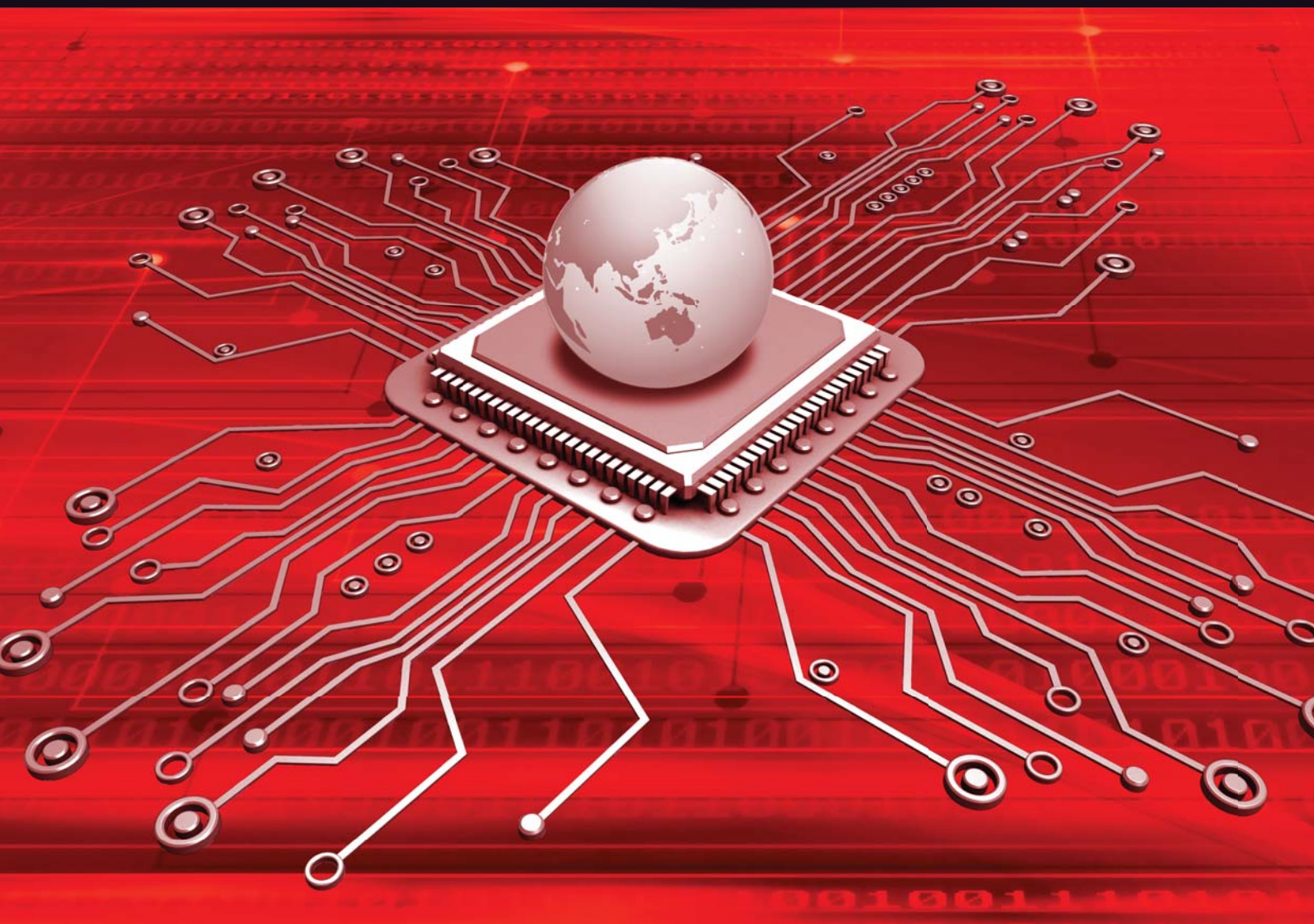


# PRODUCT SELECTION GUIDE



**KOREA**

신뢰와 정의로 고객에게 믿음을 주는 기업  
Warm Faith AND Good Feeling

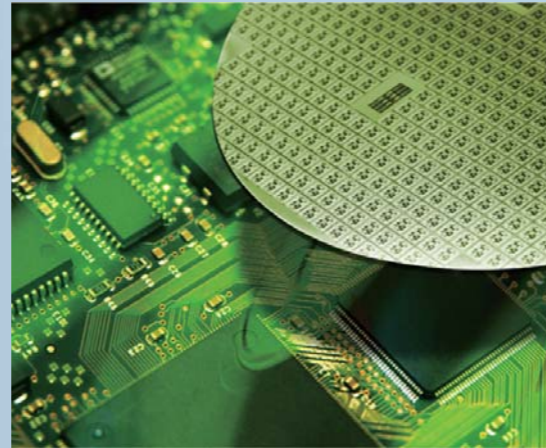


# The most powerful Partner for you!



## High Technology

- We have been developing specified power semiconductor over 15 years.
- Design & Quality control expert based on Korea technology.
- Wide range of power semiconductor such as MOSFET, SBD, FRD, TRIAC, SCR, BJT, LED Driver IC.
- 3Gen\_Deep Super\_Junction MOSFET ( 500V ~ 800V )
- Higher system efficiency through Split-Gate LV MOSFET (30V ~ 150V)
- SBD & FRD (Fast, Ultra Fast, Super Fast)
- 3<sup>rd</sup> Planar MOS 800V Series



## Power Innovation



Makes a constant effort to driven innovative ideas and management for preparing next generation market.

## Customized Solution

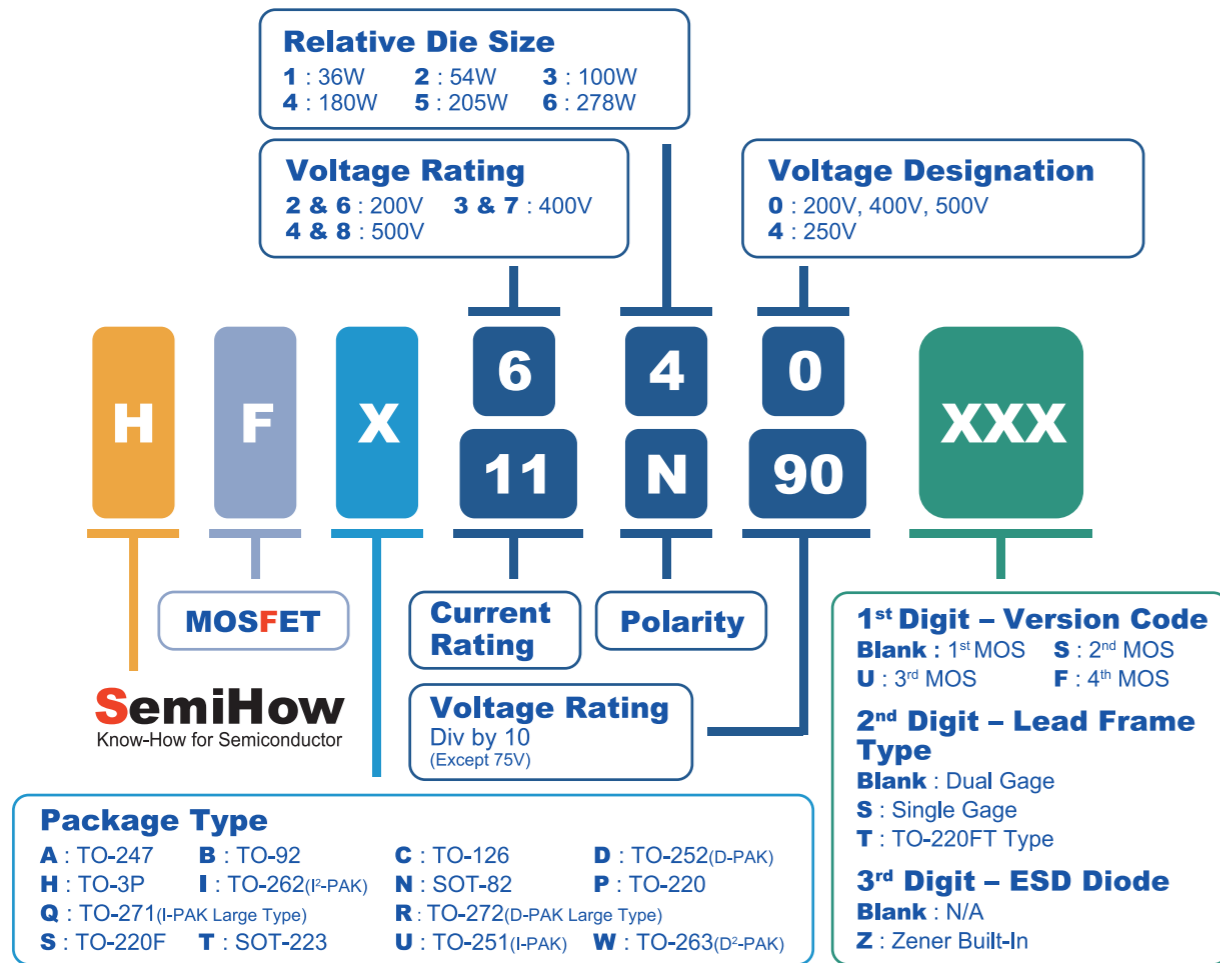
- Innovator of high performance power semiconductor products enabling all of electronic power circuit.
- Can be directly conversion, also offers diverse solutions to match your requirement.

**CUSTOMIZED SOLUTIONS**  
Built to Your Company's Specs

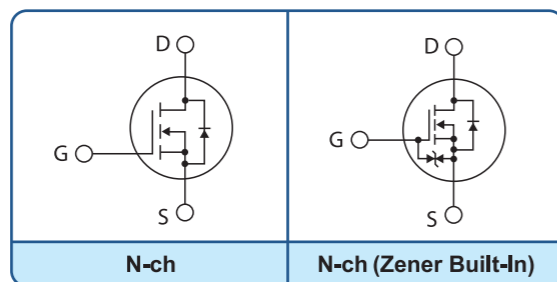
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DISCRETE

Planar MOSFET



SYMBOL



MOSFETs (60V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)</sub> max [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFW50N06A	60	50	0.022	120	27	490	D <sup>2</sup> -PAK
HFI50N06A	60	50	0.022	120	27	490	I <sup>2</sup> -PAK
HFP50N06A	60	50	0.022	120	27	490	TO-220
HFS50N06A	60	50	0.022	48	27	490	TO-220F

DISCRETE

MOSFETs (200V~500V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)</sub> max [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFD630	200	7.2	0.40	46	22	160	D-PAK
HFU630	200	7.2	0.40	46	22	160	I-PAK
HFP630	200	9.0	0.40	72	22	160	TO-220
HFS630	200	9.0	0.40	38	22	160	TO-220F
HFD630A	200	9.0	0.40	45	12	232	D-PAK
HFU630A	200	9.0	0.40	45	12	232	I-PAK
HFP630A	200	9.0	0.40	60	12	232	TO-220
HFS630A	200	9.0	0.40	30	12	232	TO-220F
HFW640	200	18.0	0.18	139	37	250	D <sup>2</sup> -PAK
HFI640	200	18.0	0.18	139	37	250	I <sup>2</sup> -PAK
HFP640	200	18.0	0.18	139	37	250	TO-220
HFS640	200	18.0	0.18	43	37	250	TO-220F
HFP640A	200	18.0	0.17	100	22	453	TO-220
HFS640A	200	18.0	0.17	35	22	453	TO-220F
HFD5N40	400	3.4	1.60	45	13	510	D-PAK
HFU5N40	400	3.4	1.60	45	13	510	I-PAK
HFP730S	400	6.0	1.00	73	17	280	TO-220
HFS730S	400	6.0	1.00	38	17	280	TO-220F
HFW11N40	400	11.4	0.48	147	35	520	D <sup>2</sup> -PAK
HFP11N40	400	11.4	0.48	147	35	520	TO-220
HFS11N40	400	11.4	0.48	50	35	520	TO-220F
HFP740	400	10.5	0.57	135	25	360	TO-220
HFS740	400	10.5	0.57	44	25	360	TO-220F
HFD4N50	500	2.6	2.70	45	13	440	D-PAK
HFU4N50	500	2.6	2.70	45	13	440	I-PAK
HFP4N50	500	3.4	2.70	70	13	440	TO-220
HFS4N50	500	3.4	2.70	28	13	440	TO-220F
HFP830	500	4.5	1.50	73	18	270	TO-220
HFS830	500	4.5	1.50	38	18	270	TO-220F
HFD5N50S	500	4.0	1.50	48	15.5	300	D-PAK
HFU5N50S	500	4.0	1.50	48	15.5	300	I-PAK
HFW5N50S	500	5.0	1.50	73	15.5	300	D <sup>2</sup> -PAK
HFI5N50S	500	5.0	1.50	73	15.5	300	I <sup>2</sup> -PAK
HFP5N50S	500	5.0	1.50	73	15.5	300	TO-220
HFS5N50S	500	5.0	1.50	38	15.5	300	TO-220F
HFW9N50	500	9.0	0.73	147	35	360	D <sup>2</sup> -PAK
HFI9N50	500	9.0	0.73	147	35	360	I <sup>2</sup> -PAK
HFP9N50	500	9.0	0.73	147	35	360	TO-220
HFS9N50	500	9.0	0.73	50	35	360	TO-220F
HFW840	500	9.0	0.85	135	25	360	D <sup>2</sup> -PAK
HFP840	500	9.0	0.85	135	25	360	TO-220
HFS840	500	9.0	0.85	44	25	360	TO-220F
HFP13N50S	500	13.0	0.48	195	38	560	TO-220
HFS13N50S	500	13.0	0.48	48	38	560	TO-220F
HFH18N50S	500	19.0	0.265	239	52	945	TO-3P
HFA24N50G	500	24.0	0.21	270	110	1200	TO-247

## DISCRETE

## MOSFETs (600V~650V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFT1N60S	600	0.2	12.00	2.1	3	33	SOT-223
HFB1N60S	600	0.3	12.00	2.5	3	33	TO-92
HFD1N60S	600	1.0	12.00	28	3	33	D-PAK
HFU1N60S	600	1.0	12.00	28	3	33	I-PAK
HFD2N60S	600	1.9	5.00	44	6	120	D-PAK
HFU2N60S	600	1.9	5.00	44	6	120	I-PAK
HFP2N60S	600	2.0	5.00	54	6	120	TO-220
HFS2N60S	600	2.0	5.00	23	6	120	TO-220F
HFD5N60S	600	4.3	2.50	91	10.5	210	D-PAK
HFU5N60S	600	4.3	2.50	91	10.5	210	I-PAK
HFV5N60S	600	4.5	2.50	100	10.5	210	D <sup>2</sup> -PAK
HFI5N60S	600	4.5	2.50	100	10.5	210	I <sup>2</sup> -PAK
HFP5N60S	600	4.5	2.50	100	10.5	210	TO-220
HFS5N60S	600	4.5	2.50	33	10.5	210	TO-220F
HFP8N60S	600	7.5	1.20	147	22	230	TO-220
HFS8N60S	600	7.5	1.20	48	22	230	TO-220F
HFV10N60S	600	9.5	0.80	156	29	700	D <sup>2</sup> -PAK
HFP10N60S	600	9.5	0.80	156	29	700	TO-220
HFS10N60S	600	9.5	0.80	50	29	700	TO-220F
HFV12N60S	600	12.0	0.65	225	38	870	D <sup>2</sup> -PAK
HFP12N60S	600	12.0	0.65	225	38	870	TO-220
HFS12N60S	600	12.0	0.65	51	38	870	TO-220F
HFH19N60	600	18.5	0.38	300	95	1150	TO-3P
HFB1N65S	650	0.3	13.50	2.5	3	26	TO-92
HFD1N65S	650	0.9	13.50	28	3	26	D-PAK
HFU1N65S	650	0.9	13.50	28	3	26	I-PAK
HFD2N65S	650	1.6	6.50	44	6	100	D-PAK
HFU2N65S	650	1.6	6.50	44	6	100	I-PAK
HFP2N65S	650	1.8	6.50	54	6	100	TO-220
HFS2N65S	650	1.8	6.50	23	6	100	TO-220F
HFD5N65S	650	4.0	2.90	91	10.5	180	D-PAK
HFU5N65S	650	4.0	2.90	91	10.5	180	I-PAK
HFV5N65S	650	4.2	2.90	100	10.5	180	D <sup>2</sup> -PAK
HFI5N65S	650	4.2	2.90	100	10.5	180	I <sup>2</sup> -PAK
HFP5N65S	650	4.2	2.90	100	10.5	180	TO-220
HFS5N65S	650	4.2	2.90	33	10.5	180	TO-220F
HFI8N65S	650	7.2	1.40	147	22	210	I <sup>2</sup> -PAK
HFP8N65S	650	7.2	1.40	147	22	210	TO-220
HFS8N65S	650	7.2	1.40	48	22	210	TO-220F
HFV10N65S	650	9.5	0.98	156	29	700	D <sup>2</sup> -PAK
HFP10N65S	650	9.5	0.98	156	29	700	TO-220
HFS10N65S	650	9.5	0.98	50	29	700	TO-220F
HFV12N65S	650	12.0	0.78	225	38	860	D <sup>2</sup> -PAK
HFP12N65S	650	12.0	0.78	225	38	860	TO-220
HFS12N65S	650	12.0	0.78	51	38	860	TO-220F

