S3D120V020B

SiC Schottky Diode

Features:

- 1200V Schottky Diode
- Zero Reverse Recovery Current
- High Frequency Operation
- Positive Temperature Coefficient
- Temperature independent Switching

Benefits:

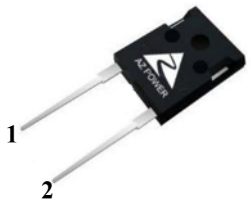
- Unipolar Rectifier
- Minimal switching loss
- Higher Efficiency
- Low cooling requirement

Symbol	Value	Unit
V_{RRM}	1200	V
$I_{F\ (Tc=155℃)}$	20	A
Q_C	110	nC

Applications:

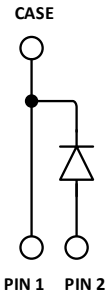
- Switch Mode Power Supply
- Booster diodes in PFC, DC/DC
- AC/DC converters

Outline



TO-247-2

Circuit



Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions
V_R	DC Peak Reverse Voltage	1200	V	T_J =25°C
V_{RRM}	Repetitive Peak Reverse	1200	V	T_J =25°C
V_{RSM}	Surge Peak Reverse Voltage	1300	V	T_J =25°C
I_F	Continuous Forward Current	68 32 20	A	T_C =25°C T_C =135°C T_C =155°C
I_{FRM}	Repetitive Peak Forward Surge Current	222 178	A	T_C =25°C, T_P=10ms, Half Sine Wave Tc=125°C, T_P =10ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	261 235	A	T_C =25°C, T_P =10ms, Half Sine Wave Tc=125°C, T_P =10ms, Half Sine Wave
P_D	Power Dissipation	312 104	W	T_C =25°C Tc=125°C
$T_{J,max}$	Operating Junction Temperature	175	°C	
T_{stg}	Storage Temperature Range	-55 to 175	°C	

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Thermal characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Thermal resistance		0.48		°C/W

Electrical Characteristics

Symbol	Parameter	Value			Unit	Test Conditions
		Min.	Typ.	Max.		
V_{DC}	DC Blocking Voltage	1200			V	I_R=400μA, T_J =25°C
V_F	Forward Voltage		1.4 1.9	1.7 2.4	V	I_F=20A, T_J=25°C I_F=20A, T_J=175°C
I_R	Reverse Current		5 35	100 500	μA	V_R=1200V, T_J =25°C V_R=1200V, T_J =175°C
Q_C	Total Capacitive Charge		110		nC	I_F=20A, dI/dt=400A/μs T_J =25°C, V_R=800V
C	Total Capacitance		1665 146 123		pF	V_R=1V, T_J =25°C, f=1 MHz V_R=400V, T_J =25°C, f=1 MHz V_R=800V, T_J =25°C, f=1 MHz

