voltage contributes to saving energy of equipment	• 50A switching capability. • 4kV dielectric strength (between coil and contacts). • UL insulation system: class F available.
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ , AgNi
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC	277VAC	277VAC
Max. Switching Power	11080VA	9695VA	12500VA
Rated Load (Resistive load)	40A 277VAC	Resistive: 35A 250VAC Inductive: 35A 277VAC	50A 250VAC
Coil Ratings			
Rated Voltage	5VDC to 110VDC	5VDC to 48VDC	5VDC to 48VDC
Nominal Operating Power	0.9W	2.25W	1.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 105°C
Operate / Release Time max.	15ms / 10ms	15ms / 10ms	15ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	3 x 10 ⁴ OPS	6000 ops(50A 250VAC,Resistive load,at 85°C,1s on 9s off, AgNi(AgSnO ₂)) 3x10 ⁷ ops(40A 250VAC,Resistive load,at 85°C,1s on 9s off,AgSnO ₂)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 40043143 CQC15002130956	E134517 40037289 CQC18002202621 R 50463438	E134517 R 50463438 CQC18002202621
Cross Reference	SONGCHUAN: 832HA	P&B: T9S SOLAR	TYCO:T9VV CHUROD:CHS01 HASCO:HATF905

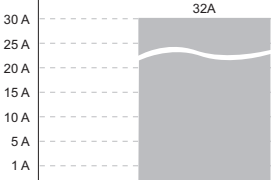
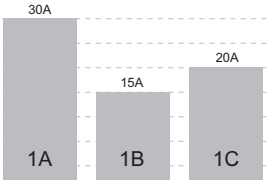
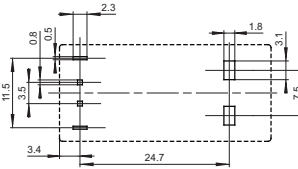
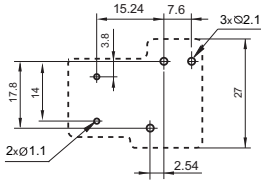
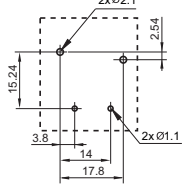
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF170F	HF187F	HF189F
Appearance			
Dimensions(L x W x H) mm	36.0 x 30.0 x 40.0	59.0 x 35.0 x 47.0	35.0 x 25.0 x 28.0
Features	40A switching capability - Applicable to solar photovoltaic inverter 3.6 mm contact gap - Low coil holding voltage contributes to saving energy of equipment - UL insulation system: Class F	4 Main contacts +1 Auxiliary contact - Detection of main contact welding makes it possible to construct a safety circuit (according to IEC 61810-3) - Meet the requirements for auxiliary contact linked with power contact (mirror contact) (according to IEC 60947-4-1) - Contact gap 3.9mm (Main contact),each contact - Low coil holding voltage contributes to energy saving - Special version fully compliant to the short circuit current test of IEC 62955 available	- With auxiliary monitoring contact,Detection of main contact welding makes it possible to construct a safety circuit (according to IEC 61810-3) - Contact gap:2.25mm - Main Contact Resistance to Short Circuit Current(according to IEC 62752 1.5kA 6kA2s) 4kV Dielectric strength (Between Main contact & coil) - UL insulation system: Class F available
Contact Ratings			
Contact Form	2A/2A+1B	4A, 4A+1B	1A+1B
Contact Material	Main contact: AgSnO ₂ , AgNi	Main contact: AgSnO ₂	Main contact: AgSnO ₂
Max. Switching Current (Resistive load)	 40A	 40A	 48A
Max. Switching Voltage	277VAC	440VAC	600VAC
Max. Switching Power	11080VA	17600VA	13296VA
Rated Load (Resistive load)	40A 277VAC	Making 10A Loading 40A Breaking 10A, 440VAC Resistive	Main contact:Making 10A Loading 48A Breaking 10A,277VAC
Coil Ratings			
Rated Voltage	6VDC to 48VDC	9VDC to 48VDC	5VDC to 48VDC
Nominal Operating Power	1.88W	4.8W	1.92W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	4000VAC
Ambient Temperature	-40°C to 85°C (Apply holding voltage to coil)	-40°C to 85°C (Apply holding voltage to coil)	-40°C to 85°C
Operate / Release Time max.	30ms / 10ms	50ms / 20ms	30ms / 20ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Electrical Endurance min.	3 x 10 ⁴ OPS	5 x 10 ⁴ OPS	5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB		
Approved Standards	UL/CUL TÜV CQC	UL TUV CQC	UL TÜV
File No.	E133481 R 50384178 CQC17002175164 CQC18002198581	E133481 R 50506590 CQC21002324800	E133481 R 50493573
Cross Reference	PANASONIC: HES HASCO:HAG02	HER	

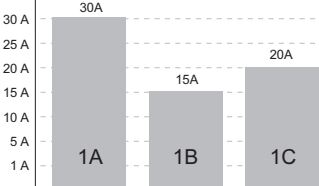
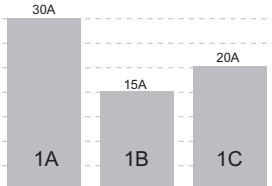
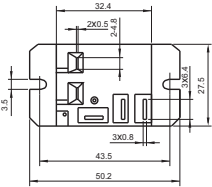
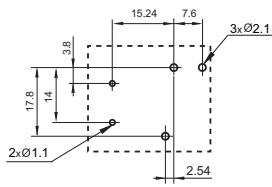
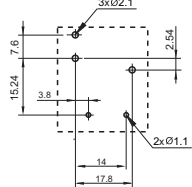
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF190F	HF105F-1	HF105F-2
Appearance			
Dimensions(L x W x H) mm	32.0 x 16.0 x 28.0	32.3 x 27.1 x 20.0	32.2 x 27.5 x 27.8
Features	- With auxiliary monitoring contacts (according to Clause L.8.4 of IEC 60947-5-1) - Main Contact gap: 2.25mm - Main Contact Resistance to Short Circuit Current (according to IEC 62752 1.5kA 6kA2s) 4kV Dielectric strength (Between Main contacts & coil) - UL insulation system: Class F available	40A switching capability - PCB coil terminals, ideal for heavy duty load 4kV dielectric strength (between coil and contacts) - Heavy load up to 7200VA - Unenclosed, plastic sealed and dust protected types available	40A switching capability - PCB coil terminals, ideal for heavy duty load - Heavy load up to 7200VA - Plastic sealed and dust protected types available
Contact Ratings			
Contact Form	1A+1B	1A, 1B, 1C	1A, 1B, 1C
Contact Material	Main contact: AgSnO ₂	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)	 30 A 25 A 20 A 15 A 10 A 5 A 1 A	 30 A 15 A 20 A 1 A 1 B 1 C	 30 A 15 A 20 A 1 A 1 B 1 C
Max. Switching Voltage	277VAC	277VAC / 28VDC	277VAC / 28VDC
Max. Switching Power	8864VA	7200VA / 560W	7200VA / 560W
Rated Load (Resistive load)	Main contact: Making 10A Loading 32A Breaking 10A, 277VAC	1A: 30A 240VAC/20A 28VDC 1B: 15A 240VAC/10A 28VDC 1C: 20A/10A 240VAC/28VDC L Type(1A): 25A 240VAC/20A 28VDC	1A: 30A 240VAC/20A 28VDC 1B: 15A 240VAC/10A 28VDC 1C: 20A/10A 240VAC/28VDC L Type(1A): 25A 240VAC/20A 28VDC
Coil Ratings			
Rated Voltage	5VDC to 48VDC	12VAC to 277VAC / 5VDC to 110VDC	12VAC to 277VAC / 5VDC to 110VDC
Nominal Operating Power	1.55W/1.92W	2.0VA, 0.9W	2.0VA, 0.9W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	2500VAC / 4000VAC	2500VAC
Ambient Temperature	-40°C to 85°C	DC: -55°C to 85°C AC: -55°C to 60°C	DC: -55°C to 85°C AC: -55°C to 60°C
Operate / Release Time max.	30ms / 20ms	15ms / 10ms(DC type)	15ms / 10ms(DC type)
Mechanical Endurance min.	5 x 10 ⁵ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB, QC
Approved Standards	UL TÜV CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
File No.	E133481 R 50509389 CQC21002301055	E134517 40025518(DC Type) CQC09002031229(Ningbo Factory, DC Type) CQC12002071130(Ningbo Factory, AC Type)	E134517 40025518(DC Type) CQC10002049165(DC Type) CQC16002140270(Hong Yuanda Factory, DC Type)
Cross Reference		OMRON: G8P PANASONIC: JTN/JTV OEG: ORU P&B: T9A/T90	OMRON: G7G/G8P PANASONIC: JT OEG: ORU P&B: 491/T9A

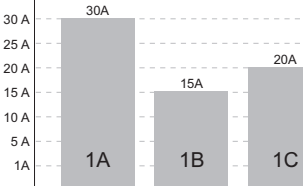
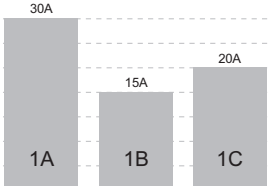
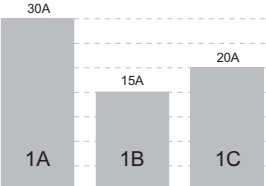
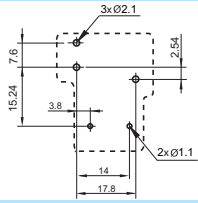
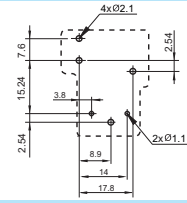
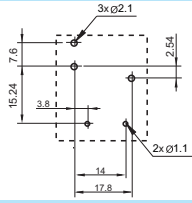
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF105F-4	HF105F-5	HF2100
Appearance			
Dimensions(L x W x H) mm	50.0 x 27.2 x 27.8	32.4 x 27.3 x 27.8	32.0 x 27.5 x 28.0
Features	• 40A switching capability • 2.5kV dielectric strength (between coil and contacts) • Heavy load up to 7200VA • Plastic sealed and dust protected types available	• 40A switching capability • PCB coil terminals, ideal for heavy duty load • Heavy load up to 7200VA • 4kV dielectric strength (between coil and contacts) • Plastic sealed and dust protected types available	• PCB coil terminals, ideal for heavy duty load • 2.5kV dielectric strength (between coil and contacts) • Plastic sealed and flux proofed types available
Contact Ratings			
Contact Form	1A, 1B, 1C	1A, 1B, 1C	1A, 1B, 1C
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC / 28VDC	277VAC / 28VDC	277VAC / 30VDC
Max. Switching Power	7200VA / 560W	7200VA / 560W	7200VA / 600W
Rated Load (Resistive load)	1A: 30A 240VAC/20A 28VDC 1B: 15A 240VAC/10A 28VDC 1C: 20A/10A 240VAC/28VDC L Type(1A): 25A 240VAC/20A/28VDC	1A: 30A 240VAC/20A 28VDC 1B: 15A 240VAC/10A 28VDC 1C: 20A/10A 240VAC/28VDC L Type(1A): 25A 240VAC/20A/28VDC	1A: 30A 240VAC/20A 30VDC 1B: 15A 240VAC/10A 30VDC 1C: 20A/10A 240VAC/30VDC
Coil Ratings			
Rated Voltage	12VAC to 277VAC / 5VDC to 110VDC	12VAC to 277VAC / 5VDC to 110VDC	5VDC to 110VDC
Nominal Operating Power	2.0VA, 0.9W	2.0VA, 0.9W	0.9W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	4000VAC / 2500VAC	2500VAC
Ambient Temperature	DC: -55°C to 85°C AC: -55°C to 60°C	DC: -55°C to 85°C AC: -55°C to 60°C	-55°C to 85°C
Operate / Release Time max.	15ms / 10ms(DC type)	15ms / 10ms(DC type)	15ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS (at 30A 240VAC)
Layout (Bottom view)			
Terminal Type	QC	PCB, QC	PCB, QC
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL TÜV CQC
File No.	E134517 40025518(DC Type) CQC09002031229(DC Type)	E134517 40025518(DC Type) CQC10002049165(DC Type) CQC16002140270(Hong Yuan Factory,DC Type)	E134517 R50153835 CQC10002049166
Cross Reference	OMRON: G7G/G8P PANASONIC: JT OEG: ORU P&B: T9A	OMRON: G7G/G8P PANASONIC: JTN OEG: ORU P&B: T90/T9A	OMRON: G7G PANASONIC: JT P&B: 491/T9A ZETTLER: AZ2100

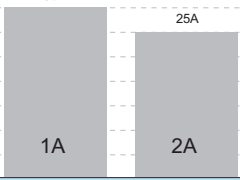
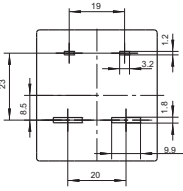
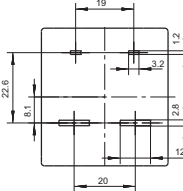
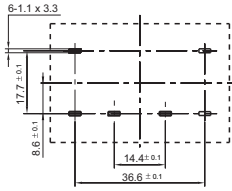
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF2110 / HF2120	HF2150 / HF2151	HF2160
Appearance			
Dimensions(L x W x H) mm	28.4 x 23.5 x 15.3	31.8 x 27.0 x 19.1	32.0 x 27.5 x 19.8
Features	• 30A switching capability • 2.5kV dielectric strength (between coil and contacts) • Plastic sealed and flux proofed types available	• 30A switching capability • 2.5kV dielectric strength (between coil and contacts) • Heavy load up to 7200VA • Plastic sealed and flux proofed type available	• 30A switching capability • PCB coil terminals, ideal for heavy duty load • 2.5KV dielectric strength (between coil and contacts) • Plastic sealed and Dust proofed types available
Contact Ratings			
Contact Form	1A, 1B, 1C	1A, 1B, 1C	1A, 1B, 1C
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC / 30VDC	277VAC / 30VDC	277VAC / 30VDC
Max. Switching Power	7200VA / 600W	7200VA / 600W	7200VA / 600W
Rated Load (Resistive load)	1A: 30A 240VAC/20A 30VDC 1B: 15A 240VAC/10A 30VDC 1C: 20A/10A 240VAC/30VDC	1A: 30A 240VAC/20A 30VDC 1B: 15A 240VAC/10A 30VDC 1C: 20A/10A 240VAC/30VDC	1A: 30A 240VAC/20A 30VDC 1B: 15A 240VAC/10A 30VDC 1C: 20A/10A 240VAC/30VDC
Coil Ratings			
Rated Voltage	5VDC to 110VDC	5VDC to 110VDC	5VDC to 110VDC
Nominal Operating Power	0.9W	0.9W	0.9W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	2500VAC	2500VAC
Ambient Temperature	-55°C to 85°C	-55°C to 85°C	-55°C to 85°C
Operate / Release Time max.	15ms / 10ms	15ms / 10ms	15ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (at 30A 240VAC)	1 x 10 ⁵ OPS (at 30A 240VAC)	1 x 10 ⁵ OPS (at 30A 240VAC)
Layout (Bottom view)			
Terminal Type	PCB, QC	PCB	PCB, QC
Approved Standards	UL/CUL CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 CQC10002049166	E134517 R50153835 CQC10002049166	E134517 R50153835 CQC10002049166
Cross Reference	OMRON: G7G PANASONIC: JT NEC: CT P&B: 491/T90 ZETTLER: AZ2110/AZ2120	OMRON: G7G PANASONIC: JTN/JTV NEC: CT P&B: T9A/T90 ZETTLER: AZ2150/AZ2151	PANASONIC: JT NEC: CT P&B: T9A/T90 ZETTLER: AZ2160

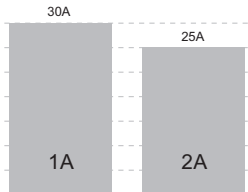
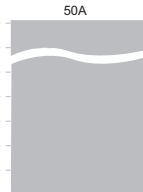
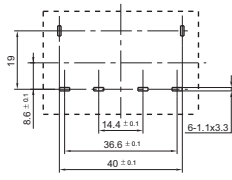
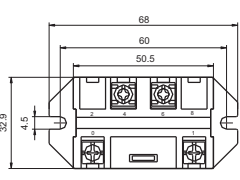
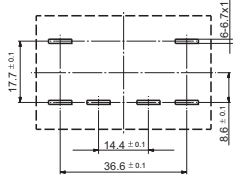
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF172F-100	HF172F-140	HF116F-1
Appearance			
Dimensions(L x W x H) mm	45.0 x 41.4 x 43.0	45.0 x 41.4 x 43.0	50.5 x 32.9 x 36.0
Features	• 100A switching capability • Applicable to solar photovoltaic inverter • 4.0 mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• 140A switching capability • Applicable to solar photovoltaic inverter • 3.0 mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• 30A switching capability • 4kV dielectric strength (between coil and contacts) • Heavy load up to 8310VA • 3mm contact gap available
Contact Ratings			
Contact Form	1A	1A	1A, 2A
Contact Material	AgNi	AgNi	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)			
Max. Switching Voltage	800VAC	800VAC	277VAC
Max. Switching Power	24000VA	24000VA	8310VA
Rated Load (Resistive load)	Making 30A, Loading 100A, breaking 30A, 690VAC 85°C	Making 40A, Loading 140A, breaking 40A, 400VAC 85°C	1A: 30A 240VAC/30A 277VAC 2A: 25A 240VAC/25A 277VAC
Coil Ratings			
Rated Voltage	6VDC to 24VDC	6VDC to 24VDC	6VAC to 220/240VAC 3VDC to 200VDC
Nominal Operating Power	2.5W	2.5W	2.7VA, 1.9W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-55°C to 70°C
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	30ms / 30ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	3 x 10 ⁴ OPS	3 x 10 ⁴ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB, QC, Panel Mount
Approved Standards	UL/CUL TÜV	UL/CUL TÜV	UL/CUL TÜV CQC
File No.	E133481 R50393829	E133481 R50393829	E134517 R50154722 CQC09002031231(DC Type) CQC18002206328
Cross Reference	SONGCHUAN:511HP1	SONGCHUAN:511EP	OMRON: G7L PANASONIC: HE

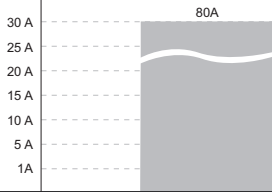
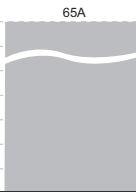
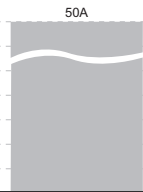
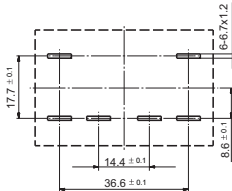
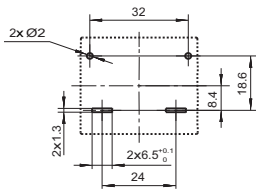
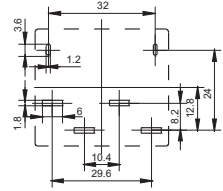
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF116F-2	HF116F-3	HF116F-G
Appearance			
Dimensions(L x W x H) mm	51.5 x 34.9 x 36.0	50.5 x 32.9 x 51.0	51.5 x 34.9 x 36.0
Features	• 30A switching capability • 4kV dielectric strength (between coil and contacts) • 3mm contact gap available	• 30A switching capability • 4kV dielectric strength (between coil and contacts) • Heavy load up to 8310VA • 3mm contact gap available	• 50A switching capability • Applicable to inverter used for photovoltaic power generation systems • 4kV dielectric strength (between coil and contacts) • 3mm contact gap (compliant to European Photovoltaic Standard VDE0126, compliant to IEC 62109-2-2011)
Contact Ratings			
Contact Form	1A, 2A	1A, 2A	1A, 2A
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO	AgSnO ₂ , AgNi
Max. Switching Current (Resistive load)			
Max. Switching Voltage	277VAC	277VAC	277VAC
Max. Switching Power	8310VA	8310VA	15235VA
Rated Load (Resistive load)	1A: 30A 240VAC/30A 277VAC 2A: 25A 240VAC/25A 277VAC	1A: 30A 240VAC/30A 277VAC 2A: 25A 240VAC/25A 277VAC	50A 277VAC
Coil Ratings			
Rated Voltage	6VAC to 220/240VAC 3VDC to 200VDC	6VAC to 220/240VAC 3VDC to 200VDC	3VDC to 48VDC
Nominal Operating Power	2.7VA, 1.9W	2.7VA, 1.9W	3.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-55°C to 70°C	-55°C to 70°C	-40°C to 85°C
Operate / Release Time max.	30ms / 30ms	30ms / 30ms	30ms / 30ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	3 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB, QC, Panel Mount	Screw	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV
File No.	E134517 R50154722 DE/TUR/ExTR20.0074/00 CQC09002031231(DC Type) CQC18002206328	E134517 R50154722 CQC09002031231(DC Type) CQC18002206328	E134517 R50154722 CQC09002031231 CQC18002206328
Cross Reference	OMRON: G7L PANASONIC: HE	OMRON: G7L PANASONIC: HE	PANASONIC: HE SONGCHUAN: 510H

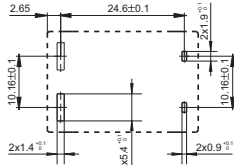
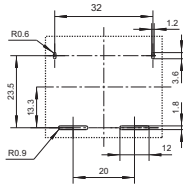
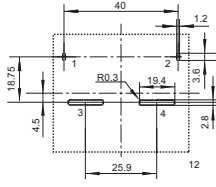
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF116F-80	HF176F	HF185F
Appearance			
Dimensions(L x W x H) mm	50.5 x 32.9 x 36.0	38.0 x 33.0 x 36.8	40.0 x 35.0 x 38.8
Features	• 80A switching capability • Applicable to solar photovoltaic inverter • Applicable to UPS • 3mm contact gap (compliant to European Photovoltaic Standard VDE0126, compliant to IEC 62109-2-2011) • 4kV dielectric strength (between coil and contacts)	• 65A switching capability. • Applicable to solar photovoltaic inverter • 3mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• Two groups 50A contact switching ability • Applicable to inverter used for photovoltaic power generation systems • Switching between zero line and fire line • 3.0 mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F
Contact Ratings			
Contact Form	1A	1A	2A
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi	AgSnO ₂
Max. Switching Current (Resistive load)	 80A	 65A	 50A
Max. Switching Voltage	277VAC/60VDC	400VAC	600VAC
Max. Switching Power	24930VA	18005VA	13850VA
Rated Load (Resistive load)	80A 60VDC/80A 250VAC	Making 20A, Loading 65A, breaking 20A 277VAC 85°C	Making 20A, Loading 50A, Breaking 20A 277VAC, Resistive load
Coil Ratings			
Rated Voltage	3VDC to 48VDC	6VDC to 24VDC	6VDC to 24VDC
Nominal Operating Power	3.2W	1.92W	3W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	5000VAC 1min	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	30ms / 30ms	30ms / 10ms	30ms / 30ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	6 x 10 ³ OPS	3 x 10 ⁴ OPS	3 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV	UL/CUL TÜV CQC	UL/CUL TÜV
File No.	E134517 R 50154722 CQC09002031231 CQC18002206328	E133481 R50411032 CQC20002238014	E133481 R 50496728
Cross Reference	PANASONIC: HE SONGCHUAN: 511E	PANASONIC: HE	

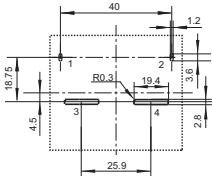
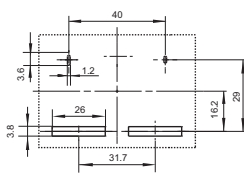
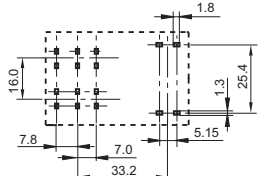
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF186F	HF167F	HF167F-G
Appearance			
Dimensions(L x W x H) mm	30.0 x 20.0 x 31.0	38.0 x 33.0 x 39.5	50.0 x 41.0 x 43.0
Features	• Applicable to inverter used for photovoltaic power generation systems • Applicable to UPS • 55A 277VAC loading current capability • 3.0mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• 90A switching capability • Applicable to solar photovoltaic inverter • 3mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• 120A switching capability • Applicable to solar photovoltaic inverter • 3.6 mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂ , AgNi	AgNi
Max. Switching Current (Resistive load)	 50A	 90A	 120A
Max. Switching Voltage	600VAC	400VAC	800VAC
Max. Switching Power	13850VA	25920VA	44000VA
Rated Load (Resistive load)	Making 20A, Loading 55A, Breaking 20A 277VAC, Resistive load	Making 30A, Loading 100A, breaking 30A 400VAC 85°C	Making 55A, Loading 120A, Breaking 55A 800VAC
Coil Ratings			
Rated Voltage	6VDC to 48VDC	6VDC to 24VDC	6VDC to 24VDC
Nominal Operating Power	2.5W	1.92W	2.5W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 105°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	20ms / 10ms	30ms / 10ms	30ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS	3 x 10 ⁴ OPS	6 x 10 ³ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL TUV CQC	UL/CUL TÜV CQC	UL/CUL TÜV
File No.	E133481 R 50476790 CQC20002260253	E133481 R50360703 CQC17002164558	E133481 R 50374273
Cross Reference		PANASONIC: HE	PANASONIC: HE-N

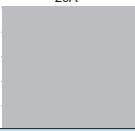
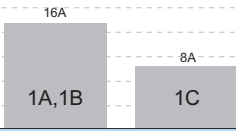
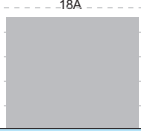
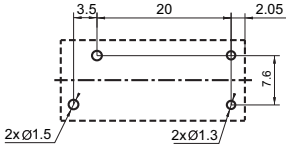
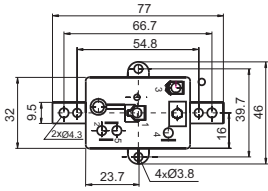
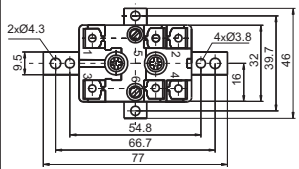
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF167F-140	HF167F-200	HF92F
Appearance			
Dimensions(L x W x H) mm	50.0 x 41.0 x 53.0	65.0 x 45.9 x 53.0	52.0 x 33.7 x 26.7
Features	• 165A switching capability • Applicable to solar photovoltaic inverter • 3.6 mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• 200A switching capability • Applicable to solar photovoltaic inverter • 4 mm contact gap • Low coil holding voltage contributes to saving energy of equipment • UL insulation system: Class F	• 30A switching capability • Creepage distance: 8mm • 4kV dielectric strength (between coil and contacts) • Plastic sealed and flux proofed types • PCB & QC layouts
Contact Ratings			
Contact Form	1A	1A	2A, 2C
Contact Material	AgNi	AgNi	AgSnO ₂ , AgCdO
Max. Switching Current (Resistive load)	 165A	 200A	 30A
Max. Switching Voltage	800VAC	830VAC	
Max. Switching Power	44000VA	45650VA	8310VA
Rated Load (Resistive load)	Making 55A Loading 165A Breaking 55A 800VAC	Making 55A, Loading 200A, Breaking 55A 800VAC	NO: 30A 250VAC/30A 277VAC NC: 3A 250VAC/3A 277VAC
Coil Ratings			
Rated Voltage	6VDC to 24VDC	6VDC to 24VDC	
Nominal Operating Power	2.5W	3W	4.0VA, 1.7W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	AC : -40°C to 65°C DC: -40°C to 85°C
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	5 x 10 ⁶ OPS
Electrical Endurance min.	6 x 10 ³ OPS	3 x 10 ⁴ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	
Approved Standards	UL/CUL TÜV	UL/CUL TÜV	UL/CUL VDE CQC
File No.	E133481 R 50374273	E133481 R 50374273	E134517 40016109 CQC09002037814(DC) CQC18002202752(DC) CQC18002202751(AC) CQC14002114447(AC) DE/TUR/ExTR20.0065/00 TUV 21 ATEX 8725 U
Cross Reference			P&B, SCHRACK: T92 FEME: CS/CF30

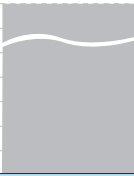
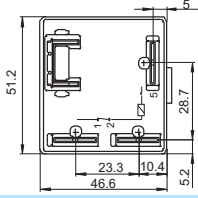
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF78F	HF84F	HF94F
Appearance			
Dimensions(L x W x H) mm	25.5 x 12.5 x 28.5	47.0 x 32.0 x 28.5	47.0 x 32.0 x 28.5
Features	• Suitable for microwave oven • 20A switching capability • 4.0kV dielectric strength (between coil and contacts) • Low height: 28.5 mm	• 16A switching capability • 2.5kV dielectric strength (between coil and contacts) • Panel mount, various terminal types	• 25A switching capability • 2kV dielectric strength (between coil and contacts) • Panel mount, various terminal types
Contact Ratings			
Contact Form	1A	1A, 1B, 1C	1A, 1B, 1C, 1A+1B
Contact Material	AgSnO ₂	AgCe	AgCe, AgCdO
Max. Switching Current (Resistive load)			
Max. Switching Voltage	250VAC	240VAC	277VAC
Max. Switching Power	4000VA	3840VA	4986VA
Rated Load (Resistive load)	16A 250VAC 16A 30VDC	1A,1B: 16A 120/240VAC 1C: 8A 120/240VAC	18A 277VAC
Coil Ratings			
Rated Voltage	3VDC to 36VDC	6VAC to 277VAC / 6VDC to 120VDC	6VAC to 277VAC / 6VDC to 120VDC
Nominal Operating Power	0.54W	3.5VA, 2.1W	4.0VA, 2.4W
Specifications			
Insulation Resistance	1200MΩ	500MΩ	500MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	2500VAC	2000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 65°C	-40°C to 65°C
Operate / Release Time max.	15ms / 5ms	25ms / 25ms	25ms / 25ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁵ OPS (at 16A 250VAC)	5 x 10 ⁴ OPS (at 25A 277VAC)
Layout (Bottom view)			
Terminal Type	PCB, QC	QC	QC
Approved Standards	UL/CUL TÜV CQC	UL/CUL	UL/CUL
File No.	E133481 R50375929 CQC17002171481	E134517	E134517
Cross Reference	SONGCHUAN:302	WHITE RODGERS 90-290 to 295 90-203, 204, 205	WHITE RODGERS 90-360, 362, 364 90-370, 372, 374 90-380, 382, 384

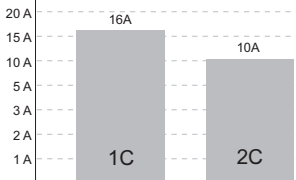
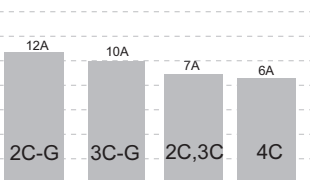
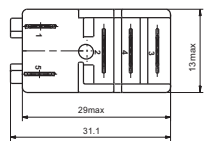
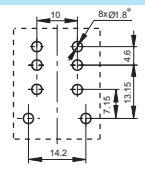
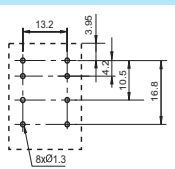
Note: Specification and dimensions in this catalog are subject to change without notice.