## DISCRETE

## MOSFETs (800V~900V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFD3N80	800	3.0	4.80	70	17	320	D-PAK
HFU3N80	800	3.0	4.80	70	17	320	I-PAK
HFP3N80	800	3.0	4.80	107	17	320	TO-220
HFS3N80	800	3.0	4.80	39	17	320	TO-220F
HFP5N80	800	5.0	2.60	140	30	450	TO-220
HFS5N80	800	5.0	2.60	47	30	450	TO-220F
HFV7N80	800	7.0	1.90	167	35	580	D <sup>2</sup> -PAK
HFI7N80	800	7.0	1.90	167	35	580	I <sup>2</sup> -PAK
HFP7N80	800	7.0	1.90	167	35	580	TO-220
HFS7N80	800	7.0	1.90	56	35	580	TO-220F
HFH7N80	800	7.0	1.90	198	35	580	TO-3P
HFS8N80	800	8.0	1.90	56	35	580	TO-220F
HFP9N80	800	9.0	1.44	178	48	860	TO-220
HFS9N80	800	9.0	1.44	59	48	860	TO-220F
HFP10N80	800	9.4	1.15	195	58	920	TO-220
HFS10N80	800	9.4	1.15	65	58	920	TO-220F
HFH10N80	800	10.0	1.15	240	58	920	TO-3P
HFP11N80Z	800	11.0	0.90	210	74	970	TO-220
HFS11N80Z	800	11.0	0.90	68	74	970	TO-220F
HFH13N80	800	12.6	0.95	300	68	1100	TO-3P
HFD3N90	900	3.0	5.60	70	17	180	D-PAK
HFU3N90	900	3.0	5.60	70	17	180	I-PAK
HFP3N90	900	3.0	5.60	107	17	180	TO-220
HFS3N90	900	3.0	5.60	39	17	180	TO-220F
HFP4N90	900	4.0	3.00	140	30	570	TO-220
HFS4N90	900	4.0	3.00	47	30	570	TO-220F
HFV6N90	900	6.0	2.40	167	41	650	D <sup>2</sup> -PAK
HFI6N90	900	6.0	2.40	167	41	650	I <sup>2</sup> -PAK
HFP6N90	900	6.0	2.40	167	41	650	TO-220
HFS6N90	900	6.0	2.40	56	41	650	TO-220F
HFH6N90	900	6.0	2.40	198	41	650	TO-3P
HFS9N90	900	9.0	1.40	68	55	900	TO-220F
HFH9N90	900	9.0	1.40	280	55	900	TO-3P
HFA9N90	900	9.0	1.40	110	55	900	TO-247
HFH9N90Z	900	9.0	1.40	280	55	900	TO-3P
HFA9N90Z	900	9.0	1.40	110	55	900	TO-247
HFH10N90Z	900	10.0	1.30	290	72	950	TO-3P
HFA10N90Z	900	10.0	1.30	115	72	950	TO-247
HFH11N90	900	11.0	1.15	300	75	960	TO-3P
HFA11N90	900	11.0	1.15	120	75	960	TO-247

## DISCRETE

3<sup>rd</sup>-Gen MOSFETs (400V~650V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)</sub> max [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFP730U	400	6.0	1.00	98	13	300	TO-220
HFS730U	400	6.0	1.00	35	13	300	TO-220F
HFD5N50U	500	4.0	1.50	63	13	230	D-PAK
HFU5N50U	500	4.0	1.50	63	13	230	I-PAK
HFP5N50U	500	5.0	1.50	98	13	230	TO-220
HFS5N50U	500	5.0	1.50	35	13	230	TO-220F
HFP13N50U	500	13.0	0.48	187	34	580	TO-220
HFS13N50U	500	13.0	0.48	41	34	580	TO-220F
HFP18N50U	500	18.0	0.265	236	58	950	TO-220
HFS18N50U	500	18.0	0.265	37	58	950	TO-220F
HFA20N50U	500	20.0	0.265	100	58	950	TO-247
HFD2N60U	600	1.8	5.00	42	5.5	116	D-PAK
HFU2N60U	600	1.8	5.00	42	5.5	116	I-PAK
HFC2N60U	600	2.0	5.00	10	5.5	116	TO-126
HFP2N60U	600	2.0	5.00	54	5.5	116	TO-220
HFS2N60U	600	2.0	5.00	23	5.5	116	TO-220F
HFD5N60U	600	3.6	2.50	80	10.5	163	D-PAK
HFU5N60U	600	3.6	2.50	80	10.5	163	I-PAK
HFP5N60U	600	4.5	2.50	123	10.5	163	TO-220
HFS5N60U	600	4.5	2.50	44	10.5	163	TO-220F
HFD6N60U	600	4.8	1.66	95	16	170	D-PAK
HFU6N60U	600	4.8	1.66	95	16	170	I-PAK
HFP6N60U	600	6.0	1.66	150	16	170	TO-220
HFS6N60U	600	6.0	1.66	54	16	170	TO-220F
HFD8N60U	600	6.0	1.20	98	22	280	D-PAK
HFU8N60U	600	6.0	1.20	98	22	280	I-PAK
HFW8N60U	600	7.5	1.20	150	22	280	D <sup>2</sup> -PAK
HFI8N60U	600	7.5	1.20	150	22	280	I <sup>2</sup> -PAK
HFP8N60U	600	7.5	1.20	150	22	280	TO-220
HFS8N60U	600	7.5	1.20	48	22	280	TO-220F
HFW10N60U	600	9.5	0.80	164	29	470	D <sup>2</sup> -PAK
HFI10N60U	600	9.5	0.80	164	29	470	I <sup>2</sup> -PAK
HFP10N60U	600	9.5	0.80	164	29	470	TO-220
HFS10N60U	600	9.5	0.80	50	29	470	TO-220F
HFP12N60U	600	12.0	0.65	230	42	840	TO-220
HFS12N60U	600	12.0	0.65	52	42	840	TO-220F
HFP13N60U	600	14.0	0.41	230	60	810	TO-220
HFS13N60U	600	14.0	0.41	54	60	810	TO-220F
HFD2N65U	650	1.8	6.50	42	5.5	116	D-PAK
HFU2N65U	650	1.8	6.50	42	5.5	116	I-PAK
HFP2N65U	650	2.0	6.50	54	5.5	116	TO-220
HFS2N65U	650	2.0	6.50	23	5.5	116	TO-220F
HFD5N65U	650	3.6	2.90	80	10.5	163	D-PAK
HFU5N65U	650	3.6	2.90	80	10.5	163	I-PAK

## DISCRETE

3<sup>rd</sup>-Gen MOSFETs (650V~800V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)</sub> max [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFV5N65U	650	4.5	2.90	123	10.5	163	D <sup>2</sup> -PAK
HFI5N65U	650	4.5	2.90	123	10.5	163	I <sup>2</sup> -PAK
HFP5N65U	650	4.5	2.90	123	10.5	163	TO-220
HFS5N65U	650	4.5	2.90	44	10.5	163	TO-220F
HFD6N65U	650	4.8	2.00	95	16	170	D-PAK
HFU6N65U	650	4.8	2.00	95	16	170	I-PAK
HFP6N65U	650	6.0	2.00	150	16	170	TO-220
HFS6N65U	650	6.0	2.00	54	16	170	TO-220F
HFD8N65U	650	6.0	1.40	98	22	280	D-PAK
HFU8N65U	650	6.0	1.40	98	22	280	I-PAK
HFV8N65U	650	7.5	1.40	150	22	280	D <sup>2</sup> -PAK
HFI8N65U	650	7.5	1.40	150	22	280	I <sup>2</sup> -PAK
HFP8N65U	650	7.5	1.40	150	22	280	TO-220
HFS8N65U	650	7.5	1.40	48	22	280	TO-220F
HFP10N65U	650	9.5	0.98	164	29	470	TO-220
HFS10N65U	650	9.5	0.98	50	29	470	TO-220F
HFP12N65U	650	12.0	0.78	230	42	800	TO-220
HFS12N65U	650	12.0	0.78	52	42	800	TO-220F
HFP13N65U	650	14.0	0.50	230	60	810	TO-220
HFS13N65U	650	14.0	0.50	54	60	810	TO-220F
HFD5N70U	700	3.6	3.20	80	10.5	163	D-PAK
HFU5N70U	700	3.6	3.20	80	10.5	163	I-PAK
HFD6N70U	700	4.8	2.30	95	16	170	D-PAK
HFU6N70U	700	4.8	2.30	95	16	170	I-PAK
HFV6N70U	700	6.0	2.30	40	16	170	SOT-82
HFP6N70U	700	6.0	2.30	150	16	170	TO-220
HFS6N70U	700	6.0	2.30	54	16	170	TO-220F
HFD8N70U	700	6.0	1.60	98	22	280	D-PAK
HFU8N70U	700	6.0	1.60	98	22	280	I-PAK
HFP8N70U	700	7.5	1.60	150	22	280	TO-220
HFS8N70U	700	7.5	1.60	48	22	280	TO-220F
HFD3N80U	800	3.0	4.80	70	17	320	D-PAK
HFU3N80U	800	3.0	4.80	70	17	320	I-PAK
HFP3N80U	800	3.0	4.80	107	17	320	TO-220
HFS3N80U	800	3.0	4.80	39	17	320	TO-220F
HFP5N80U	800	5.0	2.60	140	30	450	TO-220
HFS5N80U	800	5.0	2.60	47	30	450	TO-220F
HFP7N80U	800	7.0	1.90	167	35	580	TO-220
HFS7N80U	800	7.0	1.90	56	35	580	TO-220F
HFP9N80U	800	9.0	1.44	178	48	860	TO-220
HFS9N80U	800	9.0	1.44	59	48	860	TO-220F
HFP10N80U	800	9.4	1.15	195	58	920	TO-220
HFS10N80U	800	9.4	1.15	65	58	920	TO-220F

\* 800V series is under development.

DISCRETE

4<sup>th</sup>-Gen MOSFETs (500V~700V)

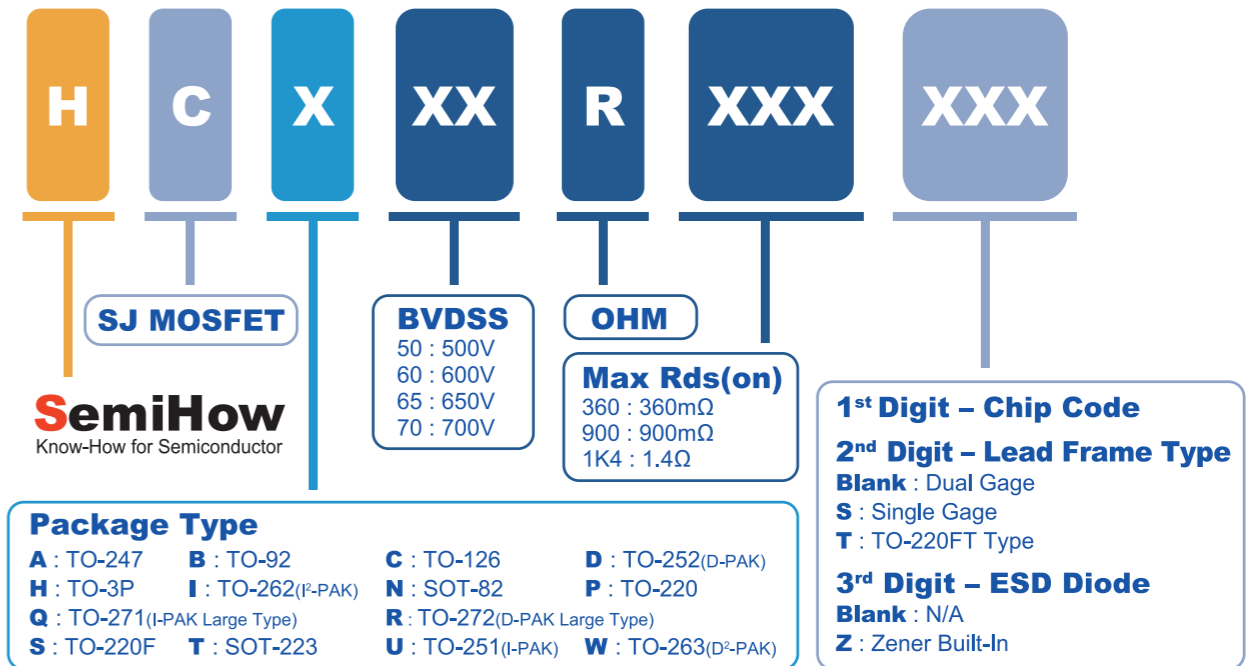
(Ruggedness improve / System oriented design)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HFP730F	400	6.0	1.0	76	13	250	TO-220
HFS730F	400	6.0	1.0	29	13	250	TO-220F
HFP830F	500	5.0	1.5	96	12	195	TO-220
HFS830F	500	5.0	1.5	36	12	195	TO-220F
HFT1N60F	600	1.0	8.0	2.1	3.7	33	SOT-223
HFB1N60F	600	1.0	8.0	2.5	3.7	33	TO-92
HFD1N60F	600	1.0	8.0	28	3.7	33	D-PAK
HFU1N60F	600	1.0	8.0	28	3.7	33	I-PAK
HFD2N60F	600	2.0	4.5	42	6.5	110	D-PAK
HFU2N60F	600	2.0	4.5	42	6.5	110	I-PAK
HFP2N60F	600	2.0	4.5	54	6.5	110	TO-220
HFS2N60F	600	2.0	4.5	23	6.5	110	TO-220F
HFS2N60FS	600	2.0	4.5	23	6.5	110	TO-220FS
HFP4N60F	600	4.0	3.2	110	8.5	70	TO-220
HFS4N60F	600	4.0	3.2	35	8.5	70	TO-220F
HFS4N60FS	600	4.0	3.2	35	8.5	70	TO-220FS
HFD5N60F	600	5.0	2.3	78	12.5	110	D-PAK
HFU5N60F	600	5.0	2.3	78	12.5	110	I-PAK
HFP5N60F	600	5.0	2.3	125	12.5	110	TO-220
HFS5N60F	600	5.0	2.3	42	12.5	110	TO-220F
HFS5N60FS	600	5.0	2.3	42	12.5	110	TO-220FS
HFP7N60F	600	7.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220
HFS7N60F	600	7.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220F
HFP12N60F	600	12.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220
HFS12N60F	600	12.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220F
HFP20N60F	600	20.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220
HFS20N60F	600	20.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220F
HFD2N65F	650	2.0	5.0	42	6.5	110	D-PAK
HFU2N65F	650	2.0	5.0	42	6.5	110	I-PAK
HFP2N65F	650	2.0	5.0	54	6.5	110	TO-220
HFS2N65F	650	2.0	5.0	23	6.5	110	TO-220F
HFS2N65FS	650	2.0	5.0	23	6.5	110	TO-220FS
HFD4N65F	650	4.0	3.8	62.5	8.5	70	D-PAK
HFU4N65F	650	4.0	3.8	62.5	8.5	70	I-PAK
HFP4N65F	650	4.0	3.8	110	8.5	70	TO-220
HFS4N65F	650	4.0	3.8	35	8.5	70	TO-220F
HFS4N65FS	650	4.0	3.8	35	8.5	70	TO-220FS
HFD5N65F	650	5.0	2.5	78	12.5	110	D-PAK
HFU5N65F	650	5.0	2.5	78	12.5	110	I-PAK
HFP5N65F	650	5.0	2.5	125	12.5	110	TO-220
HFS5N65F	650	5.0	2.5	42	12.5	110	TO-220F
HFP7N65F	650	7.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220
HFS7N65F	650	7.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220F
HFP12N65F	650	12.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220
HFS12N65F	650	12.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220F
HFP20N65F	650	20.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220
HFS20N65F	650	20.0	T.B.D	T.B.D	T.B.D	T.B.D	TO-220F
HFB1N70F	700	1.0	13.0	2.5	3.7	21	TO-92

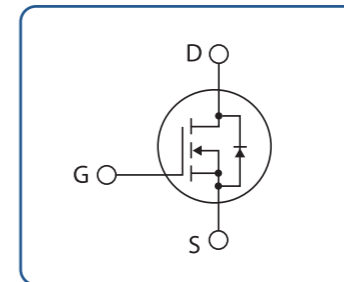
\* 7~20A series is under development.

