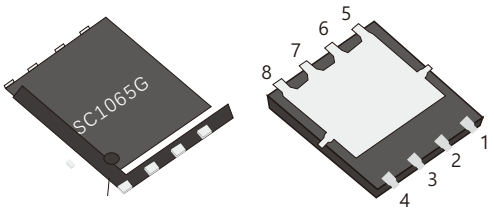
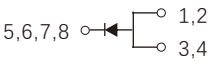
SILICON CARBIDE SCHOTTKY DIODE
Reverse Voltage - 650 Volts Forward Current - 10.0Amperes

DESCRIPTION

SiC Schottky Diode has no switching loss,provides improved system efficiency against Si diodes by utilizing new semiconductor material-Silicon Carbide,enables higher operating frequency, and helps increasing power density and reduction of system size /cost.Its high reliability ensures robust operation during surge or over_voltage conditions.

DFN5×6





FEATURES

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

MECHANICAL DATA

- Case: JEDEC DFN5×6
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked

TYPICAL APPLICATIONS

- SMPS, Solar inverter, UPS
- Power Switching Circuits
- Power Factor Correction

KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V_{DC}	I_F	Qc	T_j,max	Package
KWSC1065G	650V	10A	25nC	175℃	DFN5×6

MAXIMUM RATINGS

(Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Continuous Forward Current for $Rth_{(j-c)}$	I_F	10(Tc≤135℃)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse,tp=8.3mS)	I_{FSM}	70(25℃) 55(150℃)	A
I^2t value	$\int I^2T$	20(25℃) 12.5(150℃)	A^2S
Diode dv/dt ruggedness (VR=0...650V)	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c,max)}$(Tc=25℃)	Ptot	188	W
Operating junction temperature range	Tj	-55...175	℃
Storage temperature range	Tstg	-55...175	℃

THERMAL CHARACTERISTCS

Paramerter	Symbol	DFN5×6	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	0.8	℃/W

ELECTRICAL CHARACTERISTCS (TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V_{DC}	Tj=25...175 ℃	650	-	-	V
Diode forward voltage	V_F 1)	I_F=10A Tj=25℃ I_F=10A Tj=125℃ I_F=10A Tj=175 ℃	- - -	1.5 1.6 1.8	1.8 1.9 2.1	V
Reverse current	I_R 2)	V_R=650V Tj=25℃ V_R=650V Tj=125℃ V_R=650V Tj=175℃	- - -	- - -	20 100 200	uA

Notes: 1.Pulse test: 300 μs pulse width,1% duty cycle
2.Pulse test: pulse width≤40ms

DYNAMIC CHARACTERISTICS(at Tj=25℃,unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitivecharge	Qc	V_R=650V,I_F=10A di/dt=200A/uS	-	25	-	nC
Total capacitance	Cj	V_R=0V,f=1MHz V_R=200V,f=1MHz V_R=400V,f=1MHz		440 57 46		pF