POWER RELAY SELECTION CHART

Type	HF8565	
Appearance		
Dimensions(L x W x H) mm	51.2 x 46.6 x 36.5	
Features	• Motor start potential relay • 50A switching capability • 1 Form B configurations • 250" quick connect termination • Variety of mounting positions	
Contact Ratings		
Contact Form	1B	
Contact Material	AgCdO	
Max. Switching Current (Resistive load)		
Max. Switching Voltage		
Max. Switching Power		
Rated Load (Resistive load)	16A(make and break) 400VAC 35A(break only) 400VAC 50A(break only) 400VAC	
Coil Ratings		
Rated Voltage		
Nominal Operating Power	5.0VA	
Specifications		
Insulation Resistance		
Dielectric Strength (Between coil and contacts)		
Ambient Temperature		
Operate / Release Time max.		
Mechanical Endurance min.	7.5×10^5 OPS	
Electrical Endurance min.	5×10^5 OPS (at 16A 400VAC)	
Layout (Bottom view)		
Terminal Type	QC	
Approved Standards	UL/CUL	
File No.	SA13318	
Cross Reference	GE: 3ARR22 ELECTRICA: RVA	

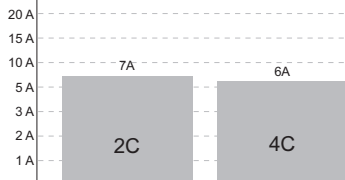
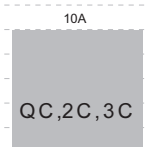
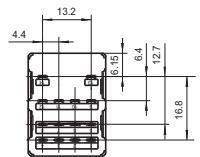
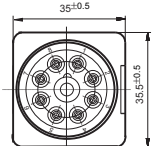
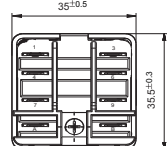
Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAY SELECTION CHART

Type	HF157F	HF13F	HF18FF/HF18FH
Appearance			
Dimensions(L x W x H) mm	(Without button) 29.0 x 13.0 x 30.0 (With button) 29.0 x 13.0 x 35.5	28.0 x 21.5 x 35.0	(Without button) 28.0 x 21.5 x 36.0 (With button) 28.0 x 21.5 x 37.0
Features	- High capacity (2 pole: 10A) - Various types available 2 pole configurations 5kV dielectric strength (between coil and contacts) - Sockets available	1C: 15A; 2C:10A switching capability 1 & 2 pole configurations - Various terminals available - Conform to the CE low voltage directive - Sockets available	- Various relay types,include the LED, diode,button,indicator 2 to 4 pole configurations - Various terminals available - Gold plated contact available - Transparent dust cover ,various installation types - Automatic production - High capacity
Contact Ratings			
Contact Form	1C, 2C	1A, 2A, 1C, 2C	2C, 3C, 4C
Contact Material	AgSnO ₂ Alloy	AgNi, AgSnO ₂	AgNi, AgSnO ₂
Max. Rated Switching Current(Resistive load)			
Max. Switching Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Max. Switching Power	1C:4000VA / 480W 2C:2500VA / 300W	1A, 1C:3750VA / 450W 2A, 2C:2500VA / 300W	2C-G:3000VA / 360W 2C,3C:1750VA / 210W 3C-G:2500VA / 300W 4C:1500VA/ 180W
Rated Load (Resistive load)	1C:12A 250VAC / 30VDC 2C: 8A 250VAC / 30VDC	1A, 1C:15A 250VAC / 30VDC 2A, 2C:10A 250VAC / 30VDC	2C-G: 12A 250VAC / 30VDC 3C-G: 10A 250VAC / 30VDC 2C, 3C: 7A 250VAC / 30VDC 4C: 6A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	5VAC to 110VAC / 6VDC to 240VDC	6VAC to 277VAC / 5VDC to 220VDC	6VAC to 277VAC / 5VDC to 220VDC
Nominal Operating Power	0.9VA (AC type) 0.53W (DC type)	1.2VA to 1.8VA, 0.9W to 1.1W	(0.9 ~ 1.5)VA (AC type) (0.8 ~ 1.1)W (DC type)
Specifications			
Insulation Resistance	1000MΩ	500MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	1500VAC	1500VAC
Ambient Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
Operate / Release Time max.	15ms / 20ms(AC type) 15ms / 10ms(DC type)	25ms / 25ms(DC type)	20ms / 15ms(DC type) 20ms / 25ms(DC type) with diode 20ms / 25ms(AC type)
Mechanical Endurance min.	AC:3 x 10 ⁷ ops DC:5 x 10 ⁷ ops	1 x 10 ⁷ ops	2 x 10 ⁷ ops
Electrical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops(room temperature)
Layout (Bottom view)			
Terminal Type	Plug-in	PCB(2Z),Plug-in	PCB,Plug-in
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E133481 R50403813 CQC18002189443	E133481 R50154518(2C type) CQC09002030028(DC type) CQC09002030029(AC type)	E133481 R50147087 CQC09002030026(DC type) CQC09002030027(AC type)
Cross Reference	OMRON: G2R-1/G2R-2 FINDER:46.61/46.52 IDEC:RJ1S/RJ2S	OMRON: LY1/2 PANASONIC: HL FUJITSU: FRL260 NEC: KML SCHRACK: TM	OMRON: MY2/3/4 FINDER: 55.32/55.33/55.34 IDEC: RM2S/ RM4S SCHNEIDER: RXM2/3/4 TE: KHAU-11/17

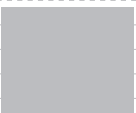
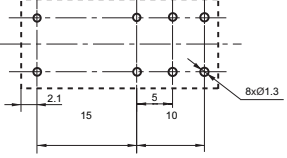
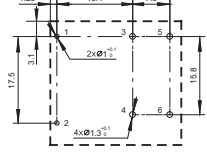
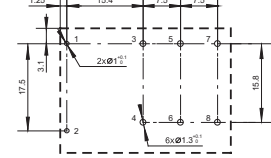
Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAY SELECTION CHART

Type	HF18FZ	HF10F
Appearance		
Dimensions(L x W x H) mm	(Without button)28.0 x 21.5 x 36.0 (With button)28.0 x 21.5 x 37.5	(Standard electrontube type terminal) 35.0mm x 35.5mm x 55.4mm (QC terminal) 35.0mm x 35.5mm x 50.0mm
Features	- Multiple switching capability (2C, 4C type) - With LED - Conform to the CE low voltage directive 2.0kV dielectric strength(between coil and contacts) - High electrical life - High mechanical life - With test button - Automatic production	10A switching capability - Bridge transformation availabe, Multiple switching capability (2C, 3C type) - Standard electrontube terminal, QC terminal - With test button - Blowout magnet type - Sockets available
Contact Ratings		
Contact Form	2C, 4C	QC, 2C, 3C
Contact Material	AgNi	AgSnO ₂
Max. Rated Switching Current(Resistive load)		
Max. Switching Voltage	277VAC / 30VDC	250VAC / 220VDC
Max. Switching Power	2C:1939VA / 210W 4C:1385VA / 150W	2500VA/ 300W
Rated Load (Resistive load)	2C: 7A 220VAC / 24VDC 5A 220VAC / 24VDC 4C: 6A 220VAC / 24VDC 5A 220VAC / 24VDC 3A 220VAC / 24VDC	HF10F-QV: QZ2Z: 10A 250VAC / 30VDC QZ(NO) 5A 220VDC 3Z: (NO) 10A 250VAC / 30VDC (NC) 5A 250VAC / 30VDC ZZ: (NO) 5A 150VDC 2Z:(NC) 2A 150VDC
Coil Ratings		
Rated Voltage	12VAC to 240VAC / 6VDC to 220VDC	6VAC to 240VAC / 6VDC to 220VDC
Nominal Operating Power	AC:Approx. 0.9VA to1.5VA DC:Approx. 0.8W to1.1W	AC:Approx. 3.0VA DC:Approx. 1.4W
Specifications		
Insulation Resistance	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2000VAC	2500VAC
Ambient Temperature	-40°C to 70°C	-40°C to 55°C
Operate / Release Time max.	20ms / 15ms(DC type) 20ms / 25ms(AC type)	30ms / 30ms(DC type)
Mechanical Endurance min.	5 x 10 ⁷ (DC type), 2 x 10 ⁷ (AC type)	1 x 10 ⁷ (HF10F), 5 x 10 ⁶ (HF10-QV)
Electrical Endurance min.	See"CONTACT DATA"	See"CONTACT DATA"
Layout (Bottom view)		 
Terminal Type	Plug-in	Standard electrontube terminal, QC terminal
Approved Standards	UL/CUL CQC VDE	UL/CUL
File No.	E133481 40048406 CQC17002183722	E134517
Cross Reference	OMRON: MY2/4-GS IDEC:RU2S/RU4S	OMRON: MK2/3 SCHNEIDER:RUM C2/C3 FINDER:60.12/60.13 FEME:RCP/RCPT

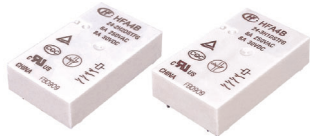
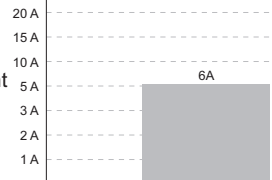
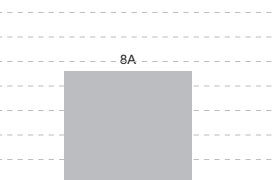
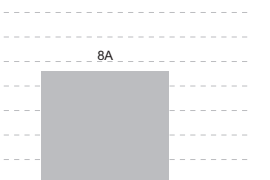
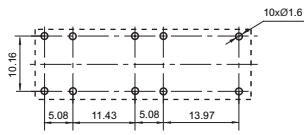
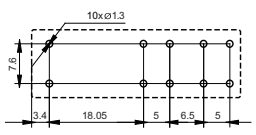
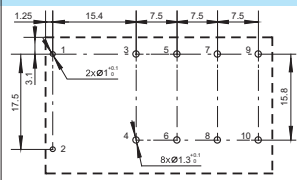
Note: Specification and dimensions in this catalog are subject to change without notice.

SAFETY RELAY SELECTION CHART

Type	HFA2	HFA2B	HFA3B
Appearance			
Dimensions(L x W x H) mm	29.0 x 12.6 x 25.5	26.6 x 25 x 10.2	34.2 x 25 x 10.2
Features	- Multi contact arrangements: 2 Form C(2C type), 1NO+1NC (HD1 type), 1NO+1NC (HD2 type) - Forcibly guided contacts according to EN50205 6A switching capability 10kV surge voltage between coil & contacts and 6kV between contact sets	- Forcibly guided contacts according to IEC 61810-3 (EN50205) 8A switching capability - Mechanical life: 4×10^7 cycles 4kV dielectric strength (Contact - Coil; Contact - Contact) - UL insulation system: Class F available	- Forcibly guided contacts according to IEC 61810-3 (EN50205) 8A switching capability - Mechanical life: 4×10^7 cycles 4kV dielectric strength (Contact - Coil; Contact - Contact) - UL insulation system: Class F available
Contact Ratings			
Contact Form	2C, 1NO+1NC(HD1&HD2 type)	1NO+1NC	2NO+1NC
Contact Material	AgSnO ₂	AgSnO ₂ +Au plated	AgSnO ₂ +Au plated
Max. Rated Switching Current(Resistive load)			
Max. Switching Voltage	400VAC / 30VDC	400VAC(3.5A)/250VDC(0.4A)	400VAC(3.5A)/250VDC(0.4A)
Max. Switching Power	1500VA / 180W	2000VA / 240W	2000VA / 240W
Rated Load (Resistive load)	6A 250VAC / 30VDC	8A 250VAC / 30VDC	8A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	5VDC to 110VDC	5VDC to 110VDC	5VDC to 110VDC
Nominal Operating Power	700mW	400mW	500mW
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	15ms / 10ms	20ms / 10ms	20ms / 10ms
Mechanical Endurance min.	1×10^7 OPS	4×10^7 OPS	4×10^7 OPS
Electrical Endurance min.	NO: 1×10^5 OPS; NC: 5×10^4 OPS (70°C, 6A 250VAC/30VDC, 1s on 9s off)	5×10^4 OPS(1NO:85°C, 1s on 9s off, 8A 250VAC, Resistive load)	5×10^4 OPS(1NO:85°C, 1s on 9s off, 8A 250VAC, Resistive load)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 B 053286 0041 CQC16002150625 CQC18002199525	E133481 R50507878 CQC21002290220	E133481 R50507878 CQC21002290220
Cross Reference	TE: SR2M HENGSTLER: K-RBS DOLD: OA5669 ELESTA: SIR282	DOLD: OA5642	DOLD: OA5643

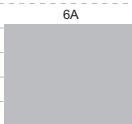
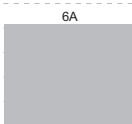
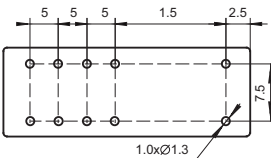
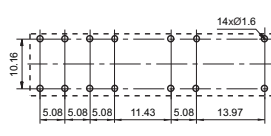
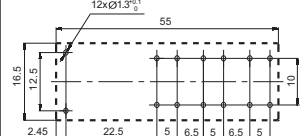
Note: Specification and dimensions in this catalog are subject to change without notice.

SAFETY RELAY SELECTION CHART

Type	HFA4	HFA4A	HFA4B
Appearance			
Dimensions(L x W x H) mm	40.0 x 13.0 x 24.0	40.0 x 13 x 15.7	41.7 x 25 x 10.2
Features	- Multi contact arrangements: 2NO+2NC, 3NO+1NC - Forcibly guided contacts according to EN50205 6A switching capability 360mW low input power 10kV surge voltage between input and output	- Forcibly guided contacts according to IEC61810-3(EN50205) 8A switching capability 4kV dielectric strength (between coil and contacts) - UL insulation system: Class F available	- Forcibly guided contacts according to IEC 61810-3 (EN50205) 8A switching capability - Mechanical life: 4x10⁷ cycles 4kV dielectric strength (Contact - Coil; Contact - Contact) - UL insulation system: Class F available
Contact Ratings			
Contact Form	2NO+2NC, 3NO+1NC	2NO+2NC 3NO+1NC	2NO+2NC,3NO+1NC
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ +Au plated
Max. Rated Switching Current (Resistive load)			
Max. Switching Voltage	400VAC / 30VDC	400VAC(3.5A Resistive load)	400VAC(3.5A)/250VDC(0.4A)
Max. Switching Power	1500VA / 180W	2000VA /240W	2000VA / 240W
Rated Load (Resistive load)	6A 250VAC / 30VDC	8A 250VAC/30VDC	8A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	6VDC to 48VDC	5VDC to 110VDC	5VDC to 110VDC
Nominal Operating Power	360mW	800mW	650mW
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 10ms	20ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	4 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS (1NO: 6A 30VDC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (1NO: 6A 250VAC, Resistive load, Room temp., 1s on 9s off)	1 x 10 ⁴ OPS(1NO: 85°C, 1s on 9s off, 8A 250VAC,Resistive load)	5 x 10 ⁴ OPS(1NO: 85°C, 1s on 9s off, 8A 250VAC,Resistive load)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 40034342 CQC16002150625 CQC18002199525	E133481 R50489710 CQC20002278708	E133481 R50507878 CQC21002290220
Cross Reference	OMRON: G7SA TE: SR4D/M PANASONIC: SFS	TE: SR4D/M	DOLD:OA5644

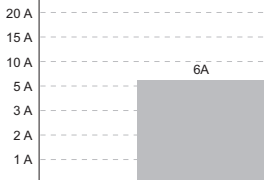
Note: Specification and dimensions in this catalog are subject to change without notice.

SAFETY RELAY SELECTION CHART

Type	HFA4G	HFA6	HFA6A
Appearance			
Dimensions(L x W x H) mm	35.0x 12.6 x 25.5	50.0 x 13.0 x 24.0	55.0 x 16.5 x 15.7
Features	• 6A switching capability	• Multi contact arrangements: 5NO+1NC, 4NO+2NC, 3NO+3NC • Forcibly guided contacts according to EN50205 • 6A switching capability • Low input power: 500mW • 10kV surge voltage between input and output	• Forcibly guided contacts according to IEC61810-3(EN50205) • 8A switching capability • Low input power: 800mW • 4kV dielectric strength(between coil and contacts)
Contact Ratings			
Contact Form	2A+2B	5NO+1NC, 4NO+2NC, 3NO+3NC	3NO+3NC,4NO+2NC,5NO+1NC
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ +Au plated
Max. Rated Switching Current (Resistive load)			
Max. Switching Voltage	400VAC	400VAC / 30VDC	400VAC / 220VDC
Max. Switching Power	1500VA / 180W	1500VA / 180W	2000VA / 240W
Rated Load (Resistive load)	6A 250VAC / 6A 24VDC	6A 250VAC / 30VDC	8A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	6VDC to 110VDC	6VDC to 48VDC	5VDC to 110VDC
Nominal Operating Power	1W	500mW	Approx:1200mW (Standard) Approx:800mW (Sensitive)
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	20ms / 10ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS (1NO: 6A 30VDC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁷ OPS (1NO: 6A 250VAC, Resistive load, Room temp., 1s on 9s off)	5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E133481 R50527765 CQC21002303130	E134517 B0532860043 CQC16002150625 CQC18002199525	E133481 R50437848 CQC19002217420
Cross Reference	Dodl:OA5670	OMRON: G7SA TE: SR6 PANASONIC: SFS	TYCO:SR6 HENGSTLER:H-480

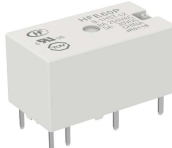
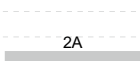
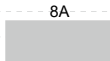
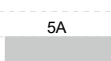
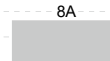
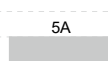
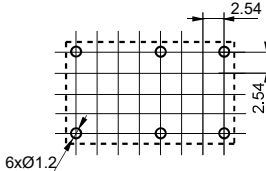
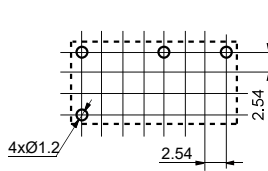
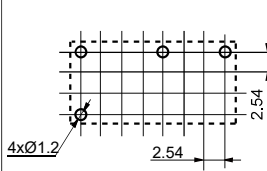
Note: Specification and dimensions in this catalog are subject to change without notice.

SAFETY RELAY SELECTION CHART

Type	HF3701	
Appearance		
Dimensions(L x W x H) mm	114 x 99.0 x 22.5	
Features	• Safety relay module of 2, 4 pole • Redundant design of circuit • With self-check function • Automatic or manual reset of contacts without time delay • Meet requirements of EN 60947-5-1, EN 60204-1, IEC62061 and SIL3, with safety grade up to PLe of ISO13849-1	
Contact Ratings		
Contact Form	2A, 1NO+1NC, 4NO, 3NO+1NC	
Contact Material	AgSnO ₂	
Max. Rated Switching Current (Resistive load)		
Max. Switching Voltage	250VAC / 30VDC	
Max. Switching Power	1500VA / 144W	
Rated Load (Resistive load)	6A 250VAC / 24VDC	
Coil Ratings		
Rated Voltage	24VAC / 24VDC	
Nominal Operating Power		
Specifications		
Insulation Resistance	100MΩ	
Dielectric Strength (Between coil and contacts)		
Ambient Temperature	-20°C to 55°C	
Operate / Release Time max.	45ms / 20ms(dual-channel)	
Mechanical Endurance min.	1 x 10 ⁷ OPS	
Electrical Endurance min.	1 x 10 ⁵ OPS	
Layout (Bottom view)		
Terminal Type	DIN 35 Rail (Mounting Type)	
Approved Standards	CE CQC	
File No.	N8A0532860046 CQC2021000303000047	
Cross Reference	OMRON: G9SX PILZ: PNOZ s2 PHOENIX: ESA4 SCHNEIDER: XPS AC	

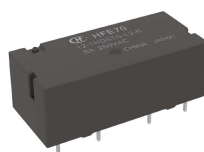
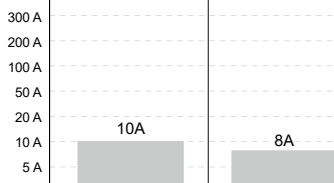
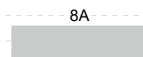
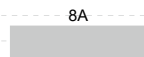
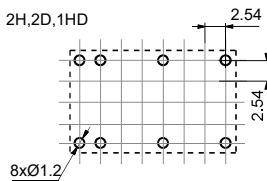
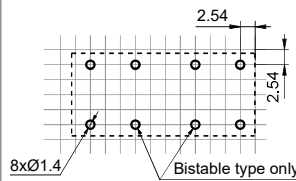
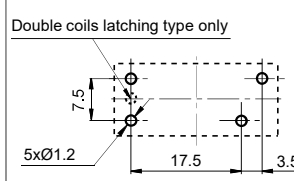
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE33		HFE60		HFE60P	
Appearance						
Dimensions(L x W x H) mm	20.0 x 13.0 x 19.2		20.2 x 11.3 x 10.5		20.2 x 11.3 x 10.5	
Features	• 2A Latching relay • Specific for meter application • 2.5kV dielectric strength (between open contacts) • 4kV dielectric strength (between coil & contacts) • Relays with 1.2mm contact gap are available		• Low height 10.5mm • Low coil power • High switching capacity 1A: 8A 250VAC 2A, 1A+1B: 5A 250VAC • 3kV dielectric strength (between coil and contacts)		• Low height 10.5mm • Low coil power • High switching capacity 1A: 8A 250VAC 2A, 1A+1B: 5A 250VAC • 3kV dielectric strength (between coil and contacts)	
Contact Ratings						
Contact Form	2A, 2B		1A	2A, 1A+1B	1A	2A, 1A+1B
Contact Material	AgNi		AgSnO ₂		AgSnO ₂	
Max. Switching Current			 		 	
Max. Switching Voltage	440VAC		380VAC/240VDC		380VAC/240VDC	
Rated switching power	500VA		2000VA/150W	1250VA/150W	2000VA/150W	1250VA/150W
Rated Load (Resistive load)	2A 250VAC		8A 250VAC 5A 30VDC	5A 250VAC 5A 30VDC	8A 250VAC 5A 30VDC	5A 250VAC 5A 30VDC 0.3A 240VAC
Coil Ratings						
Rated Voltage	(3~24)VDC		(3~24)VDC		(3~24)VDC	
Nominal Operating Power	360mW, 720mW		0.15W, 0.3W		0.15W, 0.3W	
Specifications						
Insulation Resistance	1000MΩ		1000MΩ		1000MΩ	
Dielectric Strength (Between coil and contacts)	4000VAC		3000VAC		3000VAC	
Ambient Temperature	-40℃~ 85℃		-40℃~ 85℃		-40℃~ 85℃	
Operate / Release Time max.	20ms / 20ms		10ms / 10ms		10ms / 10ms	
Mechanical Endurance min.	1 x 10 ⁶ ops		1 x 10 ⁷ ops		1 x 10 ⁷ ops	
Electrical Endurance min.	4 x 10 ⁴ ops		1 x 10 ⁵ ops		1 x 10 ⁴ ops	
Layout (Bottom view)						
Terminal Type (Coil/Load)	PCB		PCB		PCB	
Approved Standards			UL/CUL TüV CQC		UL/CUL TüV CQC	
File No.			E134517 B140653286012 CQC21002287482		E134517 B140653286012 CQC21002287482	
Cross Reference			PANASONIC:DSP OMRON: G6B		PANASONIC:DSP OMRON: G6B	

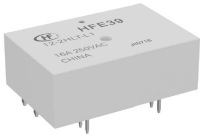
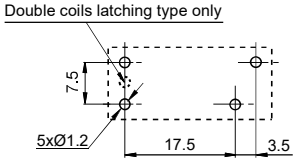
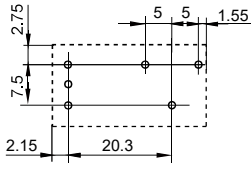
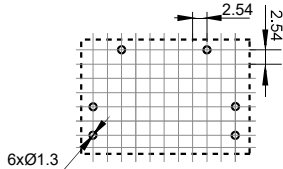
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE62		HFE70	HF163F-L
Appearance				
Dimensions(L x W x H) mm	20.0 x 15.0 x 10.2		31.0 x 14.0 x 11.3	24.0 x 10.0 x 18.8
Features	- High switching capacity 1A, 1B: 10A 250VAC/30VDC 2A, 2B, 1A+1B:8A 250VAC 4kV dielectric strength (between coil & contacts) - Suffix (803): TV5 compliant		- High switching capacity 1A, 1B: 8A 250VAC/30VDC; 4kV dielectric strength (between coil & contacts) 2 Form A and 1A + 1B contact arrangement available - Monostable and bistable types available	- Latching relay - Breakdown voltage (between contact and coil):5000V - High switching capacity: 8A 250VAC - Surge breakdown voltage (between contact and coil):12000V - Reflow soldering available
Contact Ratings				
Contact Form	1A, 1B	2A, 2B, 1A+1B	2A, 1A+1B	1A
Contact Material	AgSnO ₂		AgSnO ₂	AgSnO ₂
Max. Switching Current				
Max. Switching Voltage	277VAC		380VAC/30VDC	250VAC / 30VDC
Rated switching power	2500VA	2000VA	2000VA	2500VA/150W
Rated Load (Resistive load)	10A 250VAC	8A 250VAC	8A 250VAC 5A 30VDC	8A 250VAC 5A 30VDC
Coil Ratings				
Rated Voltage	(3~24)VDC		(3~24)VDC	(3~24)VDC
Nominal Operating Power	0.2W, 0.28W		0.24W	0.2W, 0.4W
Specifications				
Insulation Resistance	1000MΩ		1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC		3750VAC	5000VAC
Ambient Temperature	-40℃~85℃		-40℃~ 60℃	-40℃~ 85℃
Operate / Release Time max.	6ms / 6ms		15ms / 10ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁷ ops		1 x 10 ⁷ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁵ ops; 3 x 10 ⁴ ops		1 x 10 ⁵ ops; 2x 10 ⁵ ops	5 x 10 ⁴ ops
Layout (Bottom view)				
Terminal Type (Coil/Load)	PCB		PCB	PCB
Approved Standards	UL/CUL TüV			UL/CUL VDE
File No.	E133481 B0532860032			E133481 40039460
Cross Reference	PANASONIC:DK OMRON: G6C		PANASONIC:ST	PANASONIC:DW

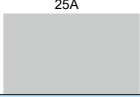
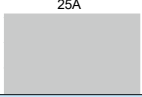
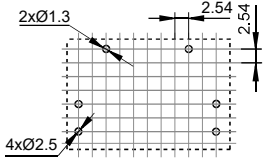
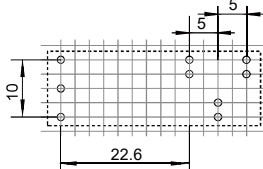
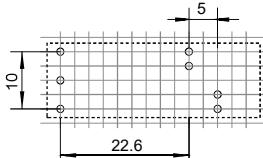
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HF163F-L16	HFE20	HFE39
Appearance			
Dimensions(L x W x H) mm	24.0 x 10.0 x 15.7	29.0 x 12.7 x 15.7	30.0 x 20.0 x 10.2
Features	- Low height 15.7mm - Breakdown voltage (between contact and coil): 5000 V - Max. inrush current 192A/1.2ms 16A switching capability - Max. switching capacity 20A - For LED load	20A switching capability - Low height 15.7mm - UL insulation class: F class - Have passed TV-8 (UL) certification - Inrush current Capacitor 500A/2ms and 320A/2ms	20A switching capability - Latching relay - Low height 10.2mm - Max.inrush current 350A/2ms
Contact Ratings			
Contact Form	1A	1A,1A,1C	2A,2B,1A+1B
Contact Material	AgSnO ₂	AgSnO ₂ ;W+AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	277VAC	277VAC	277VAC
Rated switching power	5000VA	4000VA	5000VA
Rated Load (Resistive load)	16A 277VAC 20A 250VAC	16A 250VAC 20A 250VAC	16A 250VAC 20A 250VAC
Coil Ratings			
Rated Voltage	(3~24)VDC	(3~24)VDC	(3~48)VDC
Nominal Operating Power	0.2W, 0.4W, 0.6W	0.4W, 0.6W	1W, 2W/ 0.6W, 1.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	15ms / 15ms	10ms / 10ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB	PCB	PCB
Approved Standards	UL/CUL VDE TüV CQC	UL/CUL VDE CQC	UL/CUL VDE CQC
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Cross Reference	PANASONIC:DW	PANASONIC:DJ TYCO:RT	