DISCRETE

Super Junction MOSFET



SYMBOL



SJ-MOS (500V~550V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HCD50R400T	500	7.0	0.40	63	14.5	162	D-PAK
HCA55R140E	550	23.0	0.14	151	22	610	TO-247
HCP55R140E	550	23.0	0.14	151	22	610	TO-220
HCS55R140E	550	23.0	0.14	34	22	610	TO-220F

## DISCRETE

## SJ-MOS (600V~650V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)</sub> max [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HCU60R700T	600	6.0	0.70	37	12	140	I-PAK
HCD60R700T	600	6.0	0.70	37	12	140	D-PAK
HCS60R700T	600	6.0	0.70	25	12	140	TO-220F
HCU60R520T	600	8.0	0.52	57	14	170	I-PAK
HCD60R520T	600	8.0	0.52	57	14	170	D-PAK
HCS60R520T	600	8.0	0.52	29	14	170	TO-220F
HCU60R350T	600	11.0	0.35	83	17.5	300	I-PAK
HCD60R350T	600	11.0	0.35	83	17.5	300	D-PAK
HCS60R350T	600	11.0	0.35	31	17.5	300	TO-220F
HCS60R180E	600	20.0	0.18	34	22	590	TO-220F
HCA60R150T	600	22.0	0.15	192	41	650	TO-247
HCP60R150T	600	22.0	0.15	192	41	650	TO-220
HCS60R150T	600	22.0	0.15	34.5	41	650	TO-220F
HCA60R099E	600	30.0	0.099	195	45	774	TO-247
HCA60R095T	600	40.0	0.095	400	109	1000	TO-247
HCS60R092E	600	40.0	0.092	35	45	1000	TO-220F
HCU65R600T	650	7.5	0.60	57	14	160	I-PAK
HCD65R600T	650	7.5	0.60	57	14	160	D-PAK
HCS65R600T	650	7.5	0.60	29	14	160	TO-220F
HCU65R380T	650	11.0	0.38	83	17.5	270	I-PAK
HCD65R380T	650	11.0	0.38	83	17.5	270	D-PAK
HCP65R380T	650	11.0	0.38	83	17.5	270	TO-220
HCS65R380T	650	11.0	0.38	31	17.5	270	TO-220F
HCS65R290E	650	15.0	0.29	32	16	240	TO-220F
HCS65R220E	650	20.0	0.22	34	22	370	TO-220F
HCI65R160T	650	20.0	0.16	151	41	640	I <sup>2</sup> -PAK
HCS65R160T	650	20.0	0.16	34.5	41	640	TO-220F
HCA65R125E	650	25.0	0.125	195	42	774	TO-247
HCA65R110E	650	40.0	0.11	278	42	1000	TO-247
* HCA65R110FE	650	40.0	0.11	278	42	1000	TO-247
* HCS65R110FE	650	40.0	0.11	35	42	1000	TO-220F
HCA65R069E	650	53.0	0.069	390	61	1200	TO-247
* HCA65R069FE	650	53.0	0.069	390	61	1200	TO-247
HCA65R042E	650	78.0	0.042	480	100	2800	TO-247
* HCA65R042FE	650	78.0	0.042	480	95	2800	TO-247

\* Fast Recovery Type

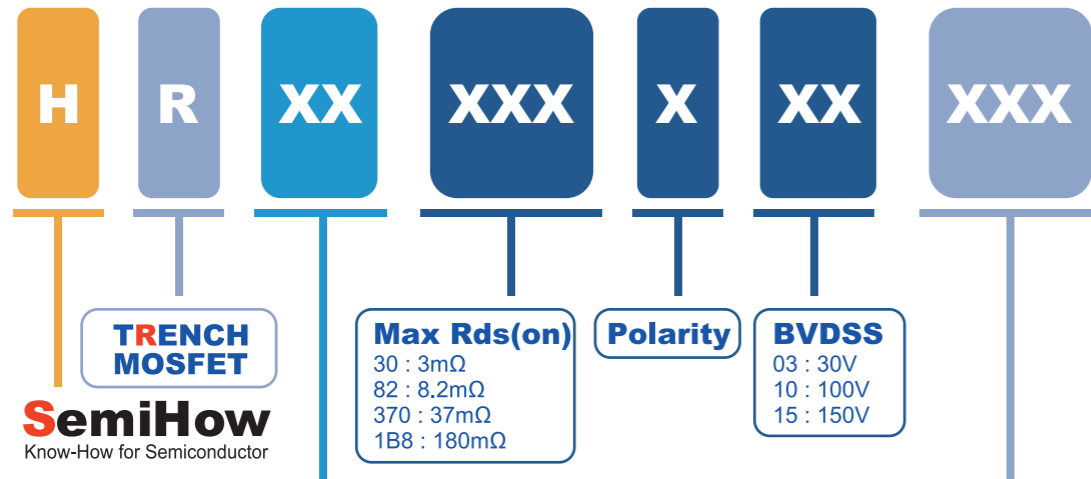
## DISCRETE

## SJ-MOS (700V~900V)

Part Name	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)</sub> max [Ω]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HCU70R1K5E	700	4.0	1.50	28	5.5	80	I-PAK
HCU70R1K4P	700	4.0	1.40	21	7.5	130	I-PAK
HCD70R1K4P	700	4.0	1.40	21	7.5	130	D-PAK
HCS70R1K4P	700	4.0	1.40	20	7.5	130	TO-220F
HCU6N70S	700	3.0	1.25	28	7	25	I-PAK
HCD6N70S	700	3.0	1.25	28	7	25	D-PAK
HCU7N70S	700	5.0	1.10	28	9	40	I-PAK
HCU70R950T	700	4.5	0.95	37	10	85	I-PAK
HCD70R950T	700	4.5	0.95	37	10	85	D-PAK
HCS70R950T	700	4.5	0.95	26	10	85	TO-220F
HCU70R700T	700	6.0	0.70	50	14	155	I-PAK
HCD70R700T	700	6.0	0.70	50	14	155	D-PAK
HCI70R700T	700	6.0	0.70	50	14	155	I <sup>2</sup> -PAK
HCS70R700T	700	6.0	0.70	28	14	155	TO-220F
HCS70R500E	700	10.0	0.50	31	12	190	TO-220F
HCD70R350E	700	12.0	0.35	104	16	215	D-PAK
HCS70R350E	700	12.0	0.35	32	16	215	TO-220F
HCU80R1K4E	800	4.0	1.40	37	6.5	140	I-PAK
HCD80R1K4E	800	4.0	1.40	37	6.5	140	D-PAK
HCS80R1K4E	800	4.0	1.40	26	6.5	140	TO-220F
HCD80R650E	800	8.0	0.65	83	12	240	D-PAK
HCS80R650E	800	8.0	0.65	31	12	240	TO-220F
HCS80R500R	800	10.5	0.50	31	13	380	TO-220F
HCS80R380R	800	14.0	0.38	32	18	490	TO-220F
HCS80R250T	800	18.0	0.29	34	58	720	TO-220F
HCU90R1K2E	900	5.0	1.20	83	11	210	I-PAK
HCS90R1K2E	900	5.0	1.20	31	11	210	TO-220F

DISCRETE

Low Voltage Trench MOSFET



1st Digit – Gate Drive Voltage

Blank : Standard (VTH : 2.5 ~ 4.5)  
L : Logic (VTH : 1~2.5)

2nd Digit – Package Type

A : TO-247    B : TO-92    C : TO-126    D : TO-252(D-PAK)  
E : SOT-23    F : 8DFN(5x6)    FS : 8DFN(3x3)    H : TO-3P  
I : TO-262(I<sup>2</sup>-PAK)    N : SOT-82    O : 8SOP(EP)    P : TO-220  
Q : TO-271(I-PAK Large Type)    R : TO-272(D-PAK Large Type)  
S : TO-220F    T : SOT-223    U : TO-251(I-PAK)    W : TO-263(D<sup>2</sup>-PAK)

1st Digit – Chip Code

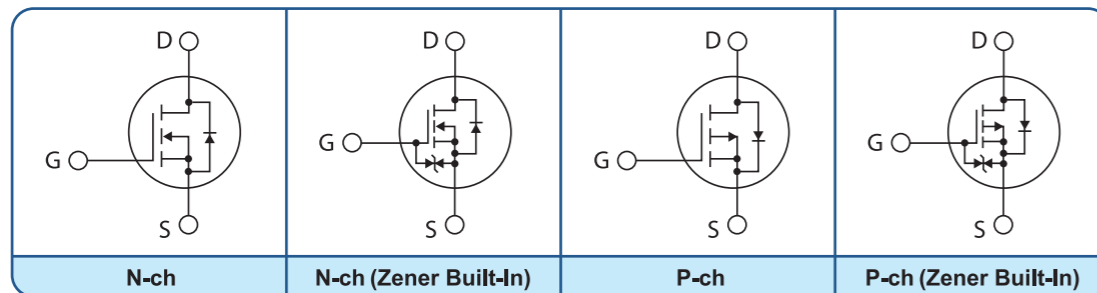
2nd Digit – Lead Frame Type

Blank : Dual Gage  
S : Single Gage  
T : TO-220FT Type

3rd Digit – ESD Diode

Blank : N/A  
Z : Zener Built-In

SYMBOL



LV Trench MOS P-Ch (-30V)

Part Name	Gate Drive	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [mΩ]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	Package
HRLE550P03K	Logic	-30	-4	55.0	1.4	18	SOT-23

DISCRETE

LV Trench MOS N-Ch (30V~60V)

Part Name	Gate Drive	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [mΩ]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HRLE320N03K	Logic	30	5	32	1.4	8.5	-	SOT-23
HRLFS190N03K	Logic	30	28	19	23	12	110	8DFN33
HRLF190N03K	Logic	30	31	19	27	12	110	8DFN56
HRLO110N03K	Logic	30	13.8	11	3.1	21	210	SOP-8
HRLFS90N03K	Logic	30	38	11	25	21	210	8DFN33
HRLF110N03K	Logic	30	42	11	30	21	210	8DFN56
HRLFS55N03K	Logic	30	66	4.2	28	50	300	8DFN33
HRLF55N03K	Logic	30	65	5.5	33	50	300	8DFN56
HRLD55N03K	Logic	30	100	5.5	75	50	300	D-PAK
HRLU55N03K	Logic	30	100	5.5	75	50	300	I-PAK
HRLP55N03K	Logic	30	100	5.5	94	50	300	TO-220
HRLF33N03K	Logic	30	85	3.3	36	110	870	8DFN56
HRLP33N03K	Logic	30	100	3.3	115	110	1200	TO-220
HRLP40N04K	Logic	40	130	4	115	130	1050	TO-220
HRP35N04K	Standard	40	150	3.5	136	110	3600	TO-220
HRP33N04K	Standard	40	180	3.3	176	155	4900	TO-220
HRP30N04K	Standard	40	230	3	250	200	5750	TO-220
HRD50N06K	Standard	60	40	14	39	40	145	D-PAK
HRU50N06K	Standard	60	40	14	39	40	145	I-PAK
HRF140N06K	Standard	60	40	14	45	40	100	8DFN56
HRP140N06K	Standard	60	40	14	50	40	145	TO-220
HRS140N06K	Standard	60	40	14	29	40	145	TO-220F
HRF130N06K	Standard	60	48	13	60	42	110	8DFN56
HRP130N06K	Standard	60	70	13	115	42	145	TO-220
HRS130N06K	Standard	60	70	13	43	42	145	TO-220F
HRLO125N06K	Logic	60	10	15.6	3.1	50	123	SOP-8
HRLF125N06K	Logic	60	52	12.5	63	50	123	8DFN56
HRLD125N06K	Logic	60	70	12.5	94	50	145	D-PAK
HRLU125N06K	Logic	60	70	12.5	94	50	145	I-PAK
HRLP125N06K	Logic	60	70	12.5	115	50	145	TO-220
HRP85N06K	Standard	60	80	8.5	110	73	275	TO-220
HRLF80N06K	Logic	60	70	8	69	100	220	8DFN56
HRLD80N06K	Logic	60	80	8	160	100	340	D-PAK
HRLU80N06K	Logic	60	80	8	160	100	340	I-PAK
HRLP80N06K	Logic	60	80	8	200	100	340	TO-220



## DISCRETE

## LV Trench MOS N-Ch (60V~80V)

Part Name	Gate Drive	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [mΩ]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HRD80N06K	Standard	60	114	8	160	90	340	D-PAK
HRU80N06K	Standard	60	114	8	160	90	340	I-PAK
HRP80N06K	Standard	60	114	8	200	90	340	TO-220
HRD72N06K	Standard	60	100	7.2	110	75	415	D-PAK
HRU72N06K	Standard	60	100	7.2	110	75	415	I-PAK
HRP72N06K	Standard	60	100	7.2	136	75	415	TO-220
HRP70N06K	Standard	60	80	7	88	100	415	TO-220
HRS70N06K	Standard	60	80	7	33	100	415	TO-220F
HRP58N06K	Standard	60	140	5.8	210	85	575	TO-220
HRP45N06K	Standard	60	150	4.5	190	120	1080	TO-220
HRP39N06K	Standard	60	180	3.9	230	150	2300	TO-220
HRP35N06K	Standard	60	210	3.5	250	190	2590	TO-220
HRP90N75K	Standard	75	70	9	94	95	300	TO-220
HRS90N75K	Standard	75	70	9	35	95	300	TO-220F
HRP100N08K	Standard	80	65	10	88	73	210	TO-220
HRP88N08K	Standard	80	80	8.8	115	75	290	TO-220
HRS88N08K	Standard	80	80	8.8	43	75	230	TO-220F
HRF85N08K	Standard	80	70	8.5	83	75	290	8DFN56
HRP85N08K	Standard	80	110	8.5	200	75	290	TO-220
HRS85N08K	Standard	80	110	8.5	75	75	290	TO-220F
HRP80N08K	Standard	80	120	8	230	60	500	TO-220
HRS80N08K	Standard	80	120	8	85	60	500	TO-220F
HRA56N08K	Standard	80	110	5.6	136	110	745	TO-247
HRP56N08K	Standard	80	110	5.6	136	110	745	TO-220
HRS56N08K	Standard	80	110	5.6	50	110	745	TO-220F
HRA45N08K	Standard	80	150	4.5	200	155	1080	TO-247
HRP45N08K	Standard	80	150	4.5	200	155	1080	TO-220
HRS45N08K	Standard	80	150	4.5	75	155	1080	TO-220F
HRA40N08K	Standard	80	180	4	250	190	1400	TO-247
HRP40N08K	Standard	80	180	4	250	190	1400	TO-220

