Leapers

Leader of SiC Power Module

CATALOGUE

Leapers Semiconductor

Leapers

SiC3 Third-generation SiC power module solution provider

Headquarter (WuXi China)

R&D Center (Japan)

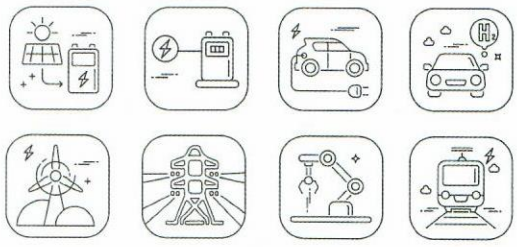
Technical Personnel ≥ 60%

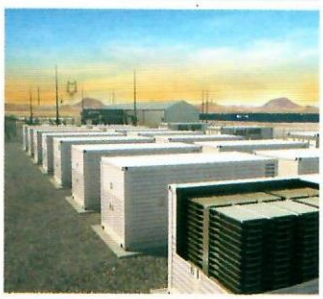
Japanese Experts ≥ 30

Core technical team is composed of top engineers of 20+ years experience in the power semiconductor industry

2 Production Lines for Automotive-grade SiC Modules

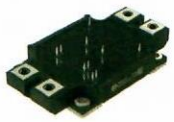
30% higher Power density than industry average for automotive-grade power modules applicable for EV main powertrains





- HPD

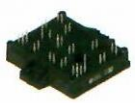
- ED3S



- ED3H

- E0

- E2

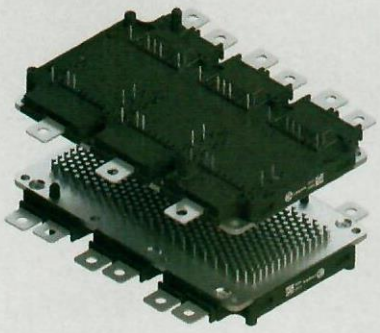


- F0

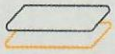
- IGBT

Applications in
xEV, solar, PCS, high-power DC charging piles, HFCV, etc.

HPD Series / SiC Module



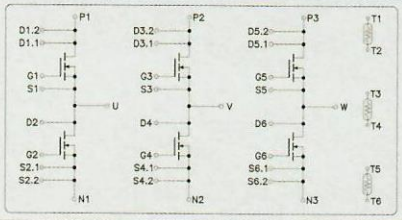
xEV/Motor Drives



PACKAGE: HPD
W126.5×L154.5×H32 mm

Features

- T_{jmax}=175℃
- Arcbonding™ Technology
- Si3N4 AMB
- High Reliability Epoxy Resin Potting Technology
- Ag-Sintering Technology

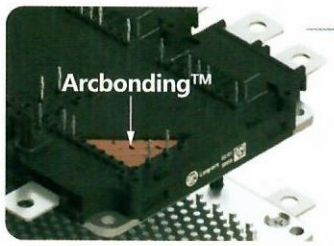
Part Number	Circuit Diagram	Blocking Voltage(V)	Current(A)	$R_{DS(on)}$(mΩ)
DFS04FB12HDB1	Full Bridge 	1200	400	3.4
DFS04FB12HDW1			400	4.2
DFS03FB12HDB1			600	2.2
DFS03FB12HDW1			600	2.8
DFS02FB12HDB1			800	1.7
DFS02FB12HDW1			800	2.1

Application

Introduction to Arcbonding™

Compared to IGBT chips, the Die area of SiC chips with the same current output capability is only about 1/4 of that of IGBT. If the SiC module uses the Al wire bonding technologgy as the conventional IGBT module, the number of Al wires that can be connected is very limited, therefore the reliability of the module is extremely difficult to guarantee. In a high power module,6-10 SiC dies need to be connected in parallel, and if Al wire bonding is applied, it also brings additional parasitic elements, which will affect the stability of the chips working in parallel.

Leapers ArcbondingTM patented chip surface connecting technology can effectively solve the above problems. This ensures that the reliability of SiC modules reach Automotive application requirements, while significantly reducing parasitic resistance and parasitic inductance, even if 6-10 SiC dies are connected in parallel, the module can still work consistently.



Features

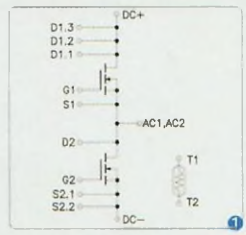
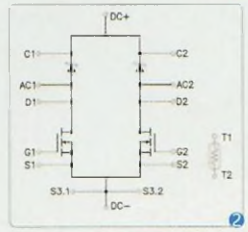
- Significant reduction in static losses
- Remarkably reduce parasitic inductance
- Improved resistance to short-time current surges
- Substantial increase of power cycle life
- Enables parallel connection up of 6-10 SiC chips
- Improved dynamic switching performance

ED3S Series SiC Module

PACKAGE: ED3S
W62×L109×H20.9 mm

Features

- T_{jmax}=175℃
- Blocking Voltage 1200V&1700V
- Si3N4 AMB
- High Reliability Epoxy Resin Potting Technology