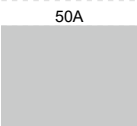
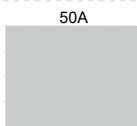
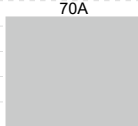
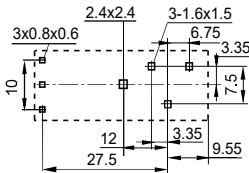
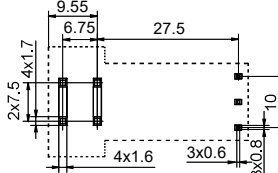
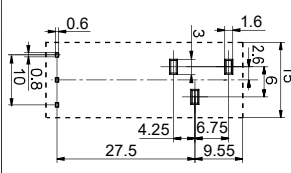
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE39-40	HFE15	HFE15L
Appearance			
Dimensions(L x W x H) mm	30.0x 20.0 x 10.2	37.3 x 13.1 x28.8	37.3 x 13.1 x28.8
Features	• 40A latching relay • Max.inrush current:350A/2ms • Short circuit withstand ability up to 1020A for 10ms • Dielectric strength: 2000VAC 1min(Between coil & contacts) 4000VAC 1min(Between open contacts)	• Latching relay • 20A switching capacity • Inrush current Capacitor 430A/1.5ms	• Latching relay • In accordance to IEC60669-2-1 • 20A switching capacity • Lamp load up to 10A • Inrush current Capacitor 430A/1.5ms
Contact Ratings			
Contact Form	2A;2B	1A;1B;1C	1A;1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	380VAC	400VAC	440VAC
Rated switching power	10000W	5000VA	5000VA
Rated Load (Resistive load)	40A 250VAC	20A 250VAC 20A 30VDC	20A 250VAC
Coil Ratings			
Rated Voltage	(3~48)VDC	(3~48)VDC	(3~48)VDC
Nominal Operating Power	1.5W, 3.0W	0.7W, 1.5W	0.7W, 1.5W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-25°C~ 70°C	-25°C~ 70°C
Operate / Release Time max.	10ms / 10ms	15ms / 15ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	2 x 10 ⁴ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB	PCB	PCB
Approved Standards		UL/CUL VDE CQC	UL/CUL VDE CQC
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Cross Reference		GRUNER:707	GRUNER:707L

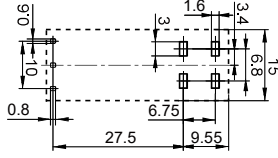
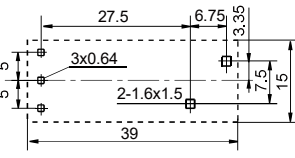
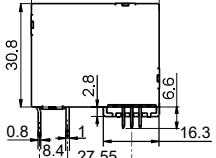
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE10	HFE10-50	HFE10-70
Appearance			
Dimensions(L x W x H) mm	39.0 x 15.0 x 30.2	39.0 x 15.0 x 30.2	39.0 x 15.0 x 30.2
Features	• 50A switching capability • Lamp load up to 5000W • Motor load up to 3HP • Max. inrush current 500A/2ms • Manual switch function available • Relays with 1.5mm contact gap are available	• 50A latching relay • Electrical endurance capability: breaking under 2000A for 0.3ms for 300 times • Inrush current withstand capability up to 500A for 2ms	• 70A latching relay • Electrical endurance capability: breaking under 2000A for 0.3ms for 300 times • Inrush current withstand capability up to 500A for 2ms
Contact Ratings			
Contact Form	1A, 1B, 1C	1A	1A, 1B, 1C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	440VAC	440VAC	440VAC
Rated switching power	1A:12500VA 1C:10000VA	22000W	30800W
Rated Load (Resistive load)	50A 277VAC 40A 277VAC	50A 250VAC(Res. load) 50A 60VDC(DC. load)	1A:70A 277VAC 1C:70A 277VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	1.5W, 3.0W, 2.4W, 4.8W	2.4W, 4.8W	3.0W, 6.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 70°C	-40°C~ 85°C	-40°C~ 70°C
Operate / Release Time max.	15ms / 15ms	15ms / 15ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁵ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁵ ops	1x10 ⁴ ops(50A 250VAC,Res.load)	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB	PCB
Approved Standards	UL/CUL VDE		
File No.	E134517 40035869		
Cross Reference	GRUNER:704/704M PANASONIC:ADJH		

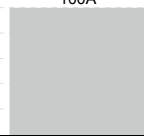
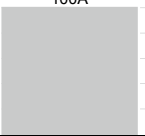
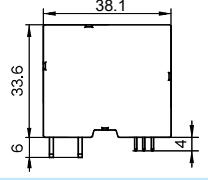
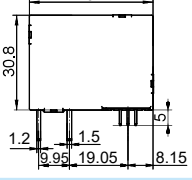
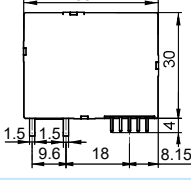
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE10-90	HFE10-L	HFE66
Appearance			
Dimensions(L x W x H) mm	39.0 x 15.0 x 30.2	39.0 x 15.0 x 29.3	38.1 x 30.8 x 16.5
Features	90A latching relay - Electrical endurance capability: breaking under 2000A for 0.3ms for 300 times - Load capability of 60VDC 100A - Inrush current withstand capability up to 500A for 2ms	20A switching capability - The relay can stand short circuit SCCR 5000A peak current for 10ms - Meet IEC60669-2-1 - Max. inrush current 500A/2ms	60A switching capability - Latching relay - Apply to smart capacitor - Low bounce time: less than 200μs
Contact Ratings			
Contact Form	1A	1A, 1B	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	440VAC	440VAC	277VAC
Rated switching power	22500W	15000VA	16620VA
Rated Load (Resistive load)	90A 250VAC(Res. load) 90A 60VDC(DC. load)	20A 277VAC	60A 250VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(5~48)VDC
Nominal Operating Power	3.0W, 6.0W	1.5W, 3.0W	1.5W, 3.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 70°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	15ms / 15ms	15ms / 15ms	6ms / 6ms (at 2.5 time nomi. volt.)
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁵ ops(20A 277VAC)	6 x 10 ³ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB	PCB	PCB, QC
Approved Standards		UL/CUL VDE	UL/CUL TüV CQC
File No.		E134517 40035869	E133481 B0532860034 CQC18002200845
Cross Reference		GRUNER:704L	

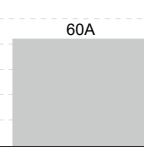
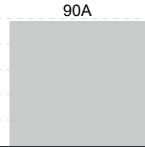
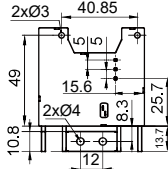
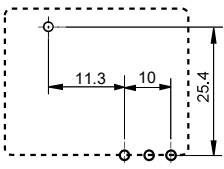
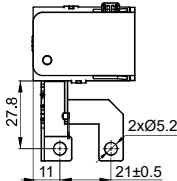
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE66(661)	HFE66-100	HFE53
Appearance			
Dimensions(L x W x H) mm	38.1 x 33.6 x 16.5	40.2 x 30.8 x 16.5	38.1 x 30.0 x 16.5
Features	- Inrush current capacity up to 2000A (peak) - Max. operate bounce time of 0.2ms - Max. operate time range of 0.3ms (for 100 times) - Dielectric strength up to 2500VAC (50/60Hz 1min)	100A latching relay - Apply to smart capacitor 100A switching capability - Low bounce time: less than 200μs	100A latching relay - Short circuit current capacity: 1H:6000A with 0.75mm silver wire SH:6000A with 0.95mm silver wire - Electrical endurance: Overvoltage at 275VAC/100A for 6000 cycles Undervoltage at 160VAC/100A for 6000 cycles
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	277VAC	277VAC	380VAC
Rated switching power	27700VA	27700VA	38000VA
Rated Load (Resistive load)	60A 250VAC 100A 250VAC	100A 250VAC	100A 250VAC
Coil Ratings			
Rated Voltage	(5~48)VDC	(5~48)VDC	(5~48)VDC
Nominal Operating Power	1.5W, 3.0W	2.5W, 5.0W	2.5W, 5.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	6ms / 6ms (at 2.5 time nomi. volt.)	6ms / 6ms (at 2.5 time nomi. volt.)	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1.5x 10 ⁴ ops	6 x 10 ³ ops	6 x 10 ³ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

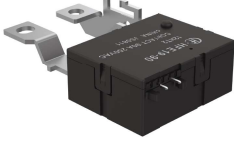
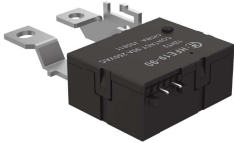
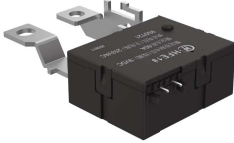
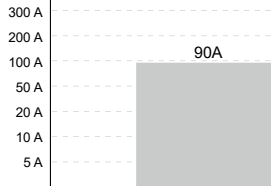
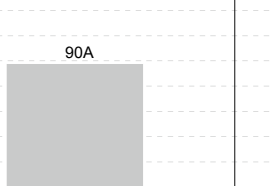
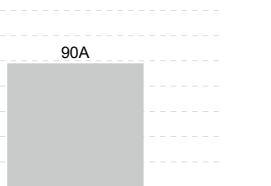
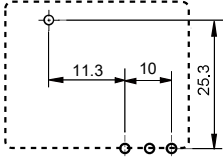
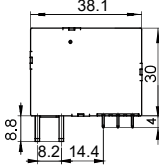
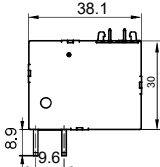
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE52	HFE19-60	HFE69
Appearance			
Dimensions(L x W x H) mm	57.0 x 53.0 x 22.0	38.0 x 30.0 x 16.5	39.6 x 30.3 x 16.7
Features	- Phase-change switch latching relay - With micro switch detection function 120A switching capability - In accordance to IEC 62055-31:UC3 Carrying: 6kA current/100ms (can break 2 times voltage) - Complete switch in 10ms	60A latching relay - Electrical endurance 10000ops - According to IEC62055-31:UC1 - Contact resistance $\leq 1\text{m}\Omega$	90A latching relay - Electrical endurance 10000ops - According to IEC62055-31:UC2 - integrated design, facilitate the auto-assembly and production - anti-AC magnetic, high consistency
Contact Ratings			
Contact Form	1A+1B	1A,1B	1A,1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current	 300 A 200 A 100 A 50 A 20 A 10 A 5 A	 60A	 90A
Max. Switching Voltage	380VAC	276VAC	276VAC
Rated switching power	26400VA	16560VA	24840VA
Rated Load (Resistive load)	120A 220VAC	60A 253VAC	60A 253VAC
Coil Ratings			
Rated Voltage	(5~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	5.0W, 10W	1.0W, 2.0W	1.5W, 3.0W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~85°C	-40°C~85°C	-40°C~85°C
Operate / Release Time max.	5.5ms / 4.5ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	2 x 10 ⁴ ops	5000ops	1 x 10 ⁵ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

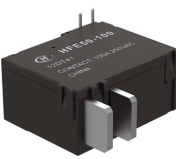
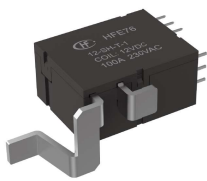
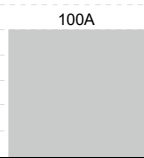
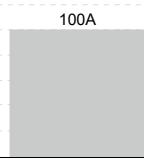
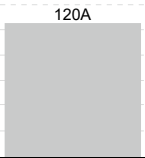
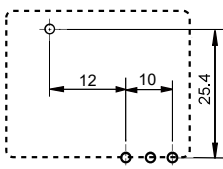
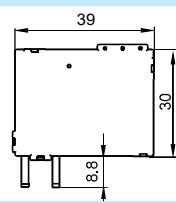
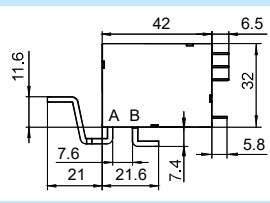
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE19-90	HFE19(661)	HFE19(SH)
Appearance			
Dimensions(L x W x H) mm	38.0 x 30.0 x 16.5	38.1 x 30.0 x 16.5	38.1 x 30.0 x 16.5
Features	● 90A latching relay ● Electrical endurance 10000ops ● According to IEC62055-31:UC2 ● Contact resistance≤0.45mΩ	● 90A latching relay ● Electrical endurance 10000ops ● According to IEC62055-31:UC2 ● Contact resistance≤0.7mΩ	● 90A latching relay ● Electrical endurance 10000ops ● According to IEC62055-31:UC2 ● Contact resistance≤0.45mΩ
Contact Ratings			
Contact Form	1A,1B	1A,1B	1A,1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	276VAC
Rated switching power	24840VA	24840VA	24840VA
Rated Load (Resistive load)	60A 253VAC	60A 276VAC	60A 276VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	1.5W, 3W	1.5W, 3W	1.5W, 3W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

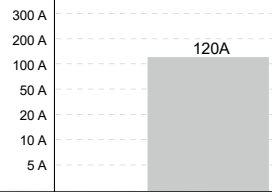
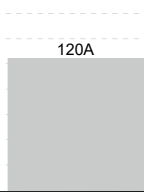
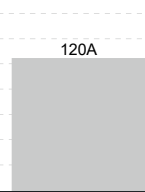
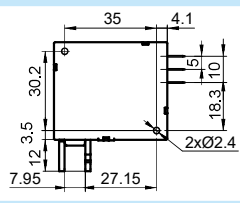
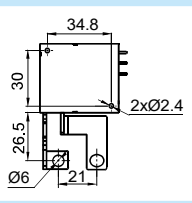
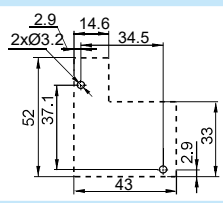
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE19-100	HFE50	HFE76
Appearance			
Dimensions(L x W x H) mm	41.0 x 31.0 x 16.8	39.0 x 30.0 x 18.5	42.0 x 32.0 x 20.8
Features	• 100A latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance≤0.35mΩ	• 100A latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC2 • Contact resistance≤0.5mΩ	• 120A latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC3 • Contact resistance≤0.35mΩ
Contact Ratings			
Contact Form	1A,1B	1A,1B	1A,1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	276VAC
Rated switching power	27600VA	27600VA	33120VA
Rated Load (Resistive load)	80A 230VAC	80A 230VAC	100A 240VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	2.4W, 4.8W	2.4W, 4.8W	3W, 6W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

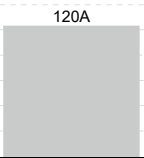
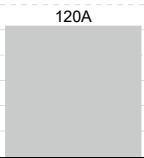
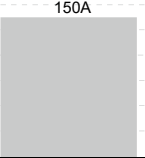
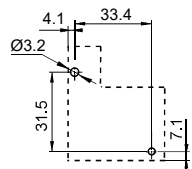
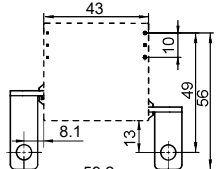
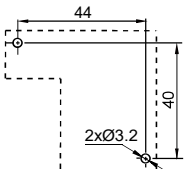
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE29(864)	HFE29	HFE12
Appearance			
Dimensions(L x W x H) mm	43.2 x 37.2 x 22.0	43.0 x 37.0 x 22.0	52.0 x 43.0 x 22.0
Features	120A latching relay - Electrical endurance 10000ops - According to IEC62055-31:UC3, IEC62052-31:UC3 - Contact resistance$\leq 0.35\text{m}\Omega$	120A latching relay - Electrical endurance 10000ops - According to IEC62052-31:UC3 - Contact resistance$\leq 0.35\text{m}\Omega$	120A latching relay - Electrical endurance 10000ops - According to IEC62052-31:UC3 - Contact resistance$\leq 0.35\text{m}\Omega$
Contact Ratings			
Contact Form	1A,1B	1A,1B	1A,1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	276VAC
Rated switching power	33120VA	33120VA	33120VA
Rated Load (Resistive load)	100A 276VAC	100A 240VAC	100A 220VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	3W, 6W	3W, 6W	2.4W, 4.8W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			CQC
File No.			CQC12002086395
Cross Reference			

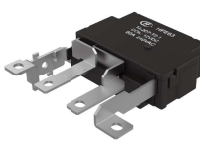
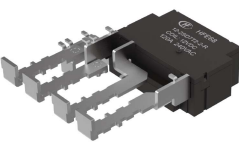
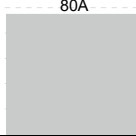
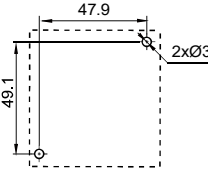
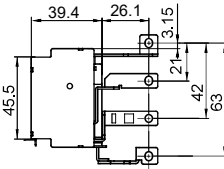
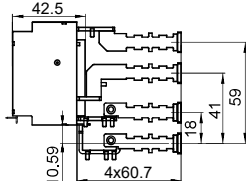
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

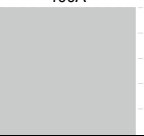
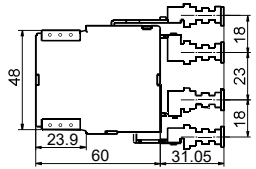
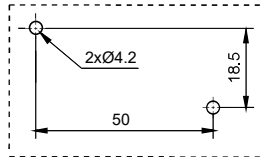
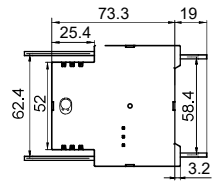
Type	HFE21	HFE61	HFE51
Appearance			
Dimensions(L x W x H) mm	52.0 x 43.0 x 22.0	43.0 x 40.0 x 18.0	52.0 x 48.0 x 30.0
Features	• 120A latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$	• 120A latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$	• 150A latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$
Contact Ratings			
Contact Form	1A,1B	1A,1B	1A,1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	250VAC
Rated switching power	33120VA	33120VA	37500VA
Rated Load (Resistive load)	100A 220VAC	100A 240VAC	120A 220VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	3W, 6W	3W, 6W	3W, 6W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms/20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

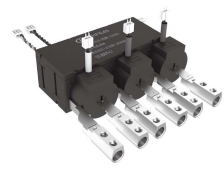
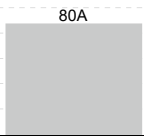
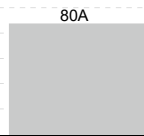
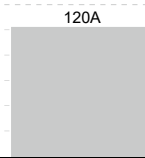
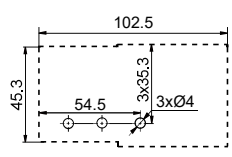
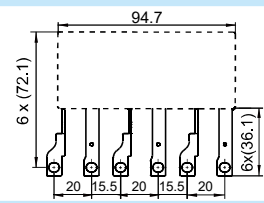
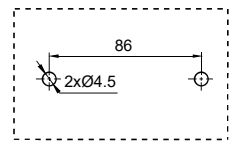
Type	HFE31	HFE63	HFE68
Appearance			
Dimensions(L x W x H) mm	61.3 x 57.0 x 29.3	54.9 x 39.4 x 19.5	59.9 x 42.5 x 24.6
Features	• 200A latching relay • Electrical endurance 5000ops • According to ANSI 12.1: (Carrying:7kA current /100ms) • Contact resistance $\leq 0.25m\Omega$	• 80A latching relay • Electrical endurance 10000ops • Terminal configuration LNNL • According to IEC62052-31 IEC62055-31:UC1, UC2, UC3 • Contact resistance $\leq 0.7m\Omega$	• 120A Latching relay • Electrical endurance 10000ops • Terminal configuration LNNL • According to IEC62055-31: UC1, UC2, UC3 • Contact resistance $\leq 0.5m\Omega$
Contact Ratings			
Contact Form	1A,1B	2A,2B	2A,2B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	288VAC	276VAC
Rated switching power	55200VA	23040VA	33120VA
Rated Load (Resistive load)	200A 240VAC	60A 276VAC 80A 240VAC	100A 240VAC 100A 276VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	5W, 10W	3W, 6W	5W, 10W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	25ms / 25ms	30ms/30ms	30ms/30ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	5 x 10 ³ ops	6 x 10 ³ ops/1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

LATCHING RELAY SELECTION CHART

Type	HFE37	HFE25	HFE65
Appearance			
Dimensions(L x W x H) mm	60.0 x 52.0 x 23.0	73.3 x 74.8 x 29.5	71.8 x 29.8 x 76.5
Features	• 100A latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC1, UC2, UC3 • AC-voltage driving is feasible • Contact resistance≤0.35mΩ	• 200A latching relay • Electrical endurance 6000ops • According to ANSI C12.1 (Carrying:12kA current/66.7ms; 7kA peak current/100ms) • Contact resistance ≤0.25mΩ	• 200A latching relay • Electrical endurance 6000ops • According to ANSI C12.1 (Carrying:12kA current/66.7ms; 7kA peak current/100ms) • Contact resistance ≤0.25mΩ
Contact Ratings			
Contact Form	2A,2B	2A,2B	2A,2B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	276VAC
Rated switching power	23000VA	55200VA	55200VA
Rated Load (Resistive load)	80A 230VAC 100A 230VAC	200A 240VAC	200A 240VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	4.0W, 8.0W	12W, 24W	12W, 24W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms/20ms	20ms/20ms	25ms/25ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	6 x 10 ³ ops/ 1 x 10 ⁴ ops	6 x 10 ³ ops	6 x 10 ³ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

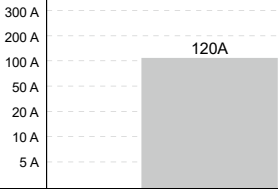
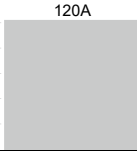
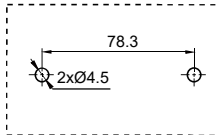
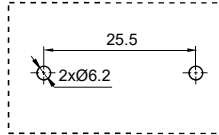
Note: Specification and dimensions in this catalog are subject to change without notice.

LATCHING RELAY SELECTION CHART

Type	HFE32	HFE45	HFE75
Appearance			
Dimensions(L x W x H) mm	102.5 x 45.3 x 24.2	94.7 x 40.5 x 34.4	98.4 x 40.3 x 37.8
Features	80A 3-phases latching relay - Electrical endurance 10000ops - According to IEC62055-31:UC2 - Contact resistance≤0.75mΩ	80A 3-phases latching relay - Electrical endurance 10000ops - According to IEC62055-31:UC2 - Contact resistance≤0.45mΩ	120A 3-phases latching relay - Electrical endurance 10000ops - According to IEC62052-31:UC2,UC3 - Contact resistance≤0.35mΩ
Contact Ratings			
Contact Form	3A,3B	3A,3B	3A,3B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	276VAC
Rated switching power	22080VA	22080VA	33120VA
Rated Load (Resistive load)	60A 253VAC	60A 253VAC	80A 230VAC 100A 230VAC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	(6~48)VDC
Nominal Operating Power	3.0W, 6.0W	3.0W, 6.0W	3.0W, 6.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	30ms / 30ms	30ms / 30ms	30ms / 30ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference			

Note: Specification and dimensions in this catalog are subject to change without notice.

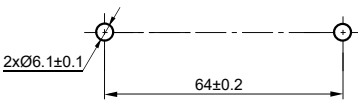
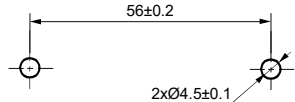
LATCHING RELAY SELECTION CHART

Type	HFE16	HFE23	
Appearance			
Dimensions(L x W x H) mm	115.0 x 48.0 x 26.0	115.0 x 54.0 x 24.0	
Features	• 120A 3-phases latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC2,UC3 • Contact resistance≤0.35mΩ	• 120A 3-phases latching relay • Electrical endurance 10000ops • According to IEC62052-31:UC2,UC3 • Contact resistance≤0.35mΩ	
Contact Ratings			
Contact Form	3A,3B	3A,3B	
Contact Material	AgSnO ₂	AgSnO ₂	
Max. Switching Current			
Max. Switching Voltage	276VAC	276VAC	
Rated switching power	33120VA	33120VA	
Rated Load (Resistive load)	100A 240VAC	100A 220VAC	
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC	
Nominal Operating Power	5.0W, 10.0W	5.0W, 10.0W	
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	
Operate / Release Time max.	30ms/30ms	30ms/30ms	
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	
Approved Standards			
File No.			
Cross Reference			

Note: Specification and dimensions in this catalog are subject to change without notice.

HVDC SELECTION CHART

Direct current relay series

Type		HFE82V-20			HFE82V-40	
Appearance						
Outline dimensions(mm)		78.0 x 39.8 x 46.1			67.0x32.6x47.0	
Contact arrangement		1 Form A			1 Form A	
Contact resistance		$\leq 4.5\text{m}\Omega$ (at 20A)			$\leq 3\text{m}\Omega$ (at 40A)	
Pick-up voltage(VDC)		$\leq 75\%$ Un			$\leq 75\%$ Un	
Contact rating		20A			40A	
Load voltage		450V	750V	1000V	450V	750V
Max. breaking current		200A (1000VDC) 1op	200A (1000VDC)1op	200A (1000VDC)1op	400A (300VDC) 1op	400A (300VDC)1op
Max. switching voltage		1000VDC	1000VDC	1000VDC	1000VDC	1000VDC
Max. switching power		18kW	30kW	30kW	36kW	60kW
Electrical endurance		Switching: 7.5 x 10 ⁴ ops (450VDC,20A)	Switching: 5 x 10 ⁴ ops (750VDC,20A)	Switching: 3 x 10 ⁴ ops (1000VDC,20A)	Switching:2×10 ⁴ ops (450VDC,40A) Making:7.5×10 ⁴ ops (450VDC,40A)	Switching:1×10 ³ ops (750VDC,40A) Making:7.5×10 ⁴ ops (750VDC,40A)
Dielectric strength	Between coil & contacts	4000VAC 1min			4000VAC 1min	
	Between open contacts	3000VAC 1min			3000VAC 1min	
Mechanical endurance		2 x 10 ⁵ ops			2 x 10 ⁵ ops	
Coil	Rated Voltage(VDC)	12, 24, 48			12, 24	
	Coil power	2.6W			3W	
Coil terminal structure		QC			Lead wire	
Load terminal structure		QC			Screw terminal female	
Unit weight		Approx. 140g			Approx. 160g	
Vibration resistance		10Hz to 500Hz 49m/s ²			10Hz to 500Hz 49m/s ²	
Humidity		5% to 85% RH			5% to 85% RH	
Ambient temperature		-40°C to 85°C			-40°C to 85°C	
Layout (Bottom View)						
Approved Standards						
Cross Reference		PANASONIC:AEV520** OMRON:G9EB/G9EJ			PANASONIC:AEVG160** LS:GER040	

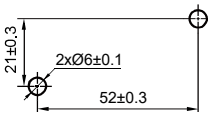
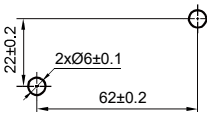
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE82V-60	HFE82V-60B	HFE82V-100D	
Appearance				
Outline dimensions(mm)	55.0x39.8x37.0	64.0x33.0x52.8	76.0x36.0x72.0	
Contact arrangement	1 Form A	1 Form A	1 Form A	
Contact resistance	$\leq 1\text{m}\Omega$ (at 60A)	$\leq 1\text{m}\Omega$ (at 60A)	$\leq 0.5\text{m}\Omega$ (at 100A)	
Pick-up voltage(VDC)	$\leq 75\% U_n$	$\leq 75\% U_n$	$\leq 75\% U_n$	
Contact rating	60A	60A	100A	
Load voltage	450V/750V	450V/750V	450V	750V
Max. breaking current	600A(450VDC)1op	600A(450VDC)1op	1000A(300VDC)1op	1000A(300VDC)1op
Max. switching voltage	1000VDC	1000VDC	750VDC	
Max. switching power	54kW	54kW	90kW	150kW
Electrical endurance	Switching:7.5x10 ⁴ ops (20VDC,60A) Breaking:100ops (450VDC,200A)	Making:7.5x10 ⁴ ops (450VDC,60A) Making:5x10 ⁴ ops (750VDC,60A)	Switching:1x10 ³ ops (450VDC, 100A) Making:2.5x10 ⁴ ops (22.5VDC, $\tau=1\text{ms}$, Inrush400A, Steady100A)	Switching:100ops (800VDC,100A) Making:1x10 ⁴ ops (37.5VDC, $\tau=1\text{ms}$, Inrush400A, Steady100A)
Dielectric strength	Between coil & contacts	4000VAC 1min	3600VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops	
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	4.5W	5.2W	5.5W
Coil terminal structure	QC	Lead wire	Connector	
Load terminal structure	QC	Screw terminal female	Screw terminal female	
Unit weight	Approx.175g	Approx.170g	Approx.260g	
Vibration resistance	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²	
Humidity	5% to 85% RH	5% to 85% RH	5% to 85% RH	
Ambient temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	
Layout (Bottom View)	See"Outline dimensions"			
Approved Standards	UL:E133481 TüV:B0532860044	UL:E133481	PANASONIC:AEVS160**M15 LS:GER100	
Cross Reference		PANASONIC:AEVG160**		

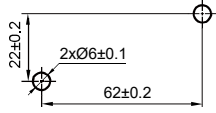
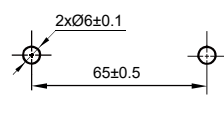
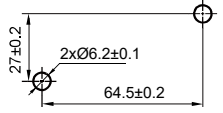
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE82V-150D		HFE82V-150F	HFE82V-200B
Appearance				
Outline dimensions(mm)	76.0x36.0x72.0		77.0x37.7x71.3	81.0x39.0x70.0(HC5) 81.7x39.5x69.6(HC5Y)
Contact arrangement	1 Form A		1 Form A	1 Form A
Contact resistance	$\leq 0.5\text{m}\Omega$ (at 150A)		$\leq 0.5\text{m}\Omega$ (at 150A)	$\leq 0.5\text{m}\Omega$ (at 200A)
Pick-up voltage(VDC)	$\leq 75\% U_n$		$\leq 75\% U_n$	$\leq 75\% U_n$
Contact rating	150A		150A	200A
Load voltage	450V	750V	-	-
Max. breaking current	1200A(300VDC)1op	1200A(300VDC)1op	1300A(400VDC)1op	2000A(450VDC)1op
Max. switching voltage	750VDC		750VDC	750VDC
Max. switching power	135kW	225kW	150kW	180kW
Electrical endurance	Switching:1x10 ³ ops (450VDC,150A) Making:2.5x10 ⁴ ops (22.5VDC, $\tau=1\text{ms}$, Inrush400A,Steady150A)	Switching:100ops (750VDC,150A) Making:1x10 ⁴ ops (37.5VDC, $\tau=1\text{ms}$, Inrush400A,Steady150A)	Breaking:5x10 ⁴ ops (475VDC,20A) Making:7x10 ⁴ ops (20VDC,100A)	Switching:1x10 ³ ops (450VDC,200A) Switching:500ops (750VDC,200A) Making:2x10 ⁴ ops (37.5VDC,RC=1ms, Inrush400A,Steady200A)
Dielectric strength	Between coil & contacts	4000VAC 1min	4000VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops		2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	5.5W	6W	6W
Coil terminal structure	Connector		QC	Connector
Load terminal structure	Screw terminal female		Screw terminal female	Screw terminal female
Unit weight	Approx.260g		Approx.285g	Approx.330g
Vibration resistance	10Hz to 500Hz 49m/s ²		10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²
Humidity	5% to 85% RH		5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C		-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)				
Approved Standards				UL:E133481
Cross Reference	PANASONIC:AEVS160**M16 TYCO:EV500		PANASONIC:AEVH900122 M03	PANASONIC:AEVF140** LS:GER200