## DISCRETE

## LV Trench MOS N-Ch (100V)

Part Name	Gate Drive	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [mΩ]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HRLD1B8N10K	Logic	100	2.7	180	33	11.5	22	D-PAK
HRLU1B8N10K	Logic	100	2.7	180	33	11.5	22	I-PAK
HRLT1B0N10K	Logic	100	3.5	105	2.1	20	21	SOT-223
HRLU1B0N10K	Logic	100	3.5	105	37	20	21	I-PAK
HRO400N10K	Logic	100	6.3	40	3.1	53	60	SOP-8
HRLD370N10K	Logic	100	25	37	100	53	80	D-PAK
HRLU370N10K	Logic	100	25	37	100	53	80	I-PAK
HRLP370N10K	Logic	100	25	37	160	53	80	TO-220
HRW370N10K	Standard	100	25	37	160	50	80	D <sup>2</sup> -PAK
HRP370N10K	Standard	100	25	37	160	50	80	TO-220
HRS370N10K	Standard	100	25	37	45	50	80	TO-220F
HRLO250N10K	Logic	100	7.9	25	3.1	90	96	SOP-8
HRLO180N10K	Logic	100	9.3	18	3.1	94	110	SOP-8
HRLF180N10K	Logic	100	40	18	63	94	110	8DFN56
HRD180N10K	Standard	100	65	18	133	85	170	D-PAK
HRU180N10K	Standard	100	65	18	133	85	170	I-PAK
HRP180N10K	Standard	100	65	18	167	85	170	TO-220
HRS180N10K	Standard	100	65	18	63	85	170	TO-220F
HRLF150N10K	Logic	100	50	15	74	80	190	8DFN56
HRLD150N10K	Logic	100	70	15	110	80	190	D-PAK
HRLU150N10K	Logic	100	70	15	110	80	190	I-PAK
HRLP150N10K	Logic	100	70	15	136	80	190	TO-220
HRF120N10K	Standard	100	60	12	83	65	190	8DFN56
HRD120N10K	Standard	100	73	12	110	65	265	D-PAK
HRU120N10K	Standard	100	73	12	110	65	265	I-PAK
HRW120N10K	Standard	100	73	12	136	65	265	D <sup>2</sup> -PAK
HRP120N10K	Standard	100	73	12	136	65	265	TO-220
HRS120N10K	Standard	100	73	12	50	65	265	TO-220F
HRW82N10K	Standard	100	100	8.2	167	110	560	D <sup>2</sup> -PAK
HRI82N10K	Standard	100	100	8.2	167	110	560	I <sup>2</sup> -PAK
HRA82N10K	Standard	100	100	8.2	167	110	560	TO-247
HRP82N10K	Standard	100	100	8.2	167	110	560	TO-220
HRS82N10K	Standard	100	100	8.2	63	110	560	TO-220F
HRA72N10K	Standard	100	140	7.2	300	150	850	TO-247
HRP72N10K	Standard	100	140	7.2	300	150	850	TO-220
HRS72N10K	Standard	100	140	7.2	110	150	850	TO-220F
HRP55N10K	Standard	100	170	5.5	300	190	910	TO-220

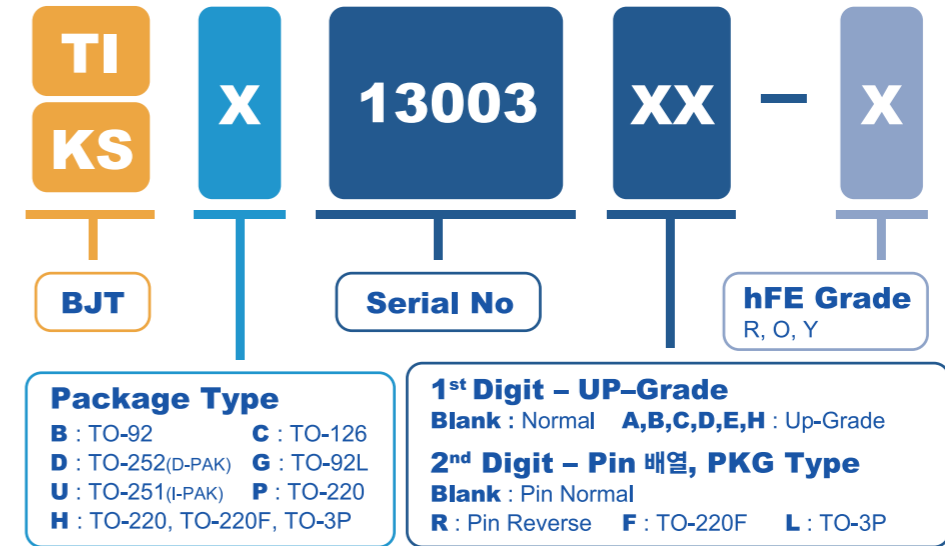
**DISCRETE**

**LV Trench MOS SGT(split gate) N-ch (45V~150V)**

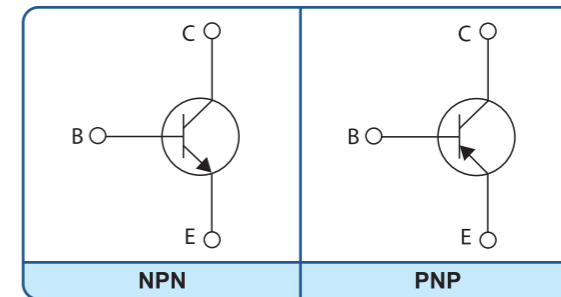
Part Name	Gate Drive	V <sub>DSS</sub> [V]	I <sub>D</sub> [A]	R <sub>DS(ON)max</sub> [mΩ]	P <sub>D</sub> [W]	Q <sub>g</sub> [nC]	E <sub>AS</sub> [mJ]	Package
HRLF45N045H	Logic	45	101	4.5	83	42	60	8DFN56
HRLF29N045H	Logic	45	140	2.9	104	50	100	8DFN56
HRLD29N045H	Logic	45	156	2.9	150	50	100	D-PAK
HRLP29N045H	Logic	45	182	2.9	176	50	100	TO-220
HRLFS150N06T	Logic	60	30	15.0	28.4	21	20	8DFN33
HRLF150N06T	Logic	60	43	15.0	56.5	21	20	8DFN56
HRLFS120N06H	Logic	60	33	11.5	25	18.5	20	8DFN33
HRLF120N06H	Logic	60	47	11.5	50	18.5	20	8DFN56
HRLO90N06H	Logic	60	14	9.0	3.1	24	65	SOP-8
HRLU90N06H	Logic	60	61	9.0	75	24	65	I-PAK
HRLO60N06H	Logic	60	17	6.0	3.1	36	80	SOP-8
HRLF53N06H	Logic	60	90	5.3	83	36	80	8DFN56
HRLU53N06H	Logic	60	105	5.3	125	36	80	I-PAK
HRLO48N06H	Logic	60	21	4.8	3.1	49	160	SOP-8
HRLF43N06H	Logic	60	120	4.3	104	49	160	8DFN56
HRLU43N06H	Logic	60	132	4.3	150	49	160	I-PAK
HRLI43N06H	Logic	60	140	4.3	176	49	160	I <sup>2</sup> -PAK
HRLP43N06H	Logic	60	140	4.3	176	49	160	TO-220
HRLS43N06H	Logic	60	140	4.3	39	49	160	TO-220F
HRLO220N10H	Logic	100	8	22	3.1	20	12	SOP-8
HRLU200N10H	Logic	100	45	20	75	20	12	I-PAK
HRLP200N10H	Logic	100	47	20	79	20	12	TO-220
HRLO120N10H	Logic	100	12	12	3.1	29	22	SOP-8
HRLF120N10H	Logic	100	60	12	83	29	22	8DFN56
HRLU120N10H	Logic	100	73	12	125	29	22	I-PAK
HRLD120N10H	Logic	100	73	12	125	29	22	D-PAK
HRLP120N10H	Logic	100	73	12	125	29	22	TO-220
HRLO85N10H	Logic	100	14	8.5	3.1	49	80	SOP-8
HRLF85N10H	Logic	100	82	8.5	104	49	80	8DFN56
HRLU85N10H	Logic	100	105	8.5	150	49	80	I-PAK
HRS82N10H	Standard	100	100	8.2	42	56	100	TO-220F
HRLF52N10H	Logic	100	115	5.2	125	60	160	8DFN56
HRP49N10H	Standard	100	150	4.9	250	61	180	TO-220
HRF190N15H	Standard	150	60	19	125	27	150	8DFN56
HRW105N15H	Standard	150	120	10.5	333	66	260	D <sup>2</sup> -PAK
HRI105N15H	Standard	150	120	10.5	333	66	260	I <sup>2</sup> -PAK
HRP105N15H	Standard	150	120	10.5	333	66	260	TO-220
HRS105N15H	Standard	150	120	10.5	40	66	260	TO-220F

**DISCRETE**

**Bipolar Junction Transistor**



**SYMBOL**



**Epitaxial Silicon Transistor**

Part Name	B <sub>VCBO</sub> [V]	B <sub>VCEO</sub> [V]	I <sub>C(CONT)</sub> [A]	P <sub>C</sub> [W]	hfe								Package
					R		O		Y		G		
					min	Max	min	Max	min	Max	min	Max	
KSH772	-40	-30	-3	10	60	120	100	200	160	320	200	400	TO-126
KSH882	40	30	3	10	60	120	100	200	160	320	200	400	
KSE772	-40	-30	3	1.2	60	120	100	200	160	320	200	400	SOT-89
TIP31C	100	100	3	40	10	50							TO-220
TIP32C	-100	-100	-3	40	10	50							
TIP41C	100	100	6	65	15	75							
TIP42C	-100	-100	-6	65	15	75							

**Epitaxial Silicon Darlington Transistor**

Part Name	B <sub>VCBO</sub> [V]	B <sub>VCEO</sub> [V]	I <sub>C(CONT)</sub> [A]	P <sub>C</sub> [W]	hfe		Product	Package
					Min	Max		
TIP102	100	100	8	80	1000	20000	TIP100/101/102	TO-220
TIP107	-100	-100	-8	80	1000	20000	TIP105/106/107	
TIP122	100	100	5	65	1000		TIP120/121/122	
TIP127	-100	-100	-5	65	1000		TIP125/126/127	
TIP142T	100	100	10	80	1000		TIP140T/141T/142T	
TIP147T	-100	-100	-10	80	1000		TIP145T/146T/147T	

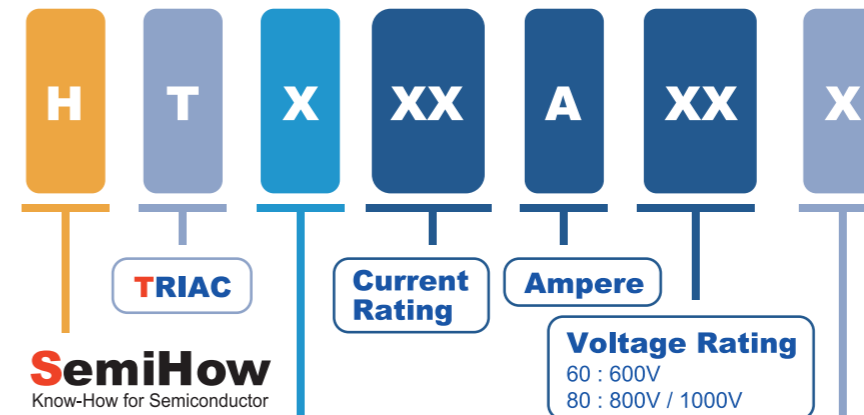
DISCRETE

Silicon Transistor

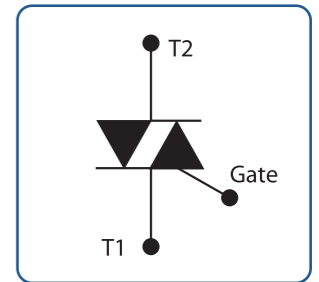
Part Name	BVCBO [V]	BVCEO [V]	IC(CONT) [A]	Pc [W]	hfe	Package
KSH1408F	80	80	4	25	40 ~ 240	TO-220F
KSB13002AR			0.8	1	9 ~ 38	TO-92
KSB13003E				1.1		TO-92
KSB13003ER						
KSD13003E			1.5		20 ~ 40	DPAK
KSD13003ER				25		
KSU13003E						IPAK
KSU13003ER						
KSB13003A				1.1		TO-92
KSB13003AR						
KSG13003AR			1.5	1.5	10 ~ 35	TO-92L
KSC13003A				20		TO-126
KSH13003A				30		TO-220
KSU13005E	700	400	4	40	20 ~ 40	IPAK
KSB13005A				2.8		TO-92
KSB13005AR						
KSG13005AR				3.8		TO-92L
KSD13005A			4	40	20 ~ 40	DPAK
KSU13005A						IPAK
KSH13005A				75		TO-220
KSH13005AF				30		TO-220F
KSH13007A			8	80	8 ~ 50	TO-220
KSH13007AF				40		TO-220F
KSH13009A				100		TO-220
KSH13009AF			12	50	8 ~ 40	TO-220F
KSH13009AL				130		TO-3P
KSB13003C				1.1		TO-92
KSB13003CR	800	450	1.5		20 ~ 40	
KSU13003C				25		IPAK
KSU13003CR						
KSB13005B	850	450	3	1.5	20 ~ 40	TO-92
KSC13005B				25		TO-126
KSB13003H				1.1		TO-92
KSB13003HR	900	530	1.5		20 ~ 40	
KSC13003H				20		TO-126
KSU13003H				25		IPAK
KSD741			2	30		DPAK
KSP741	1050	500		60	48 ~ 100	TO-220
KSP742C			4	70		TO-220
KSH5027A			3	50		TO-220
KSH5027AF	1100	800		40	10 ~ 40	TO-220F

DISCRETE

TRIAC



SYMBOL



Package Type

**B** : TO-92    **C** : TO-126    **D** : TO-252(D-PAK)  
**K** : SOT-89    **U** : TO-251(I-PAK)    **P** : TO-220  
**S** : TO-220F

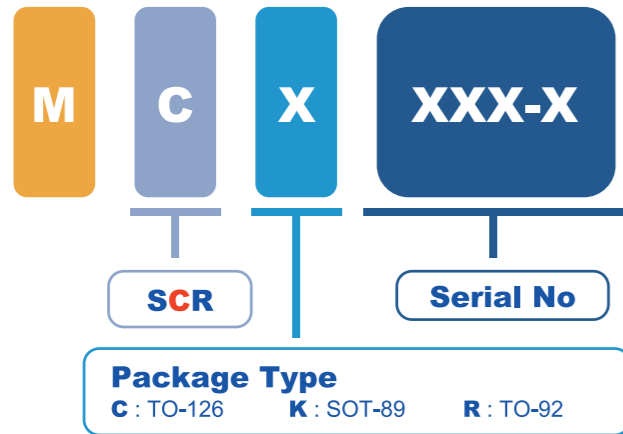
General description

**Blank, S** : Sensitive  
**A, H** : Standard  
**AS** : AC Switching

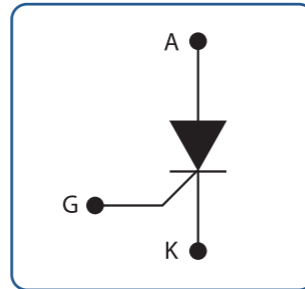
Part Name	VDRM [V]	VRRM [V]	IT(RMS) [A]	VTM [V]	VGT [V]		IGT [mA]				IH [mA]	Package	
					1+1-3-	3+	1+	1-	3-	3+			
HTB1A60	600	600	1	1.6	1.5	2			5		12	4	TO-92
HTK1A60	600	600	1	1.6	1.5	2			5		12	4	SOT-89
BT134-600	600	600	4	1.6	1.5	2			5		12	5	TO-126
BT136-600	600	600	4	1.6	1.5	2			5		12	5	TO-220
HTC4A60S	600	600	4	1.6	1.5	2			5		12	5	TO-126
HTP4A60S	600	600	4	1.6	1.5	2			5		12	5	TO-220
HTC4A60H	600	600	4	1.7	1.5				25			30	TO-126
HTP4A60H	600	600	4	1.7	1.5				25			30	TO-220
HTS4A60H	600	600	4	1.7	1.5				25			30	TO-220F
HTP6A60H	600	600	6	1.5	1.5				25			45	TO-220
HTS6A60H	600	600	6	1.5	1.5				25			45	TO-220F
HTP8-600	600	600	8	1.4	1.5				30			15	TO-220
HTS8-600	600	600	8	1.4	1.5				30			15	TO-220F
HTP12A60H	600	600	12	1.4	1.5				35			45	TO-220
HTS12A60H	600	600	12	1.4	1.5				35			45	TO-220F
HTP16A60H	600	600	16	1.4	1.5				35			50	TO-220
HTS16A60H	600	600	16	1.4	1.5				35			50	TO-220F
HTS25A60H	600	600	25	1.4	1.5				35			55	TO-220F
HTB1A80	800	800	1	1.6	1.5	2			5		12	4	TO-92
HTK1A80	800	800	1	1.6	1.5	2			5		12	4	SOT-89
HTS4A80A	800	800	4	1.6	1.3				35			30	TO-220F
HTC4A80H	800	800	4	1.7	1.5				25			30	TO-126
HTP4A80H	800	800	4	1.7	1.5				25			30	TO-220
HTS4A80H	800	800	4	1.7	1.5				25			30	TO-220F
HTP6A80H	800	800	6	1.5	1.5				25			45	TO-220
HTS6A80H	800	800	6	1.5	1.5				25			45	TO-220F
HTS8A80H	800	800	8	1.5	1.5				35			45	TO-220F
HTP12A80H	800	800	12	1.4	1.5				35			45	TO-220
HTS12A80H	800	800	12	1.4	1.5				35			45	TO-220F
HTP16A80H	800	800	16	1.4	1.5				35			50	TO-220
HTS16A80H	800	800	16	1.4	1.5				35			50	TO-220F
HTH40A80BW	800	800	40	1.55	1.3				50			60	TO-3P
HTB1A80AS	1000	1000	1	1.5	1.4				5			10	TO-92
HTT1A80AS	1000	1000	1	1.5	1.5				10			20	SOT-223
HTD2A80AS	1000	1000	2	1.55	1.3				10			10	TO-252
HTS4A80AS	1000	1000	4	1.55	1.4				10			25	TO-220F
HTS8A80AS	1000	1000	8	1.55	1.4				10			15	TO-220F
HTS10A80AS	1000	1000	10	1.55	1.4				35			50	TO-220F
HTA55A160BW	1600	1600	55	1.55	1.3				50			60	TO-247S

