

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.

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

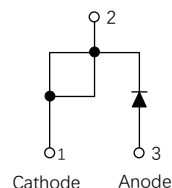
KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V_{DC}	I_F	Q_C	$T_{j,max}$	Package
SC40120P	1200V	40A	118nC	175°C	TO-247AC

TO-247AC



Base common cathode



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 $R_{th(j-c)}$	I_F	40($T_c \leq 135^\circ\text{C}$) 128($T_c \leq 25^\circ\text{C}$)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse , $t_p=8.3\text{ms}$)	I_{FSM}	200($T_c=25^\circ\text{C}$) 170($T_c=110^\circ\text{C}$)	A
Power dissipation for $R_{th(j-c,max)}$ ($T_c=25^\circ\text{C}$)	P_{tot}	375	W
Operating junction temperature range	T_j	-55...175	°C
Storage temperature range	T_{stg}	-55...175	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Max	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	-	0.40	°C/W

ELECTRICAL CHARACTERISTICS (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value(Per Leg)			Unit
			min	typ	max	
DC blocking voltage	V _{DC}	I _R =40uA,T _j =25°C	1200	-	-	V
Diode forward voltage	V _F ¹⁾	I _F =40A T _j =25°C	-	1.50	1.80	V
		I _F =40A T _j =175°C	-	2.10	2.70	
Reverse current	I _R ²⁾	V _R =1200V T _j =25°C	-	-	40	uA
		V _R =1200V T _j =175°C	-	-	400	

Notes: 1.Pulse test: 300 μs pulse width,1% duty cycle

2.Pulse test: pulse width ≤40ms

DYNAMIC CHARACTERISTICS(at T_j=25°C,unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Q _c	V _R =1200V, I _F =20A di/dt=200A/uS	-	118	-	nC
Total capacitance	C _j	V _R =1V,f=1MHz		2560		pF
		V _R =400V,f=1MHz		190		
		V _R =800V,f=1MHz		154		

FIG.1-FORWARD CURRENT DERATING CURVE

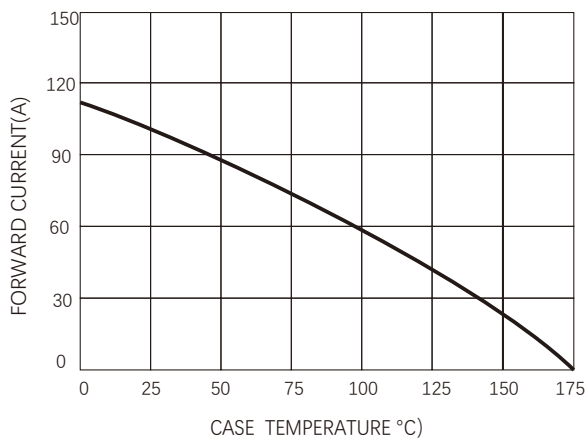


FIG.2-POWER DERATING CURVE

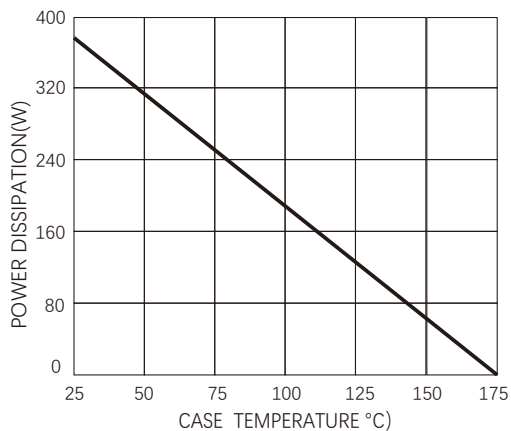


FIG.3-FORWARD CURRENT DERATING CURVE

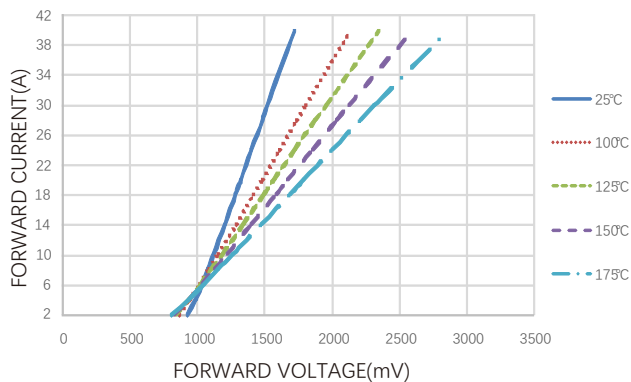
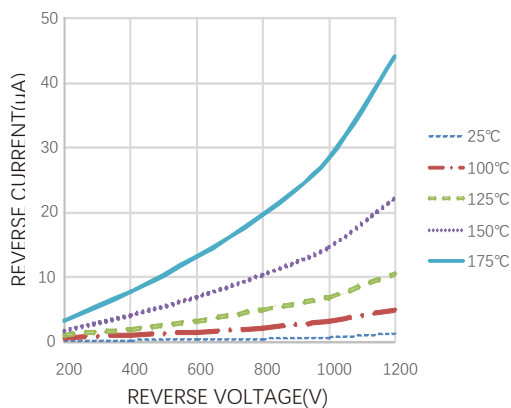
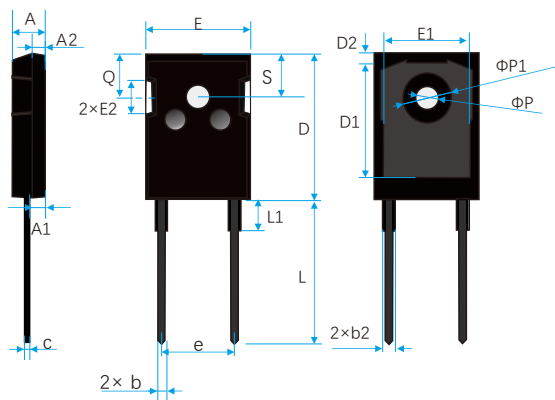


FIG.4-REVERSE CHARACTERISTICS



TO-247AC



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		1.35
D2	0.51		
E1	13.30		
ΦP1		7.20	

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