

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

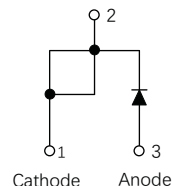
KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V _{DC}	I _F	Q _c	T _J ,max	Package
SC50170P	1700V	50A	600nC	175°C	TO-247AC

TO-247AC



Base common cathode



MAXIMUM RATINGS

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

Parameters	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	1700	V
Continuous forward current for $R_{th(j-c)}$	I_F	55($T_c=150^{\circ}C$) 83($T_c=125^{\circ}C$) 150($T_c=25^{\circ}C$)	A
Non-repetitive forward surge current (Half-Sine Pulse, $t_p=8.3ms$)	I_{FSM}	360 ($T_c=25^{\circ}C$)	A
I^2t value	I^2t	538($T_c=25^{\circ}C$)	A^2S
Power dissipation for $R_{th(j-c,max)}$ ($T_c=25^{\circ}C$)	P_{tot}	789	W
Operating junction temperature range	T_j	- 55...175	$^{\circ}C$
Storage temperature range	T_{stg}	- 55...175	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Value		Unit
		Typ	Max	
Diode thermal resistance junction-case	$R_{th(j-c)}$	-	0.23	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V _{DC}	T _j =25...175°C	1700	-	-	V
Diode forward voltage	V _F	I _F =50A T _j =25°C	-	1.50	1.65	V
		I _F =50A T _j =125°C	-	2.00	-	
		I _F =50A T _j =175°C	-	2.25	2.80	
Reverse current	I _R	V _R =1700V T _j =25°C	-	-	100	uA
		V _R =1700V T _j =125°C	-	-	300	
		V _R =1700V T _j =175°C	-	-	1000	

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 =1700V		600		nC
Total capacitance	C	V _R =0V,f=1MHz		6600		pF
		V _R =800V,f=1MHz		265		
		V _R =1700V,f=1MHz		260		

FIG.1-FORWARD CURRENT DERATING CURVE

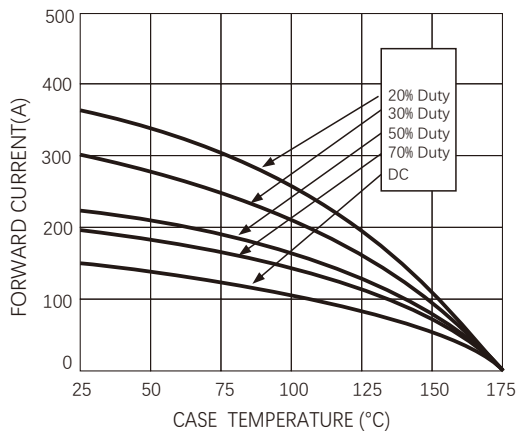


FIG.2-TYPICAL JUNCTION CAPACITANCE

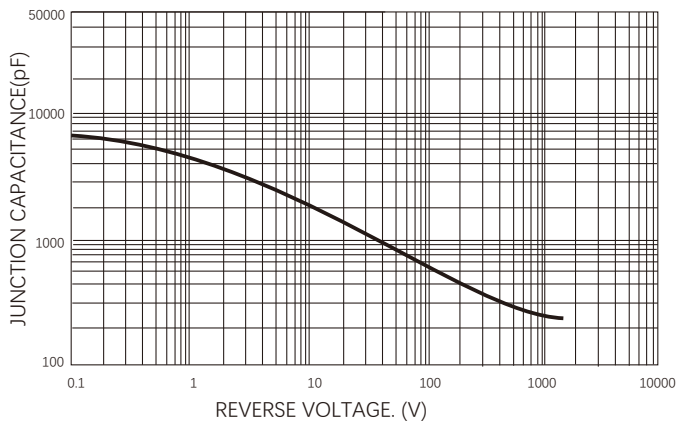


FIG.3-FORWARD CURRENT DERATING CURVE

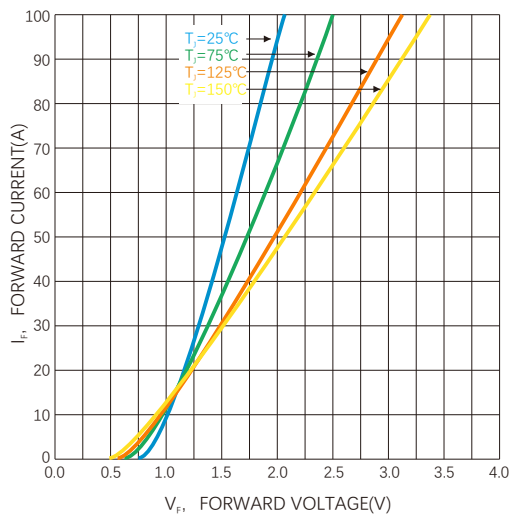
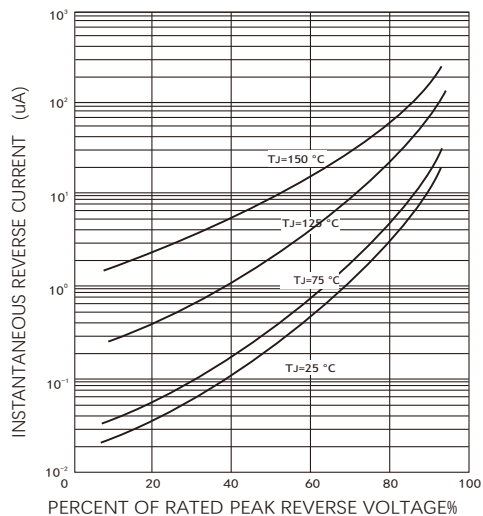
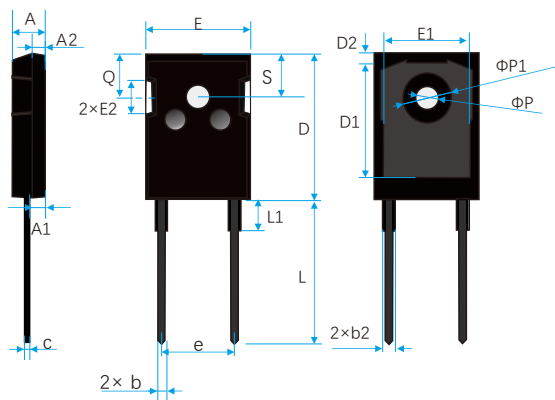


FIG.4-REVERSE CHARACTERISTICS



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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