DISCRETE

SCR



SYMBOL



Part Name	V <sub>DRM</sub> [V]	V <sub>R</sub> [V]	I <sub>T (RMS)</sub> [A]	V <sub>TM</sub> [V] / I <sub>T</sub> [A]	V <sub>GT</sub> [V]	I <sub>GT</sub> [mA]	I <sub>H</sub> [mA]	Package
MCR100-6	400	400	0.8	1.7/1.1	1	0.2	1	TO-92
MCK100-6	400	400	0.8	1.7/1.1	1	0.2	1	SOT-89
MCR100-8	600	600	1	1.6/1.4	1	0.2	2	TO-92
MCK100-8	600	600	1	1.6/1.4	1	0.2	2	SOT-89
MCK22-8	600	600	2	1.5/4	0.8	0.2	5	SOT-89
HSC106M	600	600	4	2.2/1	0.8	0.2	3	TO-126
MCR014	1250	1250	1.25	1.5/4	0.8	0.2	4	TO-92

DISCRETE

2nd-Gen DIODES

Chip Fuse

Part Name	Current Rating [A]	Voltage Rating [V]	Interrupting Rating [A]	Typical Resistance [ohms]	Typical Melt I <sup>2</sup> t DC [A <sup>2</sup> s]	Package
S6125F500	0.5	125	50	0.900	0.10	6125
S6125F750	0.75	125	50	0.600	0.28	6125
S6125F1	1	125	50	0.300	1.20	6125
S6125F1.5	1.5	125	50	0.150	2.60	6125
S6125F2	2	125	50	0.070	4.50	6125
S6125F2.5	2.5	125	50	0.045	6.25	6125
S6125F3	3	125	50	0.040	8.80	6125
S6125F3.5	3.5	125	50	0.035	12.00	6125
S6125F4	4	125	50	0.025	16.32	6125
S6125F5	5	125	50	0.020	27.25	6125
S6125F6.3	6.3	125	50	0.014	38.27	6125
S6125F7	7	125	50	0.012	45.00	6125
S6125F8	8	125	50	0.010	54.40	6125
S6125F10	10	125	50	0.007	70.00	6125

Switching Diodes

Part Name	V <sub>R</sub> [V]	I <sub>F(AV)</sub> [mA]	I <sub>FSM</sub> [mA]	V <sub>F</sub> [V]	I <sub>R</sub> [uA]	Package
1N4148W	75	150	300	1	5	SOD-123

Zener Diodes

1W SMA series (1SMAxxxxA)										Package
Part Name	4738A	4739A	4740A	4741A	4742A	4743A	4744A	4745A	4746A (HZX18)	DO-214AC (SMA)
V <sub>Z</sub> [V]	8.2	9.1	10	11	12	13	15	16	18	
Part Name	4747A	4748A	4749A	4750A	4751A	4752A	4753A	4754A	4755A	
V <sub>Z</sub> [V]	20	22	24	27	30	33	36	39	43	
Part Name	4756A	4757A	4758A	4759A	4760A	4761A	4762A	4763A	4764A	DO-214AC (SMA)
V <sub>Z</sub> [V]	47	51	56	62	68	75	62	91	100	

3W SMA series (3.0SMAZxxxA)										Package
Part Name	Z10A	Z11A	Z12A	Z13A	Z15A	Z16A	Z18A	Z20A	Z24A	DO-214AC (SMA)
V <sub>Z</sub> [V]	10	11	12	13	15	16	18	20	24	
Part Name	Z27A	Z30A	Z33A	Z36A	Z39A	Z43A	Z47A	Z51A	Z56A	
V <sub>Z</sub> [V]	27	30	33	36	39	43	47	51	56	
Part Name	Z62A	Z68A	Z75A	Z82A	Z91A	Z100A	Z110A	Z120A	Z130A	DO-214AC (SMA)
V <sub>Z</sub> [V]	62	68	75	82	91	100	110	120	130	
Part Name	Z150A	Z160A (HZX160)	Z180A	Z200A (HZX200)						DO-214AC (SMA)
V <sub>Z</sub> [V]	150	160	180	200						

## DISCRETE

## General Purpose Rectifiers

Part Name	I <sub>F(AV)</sub> [A]	I <sub>FSM</sub> [A]	V <sub>RRM</sub> [V]	V <sub>F</sub> [V]	I <sub>R</sub> [μA]	Package
M1	1	30	50	1.1	5	DO-214AC(SMA)
M2	1	30	100	1.1	5	DO-214AC(SMA)
M3	1	30	200	1.1	5	DO-214AC(SMA)
M4	1	30	400	1.1	5	DO-214AC(SMA)
M5	1	30	600	1.1	5	DO-214AC(SMA)
M6	1	30	800	1.1	5	DO-214AC(SMA)
M7	1	30	1000	1.1	5	DO-214AC(SMA)
1N4001	1	30	50	1.1	5	DO-204AL(DO-41), A-405
1N4002	1	30	100	1.1	5	DO-204AL(DO-41), A-405
1N4003	1	30	200	1.1	5	DO-204AL(DO-41), A-405
1N4004	1	30	400	1.1	5	DO-204AL(DO-41), A-405
1N4005	1	30	600	1.1	5	DO-204AL(DO-41), A-405
1N4006	1	30	800	1.1	5	DO-204AL(DO-41), A-405
1N4007	1	30	1000	1.1	5	DO-204AL(DO-41), A-405
GNOA	1.5	50	50	1.15	1	DO-214AA(SMB)
GNOB	1.5	50	100	1.15	1	DO-214AA(SMB)
GNOD	1.5	50	200	1.15	1	DO-214AA(SMB)
GNOG	1.5	50	400	1.15	1	DO-214AA(SMB)
GNOJ	1.5	50	600	1.15	1	DO-214AA(SMB)
GNOK	1.5	50	800	1.15	1	DO-214AA(SMB)
GNOM	1.5	50	1000	1.15	1	DO-214AA(SMB)
1N5400	3	200	50	1.2	10	DO-201AD
1N5401	3	200	100	1.2	10	DO-201AD
1N5402	3	200	200	1.2	10	DO-201AD
1N5403	3	200	300	1.2	10	DO-201AD
1N5404	3	200	400	1.2	10	DO-201AD
1N5405	3	200	500	1.2	10	DO-201AD
1N5406	3	200	600	1.2	10	DO-201AD
1N5407	3	200	800	1.2	10	DO-201AD
1N5408	3	200	1000	1.2	10	DO-201AD

## General Purpose Bridge Rectifiers

Part Name	I <sub>F(AV)</sub> [A]	I <sub>FSM</sub> [A]	V <sub>RRM</sub> [V]	V <sub>F</sub> [V]	I <sub>R</sub> [μA]	Package
MB2S	0.5	35	200	1	5	TO-269AA(MBS)
MB4S	0.5	35	400	1	5	TO-269AA(MBS)
MB6S	0.5	35	600	1	5	TO-269AA(MBS)
MB8S	0.5	35	800	1	5	TO-269AA(MBS)
MB10S	0.5	35	1000	1	5	TO-269AA(MBS)
MB12S	0.5	35	1200	1	5	TO-269AA(MBS)
DF005S	1	30	50	1.1	5	DFS
DF01S	1	30	100	1.1	5	DFS
DF02S	1	30	200	1.1	5	DFS
DF04S	1	30	400	1.1	5	DFS
DF06S	1	30	600	1.1	5	DFS
DF08S	1	30	800	1.1	5	DFS
DF10S	1	30	1000	1.1	5	DFS
LB201S	2	60	100	1.1	5	ABF
LB202S	2	60	200	1.1	5	ABF
LB204S	2	60	400	1.1	5	ABF
LB206S	2	60	600	1.1	5	ABF
LB208S	2	60	800	1.1	5	ABF
LB2010S	2	60	1000	1.1	5	ABF

## DISCRETE

## Schottky Barrier Rectifiers

Part Name	I <sub>F(AV)</sub> [A]	I <sub>FSM</sub> [A]	V <sub>RRM</sub> [V]	V <sub>F</sub> [V]	I <sub>R</sub> [μA]	Package
1N5817	1	25	20	0.45	1000	DO-204AL(DO-41)
1N5818	1	25	30	0.55	1000	DO-204AL(DO-41)
1N5819	1	25	40	0.6	1000	DO-204AL(DO-41)
SK22A	2	50	20	0.55	200	DO-214AC(SMA)
SK23A	2	50	30	0.55	200	DO-214AC(SMA)
SK24A	2	50	40	0.55	200	DO-214AC(SMA)
SK25A	2	50	50	0.7	150	DO-214AC(SMA)
SK26A	2	50	60	0.7	150	DO-214AC(SMA)
SK22	2	50	20	0.55	200	DO-214AA(SMB)
SK23	2	50	30	0.55	200	DO-214AA(SMB)
SK24	2	50	40	0.55	200	DO-214AA(SMB)
SK25	2	50	50	0.7	150	DO-214AA(SMB)
SK26	2	50	60	0.7	150	DO-214AA(SMB)
SK37B	3	100	70	0.79	30	DO-214AA(SMB)
SK38B	3	100	80	0.79	30	DO-214AA(SMB)
SK39B	3	100	90	0.79	30	DO-214AA(SMB)
SK3BB	3	100	100	0.79	30	DO-214AA(SMB)
SK5B5B	5	120	150	0.85	30	DO-214AA(SMB)
SGC0850S	8	200	50	0.48	500	eSGC(TO-277)
SGC0860S	8	200	60	0.48	500	eSGC(TO-277)
MBRB1045CT	10(5x2)	120	45	0.55	200	TO-263
MBR(F)1060CT	10(5x2)	120	60	0.8	200	TO-220, TO-220F
MBR(F)10100CT	10(5x2)	120	100	0.85	200	TO-220, TO-220F
MBR(F)10150CT	10(5x2)	150	150	0.92	200	TO-220, TO-220F
MBR(F)10200CT	10(5x2)	150	200	0.95	200	TO-220, TO-220F
MBR(F)2060CT	20(10x2)	150	60	0.8	200	TO-220, TO-220F
MBR(F,D)20100CT	20(10x2)	150	100	0.83	200	TO-220, TO-220F, TO-252
MBR(F)20200CT	20(10x2)	150	200	0.95	200	TO-220, TO-220F
MBR(F)30100CT	30(15x2)	200	100	0.85	200	TO-220, TO-220F
MBR(F)30150CT	30(15x2)	200	150	0.9	200	TO-220, TO-220F
MBR(F)40150CT	40(20x2)	200	150	0.86	200	TO-220, TO-220F
SMBRB4045CT	40(20x2)	250	45	0.55	500	TO-263
SBR(F,B)2045CT	20(10x2)	150	45	0.54	200	TO-220, TO-220F, TO-263
SBR(F,B)20150CT	20(10x2)	200	150	0.81	200	TO-220, TO-220F, TO-263
SBR(F)30300CT	30(15x2)	200	300	0.96	100	TO-220, TO-220F
SBR(F,B)4045CT	40(20x2)	250	45	0.53	200	TO-220, TO-220F, TO-263
SBR(F,B)40100CT	40(20x2)	200	100	0.66	200	TO-220, TO-220F, TO-263
SBR(F,B)40150CT	40(20x2)	200	150	0.84	200	TO-220, TO-220F, TO-263

## DISCRETE

## Fast Recovery Rectifiers

Part Name	I <sub>F(AV)</sub> [A]	I <sub>FSM</sub> [A]	V <sub>RRM</sub> [V]	V <sub>F</sub> [V]	I <sub>R</sub> [uA]	trr [ns]	Package
1N4933	1	30	50	1.2	5	200	DO-204AL(DO-41), A-405
1N4934	1	30	100	1.2	5	200	DO-204AL(DO-41), A-405
1N4935	1	30	200	1.2	5	200	DO-204AL(DO-41), A-405
1N4936	1	30	400	1.2	5	200	DO-204AL(DO-41), A-405
1N4937	1	30	600	1.2	5	200	DO-204AL(DO-41), A-405
FR101G	1	30	50	1.3	5	150	DO-204AL(DO-41), A-405
FR102G	1	30	100	1.3	5	150	DO-204AL(DO-41), A-405
FR103G	1	30	200	1.3	5	150	DO-204AL(DO-41), A-405
FR104G	1	30	400	1.3	5	150	DO-204AL(DO-41), A-405
FR105G	1	30	600	1.3	5	250	DO-204AL(DO-41), A-405
FR106G	1	30	800	1.3	5	500	DO-204AL(DO-41), A-405
FR107G	1	30	1000	1.3	5	500	DO-204AL(DO-41), A-405
GR1A	1	30	50	1.3	5	150	DO-214AC(SMA)
GR1B	1	30	100	1.3	5	150	DO-214AC(SMA)
GR1D	1	30	200	1.3	5	150	DO-214AC(SMA)
GR1G	1	30	400	1.3	5	150	DO-214AC(SMA)
GR1J	1	30	600	1.3	5	250	DO-214AC(SMA)
GR1K	1	30	800	1.3	5	500	DO-214AC(SMA)
GR1M	1	30	1000	1.3	5	500	DO-214AC(SMA)

## Ultra Fast Recovery High Efficiency Rectifiers

Part Name	I <sub>F(AV)</sub> [A]	I <sub>FSM</sub> [A]	V <sub>RRM</sub> [V]	V <sub>F</sub> [V]	I <sub>R</sub> [uA]	trr [ns]	Package
US1A(HS1A)	1	30	50	1	5	50	DO-214AC(SMA)
US1B(HS1B)	1	30	100	1	5	50	DO-214AC(SMA)
US1D(HS1D)	1	30	200	1	5	50	DO-214AC(SMA)
US1F(HS1F)	1	30	300	1	5	50	DO-214AC(SMA)
US1G(HS1G)	1	30	400	1.3	5	50	DO-214AC(SMA)
US1J(HS1J)	1	30	600	1.7	5	75	DO-214AC(SMA)
US1K(HS1K)	1	30	800	1.7	5	75	DO-214AC(SMA)
US1M(HS1M)	1	30	1000	1.7	5	75	DO-214AC(SMA)
MUR140	1	35	400	1.25	5	75	DO-204AC(DO-15)
MUR160	1	35	600	1.25	5	75	DO-204AC(DO-15)
MUR440	4	125	400	1.28	10	50	DO-201AD
MUR460	4	125	600	1.28	10	50	DO-201AD
MUR860(F)	8	125	600	1.5	10	50	TO-220-2L, TO-220F-2L
MURB1040CT	10(5x2)	90	400	1.3	10	50	TO-263
MUR1060(F)	10	125	600	1.6	10	50	TO-220-2L, TO-220F-2L
MUR1560(F)	15	150	600	1.9	10	50	TO-220-2L, TO-220F-2L
MUR2040(F)CT	20(10x2)	125	400	1.5	10	50	TO-220, TO-220F
MUR2060(F)CT	20(10x2)	125	600	1.6	10	50	TO-220, TO-220F