Typical Performance

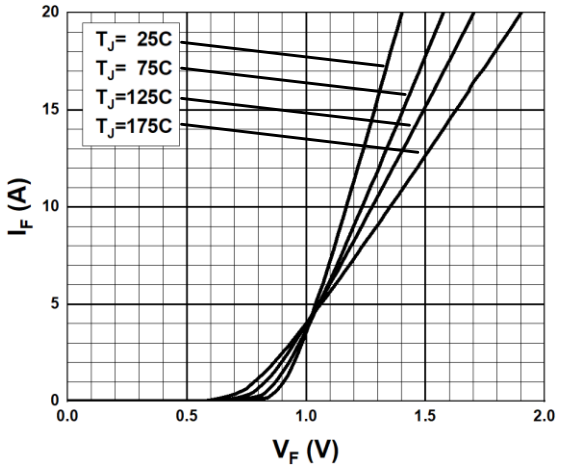

Fig. 1 Forward Characteristics

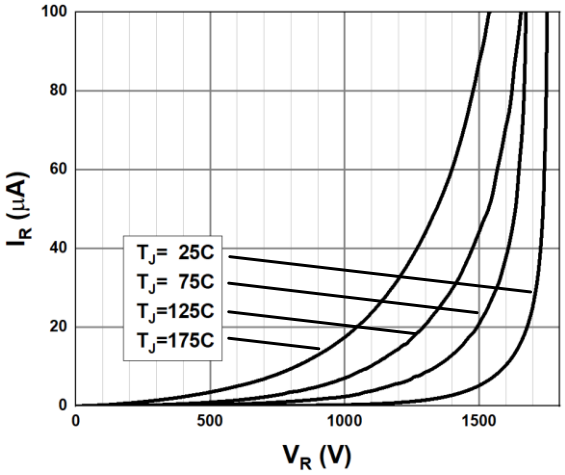

Fig. 2 Reverse Characteristics

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Typical Performance

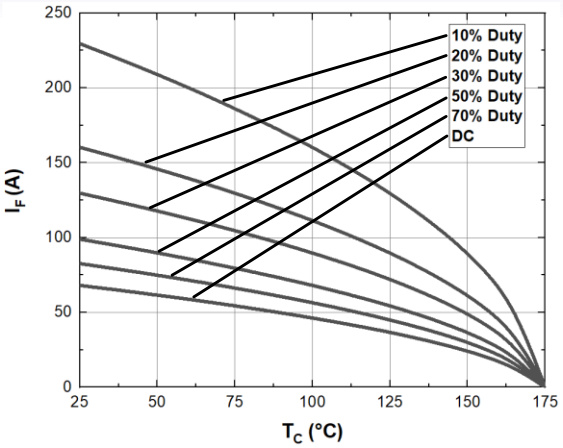

Fig. 3 Current Derating

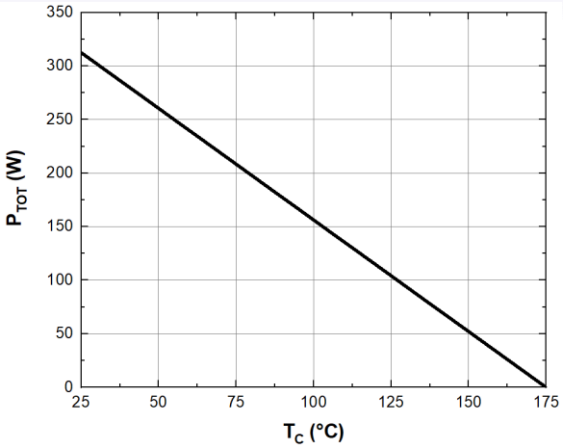

Fig. 4 Power Derating

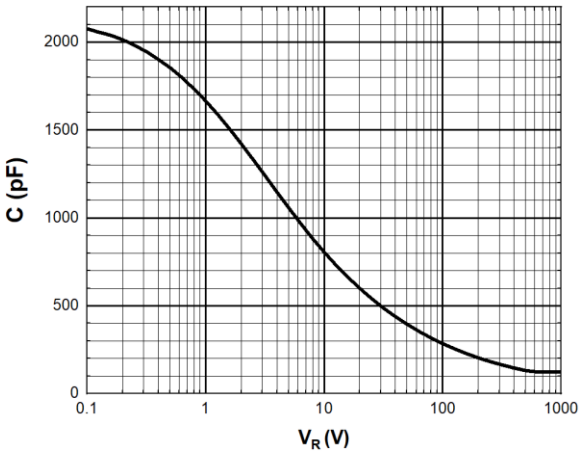

Fig. 5 Capacitance vs. Reverse Voltage

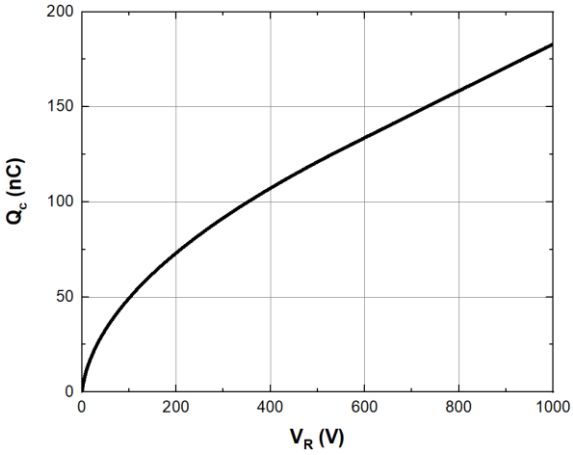

Fig. 6 Recovery Charge vs. Reverse Voltage

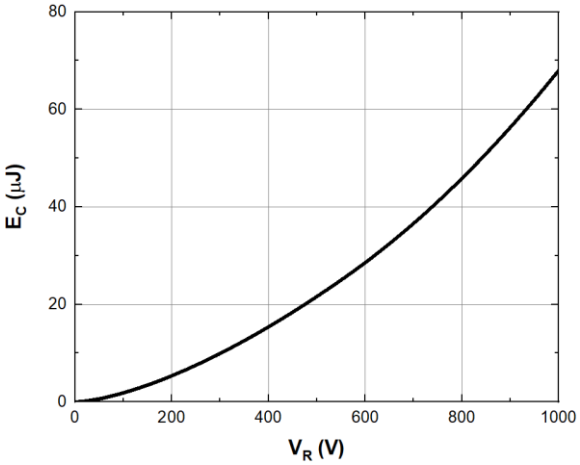

Fig. 7 Capacitance stored Energy

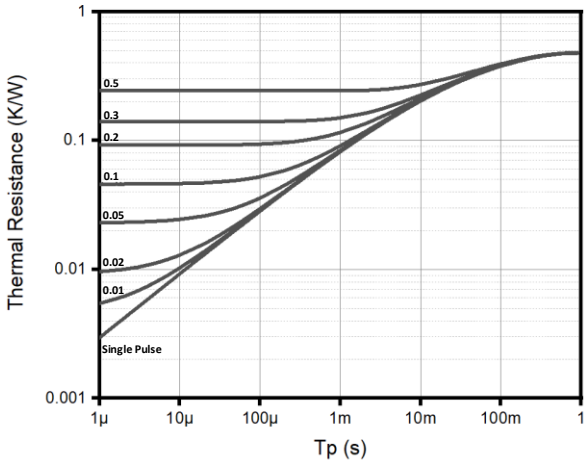

Fig. 8 Transient Thermal Impedance