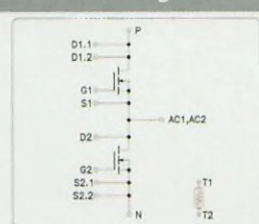
Part Number	Circuit Diagram	Blocking Voltage(V)	Current(A)	$R_{DS(on)}$(mΩ)
DFS400HF17I3C1	Half Bridge ❶ 	1700	400	5
DFS600HF17I3C1				
DFS270HF12I3C2		1200	270	7.0
DFS360HF12I3C2				5.3
DFS450HF12I3C2			450	
DFS540HF12I3C2				3.5
DFS200X2CU12I3B2	Dual Boost ❷ 	1200	200	5
DFS200X2CU12I3B3			200	
DFS300X2CU12I3B2			300	4.5
DFS300X2CU12I3B3				
DFS270CU12I3C1	Boost	1200	270	7.0
DFS360CU12I3C1			360	
DFS450CU12I3C1			450	4.5

ED3H Series SiC Module

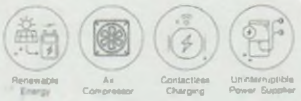
PACKAGE: ED3H
W62×L152×H20.8 mm

Features

- T_{jmax}=175℃
- Blocking Voltage 1200V
- Si3N4 AMB
- High Reliability Epoxy Resin Potting Technology
- Ag-Sintering Technology

Part Number	Circuit Diagram	Blocking Voltage(V)	Current(A)	$R_{DS(on)}$(mΩ)
DFS400HF12I5B1	Half Bridge 	1200	400	3.4
DFS400HF12I5W3			400	4.2
DFS600HF12I5B3			600	2.2
DFS600HF12I5W3			600	2.8
DFS800HF12I5B3			800	1.7
DFS800HF12I5W3			800	2.1

E0 Series SiC Module



PACKAGE: E0
W34.8×L62.8×H16 mm

Features

- T_{jmax}=175°C
- Blocking Voltage 1200V
- Si3N4 AMB
- High Reliability Epoxy Resin Potting Technology
- Highly Reliable

Part Number	Circuit Diagram	Blocking Voltage(V)	Current(A)	$R_{DS(on)}$(mΩ)
DFS40HF12EYQ1	Half Bridge ❶	1200	55 (T_f=60°C)	40
DFS26HF12EYQ1			77 (T_f=60°C)	26
DFS20HF12EYQ1			95 (T_f=60°C)	20
DFS12HF12EYQ1			100 (T_c=105°C)	12.1
DFS09HF12EYC1			100 (T_f=130°C)	9.5
DFS09HF12EYQ1			150 (T_f=75°C)	9.2
DFS05HF12EYR1			150 (T_f=95°C)	5.5
DFS40HH12EYQ1	H-Bridge❷	1200	50 (T_f=80°C)	40
DFS26HH12EYQ1			75 (T_f=65°C)	26
DFS36FB12EYQ1	3-Phase ❸	1200	25 (T_f=145°C)	36
DFS80FB12EYQ1			25 (T_f=65°C)	80
DFS09CU12EYQ1	Boost	1200	150 (T_f=75°C)	9.2

E2 Series SiC Module

PACKAGE: E2
W63×L58×H16 mm

Features

- T_{jmax}=175°C
- Blocking Voltage 1200V
- Si3N4 AMB
- High Reliability Epoxy Resin Potting Technology
- Highly Reliable

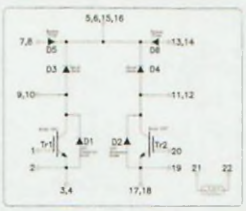
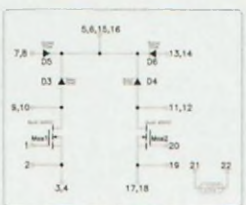
Part Number	Circuit Diagram	Blocking Voltage(V)	Current(A)	$R_{DS(on)}$(mΩ)
DFS10HF12EZC1	Half Bridge ❶	1200	160 (T_f=75°C)	10.1
DFS06HF12EZC1			200 (T_f=90°C)	6.5
DFS04HF12EZC1			200 (T_f=120°C)	4.7
DFS20HH12EZC1	H-Bridge ❷	1200	100 (T_f=75°C)	19.5
DFS10HH12EZC1	H-Bridge ❷	1200	160 (T_f=75°C)	10.1

F0 Series / SiC Mix / SiC Module

PACKAGE: F0
W32.5×L65.9×H16.23 mm

Features

- T_{jmax}=175℃
- Blocking Voltage 1200V
- High Reliability Epoxy Resin Potting Technology
- Highly Reliable

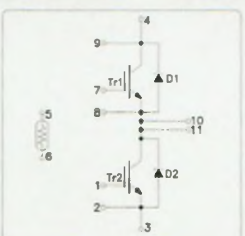
Part Number	Type	Circuit Diagram	Blocking Voltage(V)	Current(A)	$R_{DS(on)}$(mΩ)
DFH50CU12F0H1	SiC Mixed Modules	Dual Boost 	1200	75 (Tc=80℃)	——
DFS40CU12F0Q1	SiC Modules	Dual Boost 	1200	50 (Tc=80℃)	40

ED3 Series / IGBT Module

PACKAGE: ED3
W62.5×L152×H20.5 mm

Features

- Blocking Voltage 1200V&1700V
- Low Saturation Voltage VCE
- Low Turn-on & Turn-off Power Dissipation
- Highly Reliable

Part Number	Circuit Diagram	Blocking Voltage(V)	Current(A)	T_{jmax}(℃)
DFI450HF17I4RE1	Half Bridge 	1700	450	150
DFI600HF17I4RE1		1700	600	150
DFI450HF12I4ME1		1200	450	175
DFI600HF12I4ME1		1200	600	175

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