## DISCRETE

## Super Fast Recovery Rectifiers

Part Name	I <sub>F(AV)</sub> [A]	I <sub>FSM</sub> [A]	V <sub>RRM</sub> [V]	V <sub>F</sub> [V]	I <sub>R</sub> [uA]	trr [ns]	Package
ES1A	1	30	50	0.95	5	35	DO-214AC(SMA)
ES1B	1	30	100	0.95	5	35	DO-214AC(SMA)
ES1C	1	30	150	0.95	5	35	DO-214AC(SMA)
ES1D	1	30	200	0.95	5	35	DO-214AC(SMA)
ES1F	1	30	300	1.3	5	35	DO-214AC(SMA)
ES1G	1	30	400	1.3	5	35	DO-214AC(SMA)
ES1J	1	30	600	1.7	5	35	DO-214AC(SMA)
ES1K	1	30	800	1.7	5	35	DO-214AC(SMA)
ES1M	1	30	1000	1.7	5	35	DO-214AC(SMA)
SF51	5	150	50	0.95	5	35	DO-201AD
SF52	5	150	100	0.95	5	35	DO-201AD
SF53	5	150	150	0.95	5	35	DO-201AD
SF54	5	150	200	0.95	5	35	DO-201AD
SF55	5	150	300	1.25	5	35	DO-201AD
SF56	5	150	400	1.25	5	35	DO-201AD
SF57	5	150	600	1.3	5	35	DO-201AD
SF58	5	150	800	1.7	5	35	DO-201AD
SF59	5	150	1000	1.7	5	35	DO-201AD
MUR1020(F)CT	10(5x2)	120	200	1.02	10	35	TO-220, TO-220F
MUR1040(F)CT	10(5x2)	125	400	1.4	10	35	TO-220, TO-220F
MUR1620(F)CT	16(8x2)	125	200	1	10	35	TO-220, TO-220F
MUR2020(F)CT	20(10x2)	125	200	1.1	10	35	TO-220, TO-220F

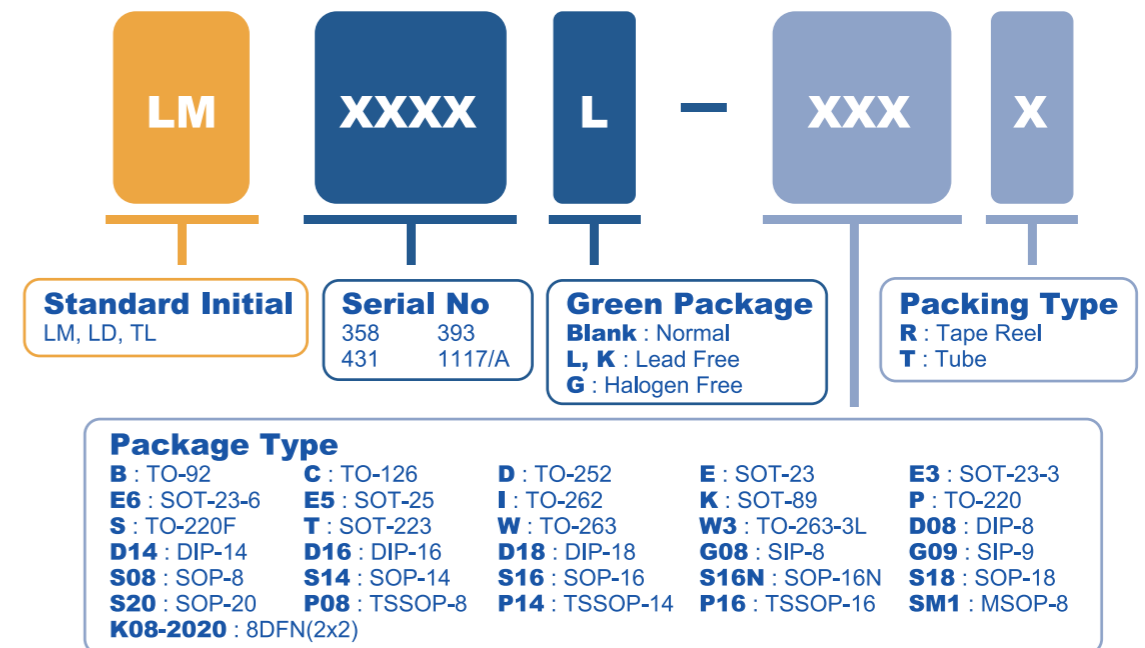
**DISCRETE**

**1st-Gen DIODES**

**Ultra Fast Recovery Rectifiers**

Part Name	V <sub>RRM</sub> [V]	I <sub>F</sub> [A]	V <sub>F(Typ)</sub> [V]	t <sub>rr@1A(Typ)</sub> [A]	Package
HDS10U20AW	200	10(5x2)	0.98	17	TO-220FL
HDS20U20AW	200	20(10x2)	0.98	19	TO-220F
HDPE15U20G	200	15	0.93	20	TO-220-2L
HDSE15U20G	200	15	0.93	20	TO-220F-2L
HDPE20U20G	200	20	0.95	20	TO-220-2L
HDSE20U20G	200	20	0.95	20	TO-220F-2L
HDA40U20GW	200	40(20x2)	0.95	20	TO-247
HDSE10U30G	300	10	1.05	21	TO-220F-2L
HDS20U30GW	300	20(10x2)	1.05	21	TO-220F
HDW20U30GW	300	20(10x2)	1.05	21	TO-263
HDA60U30GW	300	60(30x2)	1.00	30	TO-247
HDDE10U40G	400	10	1.15	23	TO-252-2L
HDPE10U40G	400	10	1.15	23	TO-220-2L
HDSE10U40G	400	10	1.15	23	TO-220F-2L
HDPE15U40G	400	15	1.20	28	TO-220-2L
HDSE15U40G	400	15	1.20	28	TO-220F-2L
HDW20U40GW	400	20(10x2)	1.15	23	TO-263
HDS20U40GW	400	20(10x2)	1.15	23	TO-220F
HDA20U40GW	400	20(10x2)	1.15	23	TO-247
HDA80U40GW	400	80(40x2)	1.20	33	TO-247
HDPE8U60G	600	8	1.40	27	TO-220-2L
HDSE8U60G	600	8	1.40	27	TO-220F-2L
HDPE10U60G	600	10	1.30	27	TO-220-2L
HDSE10U60G	600	10	1.30	27	TO-220F-2L
HDPE15U60G	600	15	1.25	28	TO-220-2L
HDSE15U60G	600	15	1.25	28	TO-220F-2L
HDAE30U60G	600	30	1.25	33	TO-247-2L
HDA30U60GW	600	30(15x2)	1.25	28	TO-247
HDAE60F60G	600	60	1.20	39	TO-247-2L
HDA60U60GW	600	60(30x2)	1.25	33	TO-247
HDAE75F60G	600	75	1.20	43	TO-247-2L
HDPE8U120G	1200	8	2.00	27	TO-220-2L
HDPE15U120G	1200	15	2.20	35	TO-220-2L
HDPE30U120G	1200	30	2.20	38	TO-220-2L
HDAE30U120G	1200	30	2.20	38	TO-247-2L

**IC**



**Operational Amplifier**

Part Name	Features	V <sub>CC(range)</sub>	Bandwidth	Package
LM358	Low Power Dual Operational Amplifier	3V ~ 32V or ±16V	-	DIP-8, SIP-8, SOP-8, TSSOP-8, MSOP-8, DFN-8(2x2)
LM4558	Dual Wide Bandwidth Operational Amplifier	±22V	2.8MHz (Unity)	DIP-8, SOP-8, TSSOP-8, SIP-9
LM324	Low Power Dual Operational Amplifier	3V ~ 32V or ±16V	-	DIP-14, SOP-14, TSSOP-14

**Voltage Comparator**

Part Name	Features	V <sub>CC(range)</sub>	P <sub>d</sub> (mW)	Package
LM393	Dual Differential Comparator	2V ~ 36V or ±18V	600/420/350	DIP-8, SOP-8, TSSOP-8, MSOP-8, DFN-8(2x2)
LM339	Quad Differential Comparator	2V ~ 36V or ±18V	760/560/440	DIP-14, SOP-14, TSSOP-14

**Leakage Current Detector**

Part Name	Features	V <sub>CC</sub>	P <sub>d</sub> (mW)	Package
LM54123L	Earth Leakage Current Detector	12V ~ 20V	200	SOP-8, DIP-8, SIP-8

IC

Interface and Driver Circuit

Part Name	Features	IOS (H) IOS (L)	VDD, VSS VOH	VDD, VSS VOL	Package
LM2003	7CH Darlington Sink Driver	500mA	Vout=50V	Vin=24V	DIP-16, SOP-16, SOP-16N, TSSOP-16
LM2803	8CH Darlington Arrays	500mA	50V	30V	SOP-18, DIP-18
LM62783	8CH High-Voltage Source Driver	50V (MAX)	0V ~ 2V	0V ~ 2V	DIP-18, SOP-18, SOP-20

Shunt Reference Regulators

Part Name	Features	V <sub>ka</sub> [V]	V <sub>ref</sub> [V]	I <sub>ka</sub> [mA]	I <sub>ref</sub> [μA]	Z <sub>ka</sub> [Ω]	Package
TL431	Programmable Precision Reference	36V	2.495V	100mA	1.5μA	0.15	SOT-89, SOT-23, SOT-23-3, SOT-25, SOP-8, TO-92

Low Dropout Linear Regulators

Part Name	Features	V <sub>in</sub> (range)	V <sub>out</sub> [V]	I <sub>q</sub> (max)	V <sub>d</sub> (max)	PSRR (Typ)	Package
LD1117 LD1117A	Low Drop Fixed & Adjustable Positive Voltage Regulators	2.5~15V	1.2V~5V & ADJ	10mA	1.3V	75	SOT-223, SOT-89, SOP-8 TO-220, TO-220F, TO-252, TO-263, TO-263-3

Linear Regulators

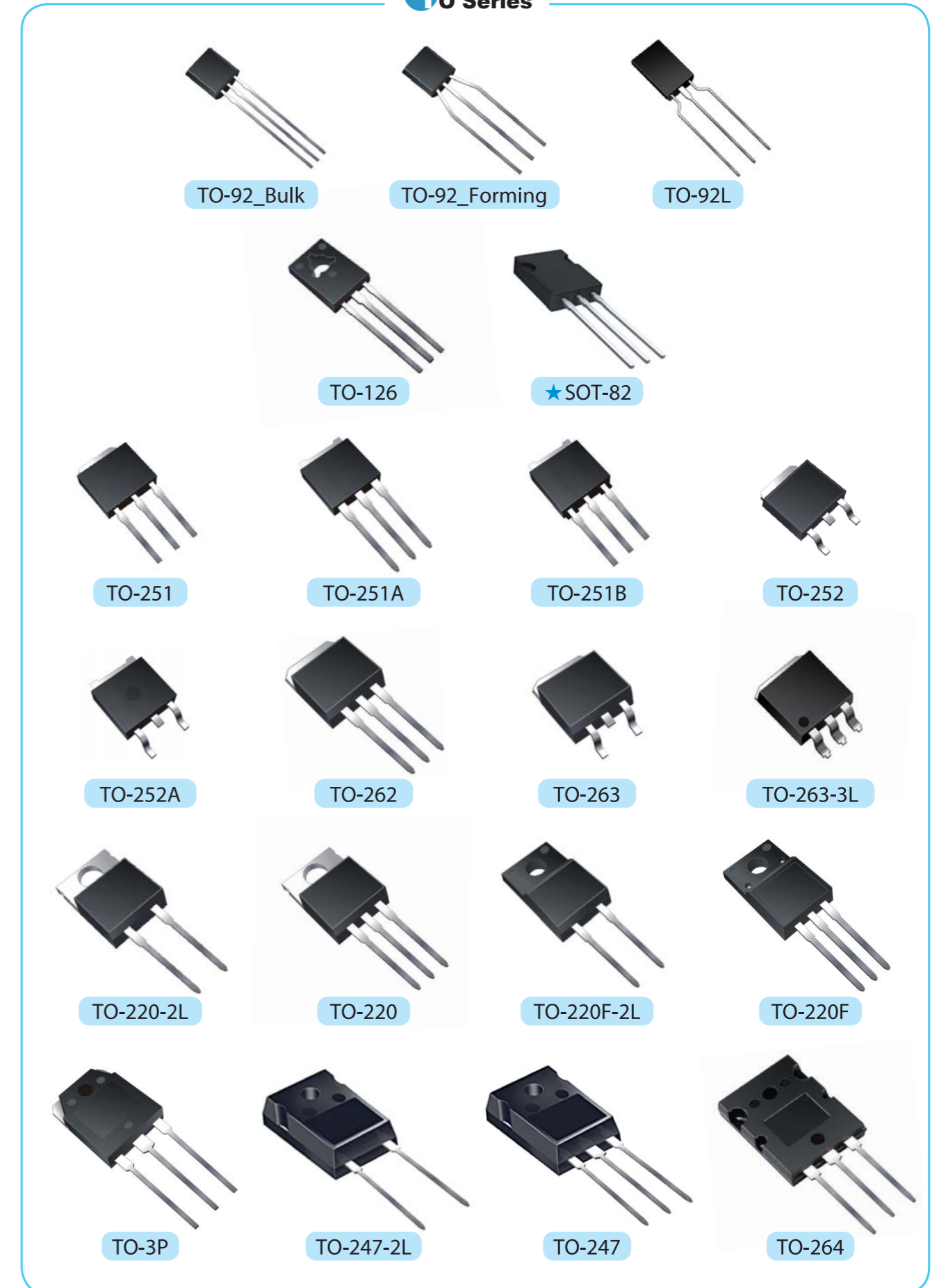
Part Name	Features	V <sub>in</sub> (range)	V <sub>out</sub>	I <sub>q</sub> (max)	V <sub>d</sub> (Typ)	PSRR (Typ)	Package
LM78LXX	0.1A Positive Fixed Linear Regulator	6.7~35V	5.0~24V	6mA	1.7V	70	SOP-8, SOT-89, SOT-25, TO-92, TO-92LN
LM78MXX	0.5A Positive Fixed Voltage Regulator	7.0~40V	5.0~24V	6mA	2.0V	62	TO-92, TO-126, TO-126C, TO-220, TO-220F
LM78XX	1.0A Positive Fixed Voltage Regulator	6.7~40V	4.7~24V	8mA	2.0V	80	TO-92, TO-220, TO-220F, TO-262
LM79LXX	0.1A Negative Fixed Linear Regulator	-7.0~-35V	-5.0~-24V	6mA	-	70	SOT-89, SOP-8, TO-92
LM79XX	1.0A Negative Fixed Voltage Regulator	-7.0~-40V	-5.0~-24V	6mA	2.0V	60	TO-220, TO-220F

Timer

Part Name	Features	V <sub>cc</sub>	P <sub>d</sub> (mW)	Package
LM555	Single Timer	4.5 ~ 16V	600	SOP-8, DIP-8