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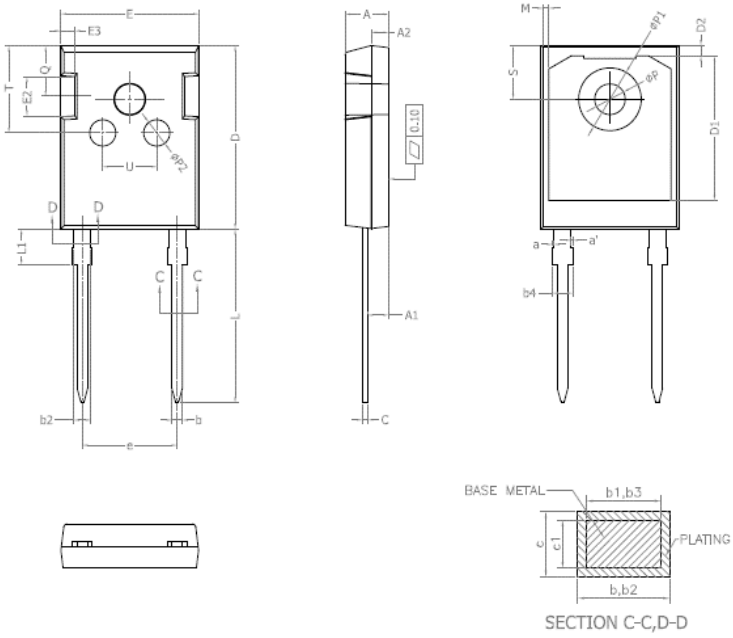
Package TO-247-2 （Unit: mm）



COMMON DIMENSIONS
(UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1,90	2,00	2,10
a	0	—	0,15
a'	0	—	0,15
b	1.16	—	1.26
b1	1.15	1.2	1.22
b2	1.96	—	2.06
b3	1,95	2,00	2,02
b4	—	—	2,25
c	0,59	—	0,66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1,05	1,17	1,35
E	15,70	15,80	15,90
E2	4,40	4,50	4,60
E3	2,40	2,50	2,60
e		10.872 BSC	
L	19.80	19.92	20.10
L1	—	—	4,30
M	0.35	—	0.95
P	3.40	3.50	3.60
P1	7.00	—	7.40
P2	2.40	2.50	2.60
Q	5.60	—	6.00
S	6.05	6.15	6.25
T	9,80	—	10,20
U	6,00	—	6,40

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