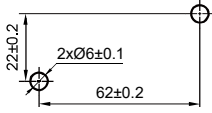
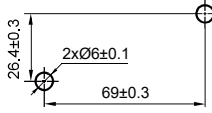
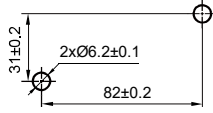
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE82V-200D		HFE82V-200W	HFE82V-250
Appearance				
Outline dimensions(mm)	78.7x36.0x72.0		55.0x43.0x65.8	95.0x45.0x85.0(HL5) 97.0x45.5x84.7(HL5Y)
Contact arrangement	1 Form A		1 Form A	1 Form A
Contact resistance	$\leq 0.5\text{m}\Omega$ (at 200A)		Main contact $\leq 0.5\text{m}\Omega$ (at 200A) auxiliary contact $\leq 100\text{m}\Omega$ (at 0.5A)	$\leq 0.2\text{m}\Omega$ (at 250A)
Pick-up voltage(VDC)	$\leq 75\% U_n$		$\leq 75\% U_n$	$\leq 75\% U_n$
Contact rating	200A		200A	250A
Load voltage	450V	750V	-	-
Max. breaking current	1200A(300VDC)1op	1200A(300VDC)1op	1500A(450VDC)1op	2000A(450VDC)1op
Max. switching voltage	750VDC		750VDC	750VDC
Max. switching power	180kW	300kW	180kW	225kW
Electrical endurance	Switching:800ops (450VDC,200A) Making:1.5x10 ⁴ ops (22.5VDC, $\tau=1\text{ms}$, Inrush 400A, Steady 200A)	Switching:100ops (750VDC,200A)	Making:1x10 ⁵ ops(20 VDC C=1500 μF ,Inrush150A) Breaking:5x10 ⁴ ops (450 VDC,15A) Breaking:500ops (450 VDC,200A)	Making:2.5x10 ⁴ ops (22.5 VDC,C=1100 μf , Inrush 400A,Steady 250A) Making:1op(300 VDC, C=1100 μF ,Inrush1350A)
Dielectric strength	Between coil & contacts	4000VAC 1min	4000VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops		2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	5.5W	6W	6W
Coil terminal structure	Connector		Connector	Lead wire
Load terminal structure	Screw terminal female		Screw terminal female	Screw terminal female
Unit weight	Approx.260g		Approx.400g	Approx.580g
Vibration resistance	10Hz to 500Hz 49m/s ²		10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²
Humidity	5% to 85% RH		5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C		-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)				
Approved Standards				UL:E133481
Cross Reference				PANASONIC:AEV170 M04

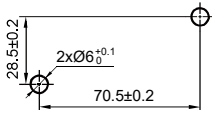
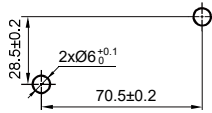
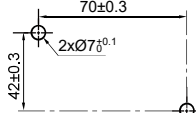
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE82V-250C		HFE82V-300C		HFE85V-300M
Appearance					
Outline dimensions(mm)	88.3x42.5x74.5 85.1x42.5x74.0		88.3x42.5x74.5 85.1x42.5x74.5		84.5 x 62.5x73.0
Contact arrangement	1 Form A		1 Form A		1 Form A
Contact resistance	$\leq 0.5\text{m}\Omega$ (at 250A)		$\leq 0.5\text{m}\Omega$ (at 300A)		$\leq 0.25\text{m}\Omega$ (at 200A)
Pick-up voltage(VDC)	$\leq 75\% U_n$		$\leq 75\% U_n$		$\leq 75\% U_n$
Contact rating	250A		300A		300A
Load voltage	450V	750V	450V	750V	-
Max. breaking current	2000A (450VDC)1op	2000A (450VDC)1op	2000A (750VDC)1op	2000A (750VDC)1op	2000A(450VDC)1op
Max. switching voltage	1000VDC	1000VDC	1000VDC		1000VDC
Max. switching power	250kW	250kW	300kW	300kW	450kW
Electrical endurance	Making:7.5x10 ⁴ ops (20VDC,Steady140A) Breaking:1000ops (450VDC,250A)	Making:7.5x10 ⁴ ops (20VDC,Steady140A) Breaking:200ops (750VDC,250A)	Making:7.5x10 ⁴ ops (Steady140A,20VDC) Breaking:1000ops (450VDC,300A)	Making:7.5x10 ⁴ ops (Steady140A,20VDC) Breaking:500ops (750VDC,300A)	Breaking:100ops (1000VDC,300A) Breaking:500ops (800VDC,300A) Breaking:1000ops (450VDC,300A)
Dielectric strength	Between coil & contacts	2600VAC 1min	2600VAC 1min		3000VAC 1min
	Between open contacts	2600VAC 1min	2600VAC 1min		3000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops		2 x 10 ⁵ ops		2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24		12, 24
	Coil power	6W	6W		Driving Power:60W Holding Power:4.3W
Coil terminal structure	Connector,QC		Connector, QC		Connector
Load terminal structure	Screw terminal female		Screw terminal female		Screw terminal female
Unit weight	Approx.360g		Approx.370g		Approx.430g
Vibration resistance	10Hz to 500Hz 49m/s ²		10Hz to 500Hz 49m/s ²		10Hz to 500Hz 49m/s ²
Humidity	5% to 85% RH		5% to 85% RH		5% to 85% RH
Ambient temperature	-40°C to 85°C		-40°C to 85°C		-40°C to 85°C
Layout (Bottom View)					
Approved Standards	UL:E133481				
Cross Reference	PANASONIC:AEVA1251 M02 LS:GER250		PANASONIC:AEVA1251 M03		

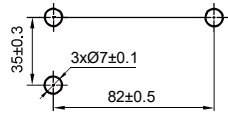
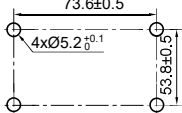
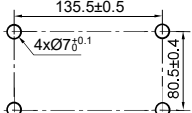
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE82V-400M	HFE82V-600	HFE82V-1000
Appearance			
Outline dimensions(mm)	95.8 x 49.0 x 93	146.0x66.6x132.8	165.9x104.6x132.8
Contact arrangement	1 Form A	1 Form A	1 Form A
Contact resistance	$\leq 0.25 \text{ m}\Omega$ Typ.:0.15 mΩ(at 400 A)	$\leq 0.15 \text{ m}\Omega$ (at 600A)	$\leq 0.2 \text{ m}\Omega$ (at 1000A)
Pick-up voltage(VDC)	$\leq 75\% U_n$	$\leq 75\% U_n$	$\leq 75\% U_n$
Contact rating	400A	600A	1000A
Load voltage	450V/750V	450V/750V	1000V/1200V
Max. breaking current	2000A(450VDC)1op	2500A(800VDC)1op	2000A(1000VDC)1op
Max. switching voltage	800VDC	1000VDC	1500VDC
Max. switching power	360kW	600kW	1500kW
Electrical endurance	Making:7.5×10 ⁴ ops (22.5VDC 140A C=110μF) Breaking:7.5×10 ⁴ ops(450VDC,5A) Breaking:2.5×10 ⁴ ops(450VDC,10A) Breaking:100ops(800VDC,400A)	Making:5×10 ⁴ ops (750VDC 120A,0.6s on:5.4s off) Switching:1×10 ⁵ ops(800VDC,10A) Switching:1×10 ⁴ ops(800VDC,100A) Switching:100ops(1000VDC,600A)	Making:2×10 ⁴ ops(1000VDC,60A) Breaking:1ops(1000VDC,2000A) Breaking:50ops(1000VDC,1000A)
Dielectric strength	Between coil & contacts	3000VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	5000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24
	Coil power	6W	Switch on:50W(time:0.2s)Holding:10W
Coil terminal structure	Connector	Lead wire	Connector
Load terminal structure	Screw terminal female	Screw terminal female and copper bus bar terminal	Screw terminal female and copper bus bar terminal
Unit weight	Approx.740g	Approx.1800g	Approx.3500g
Vibration resistance	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²	10Hz to 55Hz 49m/s ²
Humidity	5% to 85% RH	5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)			
Approved Standards			
Cross Reference		TYCO:TE600	

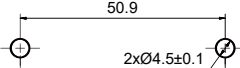
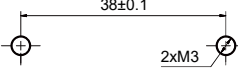
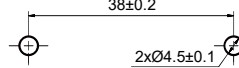
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE80V-20B	HFE80V-20C	HFE80V-20D
Appearance			
Outline dimensions(mm)	40.0x30.0x31.6	30.1x30.0x29.2	29.0x25.0x28.9
Contact arrangement	1 Form A	1 Form A	1 Form A
Contact resistance	$\leq 5\text{m}\Omega$ (at 20A)	$\leq 5\text{m}\Omega$ (at 20A)	$\leq 5\text{m}\Omega$ (at 20A)
Pick-up voltage(VDC)	$\leq 75\%$ Un	$\leq 75\%$ Un	$\leq 75\%$ Un
Contact rating	20A	20A	20A
Load voltage	750V	-	-
Max. breaking current	30A(450VDC)5ops	30A (450VDC)5ops	20A (450VDC)5ops
Max. switching voltage	450VDC	750VDC	750VDC
Max. switching power	18kW	18kW	18kW
Electrical endurance	Making: 7.5×10^4 ops(450VDC,20A) Switching: 3×10^3 ops(450VDC,20A)	Swithing: 3000ops(450VDC,20A)	Making: 7.5×10^4 ops(450VDC,20A) Switching: 1000 ops(450VDC,15A)
Dielectric strength	Between coil & contacts	3000VAC 1min	3000VAC 1min
	Between open contacts	2500VAC 1min	2000VAC 1min
Mechanical endurance	2×10^5 ops	2×10^5 ops	2×10^5 ops
Coil	Rated Voltage(VDC)	12, 24	12, 24, 48
	Coil power	3W	3W
Coil terminal structure	QC	QC,PCB	QC
Load terminal structure	QC	QC,PCB	QC
Unit weight	Approx.59g	Approx.50g	Approx.45g
Vibration resistance	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²
Humidity	5% to 85% RH	5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)			
Approved Standards		UL:E500911	
Cross Reference	PANASONIC:AEC510**	LS:GER010	PANASONIC:AECN110** TYCO:mini K

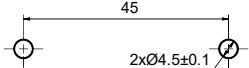
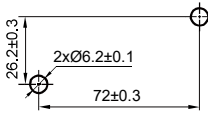
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE80V-40	HFE80V-60	HFE80V-200
Appearance			
Outline dimensions(mm)	30.1x30.0x29.2	55.1 x 38.9 x 42.6	88.0 x 47.4 x 88.0 81.0 x 47.8 x 87.4
Contact arrangement	1 Form A	1 Form A	1 Form A
Contact resistance	$\leq 5\text{m}\Omega$ (at 20A)	$\leq 1.5\text{m}\Omega$ (at 20A)	$\leq 1.0\text{m}\Omega$ (at 20A)
Pick-up voltage(VDC)	$\leq 75\%$ Un	$\leq 75\%$ Un	$\leq 75\%$ Un
Contact rating	40A	60A	200A
Load voltage	-	-	-
Max. breaking current	50A (450VDC)1op	100A	400A
Max. switching voltage	750VDC	200VDC	250VDC
Max. switching power	27kW	32kW	80kW
Electrical endurance	Switching:3000ops (150VDC,40A) Switching:6000ops (450VDC,20A) Switching:1000ops (450VDC,40A)	Switching:1 x 10 ⁵ ops (12VDC,60A) Switching:7.5 x 10 ⁴ ops (150VDC,10A)	Switching:1 x 10 ⁴ ops(150VDC,40A) Switching:3,000ops(150VDC,200A)
Dielectric strength	Between coil & contacts	3000VAC 1min	4000VAC 1min
	Between open contacts	2000VAC 1min	3000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24, 48	12, 24
	Coil power	3W	6W
Coil terminal structure	QC,PCB	QC,PCB	Connector
Load terminal structure	QC,PCB	PCB	Screw terminal female
Unit weight	Approx.51g	Approx.200g	Approx.370g
Vibration resistance	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²	10Hz to 500Hz 49m/s ²
Humidity	5% to 85% RH	5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)		See "outline dimensions"	
Approved Standards	UL:E133481	TüV: B0532860033	UL:E133481
Cross Reference	TYCO:mini K LS:GER010		

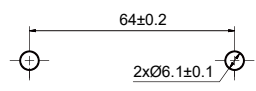
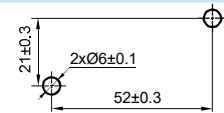
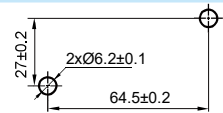
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE82P-20		HFE82P-60B	HFE82P-200B
Appearance				
Outline dimensions(mm)	78.0x 39.8 x 46.1		64.0x33.0x52.8	81.0x39.0x70.0(HC5) 81.7x39.5x69.6(HC5Y)
Contact arrangement	1 From A		1 From A	1 From A
Contact resistance	$\leq 4.5\text{m}\Omega$ (at 20A)		$\leq 1\text{m}\Omega$ (at 60A)	$\leq 0.5\text{m}\Omega$ (at 200A)
Pick-up voltage(VDC)	$\leq 80\%$ Un		$\leq 80\%$ Un	$\leq 80\%$ Un
Contact rating	20A		60A	200A
Load voltage	1000V	1500V	-	-
Max. breaking current	200A (1000VDC)1op	200A (1000VDC)1op	600A(450VDC)1op	2000A(450VDC)1op
Max. switching voltage	1000VDC	1500VDC	1000VDC	750VDC
Max. switching power	20kW	30kW	54kW	180kW
Electrical endurance	Switching:1 x 10 ⁴ ops (1500VDC,15A) Switching:1 x 10 ⁴ ops (1000VDC,15A) making:1.5 x 10 ⁴ ops (1500VDC,40A)		Switching:6000ops (600VDC,30A)	Switching:6000ops (500VDC, 60A) Breaking:500ops (500VDC, 250A)
Dielectric strength	Between coil & contacts	4000VAC 1min	3600VAC 1min	4000VAC 1min
	Between open main contacts	4000VAC 1min	3000VAC 1min	3000VAC 1min
	Between contacts & auxiliary contacts			
Mechanical endurance	2 x 10 ⁵ ops		2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24, 48	12, 24	12, 24
	Coil power	2.6W	5.2W	6W
Coil terminal structure	QC		Lead wire	Connector
Load terminal structure	QC		Screw terminal female	Screw terminal female
Unit weight	Approx.160g		Approx.162g	Approx.330g
Vibration resistance	10Hz to 55Hz 1.5mm 49m/s ²		10Hz to 55Hz 1.5mm DA	10Hz to 55Hz 1.5mm DA
Humidity	5% to 85% RH		5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C		-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)				
Approved Standards	UL: E133481		UL: E133481	UL: E133481
Cross Reference			PANASONIC:AEVG160**	PANASONIC:AEVF140** LS:GER200

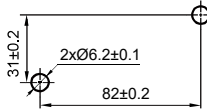
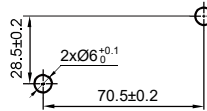
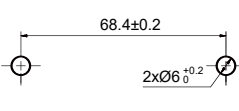
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type		HFE82P-250	HFE82P-250C	HFE85P-150
Appearance				
Outline dimensions(mm)		95.0x45.0x85.0(HL5) 97.0x45.5x84.7(HL5Y)	88.3x42.5x74.5 85.1x42.5x74.0	80.4x62.3x72.8
Contact arrangement		1 Form A	1 Form A	1 Form A
Contact resistance		≤0.2mΩ(at 250A)	≤0.5mΩ(at 250A)	≤0.3mΩ(at 150A)
Pick-up voltage(VDC)		≤80% Un	≤80% Un	≤80% Un
Contact rating		250A	250A	150A
Load voltage		-	450V	-
Max. breaking current		2000A(450VDC)1op	1500A(750VDC)1op	1000A(320VDC)1op
Max. switching voltage		750VDC	1000VDC	1000VDC
Max. switching power		225kW	250kW	300kW
Electrical endurance		Swithing:6000ops (750VDC, 60A)	Swithing:6000ops (1000VDC, 60A) Swithing:6000ops (400VDC, 150A)	Breaking:6000ops (1500VDC, 60A)
Dielectric strength	Between coil & contacts	4000VAC 1min	2600VAC 1min	3300VAC 1min
	Between open main contacts	3000VAC 1min	2600VAC 1min	3300VAC 1min
	Between contacts & auxiliary contacts			3300VAC 1min
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	6W	6W	Switch on:26W,Holding:3W
Coil terminal structure		Lead wire	Connector, QC	Lead wire
Load terminal structure		Screw terminal female	Screw terminal female	Screw terminal female
Unit weight		Approx.580g	Approx.360g	Approx.400g
Vibration resistance		10Hz to 55Hz 1.5mm DA	10Hz to 55Hz 1.5mm DA	10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH	5% to 85% RH	5% to 85% RH
Ambient temperature		-40℃ to 85℃	-40℃ to 85℃	-40℃ to 85℃
Layout (Bottom View)				
Approved Standards		UL: E133481	UL: E133481	UL: E133481
Cross Reference		PANASONIC:AEV170 M04	PANASONIC:AEVA1251 M02 LS:GER250	

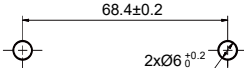
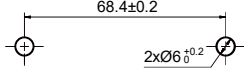
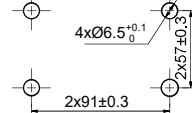
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART

Direct current relay series

Type	HFE85P-250	HFE85P-300	HFE88P-150
Appearance			
Outline dimensions(mm)	80.4x62.3x72.8	80.4x62.3x72.8	104.0x70.0x107.9
Contact arrangement	1 Form A	1 Form A	1 Form A
Contact resistance	$\leq 0.3\text{m}\Omega$ (at 200A)	$\leq 0.3\text{m}\Omega$ (at 200A)	$\leq 0.3\text{m}\Omega$ (at 150A)
Pick-up voltage(VDC)	$\leq 80\% U_n$	$\leq 80\% U_n$	$\leq 80\% U_n$
Contact rating	250A	300A	150A
Load voltage	-	-	-
Max. breaking current	2000A(320VDC)1op	2000A(320VDC)1op	1000A(1500VDC)1op
Max. switching voltage	1000VDC	1000VDC	1500VDC
Max. switching power	400kW	450kW	450kW
Electrical endurance	Breaking:6000ops (1500VDC, 60A) Breaking:500ops (1000VDC, 250A)	Breaking:1000ops(450VDC,300A) Breaking:50ops(450VDC,-300A) Breaking:100ops(1000V,300A)	Breaking:2x10 ³ ops (1500VDC,100A) Breaking:1x10 ³ ops (1500VDC,150A)
Dielectric strength	Between coil & contacts	3300VAC 1min	3300VAC 1min
	Between open main contacts	3300VAC 1min	3300VAC 1min
	Between contacts & auxiliary contacts	3300VAC 1min	3300VAC 1min
Mechanical endurance	2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24
	Coil power	Switch on:26W,Holding:3W	Switch on:26W,Holding:3W
Coil terminal structure	Lead wire	Lead wire	Connector
Load terminal structure	Screw terminal female	Screw terminal female	Screw terminal female
Unit weight	Approx.400g	Approx.400g	Approx.1150g
Vibration resistance	10Hz to 500Hz 49m/s ²	10Hz to 55Hz 1.5mm DA	10Hz to 55Hz
Humidity	5% to 85% RH	5% to 85% RH	5% to 85% RH
Ambient temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Layout (Bottom View)			
Approved Standards	UL: E133481	CCC: 2021000304000020	
Cross Reference			

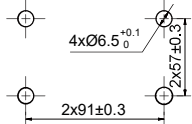
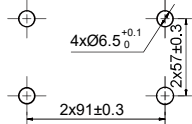
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

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HVDC SELECTION CHART

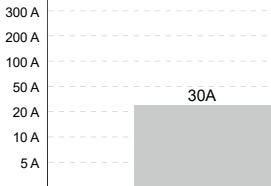
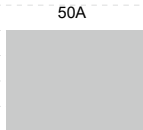
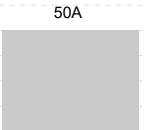
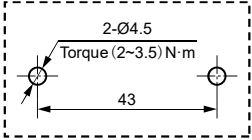
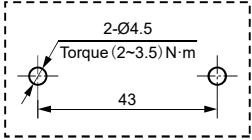
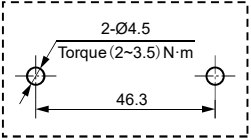
Direct current relay series

Type	HFE88P-250	HFE88P-350	
Appearance			
Outline dimensions(mm)	104.0x70.0x107.9mm	104.0x70.0x107.9mm	
Contact arrangement	1 Form A	1 Form A	
Contact resistance	$\leq 0.3\text{m}\Omega$ (at 250A)	$\leq 0.3\text{m}\Omega$ (at 350A)	
Pick-up voltage(VDC)	$\leq 80\% U_n$	$\leq 80\% U_n$	
Contact rating	250A	350A	
Load voltage	-	-	
Max. breaking current	1500A (1000VDC)1op	2000A (1000VDC)1op	
Max. switching voltage	1500VDC	1500VDC	
Max. switching power	500kW	700kW	
Electrical endurance	Swithing:6000ops(1500VDC,100A) Swithing:1000ops(1000VDC,350A) Swithing:6000ops (150VDC, 320A(L/R=0.3ms)	Swithing:6000ops(1500VDC,100A) Swithing:1000ops(1000VDC,350A) Swithing:6000ops (150VDC,320A(L/R=0.3ms)	
Dielectric strength	Between coil & contacts	4000VAC 1min	4000VAC 1min
	Between open main contacts	4000VAC 1min	4000VAC 1min
	Between contacts & auxiliary contacts	4000VAC 1min	4000VAC 1min
Mechanical endurance	2×10^5 ops	2×10^5 ops	
Coil	Rated Voltage(VDC)	12, 24	12, 24
	Coil power	Switch on:50W,Holding:5W	Switch on:50W,Holding:5W
Coil terminal structure	Connector	Connector	
Load terminal structure	Screw terminal female	Screw terminal female	
Unit weight	Approx.1150g	Approx.1150g	
Vibration resistance	10Hz to 55Hz	10Hz to 55Hz	
Humidity	5% to 85% RH	5% to 85% RH	
Ambient temperature	-40°C to 85°C	-40°C to 85°C	
Layout (Bottom View)			
Approved Standards	UL: E133481	UL: E133481	
Cross Reference	LS:GPR-H500-A		

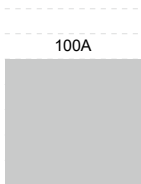
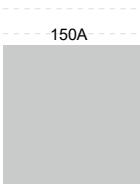
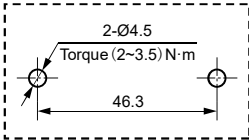
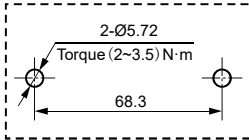
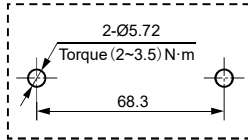
Note:1) Seal chamber $\geq$ IP67;Relay body $\geq$ P40;

2) Working altitude $\geq$ 4000m;

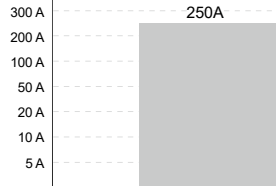
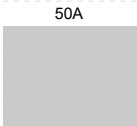
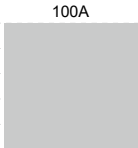
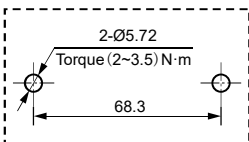
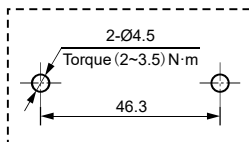
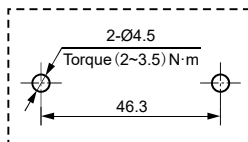
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

HVDC SELECTION CHART		Epoxy sealed series	
Type	HFZ16V-30	HFZ17V-50	HFZ16V-50
Appearance			
Dimensions(L x W x H) mm	53 x 36 x 39.5	53 x 36 x 39.5	54 x 40.3 x 58.3
Features	- Rated 30A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Pre-charging and other applications - Small size, light weight	- Rated 50A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Pre-charging and other applications - Small size, light weight	- Rated 50A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Pre-charging and other applications - Small size, light weight
Contact Ratings			
Contact Form	1SH	1SH	1SH
Contact material	Cu	Cu	Cu
Max. Rated Switching Current			
Max. Switching Voltage	900VDC	900VDC	900VDC
Max. switching power	96kW	160kW	160kW
Contact rating(Resistive load)	30A 450VAC	50A 450VDC	50A 450VDC
Coil Ratings			
Nominal Voltage	12VDC to 24VDC	12VDC to 24VDC	12VDC to 24VDC
Power consumption	3.6W, 3.8W	3.6W, 3.8W	5.5W, 6W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2200Vrms	2200Vrms	2200Vrms
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	30ms / 10ms
Mechanical Endurance min.	2 x 10 ⁵ OPS	2 x 10 ⁵ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	1 x 10 ⁴ OPS	1 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type(coil/loads)	Lead Wire	Lead Wire	Lead Wire
Safety approval ratings			
File No.			
Safety approval ratings			

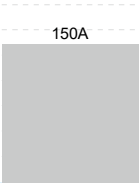
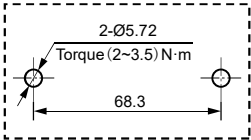
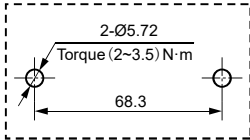
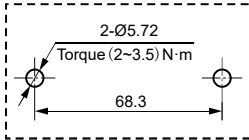
Note: Specification and dimensions in this catalog are subject to change without notice.

HVDC SELECTION CHART		Epoxy sealed series	
Type	HFZ16V-100	HFZ16V-150	HFZ16V-200
Appearance			
Dimensions(L x W x H) mm	54 x 40.3 x 58.3	80.5 x 66 x 72.3	80.5 x 66 x 72.3
Features	- Rated 100A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Pre-charging and other applications - Small size, light weight	- Rated 150A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Pre-charging and other applications - Small size, light weight	- Rated 200A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Pre-charging and other applications - Small size, light weight
Contact Ratings			
Contact Form	1SH	1SH	1SH
Contact material	Cu	Cu	Cu
Max. Rated Switching Current			
Max. Switching Voltage	900VDC	900VDC	900VDC
Max. switching power	320kW	480kW	640kW
Contact rating(Resistive load)	100A 450VAC	150A 450VDC	200A 450VDC
Coil Ratings			
Nominal Voltage	12VDC to 24VDC	9VDC to 36VDC	9VDC to 36VDC
Power consumption	5.5W, 6W	Keep the power 2W	Keep the power 2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2200Vrms	2000Vrms	2000Vrms
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	30ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	2 x 10 ⁵ OPS	2 x 10 ⁵ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	1 x 10 ⁴ OPS	1 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type(coil/loads)	Lead Wire	Lead Wire	Lead Wire
Safety approval ratings			
File No.			
Safety approval ratings			

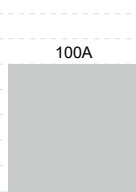
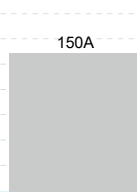
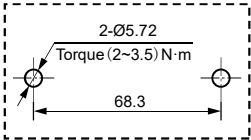
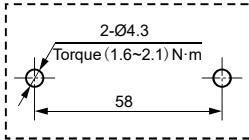
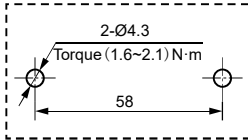
Note: Specification and dimensions in this catalog are subject to change without notice.

HVDC SELECTION CHART		Epoxy sealed series	
Type	HFZ16V-250	HFZ16V-50P	HFZ16V-100P
Appearance			
Dimensions(L x W x H) mm	80.5 x 66 x 72.3	54 x 40.3 x 60.3	54 x 40.3 x 60.3
Features	- Rated 200A switching capability - No polarity on the load and the coil - The relay has epoxy resin encapsulation and sealing structure, which can ork in explosive or hazardous environment. - Pre-charging and other applications - Small size,light weight	- Rated 50A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can ork in explosive or hazardous environment. - Small size,light weight	- Rated 100A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can ork in explosive or hazardous environment. - Small size,light weight
Contact Ratings			
Contact Form	1SH	1SH	1SH
Contact material	Cu	Cu	Cu
Max. Rated Switching Current			
Max. Switching Voltage	900VDC	900VDC	900VDC
Max.switching power	800kW	160kW	320kW
Contact rating(Resistive load)	250A 450VDC	50A 450VDC 50A 750VDC	100A 450VDC 100A 750VDC
Coil Ratings			
Nominal Voltage	9VDC to 36VDC	12VDC to 24VDC	12VDC to 24VDC
Power consumption	Keep the power 2W	5.5W,6W	5.5W,6W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2000Vrms	2200Vrms	2200Vrms
Ambient Temperature	-40℃ to 85℃	-40℃ to 85℃	-40℃ to 85℃
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	30ms / 10ms
Mechanical Endurance min.	2 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Electrical Endurance min.	1 x 10 ⁴ OPS	1 x 10 ⁴ OPS	1 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type(coil/loads)	Lead Wire	Lead Wire	Lead Wire
Safety approval ratings			
File No.			
Safety approval ratings			

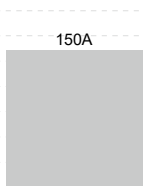
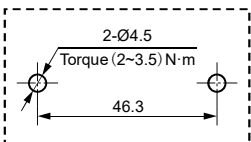
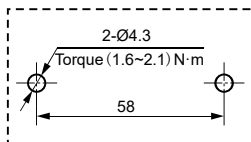
Note: Specification and dimensions in this catalog are subject to change without notice.

