SEMICONDUCTOR

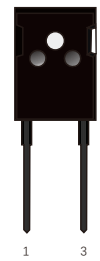
SC50120P

Silicon Carbide Schottky Diode
Reverse Voltage -1200Volts
Forward Current - 50.0Amperes

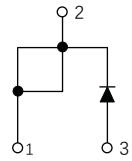
DESCRIPTION

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.

TO-247AC



Base common cathode



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 TO-247AC
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

TYPICAL APPLICATIONS

- General Purpose
- SMPS, Solar inverter, UPS
- Power Switching Circuits

KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V_{DC}	I_F	Qc	T_j,max	Package
SC40120P	1200V	50A	269nC	175℃	TO-247AC

MAXIMUM RATINGS

(Ratings at 25°C ambient temperature unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	1200	V
Continuous Forward C urrent for $Rth_{(j-c)}$	I_F	50(Tc≤150℃) 136(Tc≤25℃)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse ,tp=8.3mS)	I_{FSM}	300(Tc=25℃) 260(Tc=110℃)	A
Power dissipation for $R_{th(j-c,max)}$(Tc=25℃)	Ptot	428	W
Operating junction temperature range	Tj	-55...175	℃
Storage temperature range	Tstg	-55...175	℃

THERMAL CHARACTERISTCS

Paramerter	Symbol	Typ	Max	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	-	0.35	℃/W

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

Parameter	Symbol	Conditions	Value(Per Leg)			Unit
			min	typ	max	
DC blocking voltage	V_{DC}	I_R=100uA,Tj=25℃	1200	-	-	V
Diode forward voltage	V_F 1)	I_F=50A Tj=25℃ I_F=50A Tj=175℃	- -	1.50 2.10	1.70 2.70	V
Reverse current	I_R 2)	V_R=1200V Tj=25℃ V_R=1200V Tj=175℃	- -	- -	100 750	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 capacitive charge	Qc	V_R=800V, I_F=20A di/dt=200A/uS	-	269	-	nC
Total capacitance	Cj	V_R=1V,f=1MHz V_R=400V,f=1MHz V_R=800V,f=1MHz		3040 253 181		pF

FIG.1-FORWARD CURRENT DERATING CURVE

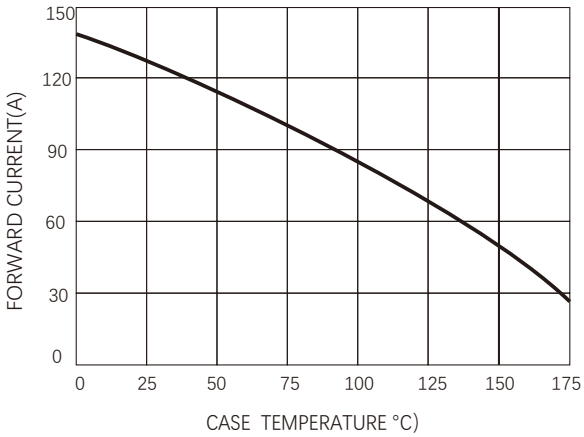


FIG.2-POWER DERATING CURVE

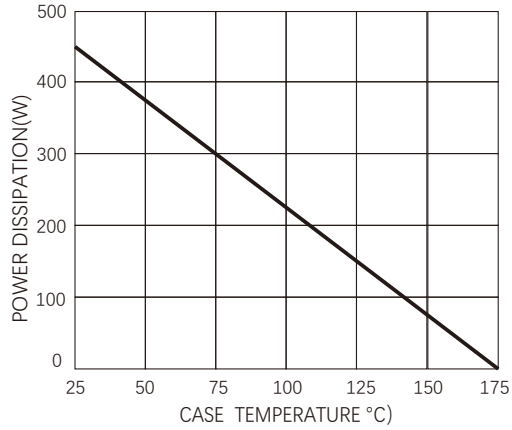


FIG.3-FORWARD CURRENT DERATING CURVE

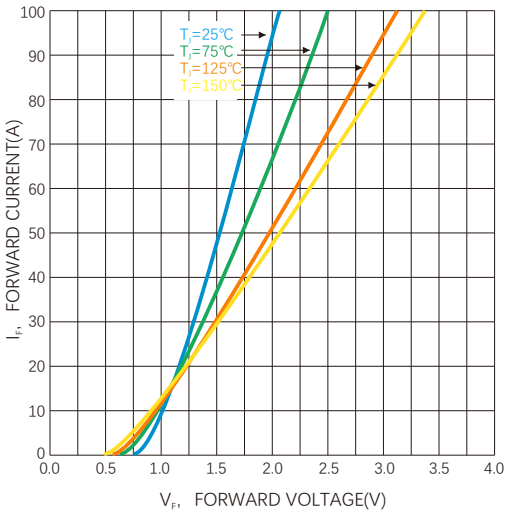
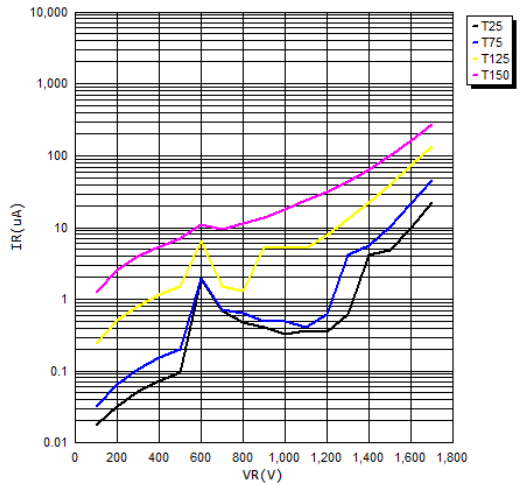


FIG.4-REVERSE CHARACTERISTICS



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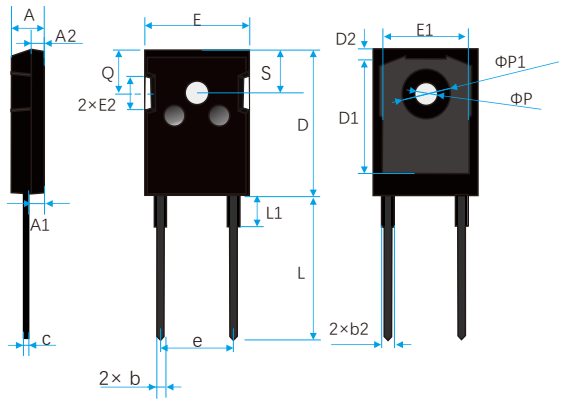

Symbol	millimeter		
	Min	Typ	MAX
A	4.70		5.30
A1	2.21		2.59
A2	1.50		2.49
D	20.50		21.30
E	15.48		16.24
E2	4.30		5.50
e		10.92	
L	19.80		20.30
L1	4.10		4.50
ΦP		3.50	
Q	5.38		6.19
S		6.14	
b	0.99		1.40
b2	1.65		2.39
c	0.38		0.89
D1	13.07		
D2	0.51		1.35
E1	13.30		
ΦP1		7.20	

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