PACKAGE LINE UP

TO Series





PACKAGE LINE UP

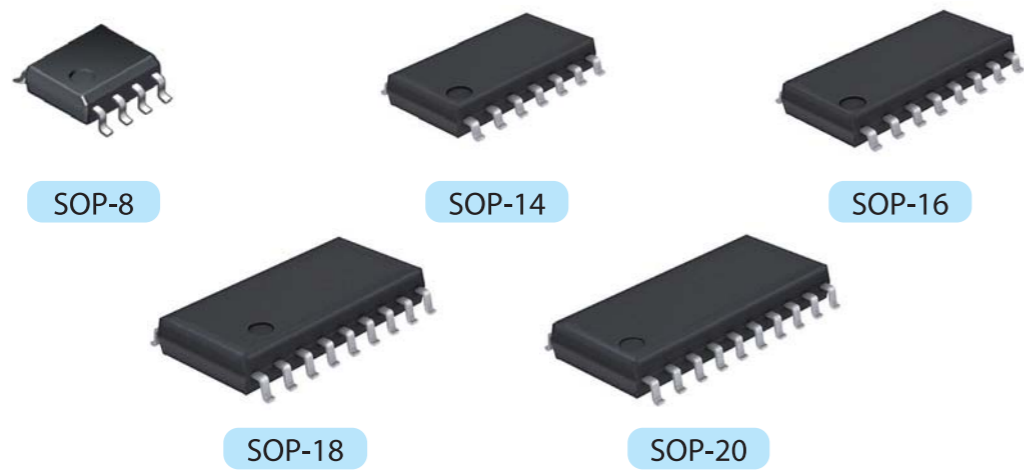
DFN Series



SOT Series



SOP Series

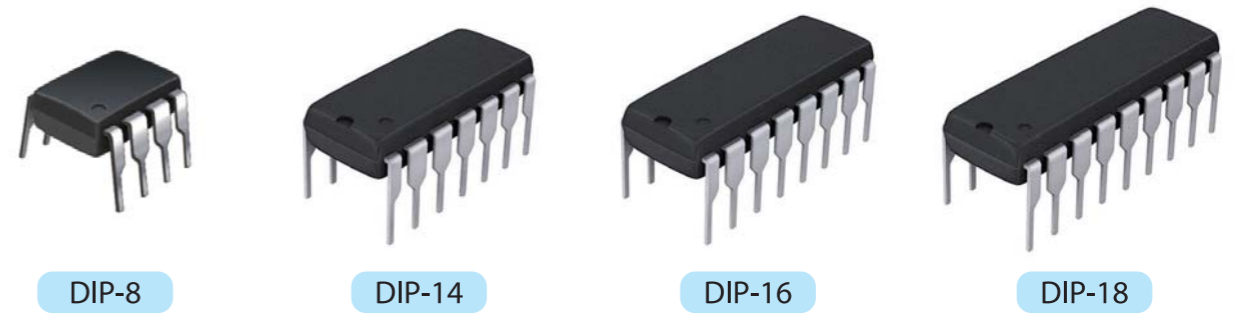


PACKAGE LINE UP

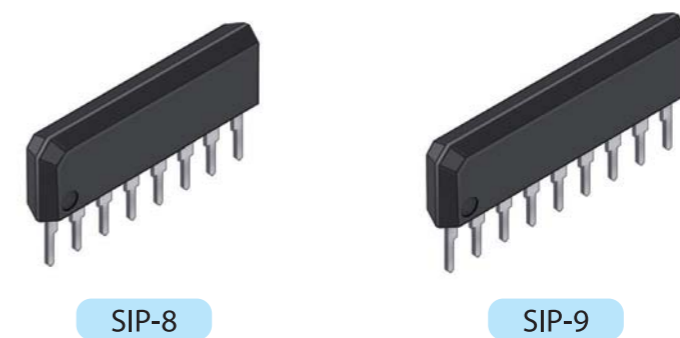
TSSOP Series



DIP Series

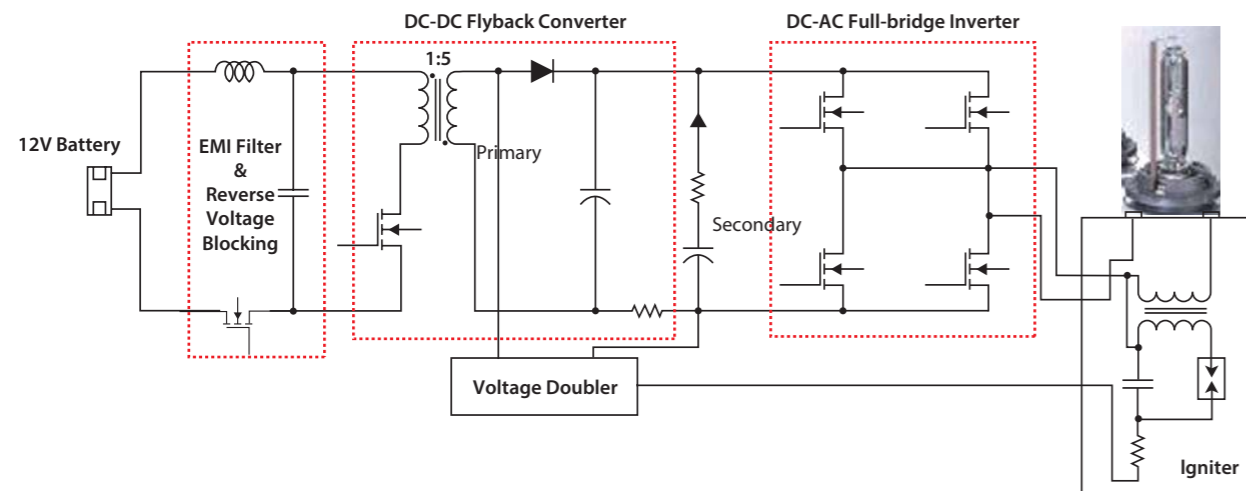


SIP Series



**APPLICATION**

**• HID Lamp**



**Target Application**

**Target Device**

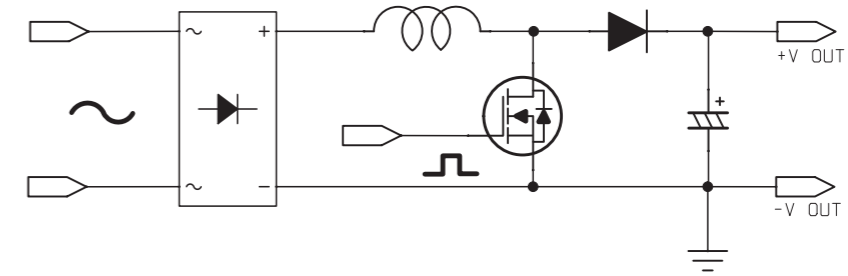


- **Primary Side**
  - Battery protection LV-MOS : 30V BVdss, Low Rds(on)
- **Secondary Side**
  - DC-DC Flyback converter : 80V/100V BVdss, Low Rds(on)
  - FRD : 600V Fast recovery time (<30ns)
  - HV MOS : 500V ~ 600V BVdss

Block	Product	Voltage	Current	Recommend	PKG
Primary side	LV-MOS	30V	100A	HRLD55N03K	TO-252
	Flyback	100V	73A	HRD120N10K	TO-252
Secondary side	FRD (Ultra fast)	600V	10A	HDPE10U60G	TO-220 (2-Lead)
		600V	15A	HDPE15U60G	
	Planar-MOS	500V	5A	HFD5N50S	TO-252
		SJ-MOS	600V	8A	

**APPLICATION**

**• PFC**



**Target Application**

**Target Device**

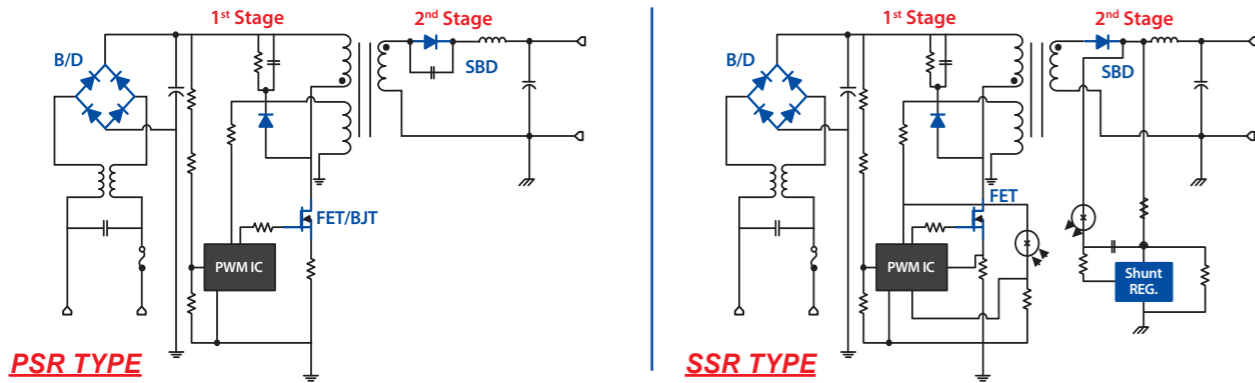
- Adaptor
- SMPS
- Telecom-Power
- Ballast for CCFL
- LED Driver
- Charger

- **HV MOSFET**
  - Planar MOSFET : Low EMI, Low S/W loss High Ruggedness
  - SJ MOSFET : Lower Rds(on), Lower Ciss & Coss, High dv/dt
- **FRD**
  - Ultra Fast recovery time (<30ns)
  - Soft recovery & Ruggedness

Block	Product	Series	Voltage	Current	PKG
Boost	Planar-MOS	S/U/F	500V	5A ~ 18A	TO-220 / TO-220F / TO-247
			600V	7.5A ~ 18.5A	
	SJ-MOS	2-Gen	600V	8A ~ 40A	
			650V	6A ~ 78A	
FRD	Ultra-fast	600V	8A ~ 75A		

**APPLICATION**

**• FLY BACK : Charger / Adaptor / LED Lighting**

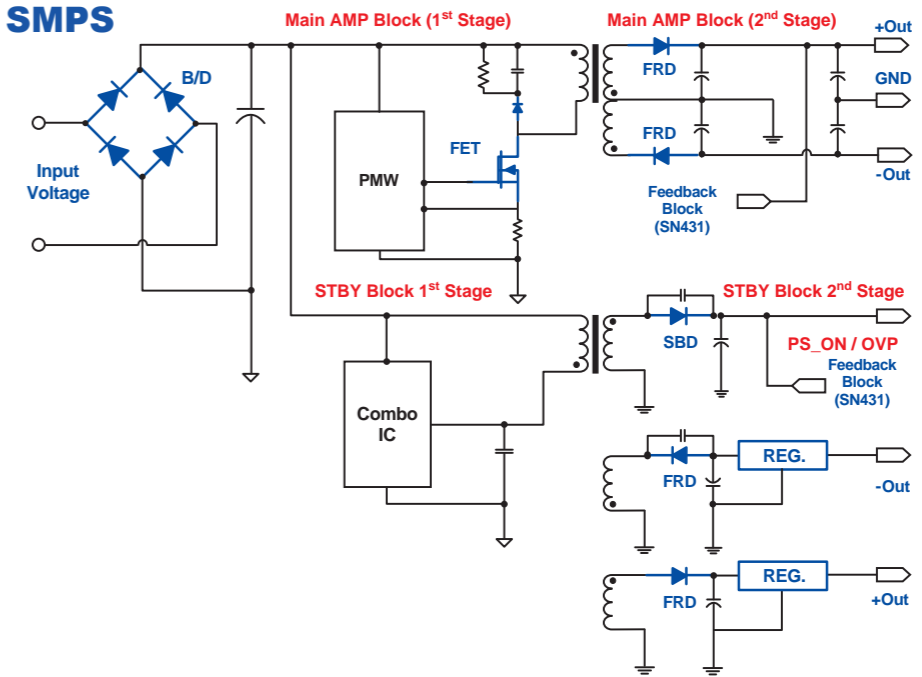


Target Application	Target Device
<p>Mobile-charger &amp; Adaptor</p> <p>LED-Driver</p> <p>LED-Lighting</p>	<ul style="list-style-type: none"> <li><b>Primary Side</b> <ul style="list-style-type: none"> <li>- Planar MOS : Low EMI, Low S/W loss High Ruggedness</li> <li>- SJ-MOS : Lower Rds(on), Lower Ciss&amp;Coss, High dv/dt</li> </ul> </li> <li><b>Secondary Side</b> <ul style="list-style-type: none"> <li>- LV-MOS : Higher system efficiency, Better Ruggedness</li> <li>- SBD : Schottky Diode (Low Vf)</li> <li>- FRD : High efficiency operation Super Fast, Ultra Fast Recovery</li> </ul> </li> </ul>

Block	Product	Series	Voltage	Current	PKG
Primary Side	Planar-MOS	S/U/F	600V	1A ~ 13A	SOT-223/TO-251/TO-252/ TO-220/TO-220F/TO-3P/ TO-247
			650V	1A ~ 13A	
			700V	5A ~ 8A	
		Q-FET	800V	3A ~ 13A	
			900V	2A ~ 11A	
			SJ-MOS	2-Gen	
650V	6A ~ 22A	TO-251/TO-220F			
700V	3A ~ 11A	TO-251/TO-220F			
800V	3A ~ 17A	TO-251/TO-220F			
Secondary Side	LV-MOS (Trench)	Logic	60V	11A ~ 80A	DFN33/DFN56/8-SOIC/ TO-251/TO-252
			100V	3A ~ 70A	
	FRD	Ultra-fast	200V	10A ~ 20A	TO-220F
			300V	20A	TO-220F/TO-263
			400V	10A ~ 20A	TO-220/TO-220F
			600V	8A ~ 15A	TO-220/TO-220F

**APPLICATION**

**• AUDIO SMPS**

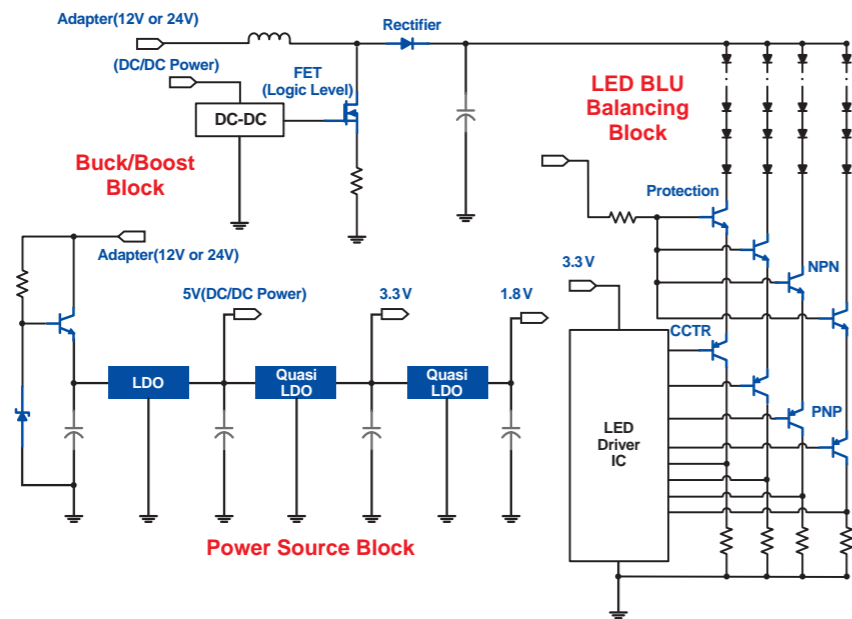


Target Application	Target Device
<p>AUDIO AV Power</p>	<ul style="list-style-type: none"> <li><b>Main AMP Block 1<sup>st</sup> Stage</b> <ul style="list-style-type: none"> <li>- Planar MOS : Low EMI, Low S/W loss High Ruggedness</li> <li>- SJ-MOS : Lower Rds (on), Lower Ciss&amp;Coss, High dv/dt</li> </ul> </li> <li><b>Main AMP 2<sup>nd</sup>, STBY Block 2<sup>nd</sup></b> <ul style="list-style-type: none"> <li>- SBD : Schottky Diode (Low Vf)</li> <li>- FRD : High efficiency operation Super Fast, Ultra Fast Recovery</li> </ul> </li> </ul>

Block	Product	Series	Voltage	Current	PKG
Primary Side	Planar-MOS	S/U/F/Q	600V	8A ~ 20A	TO-252 TO-220F
			650V	8A ~ 20A	
	SJ-MOS	2-Gen	800V	7A ~ 20A	
Secondary Side	SBD	Schottky	60V	10A ~ 20A	SMB TO-252 TO-220F
			100V	10A ~ 20A	
			150V	10A ~ 20A	
			200V	10A ~ 20A	
	FRD	Ultra-fast	200V	3A ~ 10A	TO-252 D2PAK DO-210AD TO-220F
			400V	3A ~ 10A	
			600V	10A	

APPLICATION

• LED TV [ LED Backlight Converter Block ]



Target Application



LED TV (HD, UHD, OLED)

Target Device

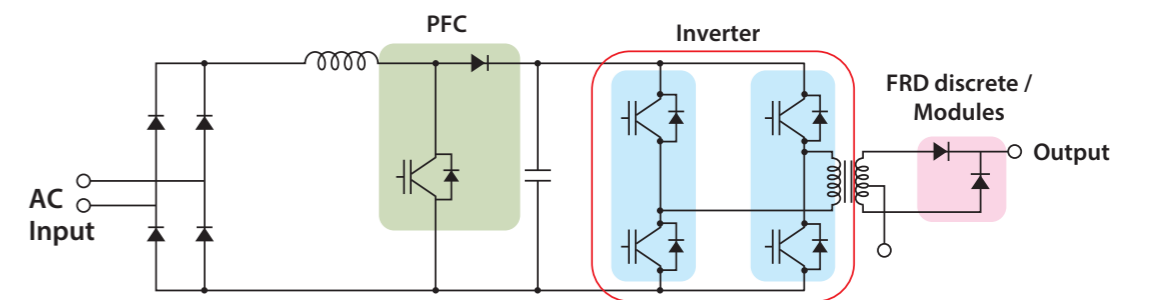
- **BUCK, BOOST**
  - LV-MOS : Higher system efficiency, Better Ruggedness
- **Buck/Boost Freewheeling**
  - SBD : Schottky Diode (Low Vf)
  - FRD : High efficiency operation Super Fast, Ultra Fast Recovery