HVDC SELECTION CHART		Epoxy sealed series	
Type	HFZ16V-150P	HFZ16V-200P	HFZ16V-250P
Appearance			
Dimensions(L x W x H) mm	80.5 x 66 x 72.3	80.5 x 66 x 72.3	80.5 x 66 x 72.3
Features	- Rated 150A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight	- Rated 200A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight	- Rated 250A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment.
Contact Ratings			
Contact Form	1SH	1SH	1SH
Contact material	Cu	Cu	Cu
Max. Rated Switching Current			
Max. Switching Voltage	900VDC	900VDC	900VDC
Max. switching power	480kW	640kW	800kW
Contact rating(Resistive load)	150A 450VDC 150A 750VDC	200A 450VDC 200A 750VDC	250A 450VDC 250A 750VDC
Coil Ratings			
Nominal Voltage	9VDC to 36VDC	9VDC to 36VDC	9VDC to 36VDC
Power consumption	Keep the power 2W	Keep the power 2W	Keep the power 2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2000Vrms	2000Vrms	2000Vrms
Ambient Temperature	-40℃ to 85℃	-40℃ to 85℃	-40℃ to 85℃
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	30ms / 10ms
Mechanical Endurance min.	2 x 10 ⁵ OPS	2 x 10 ⁵ OPS	2 x 10 ⁵ OPS
Electrical Endurance min.	1 x 10 ³ OPS	1 x 10 ³ OPS	1 x 10 ³ OPS
Layout (Bottom view)			
Terminal Type(coil/loads)	Lead Wire	Lead Wire	Lead Wire
Safety approval ratings			
File No.			
Safety approval ratings			

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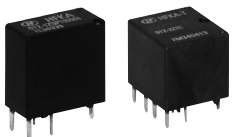
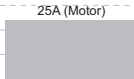
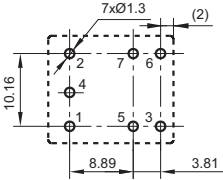
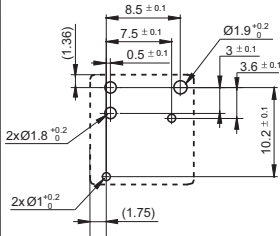
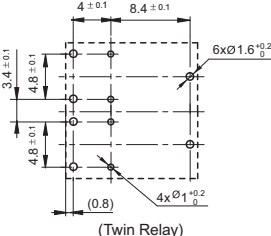
HVDC SELECTION CHART		Epoxy sealed series	
Type	HFZ16V-300P	HFZ18V-100P	HFZ18V-150P
Appearance			
Dimensions(L x W x H) mm	100 x 80 x 64.2	68 x 50.6 x 58.3	68 x 50.6 x 58.3
Features	- Rated 300A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight	- Rated 100A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight	- Rated 150A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight
Contact Ratings			
Contact Form	1SH	1SH	1SH
Contact material	Cu	Cu	Cu
Max. Rated Switching Current			
Max. Switching Voltage	900VDC	900VDC	900VDC
Max. switching power	800kW	320kW	480kW
Contact rating(Resistive load)	300A 450VDC 300A 750VDC	100A 450VDC 100A 750VDC	150A 450VDC 150A 750VDC
Coil Ratings			
Nominal Voltage	9VDC to 36VDC	12VDC to 24VDC	12VDC to 24VDC
Power consumption	Keep the power 2W	5.8.W, 5.2W	5.8.W, 5.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2000Vrms	2000Vrms	2000Vrms
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	30ms / 10ms
Mechanical Endurance min.	2 x 10 ⁵ OPS	2 x 10 ⁵ OPS	2 x 10 ⁵ OPS
Electrical Endurance min.	1 x 10 ³ OPS	1 x 10 ³ OPS	1 x 10 ³ OPS
Layout (Bottom view)			
Terminal Type(coil/loads)	Lead Wire	Lead Wire	Lead Wire
Safety approval ratings			
File No.			
Safety approval ratings			

Note: Specification and dimensions in this catalog are subject to change without notice.

HVDC SELECTION CHART			Epoxy sealed series
Type	HFZ20V-150P	HFZ20V-200P	
Appearance			
Dimensions(L x W x H) mm	54 x 40.3 x 60.3	68 x 50.6 x 58.3	
Features	- Rated 150A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight	- Rated 200A switching capability - Coil does not require polarity, contact load has polarity - The relay has epoxy resin encapsulation and sealing structure, which can work in explosive or hazardous environment. - Small size, light weight	
Contact Ratings			
Contact Form	1SH	1SH	
Contact material	Cu	Cu	
Max. Rated Switching Current			
Max. Switching Voltage	200VDC	200VDC	
Max. switching power	300kW	400kW	
Contact rating(Resistive load)	150A 200VDC	200A 200VDC	
Coil Ratings			
Nominal Voltage	12VDC to 24VDC	12VDC to 24VDC	
Power consumption	5.8.W, 5.2W	5.8.W, 5.2W	
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	
Dielectric Strength (Between coil and contacts)	2000Vrms	2000Vrms	
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	
Operate / Release Time max.	30ms / 10ms	30ms / 10ms	
Mechanical Endurance min.	1 x 10 ⁶ OPS	2 x 10 ⁵ OPS	
Electrical Endurance min.	6 x 10 ³ OPS	1 x 10 ⁴ OPS	
Layout (Bottom view)			
Terminal Type(coil/loads)	Lead Wire	Lead Wire	
Safety approval ratings			
File No.			
Safety approval ratings			

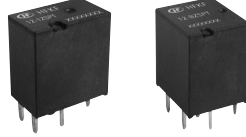
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFKM	HFKC / HFKC-T	HFKA / HFKA-T
Appearance			
Dimensions(L x W x H) mm	17.5 x 15.0 x 19.5	12.0 x 12.9 x 9.9	14.0 x 15.4 x 13.5 (Twin)
Features	• Six different contact arrangements • PCB terminals	• Subminiature relay • 4g weight • The reflow soldering version (open vent hole) available (HFKC-T)	• 25A motor lock load • Extremely small relay • Single and twin version available • Coil wire insulation class H (at 180°C) • HFKA-T (reflow soldering version) available
Contact Ratings			
Contact Form	1A, 1B, 1C, 1U, 1V, 1W	1A, 1C	1A, 2A, 1C, 2C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage		16VDC	16VDC
Rated Load (Resistive load)	1A: 15A 13.5VDC 1B: 10A 13.5VDC 1C: NO/NC 15A/10A 13.5VDC 1U: 2 x 7A 13.5VDC 1V: 2 x 5A 13.5VDC 1W: NO/NC 2 x 7A/2 x 5A 13.5VDC	20A 13.5VDC	Motor: 25A 13.5VDC
Coil Ratings			
Rated Voltage	6, 12VDC	6, 10, 12VDC	12VDC
Nominal Operating Power	1.1W	0.55W, 0.8W	0.64W, 0.8W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 85°C	-40°C to 125°C	HFKA: -40°C to 85°C HFKA-T: -40°C to 125°C
Operate / Release Time max.	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	2 x 10 ⁵ OPS	3 x 10 ⁵ OPS (at 20A 13.5VDC)	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Cross Reference	TE: V23072	PANASONIC: CP TE: V23086 SONGCHUAN: 102	Single Relay: OMRON: G8N-1 Twin Relay: OMRON: G8NW Single Relay: PANASONIC: TB Twin Relay: PANASONIC: TB SONGCHUAN: 103

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AUTOMOTIVE RELAY SELECTION CHART

Type	HFKAH	HFKF/HFKF-T	HFKJ/ HFKJ-T
Appearance			
Dimensions(L x W x H) mm	14.0 x 15.4 x 13.5	12.0 x 14.0 x 7.3(Single relay)	13.6 x 12.0 x 14.0
Features	•25A motor locked load •Extremely small relay •A type and C type available •Single and twin version available •30A fuse specification available	•25A motor locked load •Extremely small relay •Change-over contact version •Single and twin(8 pins or 10 pins) version available •Coil wire insulation class H (180°C) •HFKF-T (reflow soldering version) available	•25A motor locked load •Extremely small relay •Change-over contact version •Coil wire insulation class H (180°C) •HFKJ-T(reflow soldering version) available

Contact Ratings

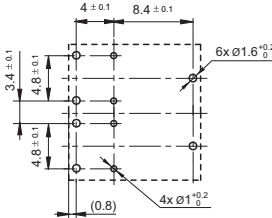
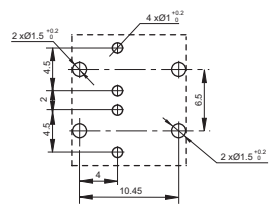
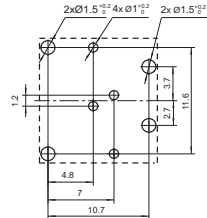
Contact Form	1C, 2C, 1A, 2A	1C, 2C,BZ	BZ(Twin relay)
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current	70 A 60 A 50 A 40 A 30 A 20 A 10 A 25A (Motor)	70 A 60 A 50 A 40 A 30 A 20 A 10 A 25A (Motor)	70 A 60 A 50 A 40 A 30 A 20 A 10 A 25A(Motor)
Max. Switching Voltage	16VDC	16VDC	16VDC
Rated Load (Resistive load)	1A 6VDC	25A 14VDC(Motor)	25A 14VDC(Motor)

Coil Ratings

Rated Voltage	12VDC	12VDC	12VDC
Nominal Operating Power	0.48W,0.64W, 0.8W	0.9W, 0.655W	0.9W, 0.655W

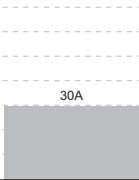
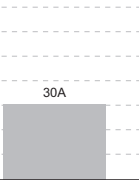
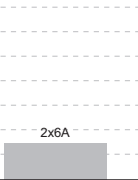
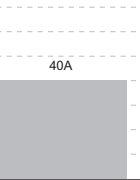
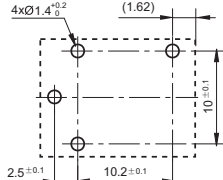
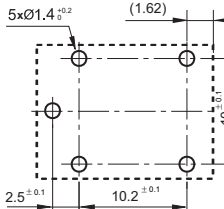
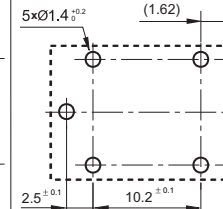
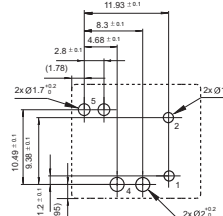
Specifications

Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	HFKF: -40°C to 85°C HFKF-T: -40°C to 125°C	HFKJ: -40°C to 85°C HFKJ-T: -40°C to 125°C
Operate / Release Time max.	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	See "CONTACT DATA"	See "CONTACT DATA"	See "CONTACT DATA"

Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Cross Reference		PANASONIC: ACTE/ACJ NEC: EX1/EX2 OMRON:G8NDL/G8K FUJITSU:FTR-G1	PANASONIC: ACTE/ACJ NEC: EX1/EX2 OMRON:G8NDL/G8K FUJITSU:FTR-G1

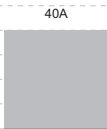
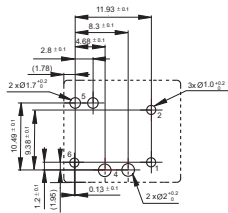
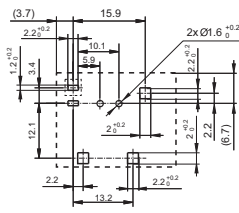
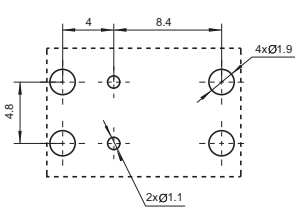
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFKH	HFKW	HFKW-SH	HFKT/HFKT-T
Appearance				
Dimensions(L x W x H) mm	15.7 x 12.5 x 14.0	15.7 x 12.5 x 14.0	15.7 x 12.5 x 14.0	18.3 x 16.0 x 15.9
Features	- Tight structure and light weight - High current contact capacity (Carrying current: 35A/10min 25A/1h) - Improved heat resistance	- Small size - High current contact capacity (HFKW:carrying current 35A/10min,25A/1h) - Improved heat resistance - Reflow soldering version avail	- Small size - Double NO contacts(HFKW-SH) - Standard terminal pitch employed - Plastic sealed and flux proofed types available	- Max.continuous current 50A - Max.making current 200A - Extended temp. range up to 125°C - With highly established reliability - Strong resistance ability to shock & vibration - Reflow soldering version available
Contact Ratings				
Contact Form	1A, 1C	1A, 1C	1U	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current				
Max. Switching Voltage	16VDC	16VDC	16VDC	16VDC
Rated Load (Resistive load)	30A 13.5VDC	1A:20A 13.5VDC 1C:NO/NC 20A/10A 13.5VDC	2x6A 13.5VDC	40A 13.5VDC
Coil Ratings				
Rated Voltage	12VDC	6, 9, 10, 12VDC	6, 9, 10, 12VDC	10, 12VDC
Nominal Operating Power	0.64W	0.6W	1W	0.818W, 0.833W
Specifications				
Insulation Resistance	100MΩ	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 85°C	standard: -40°C to 85°C Flux proofed:-40°C to 125°C	standard: -40°C to 85°C Flux proofed:-40°C to 125°C	-40°C to 125°C
Operate / Release Time max.	10ms / 5ms	10ms / 5ms	10ms / 5ms	10ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	2 x 10 ⁶ OPS
Electrical Endurance min.	See "CONTACT DATA"	See "CONTACT DATA"	See "CONTACT DATA"	1 x 10 ⁵ OPS
Layout (Bottom view)				
Terminal Type	PCB	PCB	PCB	PCB
Cross Reference	OMRON:G8QN PANASONIC:JJM FUJITSU:FBR51/52 SONGCHUAN:895	OMRON: G8QN PANASONIC: JJM FUJITSU: FBR51/52 SONGCHUAN:895	PANASONIC: JJMD SONGCHUAN:895	TE V23201

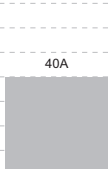
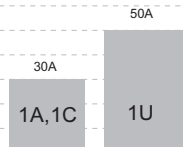
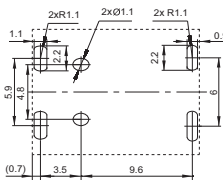
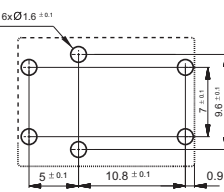
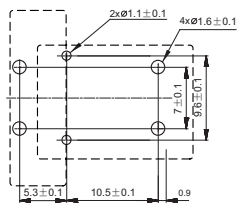
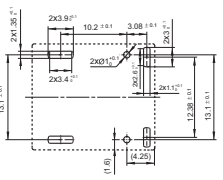
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFKT-L/HFKT-LT	HFKP	HFK7-T
Appearance			
Dimensions(L x W x H) mm	18.3 x 16.0 x 15.9	26.5 x 22.0 x 22.3	14.0 x 9.2 x 14.0
Features	• Double coil magnetic latching automotive relay • Max. continuous current 60A • Max. making current 200A • Extended temp. range up to 125°C • With highly established reliability • Strong resistance ability to shock & vibration • Reflow soldering version available	• 45A switching capability • PCB terminals • 1 Form A & 1 Form C contact arrangement	• Max.continuous current 30A • Max.making current 100A • Extended temp. range up to 125°C • With highly established reliability • Strong resistance ability to shock & vibration
Contact Ratings			
Contact Form	1A	1A, 1C	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage	16VDC	75VDC	16VDC
Rated Load (Resistive load)	40A 13.5VDC	1A: 45A 13.5VDC 1C: NO/NC 45A/30A 13.5VDC	30A 14VDC
Coil Ratings			
Rated Voltage	12VDC	6, 12, 24VDC	12VDC
Nominal Operating Power	7.2W(Set coil) 7.579W(Reset coil)	1.2W, 1.6W, 1.9W	0.48W
Specifications			
Insulation Resistance	100MΩ	500MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max.	10ms / 5ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	See "CONTACT DATA"
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Cross Reference	TE: V23201-L	OMRON: G8PE TE: V23076/V23133 FUJITSU: FRL274 SONGCHUAN:822E/822	PANASONIC: ACTBP

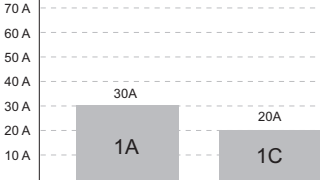
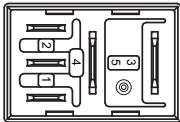
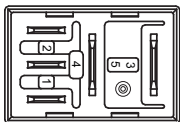
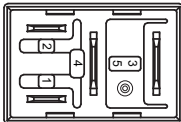
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFK8-T	HFK9-T	HFK9-TC	HFK10-T
Appearance				
Dimensions(L x W x H) mm	14.4 x 11.0 x 16.0	17.8 x 13.0 x 16.4	20.0 x 17.8 x 17.6	18.9 x 15.9 x 17.0
Features	• Max.continuous current 40A • Max.making current 120A • Extended temp. range up to 125°C • With highly established reliability • Strong resistance ability to shock & vibration • Reflow soldering version available	• Max.continuous current 50A • Max.making current 200A • Extended temp. range up to 125°C • With highly established reliability • Strong resistance ability to shock & vibration	• Max. Rated Voltage 450VDC • Max. Pre-charging current:20A • Reflow soldering version available	• Max.continuous current 70A • Max.making current 200A • Extended temp. range up to 125°C • With highly established reliability • Strong resistance ability to shock & vibration • Reflow soldering version available
Contact Ratings				
Contact Form	1U	1A, 1C, 1U	1A	1U
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current				
Max. Switching Voltage	16VDC	16VDC	500VDC	16VDC
Rated Load (Resistive load)	40A 14VDC	1A,1C: NO/NC 30A/15A 14VDC 1A:50A 14VDC	20A/0A,10A/10A, 20A/20A 450VDC 15A/0A, 20A/20A 330VDC	60A 13.5VDC
Coil Ratings				
Rated Voltage	12VDC	12VDC	12VDC	12VDC
Nominal Operating Power	0.64W	0.9W,0.64W	2.88W, 1.31W	0.45W
Specifications				
Insulation Resistance	100MΩ	100MΩ	1000MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	50Ω 2500VAC 110Ω 1800VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C ~ 85°C	HFK10-T:-40°C to 125°C
Operate / Release Time max.	10ms / 10ms	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ 次	1 x 10 ⁷ OPS
Electrical Endurance min.	See "CONTACT DATA"	See "CONTACT DATA"	See "CONTACT DATA"	See "CONTACT DATA"
Layout (Bottom view)				
Terminal Type	PCB	PCB	PCB	PCB
Cross Reference	PANASONIC: ACTL/ACNH FUJITSU:FBR53	PANASONIC: ACTC OMRON:G8PM		FUJITSU: FBR59/HW

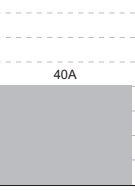
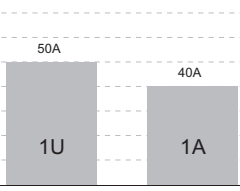
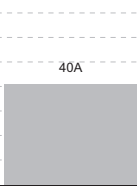
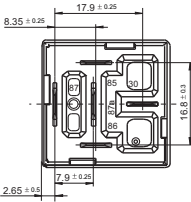
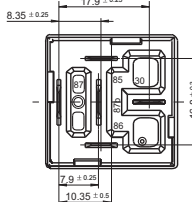
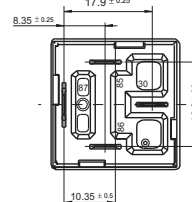
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFV6	HFV6-G	HFV6V
Appearance			
Dimensions(L x W x H) mm	22.8 x 15.3 x 25.0	22.8 x 15.3 x 25.0	22.8 x 15.3 x 25.0
Features	• 30A switching capability • Ambient temp. range up to 125°C • 1 Form A & 1 Form C contact arrangement • Plastic sealed and dust protected types available	• Ambient temp. range up to 125°C • 1 Form A & 1 Form C contact arrangement • Plastic sealed and dust protected types available	• Noise level ≤ 50dB (A) • 30A switching capability • Ambient temp. range up to 125°C • 1 Form A contact arrangement
Contact Ratings			
Contact Form	1A, 1C	1A, 1C	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage			
Rated Load (Resistive load)	1A: 30A 13.5VDC 1C: NO/NC 20A/10A 13.5VDC 1A: 20A 27VDC 1C: NO/NC 20A/10A 27VDC	1A: 35A 13.5VDC 1C: NO/NC 35A/20A 13.5VDC	20A 13.5VDC
Coil Ratings			
Rated Voltage	12, 24VDC	12VDC	12VDC
Nominal Operating Power	1.2W, 1.3W, 1.4W, 1.6W, 1.8W	1.16W, 1.37W	0.567W, 0.687W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max. (Parallel transient suppression diode or resistors)	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	QC	QC	QC
Cross Reference	OMRON: G8HN PANASONIC: CM TE: V23074-A SONGCHUAN: 871	OMRON: G8HE TE: V23074-H	TE: V23145-B

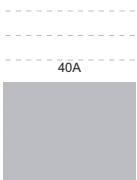
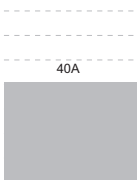
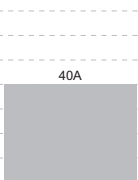
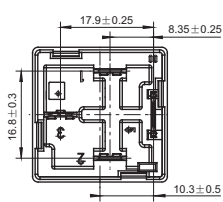
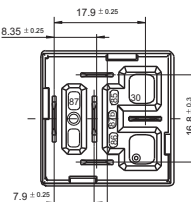
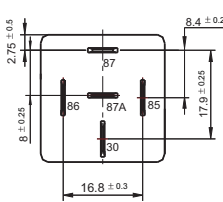
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFV15	HFV15-SH	HFV15-L
Appearance			
Dimensions(L x W x H) mm	26.0 x 26.0 x 22.7	26.0 x 26.0 x 22.7	26.0 x 26.0 x 22.7
Features	40A switching capability 1Form A & 1 Form C contact arrangement	- Contact type: SH, two types of wiring methods, a: double NO contacts; b: H-bridge, one NO contact. - Wiring method a: 2x25A contact switching capability, maximum continuous current 2x25A(at 85°C) - Wiring method b: 54VDC contact switching capability, maximum continuous current 40A(at 85°C) - Plastic sealed and dust protected types available	40A switching capability - Extended temp. range up to 125°C - Max. continous current 60A - Max. making current 150A - Plastic sealed and dust protected types available - QC terminal and PCB terminal available - Pin assignment similar to ISO 7588 part 1
Contact Ratings			
Contact Form	1A,1C	1U	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage			
Rated Load (Resistive load)	1A: 40A 13.5VDC 1C: NO/NC 40A/30A 13.5VDC 1A: 20A 27VDC 1C: NO/NC 20A/10A 27VDC	SH(Wiring method a): 2 x 25A 13.5VDC 2 x 15A 27VDC SH(Wiring method b): 25A 54VDC	40A 13.5VDC
Coil Ratings			
Rated Voltage	12,24VDC	12,24VDC	12VDC
Nominal Operating Power	1.6W, 1.8W, 2W	1.6W, 1.8W, 2W	5.76W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max.	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	QC	QC	QC,PCB
Cross Reference	PANASONIC: CB OMRON: G8JN TE: V23134-A/B, V23136 V23234-A/B, VF4A SONGCHUAN: 896/896H	TE: V23134-M SONGCHUAN: 896/2AH	TE: V23134-L

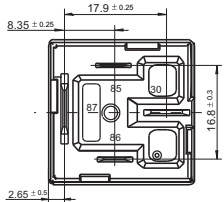
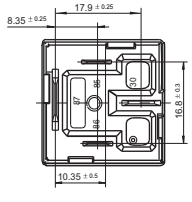
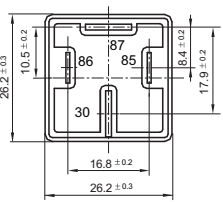
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFV15A	HFV15N	HFV4
Appearance			
Dimensions(L x W x H) mm	26.0 x 26.0 x 31.7	26.0 x 26.0 x 22.7	26.2 x 26.2 x 23.7
Features	• ISO 7588-1(1998) Standard terminal • Extended temp. range up to 125°C • Continuous current: 40 A • 1 Form A • Meets DIN ISO 22628 unleaded standard	• 40A switching capability • Various mounting terminations available • 1 Form A (2x87) contact arrangement	• 40A switching capability • Various mounting terminations available • 1 Form A & 1 Form C contact arrangement • Plastic sealed and dust protected types available
Contact Ratings			
Contact Form	1H	1A	1A, 1C
Contact Material		AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage			
Rated Load (Resistive load)	40A 13.5VDC	40A 13.5VDC	1A: 40A 13.5VDC 20A 27VDC 1C: NO/NC 40A/30A 13.5VDC 20A/10A 27VDC
Coil Ratings			
Rated Voltage	12, 24VDC	12VDC	6, 12, 24VDC
Nominal Operating Power	1.7W, 1.8W, 1.9W, 2.0W	1.6W, 1.8W	1.6W, 1.7W, 1.8W, 1.9W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max. (Parallel transient suppression diode or resistors)	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	See "CONTACT DATA"	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	QC	QC	QC, PCB
Cross Reference	PANASONIC: CB OMRON: G8JN SONGCHUAN: 896/896H	TE: V23134-C	OMRON: G8JN PANASONIC: CB TE: V23134-A/B, V23234-A/B, V23136-A/B, VF4A SONGCHUAN: 896/896H

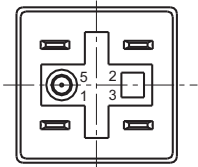
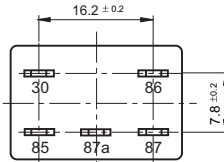
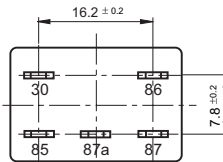
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFV16	HFV16-L	HFV7
Appearance			
Dimensions(L x W x H) mm	26.0 x 26.0 x 22.7	26.0 x 26.0 x 17.9	26.5 x 26.5 x 25.2
Features	70A switching capability - Extended temp. range up to 125°C 1Form A contact arrangement	70A switching capability - Extended temp. range up to 125°C - Max. continuous current 80A - Max. making current 300A - Plastic sealed and dust protected types available - QC terminal and PCB terminal available - Pin assignment similar to ISO 7588 part 1	70A switching capability - Extended temp. range up to 125°C - With transient suppression resistor available 1 Form A contact arrangement - Plastic sealed and dust protected types available
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current	70A	70A	70A
Max. Switching Voltage			
Rated Load (Resistive load)	70A 13.5VDC 40A 27VDC	70A 13.5VDC	70A 13.5VDC 40A 27VDC
Coil Ratings			
Rated Voltage	12,24VDC	12VDC	6, 12, 24VDC
Nominal Operating Power	1.6W, 1.8W, 2W	5.76W	1.6W, 1.8W, 2.0W, 2.2W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max (Parallel transient suppression diode or resistors)	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	QC	QC, PCB	QC, PCB
Cross Reference	PANASONIC: CB OMRON: G8JR SONGCHUAN: 897 TE:V23134-J/V23136-J	TE: V23136-L	OMRON: G8JR PANASONIC: CB TE: V23134-J/V23136-J

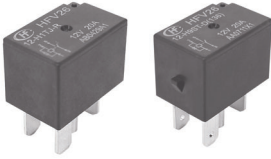
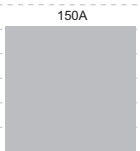
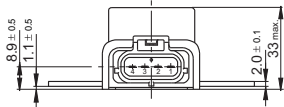
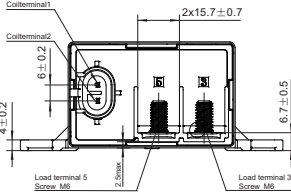
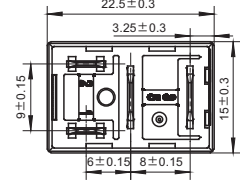
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFV11	HFV9	HFV9-G
Appearance			
Dimensions(L x W x H) mm	15.6 x 15.2 x 16.4	22.5 x 15.0 x 25.0	22.5 x 15.0 x 25.0
Features	• Miniaturized package • Extended temp. range up to 125°C • 2.8mm QC terminals • 1 Form A contact arrangement	• Extended temp. range up to 125°C • 2.8mm QC terminals • 1 Form A & 1 Form C contact arrangement	• Extended temp. range up to 125°C • 2.8mm QC terminals • 1 Form A & 1 Form C contact arrangement
Contact Ratings			
Contact Form	1A	1A, 1C	1A, 1C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage			
Rated Load (Resistive load)	20A 13.5VDC	1A: 20A 13.5VDC 20A 27VDC 1C: NO/NC 20A/10A 13.5VDC 20A/10A 27VDC	1A: 35A 13.5VDC 1C: NO: 35A/20A13.5V NC:20A/10A 27V
Coil Ratings			
Rated Voltage	12VDC	12, 24VDC	12,24VDC
Nominal Operating Power	0.95W, 1.1W	1.3W, 1.5W, 1.6W, 1.8W	1.2W, 1.4W,1.6W, 1.8W
Specifications			
Insulation Resistance	100MΩ	100MΩ	100MΩ
Dielectric Strength (Between coil and contacts)	500VAC	500VAC	500VAC
Ambient Temperature	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max (Parallel transient supression diode or resistors) .	10ms / 10ms	10ms / 10ms	10ms / 10ms
Mechanical Endurance min.	1 x 10 ⁶ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	QC	QC	QC
Cross Reference	OMRON: G8VA/G8VL TE: VH28	OMRON: G8V TE: VJ28 SONGCHUAN:301	OMRON: G8V-RH TE: VJ28 SONGCHUAN:301