FIG.1-FORWARD CURRENT DERATING CURVE

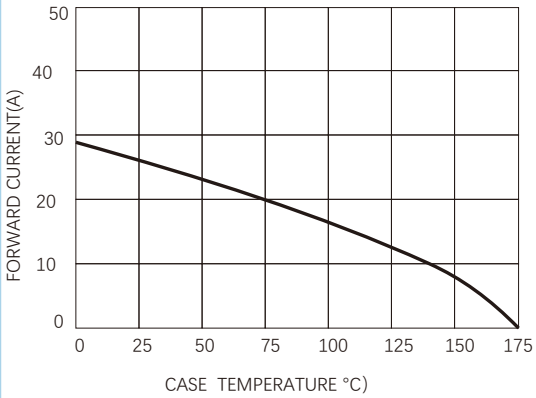


FIG.2-TYPICAL JUNCTION CAPACITANCE

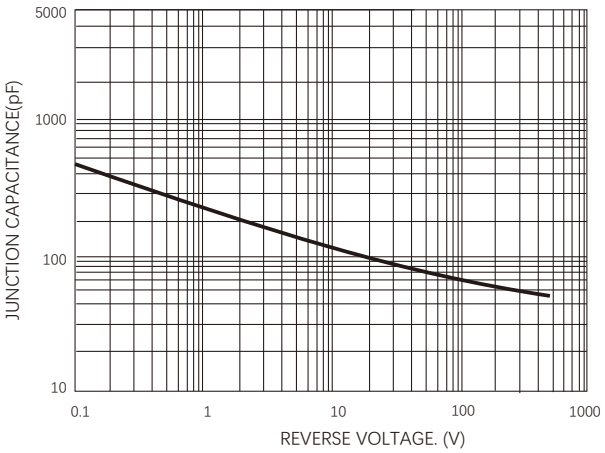


FIG.3-FORWARD CHARACTERISTICS

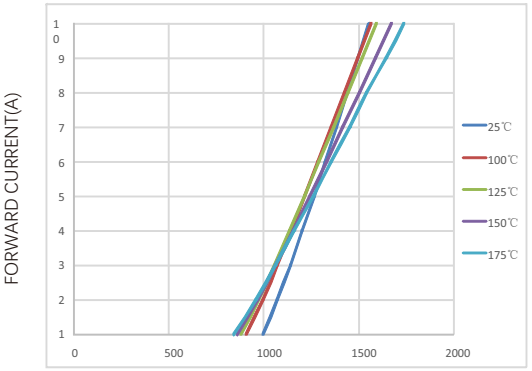


FIG.4-REVERSE CHARACTERISTICS

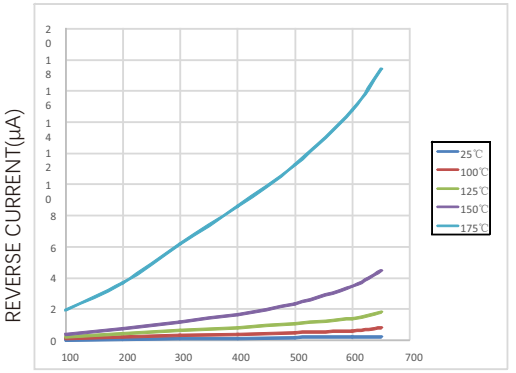
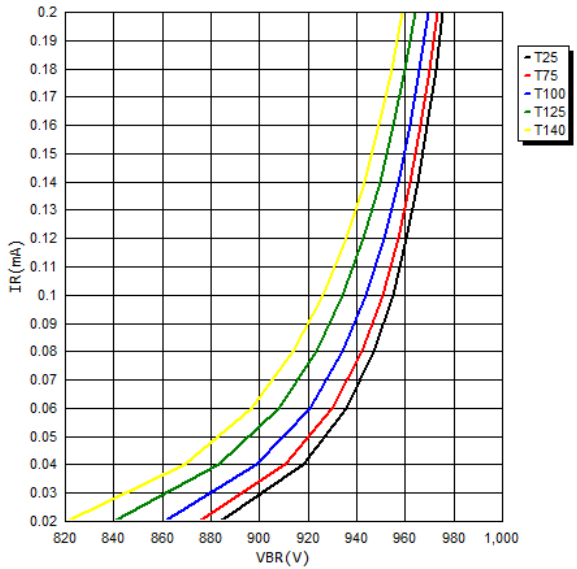
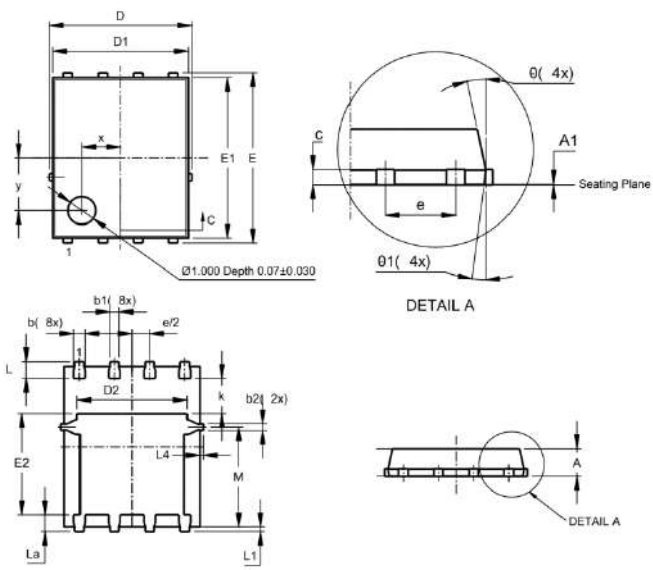


FIG.5-REVERSE CHARACTERISTICS



DFN5×6 PACKAGE OUTLINE DIMENSIONS



Dim	Min	Max	Type
A	0.90	1.10	1.00
b	0.23	0.41	0.32
b1	0.24	0.30	0.27
b2	0.16	0.32	0.23
c	0.17	0.27	0.22
D	-	-	5.01
D1	4.80	4.95	4.88
D2	-	-	3.98
E	-	-	6.06
E1	5.72	5.82	5.77
E2	3.42	3.52	3.47
k	-	-	1.33
L	0.56	0.66	0.61
La	0.57	0.67	0.63
L1	0.06	0.15	0.11
L4	-	-	0.06
M	3.00	3.20	3.08
ϕ	10	11	10.39

Suggested Pad Layout