Block	Product	Series	Voltage	Current	PKG	
BUCK / BOOST	LV-MOS (Trench)	Logic	60V	11A ~ 80A	DFN33/DFN56/8-SOIC/ TO-251/TO-252/TO-220F	
			100V	3A ~ 70A		
		Logic, Std	60V ~ 80V	40A ~ 210A		
			100V	5.5A ~ 180A		
	SBD	Schottky	60V	10A ~ 20A		SMB/TO-252 TO-220F
			100V	10A ~ 20A		
			150V	10A ~ 20A		
			200V	10A ~ 20A		
	FRD	Ultra-fast	200V	3A ~ 10A		TO-252 D2PAK DO-210AD TO-220F
			400V	3A ~ 10A		
600V			10A			

APPLICATION

INDUSTRIAL

• Welding Machine



Target Application



Arc Welding

Plasma Welding

Target Device

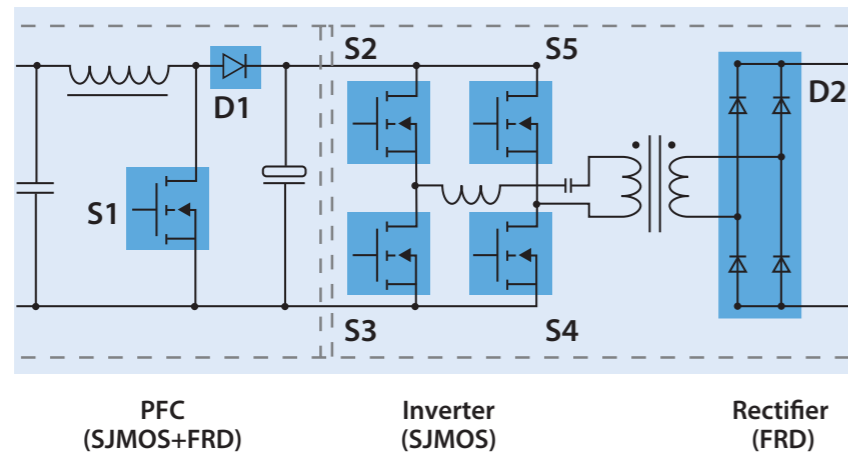
- **PFC & Full Bridge**
  - Planar MOS : Low EMI, Low S/W loss High Ruggedness
  - SJ-MOS : Lower Rds(on), High efficiency Lower Ciss & Coss, High dv/dt
- **Output Rectifier**
  - FRD : High efficiency operation Super Fast, Ultra Fast Recovery

Block	Product	Voltage	Current	Recommend	PKG
PFC Full Bridge	Planar-MOS	500V	20A/24A	HFA20N50U/24N50G	TO-220 TO-247
		900V	11A	HFA11N90	
	SJ-MOS	650V	40A	HCA65R110FE	
			53A	HCA65R069FE	
Output Rectifier	FRD	200V	40A(20*2)	HAD40U20GW	TO-247
		300V	60A(20*2)	HDA60U30GW	
		400V	80A(40*2)	HDA80U40GW	
		600V	60A(30*2)	HDA60U60GW	

APPLICATION

INDUSTRIAL

• EV Car Charger Station



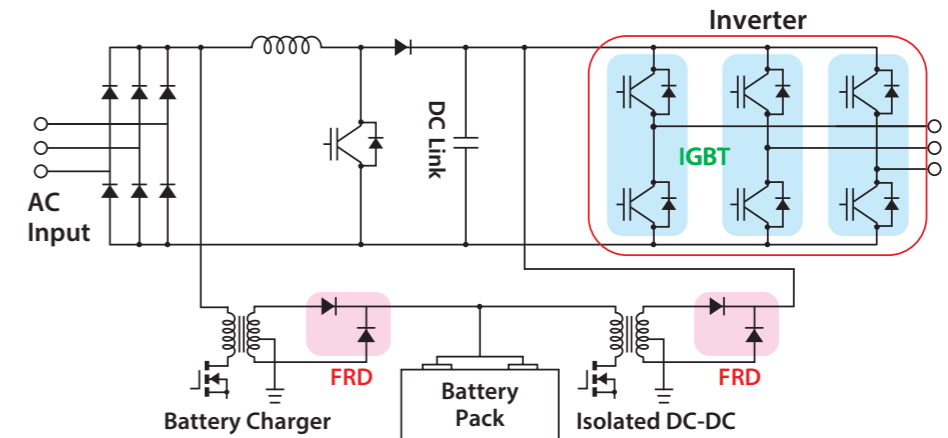
Target Application	Target Products
<p>EV Car Charger</p>	<ul style="list-style-type: none"> <li>• <b>PFC &amp; Inverter Block</b> <ul style="list-style-type: none"> <li>- SJ-MOS : Lower Rds(on), Lower Ciss&amp;Coss, High dv/dt</li> <li>- FRD : High efficiency operation</li> </ul> </li> <li>• <b>Output Rectifier</b> <ul style="list-style-type: none"> <li>- FRD : High efficiency operation Super Fast, Ultra Fast Recovery</li> </ul> </li> </ul>

Block	Product	Voltage	Current	Recommend	PKG
PFC	SJ-MOS	600V	22A	HCA60R150T	TO-247
		650V	40A	HCA65R110E	
			53A	HCA65R069E	
			78A	HCA65R042E	
FRD	600V	60A	HDAE60F60G	TO-247 (2-Lead)	
		75A	HDAE75F60G		
Inverter	SJ-MOS	650V	40A	HCA65R110FE	TO-247
			53A	HCA65R069FE	
			78A	HCA65R042FE	
Output Rectifier	FRD	600V	60A	HDAE60F60G	TO-247 (2-Lead)
			75A	HDAE75F60G	

APPLICATION

INDUSTRIAL

• UPS (Uninterrupted Power Supply )



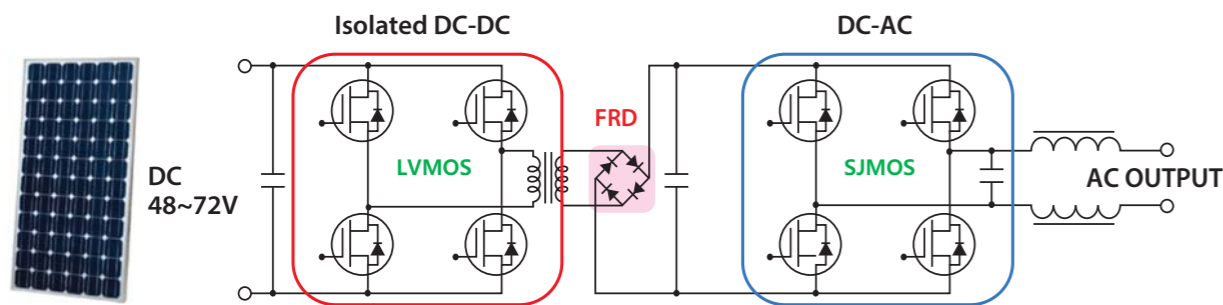
Target Application	Target Device
	<ul style="list-style-type: none"> <li>• <b>Inverter</b> <ul style="list-style-type: none"> <li>- LV-MOS : Higher system efficiency, Better Ruggedness</li> <li>- SJ-MOS : Lower Rds(on), High efficiency Lower Ciss &amp; Coss, High dv/dt</li> </ul> </li> <li>• <b>Output Rectifier</b> <ul style="list-style-type: none"> <li>- FRD : High efficiency operation Super Fast, Ultra Fast Recovery</li> </ul> </li> </ul>

Block	Product	Voltage	Current	Recommend	PKG
Inverter	LV-MOS (Trench)	40V	~ 230A	HRP30N04K	TO-220
		60V	~ 210A	HRP35N06K	
		100V	~ 150A	HRP49N10H	
		150V	~ 120A	HRP105N15H	
Output Rectifier	FRD	600V	30A	HADE30U60G	TO-247 (2-Lead)
			60A	HADE60F60G	
		600V	30A(15*2)	HDA30U60GW	TO-247
	600V	60A(30*2)	HDA60U60GW		
	SJ-MOS	650V	30A	HADE30U120G	TO-247 (2-Lead)
40A			HCA65R110FE		
53A			HCA65R069FE		
			78A	HCA65R042FE	TO-247

APPLICATION

INDUSTRIAL

Solar Inverter



Target Application

Target Device



- **Isolated Side (DC-DC)**
  - LV-MOS : Higher system efficiency, Better Ruggedness
- **Inverter Side (DC-AC)**
  - SJ-MOS : Lower Rds(on), High efficiency, Lower Ciss & Coss, High dv/dt
  - FRD : High efficiency operation

Block	Product	Voltage	Current	Recommend	PKG
DC-DC	LV-MOS (Trench)	100V	~150A	HRP49N10H	TO-220
		150V	~120A	HRP105N15H	
Inverter DC-AC	FRD	600V	30A	HADE30U60G	TO-247 (2-Lead)
			60A	HADE60F60G	
		600V	30A(15*2)	HDA30U60GW	TO-247
	60A(30*2)	HDA60U60GW			
	SJ-MOS	650V	30A	HADE30U120G	TO-247 (2-Lead)
			40A	HCA65R110FE	
53A			HCA65R069FE		
			78A	HCA65R042FE	

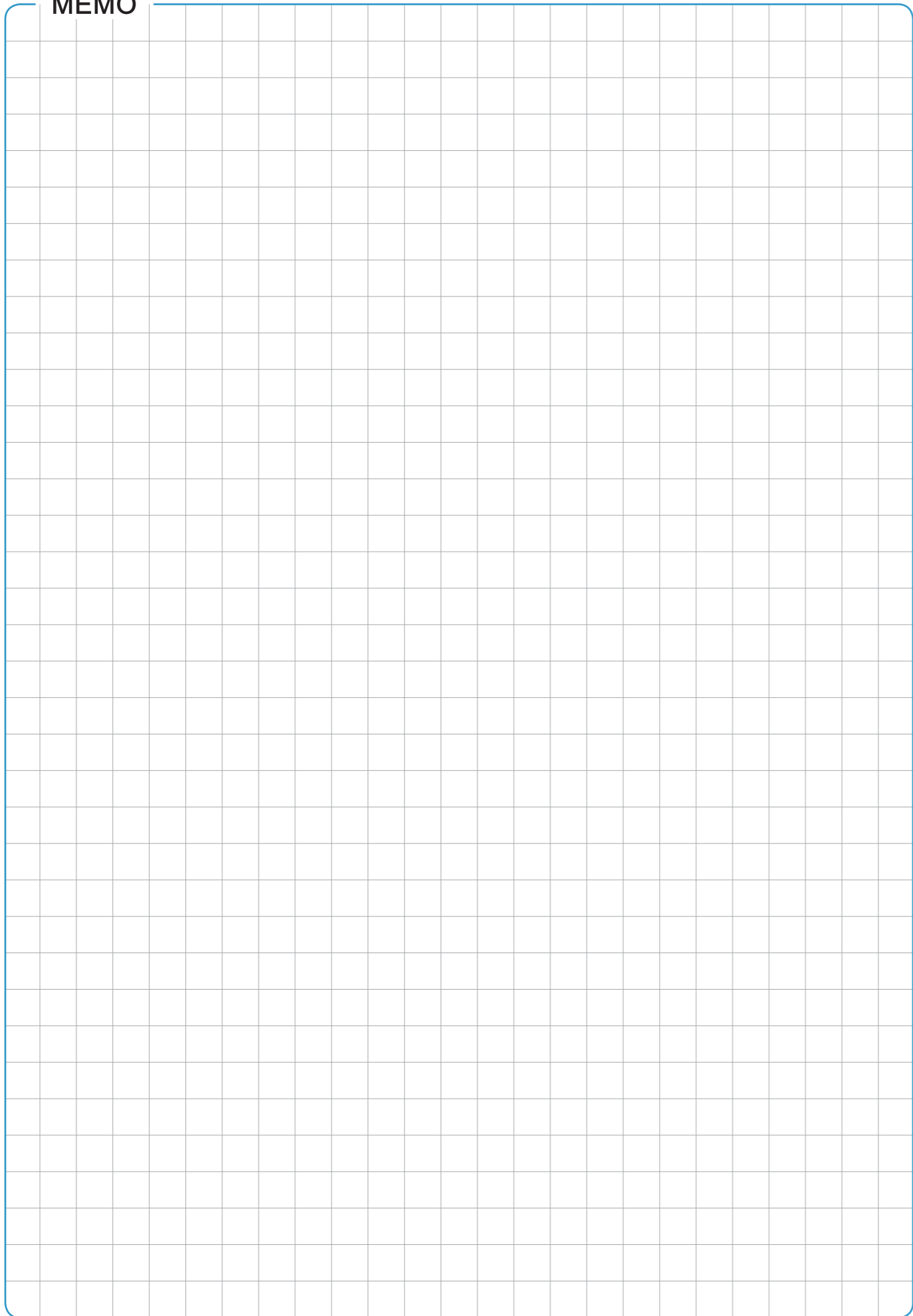
QUALITY CERTIFICATIONS



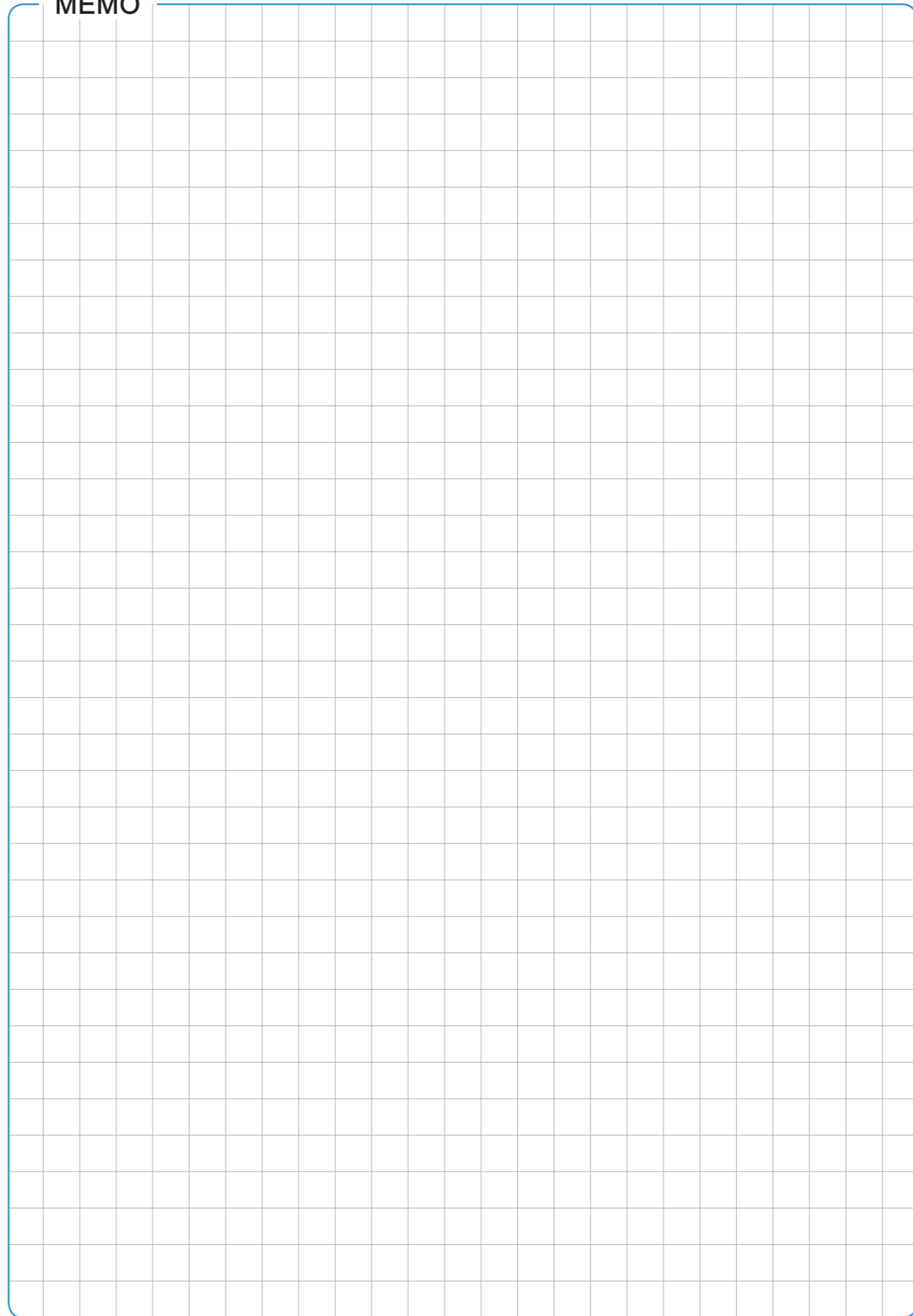
END CUSTOMER

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MEMO



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