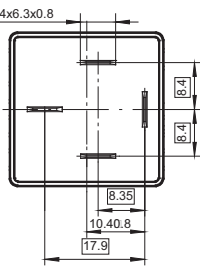
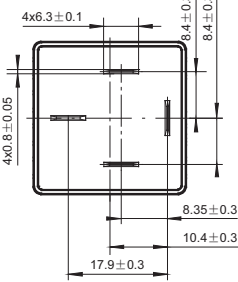
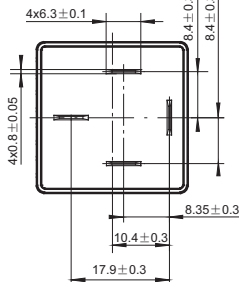
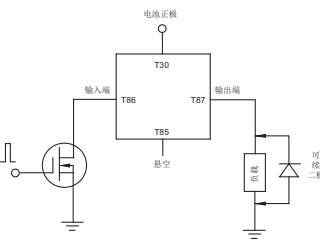
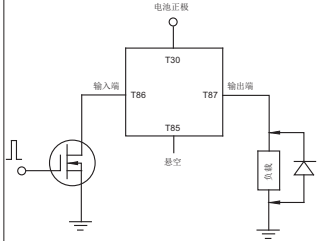
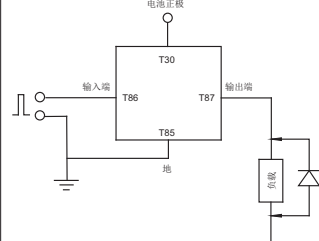
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFV12	HFV20-150	HFV26
Appearance			
Dimensions(L x W x H) mm	86.0 x 83.0 x 33.0	99.0 x 71.1 x 40.0	22.5 x 15.0 x 15.7
Features	- Battery Disconnect Relay (Energy-management) 2 coils latching automotive relay - Continuous current of 190 A at 85°C - Load terminal connection: screw connection(M8 bolt) - Coil terminal connection: 4-pin connector (AMP 0.070 series) - Weight: Approx.210g	- Max. continuous current : 130A (85°C) 150A (23°C) - Covers both 12VDC and 24VDC applications - Plastic sealed and dust protect types available - Ambient Temperature -40°C~ +125°C - Strong impact (50G) and vibration resistance - With separate mounting plate	- Low height plug-in relay based on Micro ISO - Max.continuous current 20A(85°C) - Max.making current 100A - Strong resistance ability to shock & vibration - Plastic sealed and dust protect types available - RoHS & ELV compliant
Contact Ratings			
Contact Form	1A	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage			
Rated Load (Resistive load)	Inductive:180A 14VDC 100A 14VDC	12VDC 150A 24VDC 150A	14VDC 30A
Coil Ratings			
Rated Voltage	12VDC	12, 24VDC	12VDC
Nominal Operating Power	28.8W	3.5W, 3.9W, 3.2W, 4.1W	0.9W, 1.0W
Specifications			
Insulation Resistance	100MΩ	Before test: 100MΩ After test: 20MΩ	Before test: 100MΩ After test: 10MΩ
Dielectric Strength (Between coil and contacts)	500VAC	1000VAC	500VAC
Ambient Temperature	-40°C to 120°C	-40°C to 125°C	-40°C to 125°C
Operate / Release Time max (Parallel transient supression diode or resistors) .	20ms / 20ms	35ms / 20ms	10ms / 10ms
Mechanical Endurance min.	2 x 10 ⁵ OPS	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS
Electrical Endurance min.	5 x 10 ⁴ OPS (at 100A 14VDC) 1.5 x 10 ⁴ OPS (at 180A 14VDC)	See "CONTACT DATA"	See "CONTACT DATA"
Layout (Bottom view)			
Terminal Type	QC & Screw	Bolt	QC
Cross Reference	TE:V23130/BDS-A		PANASONIC: ACVN

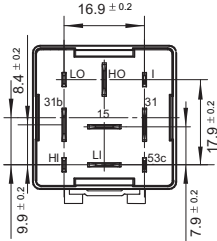
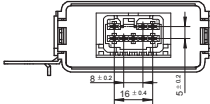
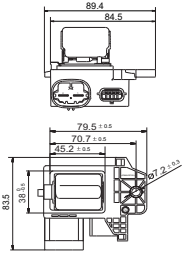
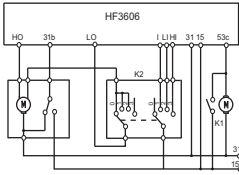
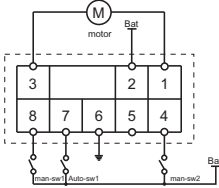
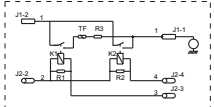
Note: Specification and dimensions in this catalog are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HFS60-A	HFS60-B	HFS60-C
Appearance			
Dimensions (L x W x H) mm	27.7 x 27.7 x 26.8	27.7 x 27.7 x 26.8	27.7 x 27.7 x 26.8
Features	- No noise - High electrical endurance: 9×10^5 OPS or more - Extended temp. range up to 125°C - Low quiescent current: typ. 20 μ A, max. 100 μ A - Pulse width modulation (PWM) - Embedded protection functions - Ingress protection: IP6K7 - RoHS & ELV compliant	- No noise - High electrical endurance: 1.2×10^6 OPS or more - Extended temp. range up to 125°C - Low quiescent current: max. 13 μ A - Pulse width modulation (PWM) - Embedded protection functions - Ingress protection: IP6K7 - RoHS & ELV compliant	- No noise - High electrical endurance: 1.5×10^6 OPS or more - Extended temp. range up to 125°C - Low quiescent current: max. 13 μ A - Pulse width modulation (PWM) - Embedded protection functions - Ingress protection: IP6K7 - RoHS & ELV compliant
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Rated Load	30A @ 23°C 18A @ 100°C 14A @ 125°C	35A @ 23°C 25A @ 105°C 18A @ 125°C	35A @ 23°C 26A @ 85°C 21.5A @ 125°C
Normal Voltage	12VDC	12VDC	12VDC
Intermittent Time	400 μ s max. (@1 Ω resistive load)	640 μ s max. (@1 Ω resistive load)	1000 μ s max. (@1 Ω resistive load)
Wiping Time	115 μ s max. (@1 Ω resistive load)	1300 μ s max. (@1 Ω resistive load)	3600 μ s max. (@1 Ω resistive load)
Flashing Frequency	---	---	---
Lamp Failure Flashing Frequency	---	---	---
Delaying Time	---	---	---
Energizing Ratio	---	---	---
Electrical Endurance min.	9×10^5 OPS	1.2×10^6 OPS	1.5×10^6 OPS
Weight	33x(1 $\pm$ 3.5%) g	33x(1 $\pm$ 3.5%) g	33x(1 $\pm$ 3.5%) g
Layout (Bottom view)			
Wiring Diagram			

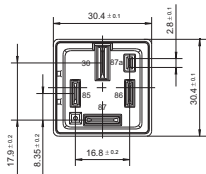
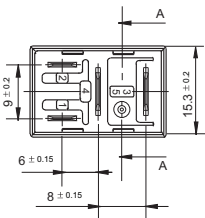
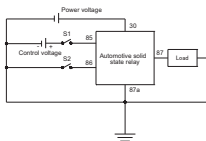
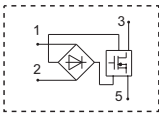
Note: The above product with brackets are available; PCB layout differences for different specifications . please see each data sheets. All the specifications and dimensions are subject to change without notice.

AUTOMOTIVE RELAY SELECTION CHART

Type	HF3606 (Wiper Controller)	HF3605 (Window Lifter Controller)	HF3615 (Cooling Fan Control Module)
Appearance			
Dimensions (L x W x H) mm	30.0 x 30.0 x 40.0	87.0 x 29.0 x 82.0	89.4 x 83.5 x 64.4
Features	- Wiper operation (HS, LS, intermit) controls - Motor stall protection - Solid base design, stable structure - Surface mounting technology, advanced craftwork	- Use MCU control circuit to ensure stable performance - With manual & automatic downfunction - With overload protection - Connect with DJ7081-2.3-20 easy to mount - Surface mounting technology, advanced craftwork	- High and low speed control of cooling fan - Low speed overheating protection function - Pluggable terminal - Ingress protection: IP6K9K - Material flammability grade V-0 - RoHS & ELV compliant
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 90°C
Rated Load	Wiper: 50W 12VDC	Simulation Motor Load: 10A 12VDC	---
Norminal Voltage	12VDC	12VDC	12VDC
Intermittent Time	4s ± 0.6s(0Ω) 12s ± 1.2s(10kΩ)	---	---
Wiping Time	3.5s + 2.5s	---	---
Flashing Frequency	---	---	---
Lamp Failure Flashing Frequency	---	---	---
Delaying Time	---	---	---
Energizing Ratio	---	---	---
Electrical Endurance min.	1 x 10 ⁵ OPS	5 x 10 ⁴ OPS	See "CONTACT DATA"
Weight	36g	70g	Approx 132 g
Layout (Bottom view)			
Wiring Diagram			

Note: The above product with brackets are available; PCB layout differences for different specifications .please see each data sheets. All the specifications and dimensions are subject to change without notice.

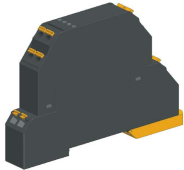
AUTOMOTIVE RELAY SELECTION CHART

Type	HF3628 (Solid State Relay)	HF3631 (Solid State Relay)	
Appearance			
Dimensions (L x W x H) mm	30.4 x 30.4 x 25.0	22.8 x 15.3 x 25.0	
Features	• No noise • High electrical endurance • Ambient temp.: range up to 125°C • Low quiescent current (max. 20μA) • Pulse width modulation (PWM) • Ingress protection: IP6K9K • Pin assignment compliant with ISO 7588 • RoHS & ELV compliant	• No noise • High electrical endurance • The working temperature is as high as 110°C • Low quiescent current(max. 20μA) • Pulse width modulation (PWM) • Ingress protection: IP50	
Ambient Temperature	-40°C to 125°C	-40°C to 110°C	
Rated Load	---	---	
Norminal Voltage	12VDC	12VDC	
Intermittent Time	---	---	
Wiping Time	---	---	
Flashing Frequency	---	---	
Lamp Failure Flashing Frequency	---	---	
Delaying Time	---	---	
Energizing Ratio	---	---	
Electrical Endurance min.	5 x 10 ⁵ OPS	3 x 10 ⁵ OPS	
Weight	40g	7.5g	
Layout (Bottom view)			
Wiring Diagram			

Note: The above product with brackets are available; PCB layout differences for different specifications .please see each data sheets. All the specifications and dimensions are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Electromagnetic relay module

Type	HF49FD	HF49FD-3	HF49FD-4
Appearance			
Dimensions(mm)	W × H: 72 × 45	L × W × H: 32.1 × 73 × 33.7	L × W × H: 13 × 85.6 × 58
Features	● 4, 8, 12, 16, 20 and 32 channels HF49FD relay module ● Installation method:DIN35 ● Load capability 5A 250VAC/30VDC ● Screw connection and IDC plug are available for easy installation ● Relays are equipped with sockets for quick replacement and maintenance	● 4-Channel NO relay module, with a thickness of only 32.1mm ● Installation method:DIN35 ● Load capability 5A 250VAC/30VDC ● Relays are equipped with sockets for quick replacement and maintenance ● Protective cover for preventing electric shock	● 4-Channel NO relay module, with a thickness of only 13mm ● Installation method:DIN35 ● Load capability 5A 250VAC/30VDC ● Spring terminal block, quick installation and replacement

CHARACTERISTICS

Input

Nominal Voltage	12VDC, 24VDC (Allow 85% to 110% rated change range)	24VDC	12VDC, 24VDC (Allow 85% to 110% rated change range)
Power Consumption Per Channel	<260mW	<250mW	<250mW
Wiring Polarity	Polar, Apolar	Polar (pay attention to wiring polarity)	Polar (pay attention to wiring polarity)
Terminal Type	Terminal block/IDC & Terminal block	Screw terminal	Spring terminal block
Control Channel Qty	4, 8, 12, 16, 20, 32	4	4

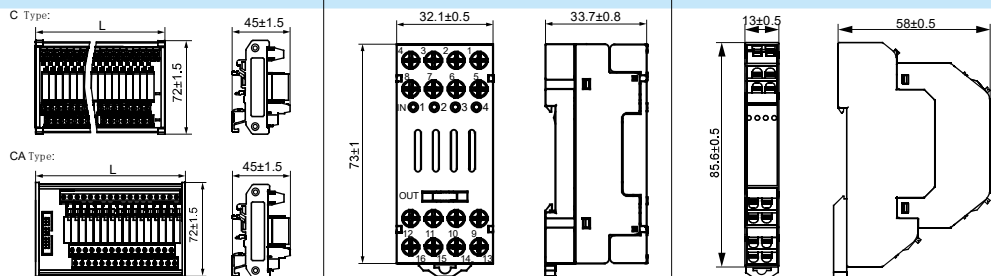
Output

Relay Specification	HF49FD	HF49FD	HF49FD
Contact Arrangement	1NO	1NO	1NO
Rated Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Rated Current	5A/Channel	5A/Channel	5A/Channel
Terminal Type	Terminal block	Screw terminal	Spring terminal block
Min. Contact Load	50mW	50mW	50mW
Max. Switching Frequency	30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)

Other

Operate / Release Time	Approx. 5ms/Approx. 2.5ms/Approx. 5ms	/	/
Creepage Distance	Between output channels ≥ 1mm Between input and output ≥ 3mm	Between output channels ≥ 1.5mm Between input and output ≥ 3mm	Between output channels ≥ 3mm Between input and output ≥ 3mm
Clearance Distance	Between output channels ≥ 1mm Between input and output ≥ 3mm	Between output channels ≥ 1.5mm Between input and output ≥ 3mm	Between output channels ≥ 3mm Between input and output ≥ 3mm
Surge Voltage (1.2/50μs)	Between output channels: 2kV Between input and output: 4kV	Between output channels: 2.5kV Between input and output: 2.5kV	Between output channels: 4kV Between input and output: 4kV
Replacement of Relay	Replaceable	Replaceable	Replaceable

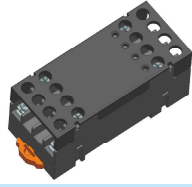
Outline Dimensions



Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Solid state relay module

Type	HFGD2	HFGD2-1	HFGD2-3
Appearance			
Dimensions(mm)	L x W x H: 41 × 85.6 × 42	L x W x H: 28 × 21.5 × 36	L x W x H: 32.1 × 73 × 33.7
Features	• 2-Channel NO AC solid state module • Installation method:DIN35 • Optocoupler isolation between input and output, withstand voltage 4kV • 5VDC to 30VDC wide voltage input range • 5A 240VAC load capacity per channel • 50Hz high speed switching capability	• Single channel AC solid state module • Small volume, suitable for 18FF relay socket, which is installed on DIN35 guide rail • Optocoupler isolation between input and output, withstand voltage 4kV • 5VDC to 30VDC wide voltage input range • Max. switching current:3A • Max. switching voltage:380VAC • 50Hz high speed switching capability	• 2-Channel AC solid state module, with a thickness of only 32.1mm • Installation method:DIN35 • Optocoupler isolation between input and output, withstand voltage 4kV • 5VDC to 30VDC wide voltage input range • 5A 240VAC load capacity per channel • Protective cover for preventing electric shock • 50Hz high speed switching capability

CHARACTERISTICS

Input

Nominal Voltage	5VDC to 30VDC	5VDC to 30VDC	5VDC to 30VDC
Power Consumption Per Channel	<220mW(@24V)	<220mW(@24V)	<250mW(@24V)
Wiring Polarity	Polar(pay attention to wiring polarity)	Polar(pay attention to wiring polarity)	Polar(pay attention to wiring polarity)
Terminal Type	Terminal block	Plug-in	Screw terminal
Control Channel Qty	2	1	2

Output

Contact Arrangement	1NO	1NO	1NO
Rated Voltage	12VAC to 240VAC	12VAC to 380VAC	250VAC
Rated Current	5A/Channel	3A/Channel	2A/Channel
Terminal Type	Terminal block	Plug-in	Screw terminal
Leakage Current	≤5μA(@240VAC)	≤5μA(@380VAC)	≤5μA(@250VAC)
Max. Switching Frequency	50Hz	50Hz	50Hz
Other			

Operate / Release Time

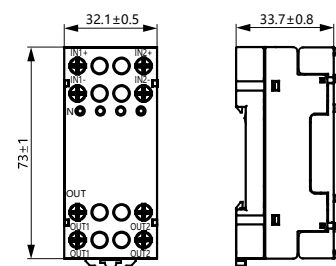
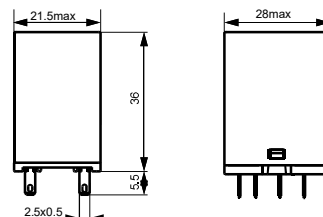
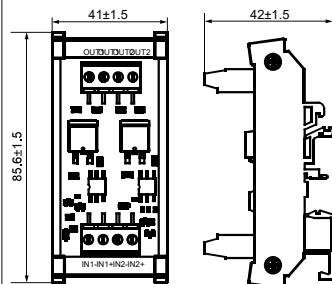
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Creepage Distance	Between output channels≥1.5mm Between input and output≥3mm	Between input and output≥3mm	Between output channels≥3mm Between input and output≥3mm
Clearance Distance	Between output channels≥1.5mm Between input and output≥3mm	Between input and output≥3mm	Between output channels≥3mm Between input and output≥3mm
Surge Voltage (1.2/50μs)	Between output channels:2.5kV Between input and output:4kV	Between input and output:4kV	Between output channels:4kV Between input and output:4kV

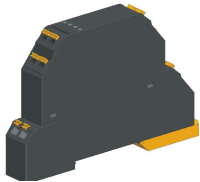
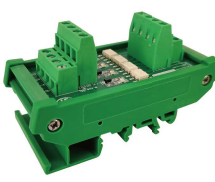
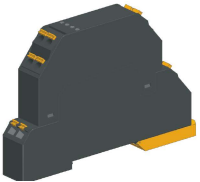
Outline Dimensions



Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Solid state relay module

Type	HF2GD2-4	HF2GD4	HF2GD4-2
Appearance			
Dimensions(mm)	L × W × H: 13 × 85.6 × 58	L × W × H: 41 × 85.6 × 47.2	L × W × H: 13 × 85.6 × 58
Features	• 2-Channel AC solid state module, with a thickness of only 13mm • Installation method: DIN35 • Optocoupler isolation between input and output, withstand voltage 4kV • 5VDC to 30VDC wide voltage input range • 2A 250VAC load capacity per channel • Spring terminal block, quick installation and replacement • 50Hz high speed switching capability	• 4-Channel DC solid state module • Installation method: DIN35 • Optocoupler isolation between input and output, withstand voltage 2.5kV • 3A 30VDC load capacity per channel • 30kHz high frequency switching capability	• 4-Channel DC solid state module, with a thickness of only 13mm • Installation method: DIN35 • Optocoupler isolation between input and output, withstand voltage 2.5kV • 3A 30VDC load capacity per channel • Spring terminal block, quick installation and replacement • 30kHz high frequency switching capability

CHARACTERISTICS

Input

Nominal Voltage	5VDC to 30VDC	24VDC (Allow 85% to 110% rated change range)	24VDC (Allow 85% to 110% rated change range)
Power Consumption Per Channel	<220mW(@24V)	<220mW(@24V)	<220mW
Wiring Polarity	Polar (pay attention to wiring polarity)	Polar (pay attention to wiring polarity)	Polar (pay attention to wiring polarity)
Terminal Type	Spring terminal block	Terminal block	Spring terminal block
Control Channel Qty	2	4	4

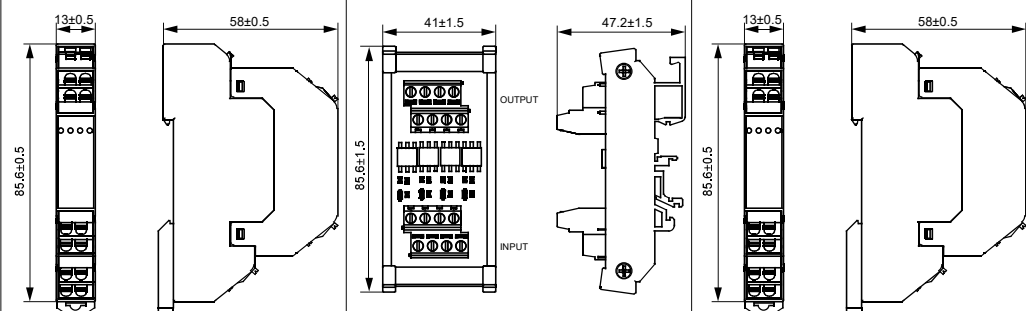
Output

Contact Arrangement	1NO	1NO	1NO
Rated Voltage	250VAC	5VDC to 30VDC	5VDC to 30VDC
Rated Current	2A/Channel	3A/Channel	3A/Channel
Terminal Type	Spring terminal block	Terminal block	Spring terminal block
Leakage Current	≤5μA(@25 0VAC)	≤10nA(@30VDC)	≤10nA(@30VDC)
Max. Switching Frequency	50Hz	30kHz	30kHz

Other

Operate / Release Time	/	/	/
Creepage Distance	Between output channels ≥3mm Between input and output ≥3mm	Between input and output ≥1.5mm	Between input and output ≥1.5mm
Clearance Distance	Between output channels ≥3mm Between input and output ≥3mm	Between input and output ≥1.5mm	Between input and output ≥1.5mm
Surge Voltage (1.2/50μs)	Between output channels: 4kV Between input and output: 4kV	Between input and output: 2.5kV	Between input and output: 2.5kV

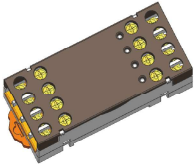
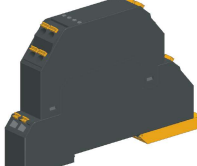
Outline Dimensions



Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Solid state relay module

Type	HFGD4-3	HFGD4-4
Appearance		
Dimensions(mm)	L x W x H: 32.1 × 73 × 33.6	L x W x H: 13 × 85.6 × 58
Features	● 4-Channel DC solid state module, with a thickness of only 32.1mm ● Installation method: DIN35 ● Optocoupler isolation between input and output, withstand voltage 2.5kV ● 30kHz high frequency switching capability ● Protective cover for preventing electric shock ● The common positive wiring or common negative wiring can be simply carried out by using the short connector	● 4-Channel DC solid state module, with a thickness of only 32.1mm ● Installation method: DIN35 ● 30kHz high frequency switching capability ● Optocoupler isolation between input and output, withstand voltage 2kV ● 3A 30VDC load capacity per channel ● Spring terminal block, quick installation and replacement

CHARACTERISTICS

Input

Nominal Voltage	24VDC (Allow 85% to 110% rated change range)	24VDC (Allow 85% to 110% rated change range)
Power Consumption Per Channel	<220mW	<220mW
Wiring Polarity	Polar (pay attention to wiring polarity)	Apolar
Terminal Type	Screw terminal	Spring terminal block
Control Channel Qty	4	4

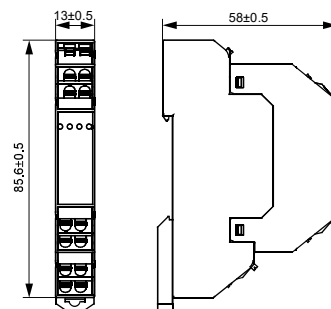
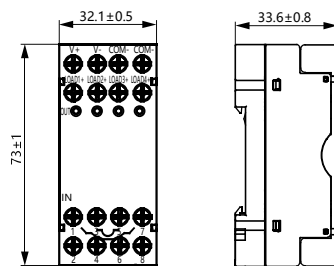
Output

Contact Arrangement	1NO	1NO
Rated Voltage	12VAC to 240VAC	5VDC to 30VDC
Rated Current	5A/Channel	3A/Channel
Terminal Type	Terminal block	Spring terminal block
Leakage Current	≤1μA(@30VDC)	≤1μA(@30VDC)
Max. Switching Frequency	30kHz	30kHz

Other

Operate / Release Time	/	/
Creepage Distance	Between input and output ≥1.5mm	/
Clearance Distance	Between input and output ≥1.5mm	/
Surge Voltage (1.2/50μs)	Between input and output: 2.5kV	/

Outline Dimensions



Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Terminal block

Type	HFGD3/R32	
Appearance		
Dimensions(mm)	L x W x H: 183 × 63.5 × 65	
Features	• IDC interface to double-row terminal block interface, saving space • Installation method: DIN35 • 0.2mm² to 2.5mm²/24AWG to 16AWG Wide range of wiring capacity	

CHARACTERISTICS

Input

Nominal Voltage	24VDC	
Max. Continuous Load current	1A/Channel	
Wiring Polarity	Polar(pay attention to wiring polarity)	
Terminal Type	IDC 40 pin	
Control Channel Qty	32	

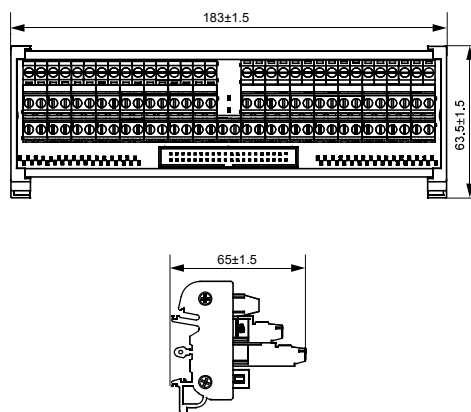
Output

Operating Voltage	24VDC	
Max.Switching Current	1A/Channel	
Max. Continuous Load current	1A/Channel	
Terminal Type	Terminal block	

Other

Creepage Distance	Between channels : $\geq 0.2\text{mm}$	
Clearance Distance	Between channels : $\geq 0.2\text{mm}$	
Surge Voltage (1.2/50 μs)	Between channels : 800V	
Installation Method	DIN35 guide rail installation(Compatible with 1.0mm and 1.2mm thickness)	

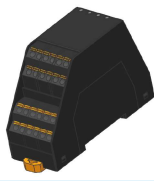
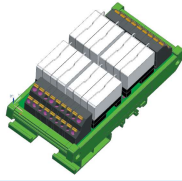
Outline Dimensions



Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Electromagnetic relay module

Type	HFGD5	HFGD5-4	HFGD5-5
Appearance			
Dimensions(mm)	W × H: 85.6 × 56	L × W × H: 34 × 85.6 × 58	W × H: 123 × 54
Features	• 2,4,6,8,12 and 16 channels HF115FK relay module • Single group contact load capacity 10A 250VAC / 30VDC • Double group contact load capacity 8A 250VAC/30VDC • Relays are equipped with sockets for quick replacement and maintenance • Action response characteristics with fast make and break	• 4-Channel HF115FK relay module, with a thickness of only 34mm • Installation method: DIN35 • No/CO contact type, Max. load capacity 16A 250VAC • Spring terminal block, quick installation and replacement	• 3,4,6 and 8 channel HF115FK relay module, double row arrangement • Installation method: DIN35 • Relays are equipped with sockets for quick replacement and maintenance • 1Z/2Z contact type, Max. load capacity 10A 250VAC / 30VDC • Non-polar wiring

CHARACTERISTICS

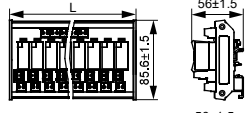
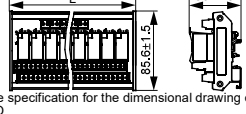
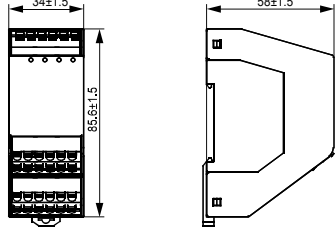
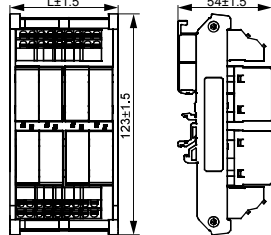
Input

Nominal Voltage	24VDC (Allow 85% to 110% rated change range)	24VDC/VAC, 230VDC/VAC (Allow 85% to 110% rated change range)	24VDC/VAC, 230VDC/VAC (Allow 85% to 110% rated change range)
Power Consumption Per Channel	<620mW	Max. <0.92W	Max. <0.92W
Wiring Polarity	Apolar	Apolar	Apolar
Terminal Type	Terminal block	Spring terminal block	Spring terminal block
Control Channel Qty	2,4,6,8,12,16	4	3,4,6,8

Output

Relay Specification	HF115FK	HF115FK	HF115FK
Contact Arrangement	1NO/1CO/2NO/2CO	1NO/1CO/2CO	1CO/2CO
Nominal Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Nominal Current	1Z: 10A/Channel, 2Z: 8A/Channel	1H: 10A/Channel, 1Z: 10A/Channel, 2Z: 8A/Channel	1Z: 10A/Channel, 2Z: 8A/Channel
Terminal Type	Terminal block	Spring terminal block	Spring terminal block
Min. Contact Load	50mW	50mW	50mW
Max. Switching Frequency	10 ops/min (@5A to 16A) 30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	10 ops/min (@5A to 16A) 30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	10 ops/min (@5A to 16A) 30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)

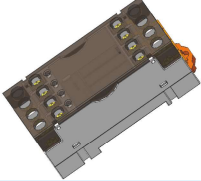
Other

Operate / Release Time	Approx. 6ms/Approx. 3ms	/	/
Creepage Distance	Between output channels: ≥3mm(1 pole), ≥1mm(2 pole) Between input and output ≥3mm	Between output channels: ≥3mm(1 pole), ≥1.5mm(2 pole) Between input and output ≥3mm	Between output channels ≥3mm Between input and output ≥3mm
Clearance Distance	Between output channels: ≥3mm(1 pole), ≥1mm(2 pole) Between input and output ≥3mm	Between output channels: ≥3mm(1 pole), ≥1.5mm(2 pole) Between input and output ≥3mm	Between output channels ≥3mm Between input and output ≥3mm
Surge Voltage (1.2/50μs)	Between output channels: 4kV(1 pole), 1.5kV(2 pole) Between input and output: 4kV	Between output channels: 4kV(1 pole), 2.5kV(2 pole) Between input and output: 4kV	Between output channels: 4kV Between input and output: 4kV
Relay Replacement	Replaceable	Replaceable	Replaceable
Outline Dimensions	2 Form A:  2 Form C:  Note: see the specification for the dimensional drawing of 1no and 1CO		

Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Electromagnetic relay module

Type	HF46F	HF46F-3	HF46F-4
Appearance			
Dimensions(mm)	W × H: 85.6 × 55	L × W × H: 32.1 × 73 × 33.6	L × W × H: 18 × 85.6 × 58
Features	4, 8, 12 and 16 channels HF46F relay module - Installation method: DIN35 - Load capability 3A 250VAC/30VDC - Relays are equipped with sockets for quick replacement and maintenance - Action response characteristics with fast make and break	4-Channel NO relay module, with a thickness of only 32.1mm - Load capability 3A 250VAC/30VDC - The common positive wiring or common negative wiring can be simply carried out by using the short connector - Protective cover for preventing electric shock - The product has excellent cost performance	4-Channel HF46F relay module, with a thickness of only 18mm - Installation method: DIN35 - Load capability 3A 250VAC/30VDC - Spring terminal block, quick installation and replacement - The product has excellent cost performance

CHARACTERISTICS

Input

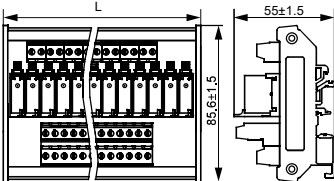
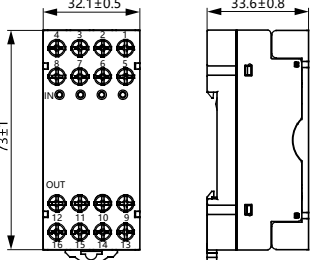
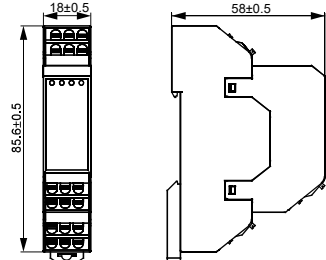
Nominal Voltage	12VDC, 24VDC (Allow 85% to 110% rated change range)	12VDC, 24VDC	12VDC, 24VDC (Allow 85% to 110% rated change range)
Power Consumption Per Channel	<260mW	<260mW	<260mW
Wiring Polarity	Polar (pay attention to wiring polarity)	Polar (pay attention to wiring polarity)	Polar (pay attention to wiring polarity)
Terminal Type	Terminal block	Fence screw terminal	Spring terminal block
Control Channel Qty	4, 8, 12, 16	4	4

Output

Relay Specification	HF46F	HF46F	HF46F
Contact Arrangement	1NO	1NO	1NO
Nominal Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Nominal Current	3A/Channel	3A/Channel	3A/Channel
Terminal Type	Terminal block	Screw terminal	Spring terminal block
Min. Contact Load	50mW	50mW	50mW
Max. Switching Frequency	30 ops/min (@1A to 3A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	30 ops/min (@1A to 3A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	30 ops/min (@1A to 3A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)

Other

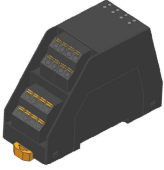
Operate / Release Time	Approx. 4.5ms/Approx. 2.0ms	/	/
Creepage Distance	Between output channels ≥ 1mm Between input and output ≥ 3mm	Between output channels ≥ 1.5mm Between input and output ≥ 5mm	Between output channels ≥ 1.5mm Between input and output ≥ 3mm
Clearance Distance	Between output channels ≥ 1mm Between input and output ≥ 3mm	Between output channels ≥ 1.5mm Between input and output ≥ 5mm	Between output channels ≥ 1.5mm Between input and output ≥ 3mm
Surge Voltage (1.2/50μs)	Between output channels: 1.5kV Between input and output: 4kV	Between output channels: 2.5kV Between input and output: 6kV	Between output channels: 2.5kV Between input and output: 4kV
Relay Replacement	Replaceable	Not replaceable	Not replaceable

Outline Dimensions			
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Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Electromagnetic relay module

Type	HF6D-5	HF6D7-5	HF6D8-1
Appearance			
Dimensions(mm)	L × W × H: 34 × 85.6 × 58	W × H: 85.6 × 68.5	W × H: 85.6 × 66
Features	8-Channel HF46F relay module, with a thickness of only 34mm - Installation method: DIN35 - Load capability 3A 250VAC/30VDC - Spring terminal block, quick installation and replacement - The product has excellent cost performance	2, 4, 6, 8, 12, 16 and 20 Channels HF157F relay module - Installation method: DIN35 - Single group contact load capacity 16A 250VAC/30VDC - Double group contact load capacity 10A 250VAC/30VDC - Relay with manual lever and socket - Action response characteristics with fast make and break	4, 8, 12, 16 and 32 Channels HF41F relay module - Installation method: DIN35 - Load capacity 6A 250VAC/30VDC - Relays are equipped with sockets for quick replacement and maintenance - Non-polar wiring - Action response characteristics with fast make and break

CHARACTERISTICS

Input

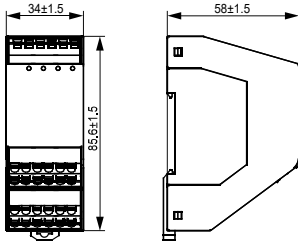
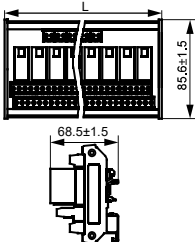
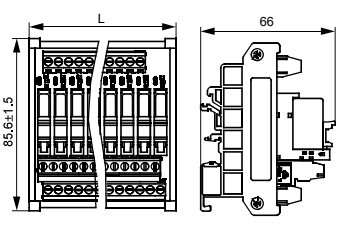
Nominal Voltage	12VDC, 24VDC (Allow 85% to 110% rated change range)	24VDC (Allow 85% to 110% rated change range)	12VDC, 24VDC (Allow 85% to 110% rated change range)
Power Consumption Per Channel	<260mW	<670mW	<280mW
Wiring Polarity	Polar (pay attention to wiring polarity)	Apolar	Apolar
Terminal Type	Spring terminal block	Terminal block	Terminal block
Control Channel Qty	8	2, 4, 6, 8, 12, 16, 20	4, 8, 12, 16, 32

Output

Relay Specification	HF46F	HF157F	HF41F
Contact Arrangement	1NO	1CO/2CO	1NO/1CO
Nominal Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Nominal Current	3A/Channel	1Z: 16A/Channel, 2Z: 10A/Channel	6A/Channel
Terminal Type	Spring terminal block	Terminal block	Terminal block
Min. Contact Load	50mW	50mW	50mW
Max. Switching Frequency	30 ops/min (@1A to 3A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	10 ops/min (@5A to 16A) 30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	20 ops/min (@3A to 6A) 30 ops/min (@1A to 3A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)

Other

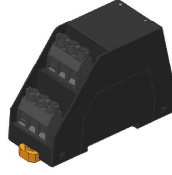
Operate / Release Time	/	Approx. 8ms/Approx. 3ms	Approx. 6ms/Approx. 3ms
Creepage Distance	Between output channels ≥ 1.5mm Between input and output ≥ 3mm	Between output channels: ≥ 3mm (1Z), ≥ 1mm (2Z) Between input and output ≥ 3mm	Between output channels ≥ 1mm Between input and output ≥ 3mm
Clearance Distance	Between output channels ≥ 1.5mm Between input and output ≥ 3mm	Between output channels: ≥ 3mm (1Z), ≥ 1mm (2Z) Between input and output ≥ 3mm	Between output channels ≥ 1mm Between input and output ≥ 3mm
Surge Voltage (1.2/50μs)	Between output channels: 2.5kV Between input and output: 4kV	Between output channels: 4kV (1Z), 1.5kV (2Z) Between input and output: 4kV	Between output channels: 2kV Between input and output: 4kV
Relay Replacement	Not replaceable	Replaceable	Replaceable

Outline Dimensions			
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Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Electromagnetic relay module

Type	HF41F	HF165FD	
Appearance			
Dimensions(mm)	L × W × H: 18 × 85.6 × 58	L × W × H: 34 × 85.6 × 58	
Features	4-Channel HF41F relay module, with a thickness of only 18mm - Installation method: DIN35 - Load capability 6A 250VAC/30VDC - Spring terminal block, quick installation and replacement	2-Channel HF165FD relay module - Installation method: DIN35 - Load Capability: 25A 250VAC/28VDC - screw connection - Non-polar wiring 0.5-4mm²/20-10AWG Wide range of wiring capacity	

CHARACTERISTICS

Input

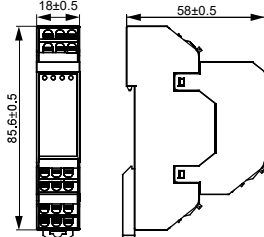
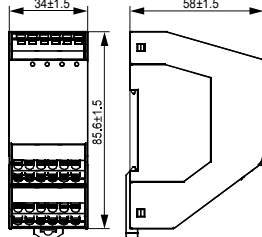
Nominal Voltage	12VDC/24VDC (Allow 85% to 110% rated change range)	24VDC/VAC, 230VDC/VAC (Allow 85% to 110% rated change range)	
Power Consumption Per Channel	<280mW	<2.02VA	
Wiring Polarity	Polar (pay attention to wiring polarity)	Apolar	
Terminal Type	Spring terminal block	Terminal block	
Control Channel Qty	4	2	

Output

Relay Specification	HF41F	HF165FD	
Contact Arrangement	1NO/1CO	1NO/1NC/1CO	
Nominal Voltage	250VAC / 30VDC	250VAC	
Nominal Current	6A/Channel	25A/Channel	
Terminal Type	Terminal block	Terminal block	
Min. Contact Load	50mW	50mW	
Max. Switching Frequency	20 ops/min (@3A to 6A) 30 ops/min (@1A to 3A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	10 ops/min (@5A to 25A) 30 ops/min (@1A to 5A) 60 ops/min (@0.5A to 1A) 300 ops/min (@<0.5A)	

Other

Operate / Release Time	/	/	
Creepage Distance	Between output channels ≥ 3mm Between input and output ≥ 3mm	Between output channels ≥ 3mm Between input and output ≥ 3mm	
Clearance Distance	Between output channels ≥ 3mm Between input and output ≥ 3mm	Between output channels ≥ 3mm Between input and output ≥ 3mm	
Surge Voltage (1.2/50μs)	Between output channels: 4kV Between input and output: 4kV	Between output channels: 4kV Between input and output: 4kV	
Relay Replacement	Not replaceable	Not replaceable	

Outline Dimensions			
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Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Safety control module

Type	HFGA1	
Appearance		
Dimensions(mm)	L × W × H: 99 × 22.5 × 114	
Features	• Safety relays for monitoring emergency stop switches, safety solenoid switches, safety light grids and safety door switches • Internal circuit redundancy design, even if a single component fails, the safety function can still be maintained • With built-in self-test function, each start and stop cycle automatically detects the normal operation and release of the internal relay • Non-delayed contacts, up to 4 safety contacts, manual or automatic reset • Meets the requirements of EN 60947-5-1, with safety performance levels up to PLe level of ISO 13849-1, meets IEC 62061-1 Safety Integrity SIL 3 requirements • Screw terminals or spring terminals are optional	

CHARACTERISTICS

Input

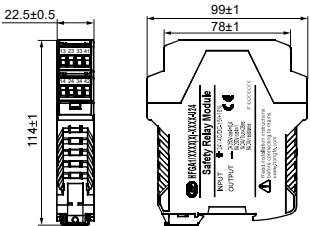
Nominal Voltage	24VAC/VDC	
Working Voltage Tolerance	-15% to 10%	
Frequency	50Hz to 60Hz	
Power Consumption	2 pole: ≤3.5VA/1.7W 4 pole: ≤5.1VA/2.4W	
Wiring Polarity	Polar(pay attention to wiring polarity)	
Terminal Type	Terminal block	

Output

Contact Arrangement	2H,1H1D,3H1D,4H	
Additional Function	optional function: Basic function With OSSD, safety light grid monitoring Turn-off delay function Manual reset+Auto reset Action delay function Time function+manual reset+auto reset	
Max. Rated Output Power	144W(24VDC, τ=0ms), 144W(24VDC, τ=40ms) 1500VA(250VAC, cosφ=1), 1200VA(250VAC, cosφ=0.4)	
Operate Time (at rated. volt.)	≤100ms	
Release Time (at rated. volt.)	≤45ms	
Min. Switching Voltage	≤0.5s	
Min. Switching Power	15VDC/VAC	
Contact Rating	0.4W	
Terminal Type	6A 24VDC/5A 230VAC	
Mechanical Endurance	Terminal block 1×10 ⁷ ops(7200 ops/h)	

Environmental and safety regulations

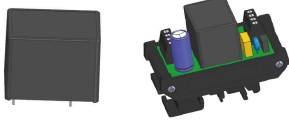
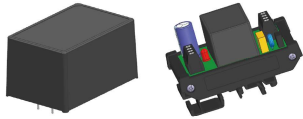
Installation Method	DIN35 guide rail installation	
mounting Requirements	Installation location:IP54	
Standard Compliance	IEC 60947-5-1,IEC 62061,ISO/EN 13849-1,IEC 61508	
Rated Insulation Voltage	250VAC	

Outline Dimensions		
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Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Switching power module

Type	HFGP1	HFGP2	HFGP4
Appearance			
Dimensions(mm)	L × W × H: 25.4 × 25.4 × 17.8	L × W × H: PCB: 37.6 × 28.3 × 27.5 DIN rail mounting: 85.6 × 51.6 × 53.2	L × W × H: PCB: 45.2 × 30.2 × 24 DIN rail mounting: 85.6 × 58.6 × 50
Features	- Wide input voltage range: 100VAC to 240VAC - With overcurrent protection, short circuit protection and other safety applications - Working temperature range: -25°C to 85°C	- Wide input voltage range: 100VAC to 240VAC - Stable output voltage: Un×(1±5%) - With over-current protection, short-circuit protection and other safety applications - Working temperature range: -25°C to 85°C	- Wide voltage input range: 100VAC to 240VAC - With over-current protection, short-circuit protection and other safety applications - Working temperature range: -25°C to 85°C

CHARACTERISTICS

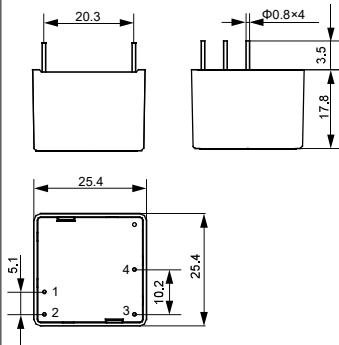
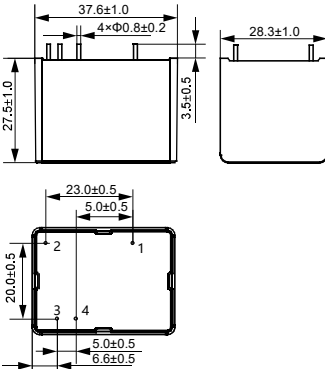
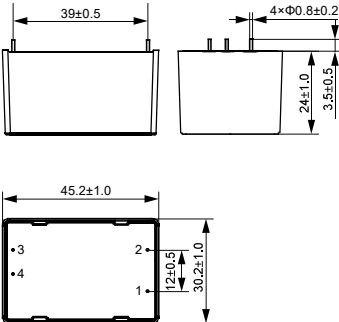
Input

Input voltage Range	100VAC to 240VAC	100VAC to 240VAC	100VAC to 240VAC
Input Frequency Range	47Hz to 63Hz	47Hz to 63Hz	47Hz to 63Hz
Input Current	0.08A MAX (@110VAC) 0.06A MAX (@220VAC)	0.13A MAX (@110VAC) 0.07A MAX (@220VAC)	0.23A MAX (@110VAC) 0.157A MAX (@220VAC)
Standby Power Consumption	0.3W Max	0.3W Max	0.3W Max
Hot plug	Not support	Not support	Not support

Output

Output Power	2W	5W	10W
Rated Output Voltage	12VDC,24VDC	12VDC,24VDC	12VDC,24VDC
Max Output Load	12V/167mA,24VDC/84mA	12V/420mA,24VDC/210mA	12V/830mA,24VDC/410mA
Output Voltage Accuracy	±5%	±5%	±5%
Voltage Stability(full load)	±5%	±5%	±5%
Load Stability (10% to 100% load)	±5%	±5%	±5%
Efficiency	≥73%	≥73%	≥75%
Overcurrent Protection	≥120% In, Self recovery	≥120% In, Self recovery	≥120% In, Self recovery
Short-circuit Protection	Hiccup mode, self-recovery	Hiccup mode, self-recovery	Hiccup mode, self-recovery
Max Capacitive Load	470μF(@12VDC),220μF(@24VDC)	1200μF(@12VDC),220μF(@24VDC)	2000μF(@12VDC),470μF(@24VDC)

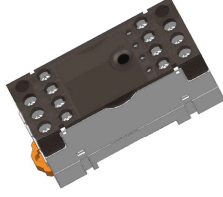
Other

Dielectric Strength	≥2500VAC,3mA,1min	≥2500VAC,3mA,1min	≥2500VAC,3mA,1min
Outline Dimensions (Take PCB type as an example)			

Note: Specification and dimensions in this catalog are subject to change without notice.

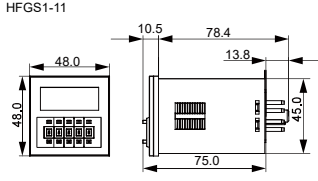
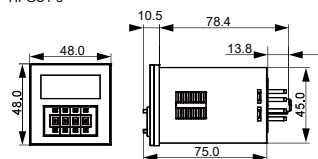
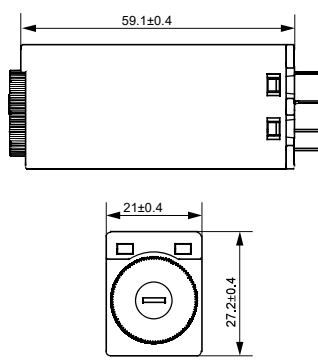
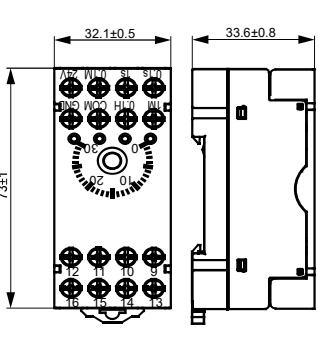
INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Time delay relay module

Type	HFGS1	HFGS2	HFGS3
Appearance			
Dimensions(mm)	L × W × H: 48 × 48 × 75	L × W × H: 21 × 27.2 × 59.1	L × W × H: 32.1 × 73 × 33.6
Features	24VAC to 240VAC/24VDC to 240VDC wide voltage input 8 kinds of action functions can be set by DIP switch - Wide time setting range: 0.1s to 9990h - Equipped with external input signal function to realize contactless connection with equipment - Multi-function and single-function models are available	2CO output methods - It has the function of delay connection after power-on - With stepless adjustment knob, the delay time can be adjusted quickly and easily - DIN35 socket, standard guide rail installation - Load Capability 5A 250VAC/30VDC	4NO, 2CO, 2NO+1CO three output modes - It has the function of delay connection after power-on - With 5-step delay time range and stepless adjustment knob - Installation method: DIN35 - Load Capability 3A 250VAC/30VDC - Screw-type wiring

CHARACTERISTICS

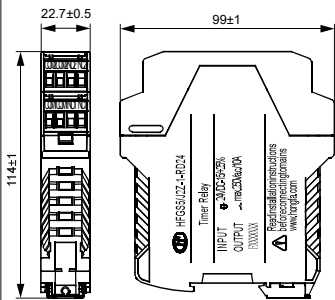
Action Function	8 kinds of action function optional 4 kinds of action function single choice	On-delay	On-delay
Terminal Type	8P socket/11P socket	8P socket	Fence screw terminal
Time Slot	0.1s to 9990h	0.1s to 1.0s, 1.0s to 30s, 0.1min to 3min	0.1s to 3s, 1s to 30s, 6s to 180s, 1m to 30m, 6m to 180m
Input Nominal Voltage	24VAC/VDC to 240VAC/VDC	200VAC to 230VAC(50/60Hz)	12VDC, 24VDC (Allow 85% to 110% rated change range)
Power Consumption	AC Max.: <10VA, DC Max.: <2W	Approx. 2W	Approx. 2W
Rating Contact	3A 250VAC/30VDC	5A 250VAC/30VDC	3A 250VAC/30VDC
Setting Error	± 0.5% of set value (the set value < 16.7s, ± 0.05s)	±10%±50ms (Max. Scale Time)	±10%±50ms (Max. Scale Time)
Insulation Resistance	≥100MΩ(DC500V)	≥100MΩ(DC500V)	≥100MΩ(DC500V)
Dielectric Strength (50/60Hz, 1min)	≥2000VAC (Between operating power circuit and control output)	≥2000VAC (Between operating power circuit and control output)	≥2000VAC (Between operating power circuit and control output)
Surge Voltage (1.2/50μs)	2kV (Between operating power circuit and control output)	3kV (Between operating power circuit and control output)	3kV (Between operating power circuit and control output)
Anti-static Discharge	/	Functional: 4kV, Destructive: 8kV	Functional: 4kV, Destructive: 8kV
Vibration Resistance (destructive)	NC: 10Hz to 55Hz 0.8mm DA NO: 10Hz to 55Hz 0.8mm DA	10Hz to 60Hz, DA 0.3mm 60Hz to 150Hz, 19.6m/s²	10Hz to 60Hz, DA 0.3mm 60Hz to 150Hz, 19.6m/s²
Shock Resistance	Functional: NC: 49m/s², NO: 98m/s² Destructive: 980m/s²	Functional: 98m/s², Destructive: 980m/s²	Functional: 98m/s², Destructive: 980m/s²
Mechanical Endurance	≥2 × 10⁶ ops	≥1 × 10⁷ ops	≥5 × 10⁶ ops
Electrical Endurance	≥1 × 10⁵ ops	≥1 × 10⁵ ops	≥1 × 10⁵ ops
Installation Method	P2CF-8/P2CF-11 socket mounted on DIN35 rail	18FF-2Z-C2 socket, mounted on DIN35 rail (Compatible with both 1.0mm and 1.2mm thickness)	DIN35 rail installation (Thickness 1.0mm)

Outline Dimensions	 HFGS1-11  HFGS1-8		
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Note: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL ELECTRONIC MODULE SELECTION CHART

Time delay relay module

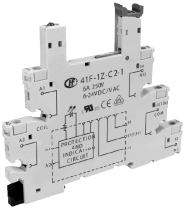
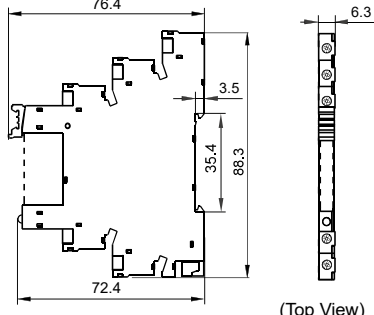
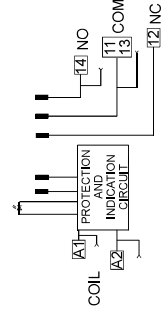
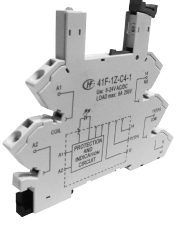
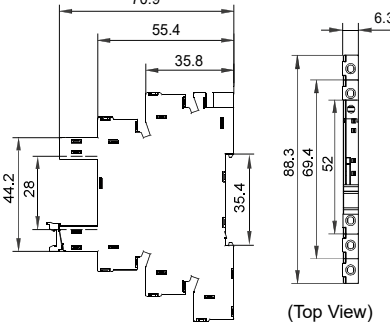
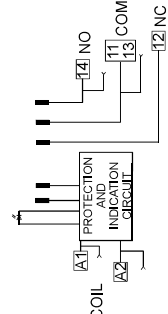
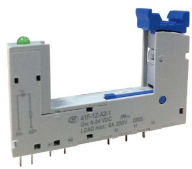
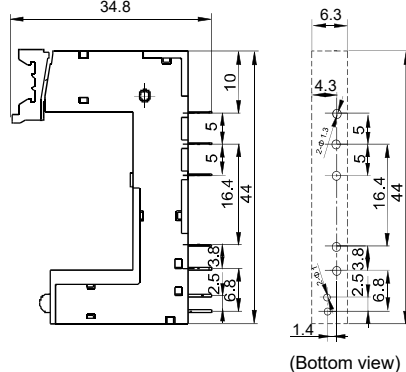
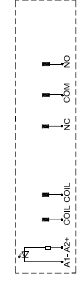
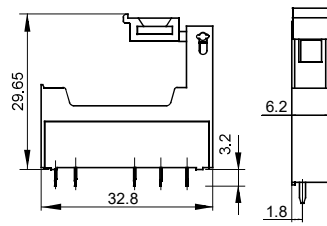
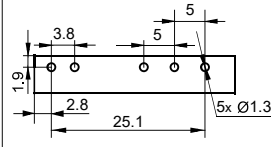
Type	HFGS5	
Appearance		
Dimensions(mm)	L × W × H: 22.7 × 99 × 114	
Features	• 2 groups of conversion output methods • It has the function of delay disconnection or delay connection after power failure • With 5-step delay time range and stepless adjustment knob • Installation method: DIN35 • Pluggable screw or spring-loaded terminals are optional • Load Capability 3A 250VAC/30VDC	
CHARACTERISTICS		
Action Function	Power-off delay	
Terminal Type	Removable screw or spring-loaded terminals available	
Time Slot	5-step time range, stepless adjustment knob	
Input Nominal Voltage	24VDC, 220VAC (Allow 85% to 110% rated change range)	
Power Consumption	Approx. 1.2W	
Rating Load	3A 250VAC/30VDC	
Setting Error	±10%±50ms(Max. Scale Time)	
Insulation Resistance	≥100MΩ(DC500V)	
Dielectric Strength (50/60Hz, 1min)	≥2000VAC (Between operating power circuit and control output)	
Surge Voltage (1.2/50μs)	3kV (Between operating power circuit and control output)	
Anti-static Discharge	/	
Vibration Resistance (destructive)	10Hz to 60Hz, DA 0.3mm 60Hz to 150Hz, 19.6m/s ²	
Shock Resistance	Destructive: 98m/s ² Functional: 980m/s ²	
Mechanical Endurance	≥5 × 10 ⁶ ops	
Electrical Endurance	≥1 × 10 ⁵ ops	
Installation Method	DIN35rail installation (Compatible with both 1.0mm and 1.2mm thickness)	
Outline Dimensions		

Note: Specification and dimensions in this catalog are subject to change without notice.

RELAY SOCKET SELECTION CHART

41F Sockets (Applicable relay types: HF41F)

Unit: mm

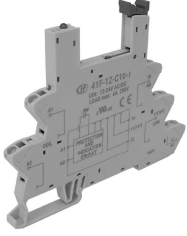
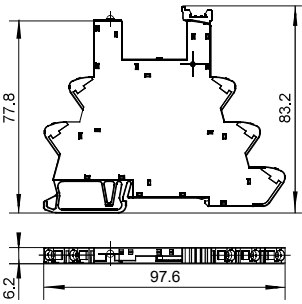
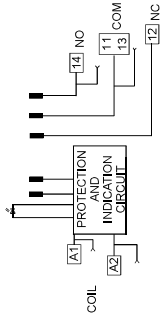
Socket	Outline Dimensions	Wiring Diagram	Accessory Available
41F-1Z-C2-1/2/3/4/5  Screw terminal, DIN rail mounting, With finger protection device Certified by VDE and UL/CU	 (Top View)		Marker: 41F-M 41F-M1 Jumper: 41F-J1(blue) 41F-J1R(red) 41F-J1B(black) Separator: 41F-S
41F-1Z-C4-1/2/3/4/5  Spring-loaded terminal, DIN rail mounting, With finger protection device	 (Top View)		Marker: 41F-M 41F-M1 Jumper: 41F-J1(blue) 41F-J1R(red) 41F-J1B(black) Separator: 41F-S
41F-1Z-A2-1/2  PCB terminal, PCB mounting	 (Bottom view)		*Marker: 41F-M
41F-1Z-A1 			Null

Notes: * If need accessory, please order with type.

(To be continued)

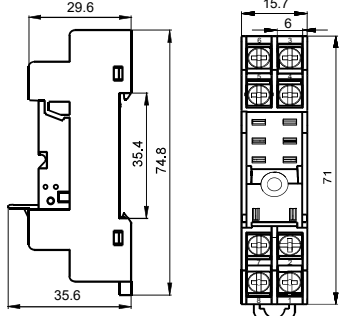
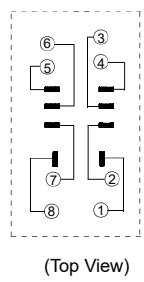
RELAY SOCKET SELECTION CHART

(Continued)

Socket	Outline Dimensions	Wiring Diagram	Accessory Available
41F-1Z-C10-1/2/3/4/5  With finger protection device Ensure secure retention and easy ejection of relays			Marker: 41F-M 41F-M1 Jumper: 41F-J1(blue) 41F-J1R (red) 41F-J1B (black) Separator: 41F-S

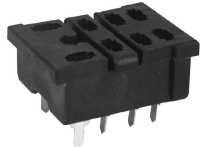
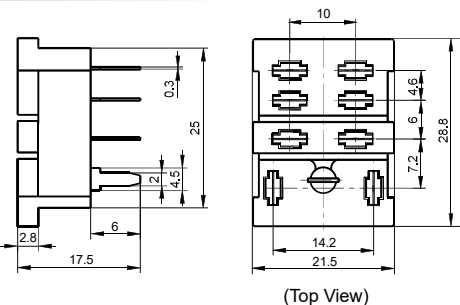
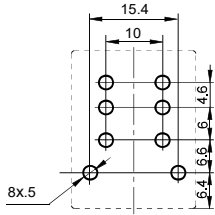
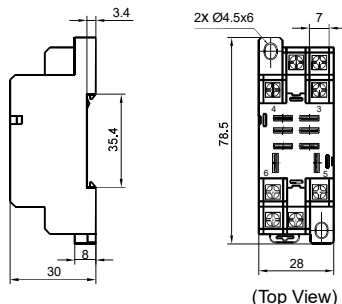
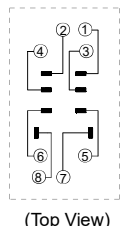
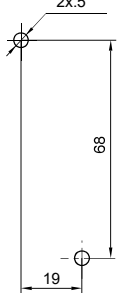
157F Sockets (Applicable relay types: HF157F)

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Accessory Available
157F-2Z-C1  DIN rail or Screw mounting		 (Top View)	Plastic retainer 157F-H1 Metallic retainer 157F-H2

13F Sockets (Applicable relay types: HF13F)

Unit: mm

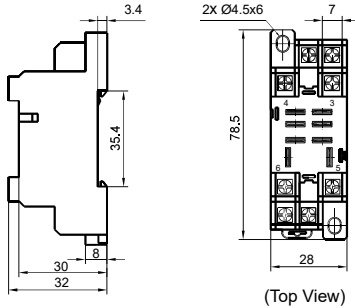
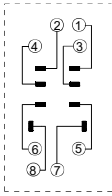
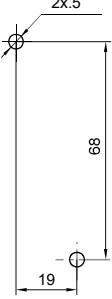
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
13F-2Z-A2  PCB terminal, PCB mounting	 (Top View)			Metallic retainer 18FF-H1
13F-2Z-C1  Screw terminal, DIN rail or Screw mounting Without finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)

Notes: * If need accessory, please order with type.

(To be continued)

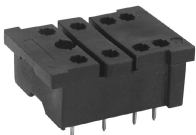
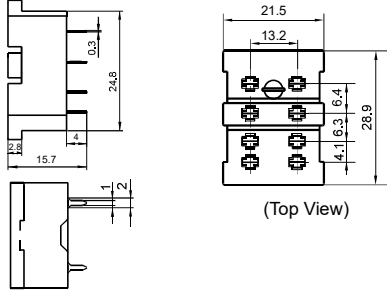
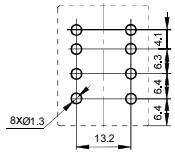
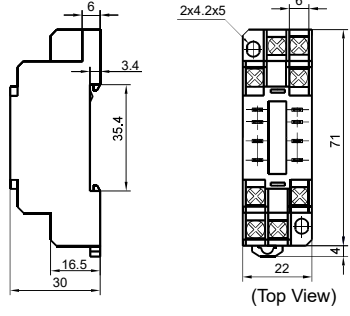
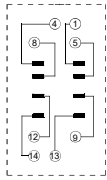
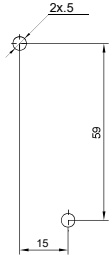
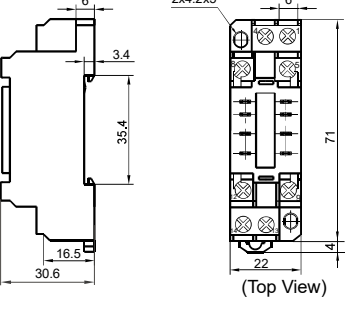
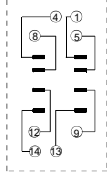
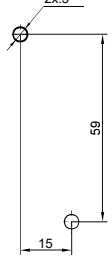
RELAY SOCKET SELECTION CHART

(Continued)

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
13F-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)

18FF Sockets (Applicable relay types: HF18FF)

Unit: mm

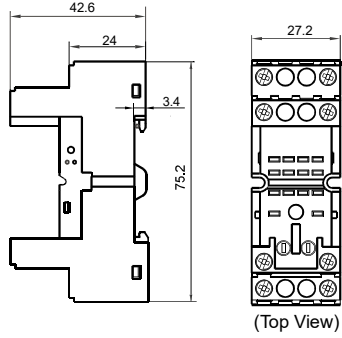
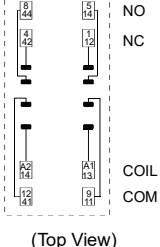
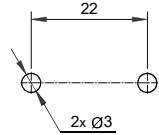
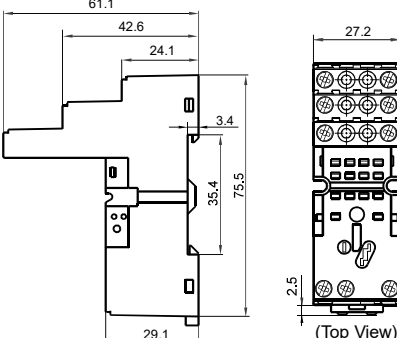
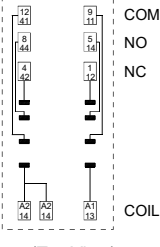
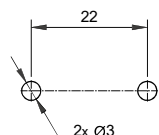
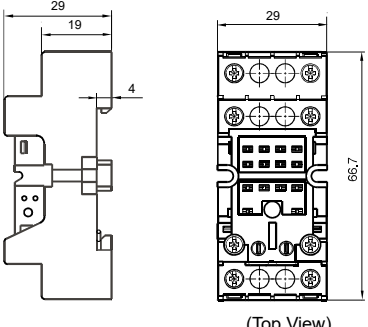
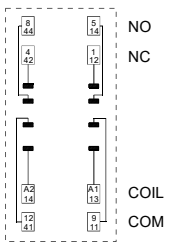
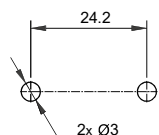
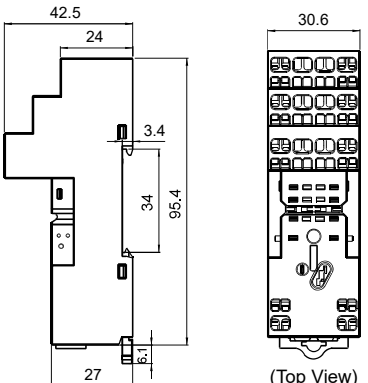
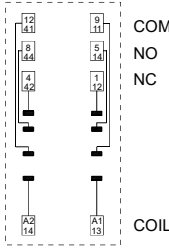
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-2Z-A2  PCB terminal, PCB mounting Applicable for 2 poles	 (Top View)			Metallic retainer 18FF-H1
18FF-2Z-C1  Screw terminal, DIN rail or Screw mounting Without finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)
18FF-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)

Notes: * If need accessory, please order with type.

(To be continued)

RELAY SOCKET SELECTION CHART

(Continued)

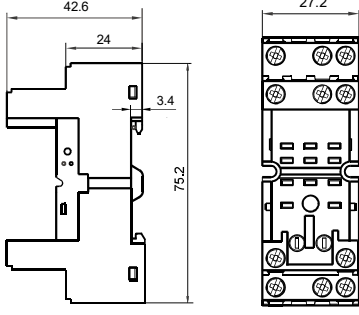
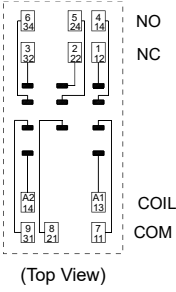
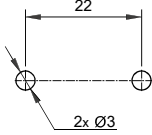
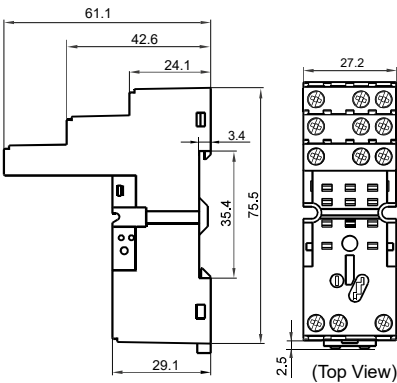
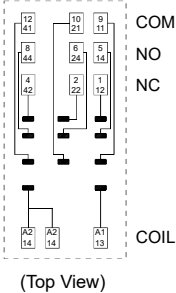
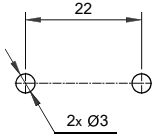
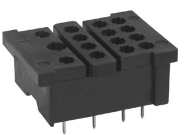
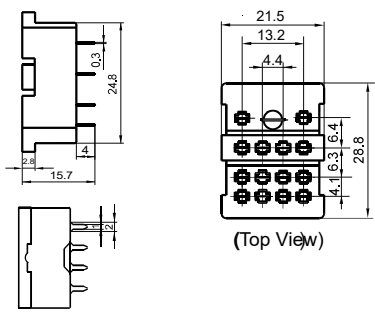
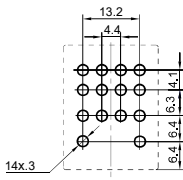
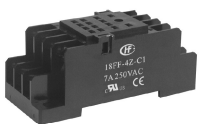
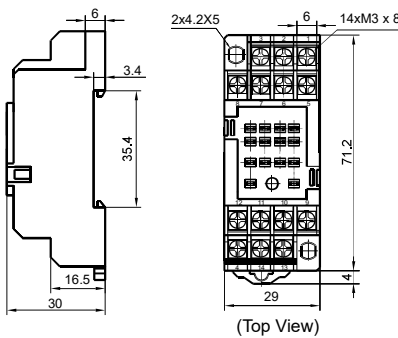
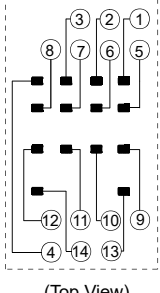
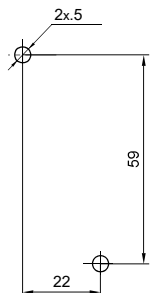
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-2Z-C4  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M1 Plug-in module HFAA ~ HFHU*
18FF-2Z-C5  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M1 Plug-in module HFAA ~ HFHU*
18FF-2Z-C8  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M3
18FF-2Z-C9  Spring-loaded terminal, DIN rail mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Plug-in module HFAA ~ HFHU* Marker: 18FF-M3

Notes: * If need accessory, please order with type.

(To be continued)

RELAY SOCKET SELECTION CHART

(Continued)

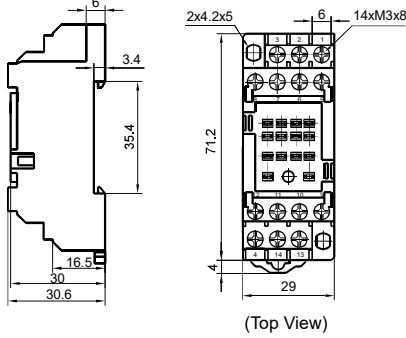
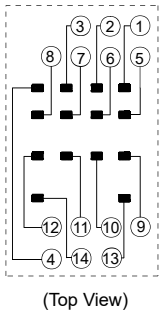
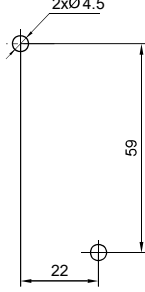
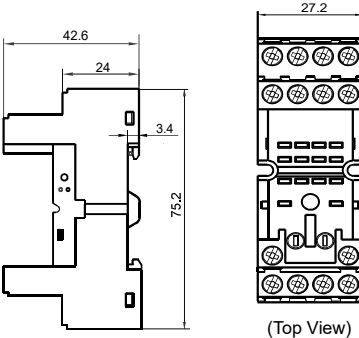
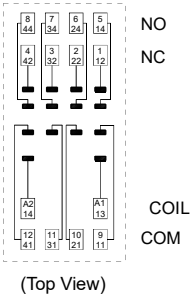
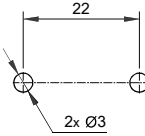
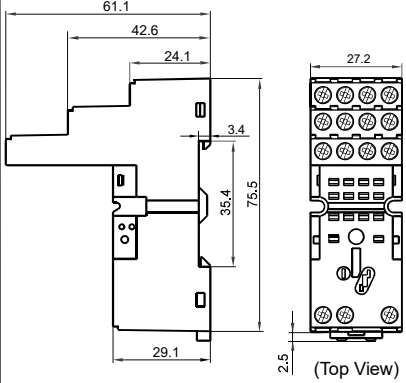
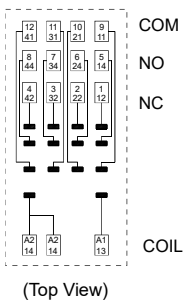
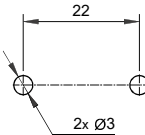
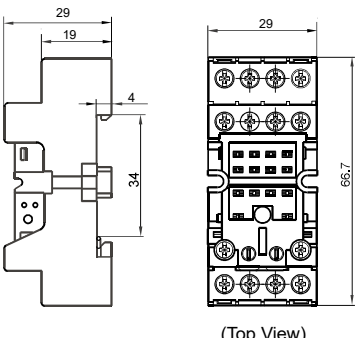
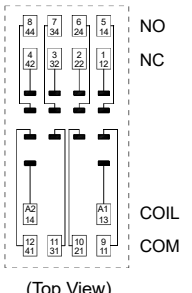
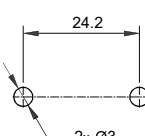
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-3Z-C4  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M1 Plug-in module HFAA ~ HFHU*
18FF-3Z-C5  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M1 Plug-in module HFAA ~ HFHU*
18FF-4Z-A2  PCB terminal, PCB mounting Applicable for 4 poles	 (Top View)		 (Top View)	Metallic retainer 18FF-H1
18FF-4Z-C1  Screw terminal, DIN rail or Screw mounting Without finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)

Notes: * If need accessory, please order with type.

(To be continued)

RELAY SOCKET SELECTION CHART

(Continued)

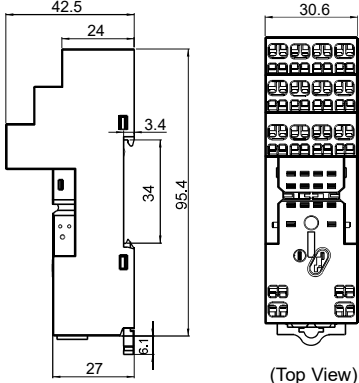
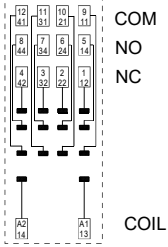
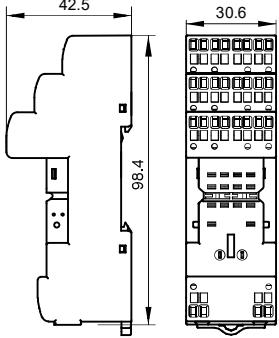
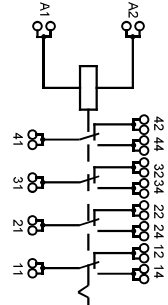
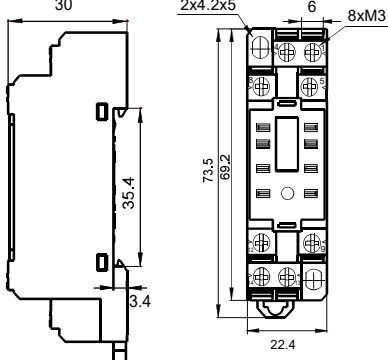
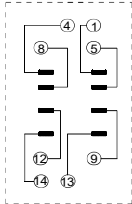
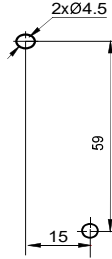
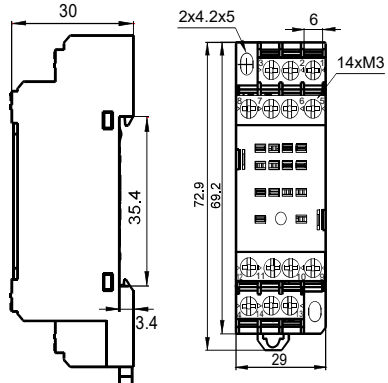
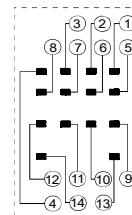
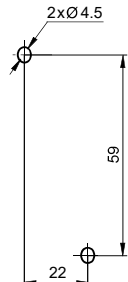
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18FF-4Z-C4  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M1 Plug-in module HFAA ~ HFHU*
18FF-4Z-C5  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker: 18FF-M1 Plug-in module HFAA ~ HFHU*
18FF-4Z-C8  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H4 Marker: 18FF-M3

Notes: * If need accessory, please order with type.

(To be continued)

RELAY SOCKET SELECTION CHART

(Continued)

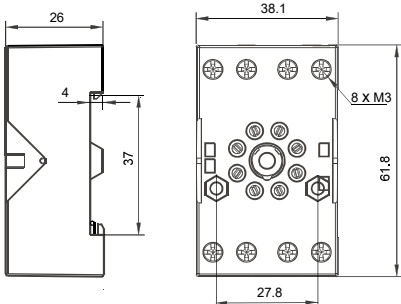
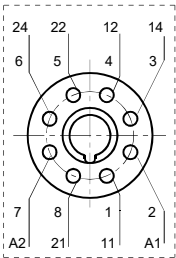
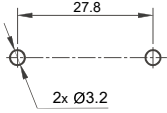
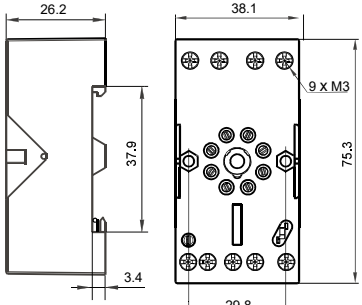
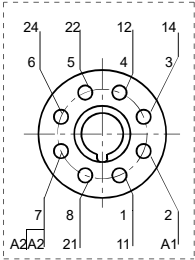
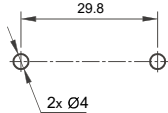
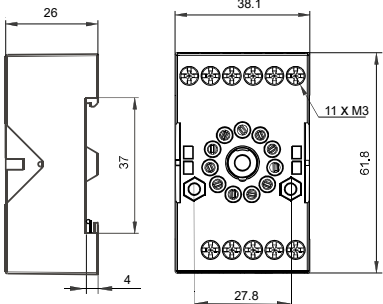
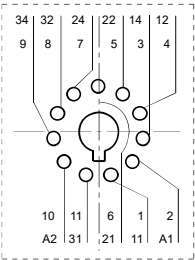
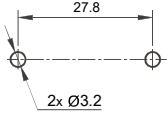
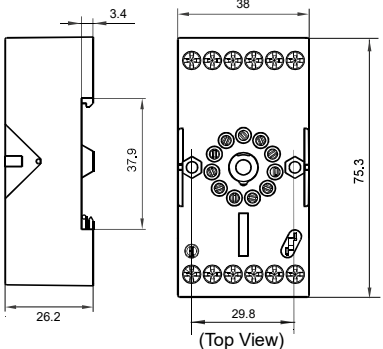
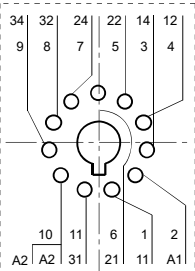
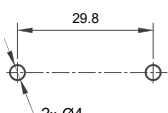
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-4Z-C9  Spring-loaded terminal, DIN rail mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Plug-in module HFAA ~ HFHU* Marker: 18FF-M3
18FF-4Z-C10  Spring-loaded terminal, DIN rail mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Retainer: 18FF-H4, 18FF-H5 Jumper: 18FF-J2 Marker : 18FF-M1 Plug-in module: HFAA~HFHU
18FZ-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 ((be used in sets))
18FZ-4Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets))

Notes: * If need accessory, please order with type.

RELAY SOCKET SELECTION CHART

10FF S Sockets (Applicable relay types: HF10FF/HF10FH)

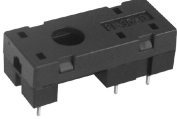
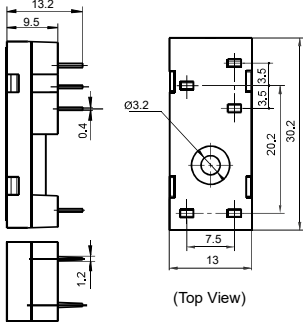
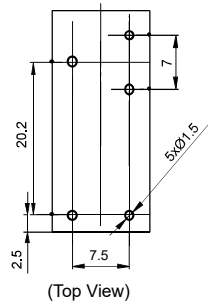
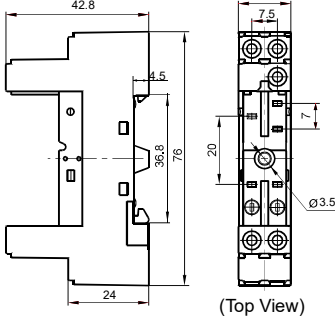
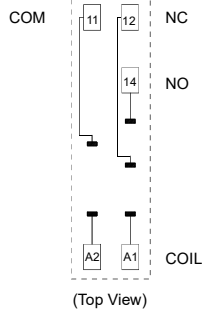
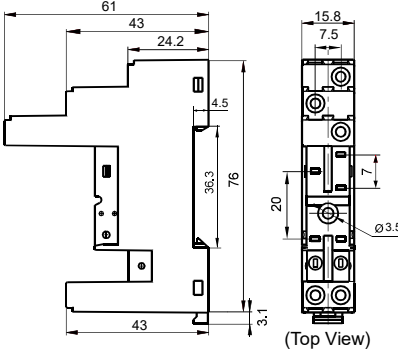
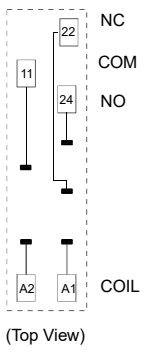
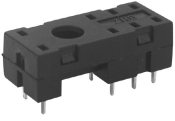
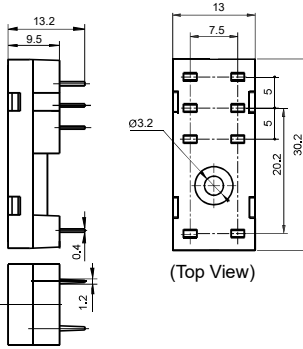
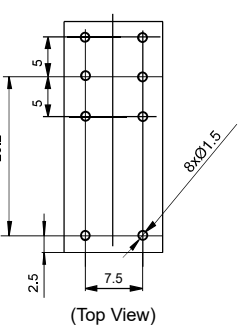
Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
10FF-2Z-C3  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Metallic retainer 10FF-H1
10FF-2Z-C4  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Metallic retainer 10FF-H1 Plug-in module HFFAA ~ HFFHU*
10FF-3Z-C3  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)		Metallic retainer 10FF-H1
10FF-3Z-C4  Screw terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)		Metallic retainer 10FF-H1 Plug-in module HFFAA ~ HFFHU*

Notes: * If need accessory, please order with type.

RELAY SOCKET SELECTION CHART

14FF Socket(Applicable relay types: HF115F/115F-A/115FP, HF14FF/14FW/140FF/141FF)

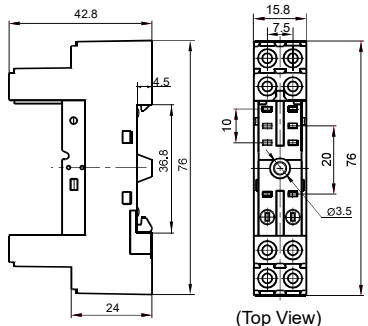
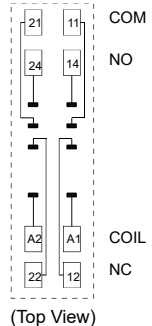
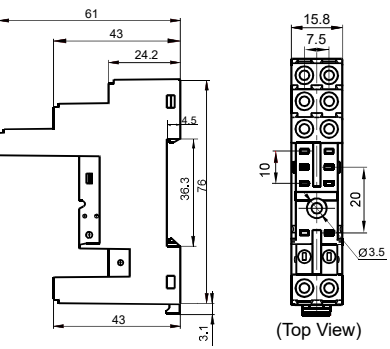
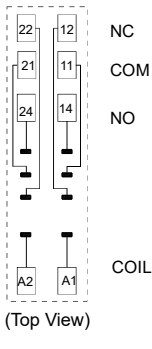
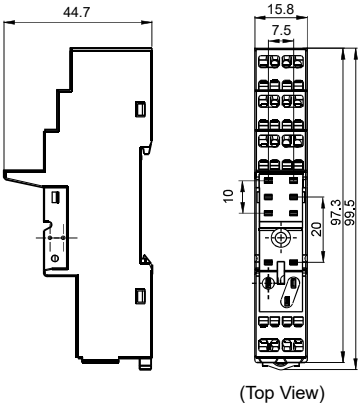
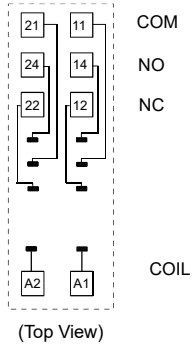
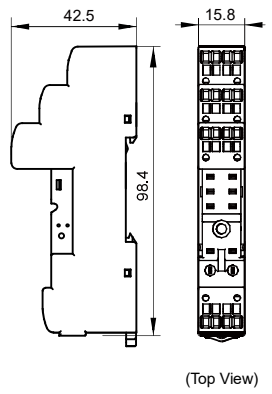
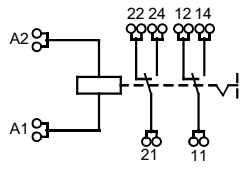
Socket	Outline Dimensions	Wiring Diagram	Accessory Available
14FF-1Z-A1  PCB terminal, PCB or Screw mounting	 (Top View)	 (Top View)	
14FF-1Z-C2  Screw terminal, PCB or Screw mounting With finger protection device	 (Top View)	 (Top View)	Marker: 14FF-M1 Plug-in module: HF_{AA}~ HF_{HU}*
14FF-1Z-C3  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)	Marker: 14FF-M1
14FF-2Z-A1  PCB terminal, PCB or Screw mounting	 (Top View)	 (Top View)	Metallic retainer: 14FF-H3 Remarks: the dielectric strength can reach 1500VAC that sockets mounted 14FF-H3

Notes: * If need accessory, please order with type.

(To be continued)

RELAY SOCKET SELECTION CHART

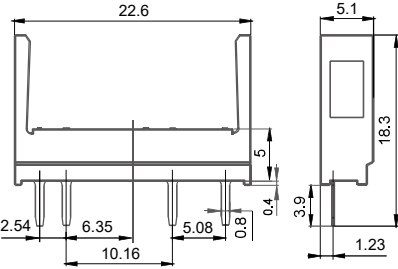
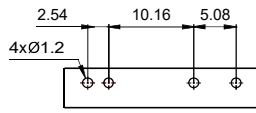
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Socket	Outline Dimensions	Wiring Diagram	Accessory Available
14FF-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)	Plastic retainer: 14FF-H6 Marker: 14FF-M1 Plug-in module: HFAA~ HFHU*
14FF-2Z-C3  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)	Plastic retainer: 14FF-H6 Marker: 14FF-M1 Plug-in module: HFAA~ HFHU*
14FF-2Z-C4  Spring-loaded terminal, DIN rail mounting, With finger protection device	 (Top View)	 (Top View)	Plastic retainer: 14FF-H6 Marker: 14FF-M1 Plug-in module: HFAA~ HFHU*
14FF-2Z-C10  Spring-loaded terminal, DIN rail mounting, With finger protection device	 (Top View)		Plastic retainer: 14FF-H4 14FF-H6 14FF-H10 Marker: 14FF-M1 Plug-in module HFAA~HFHU

Notes: * If need accessory, please order with type.

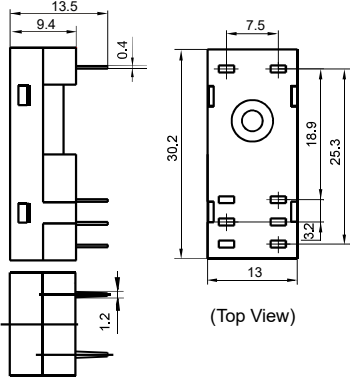
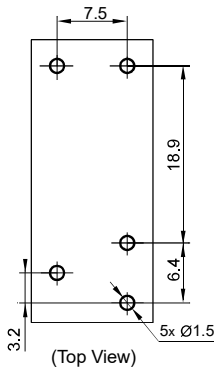
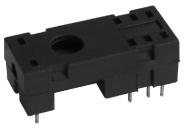
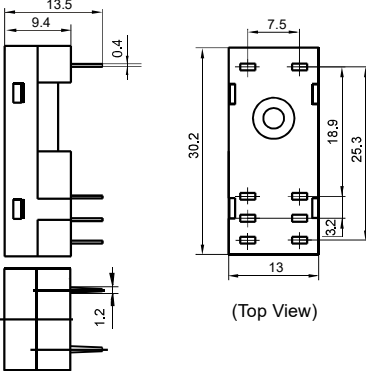
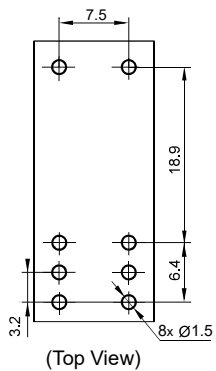
RELAY SOCKET SELECTION CHART

49F Socket(Applicable relay types: HF49FD)

Socket	Outline Dimensions	Wiring Diagram	Accessory Available
49F-1Z-A1-1/2  PCB terminal			取出卡: 49F-B

118F Socket(Applicable relay types: HF118F)

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Accessory Available
118F-1Z-A1-1  PCB terminal, PCB or Screw mounting Applicable for HF118F 1 type			Metallic retainer 118F-H1
118F-2Z-A1  PCB terminal, PCB or Screw mounting Applicable for HF118F 2 type			Metallic retainer 118F-H1

Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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