S3D120V020S

SiC Schottky Diode

Features:

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

Benefits:

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

Symbol	Value	Unit
V_{RRM}	1200	V
$I_{F\ (Tc=154℃)}$	20	A
Q_C	110	nC

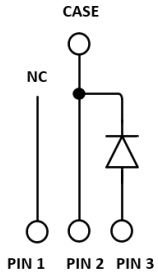
Applications:

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

Outline

TO-247-3

Circuit



Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions
V_R	DC Peak Reverse Voltage	1200	V	T_J = 25℃
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	T_J = 25℃
V_{RSM}	Surge Peak Reverse Voltage	1300	V	T_J = 25℃
I_F	Continuous Forward Current	64 30 20	A	T_C = 25℃ T_C = 135℃ T_C = 154℃
I_{FRM}	Repetitive Peak Forward Surge Current	222 178	A	T_C = 25℃, T_P = 10ms, Half Sine Wave Tc = 125℃, T_P = 10ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	261 235	A	T_C = 25℃, T_P = 10ms, Half Sine Wave Tc = 125℃, T_P = 10ms, Half Sine Wave
P_D	Power Dissipation	278 92.5	W	T_C = 25℃ Tc = 125℃
$T_{J,max}$	Operating Junction Temperature	175	℃	
T_{stg}	Storage Temperature Range	-55 to 175	℃	

Thermal characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Thermal resistance		0.54		°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

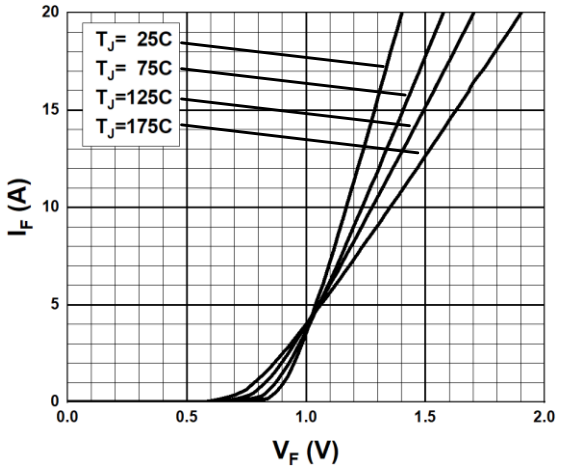


Fig. 1 Forward Characteristics

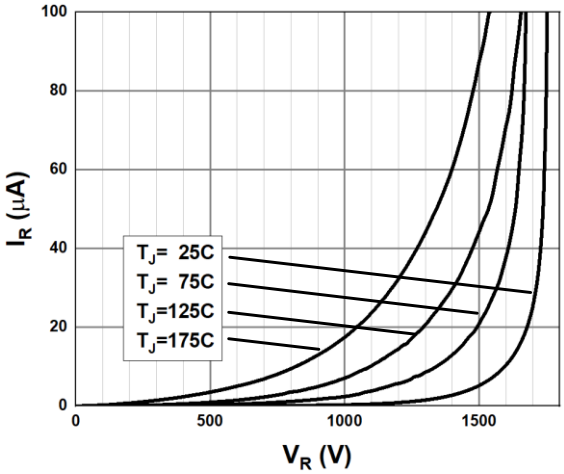


Fig. 2 Reverse Characteristics

Typical Performance

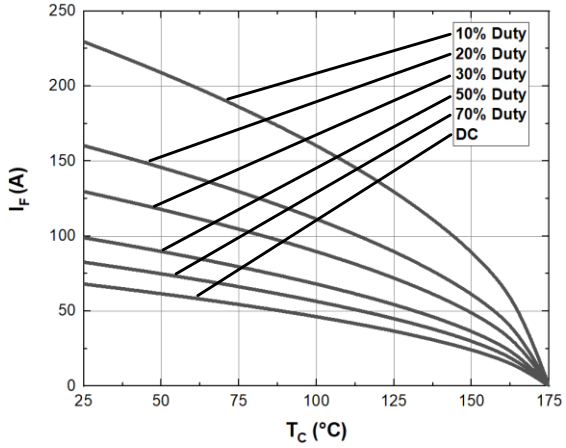


Fig. 3 Current Derating

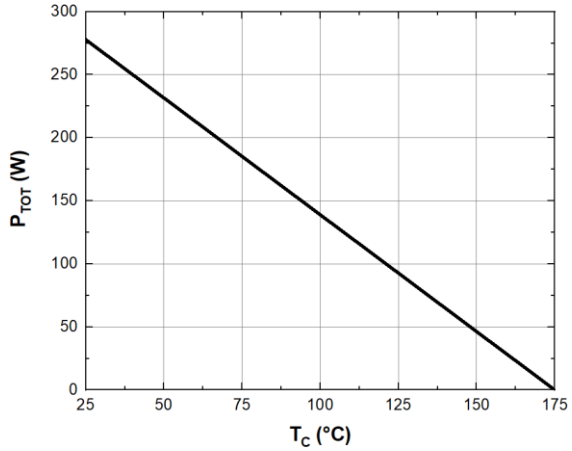


Fig. 4 Power Derating

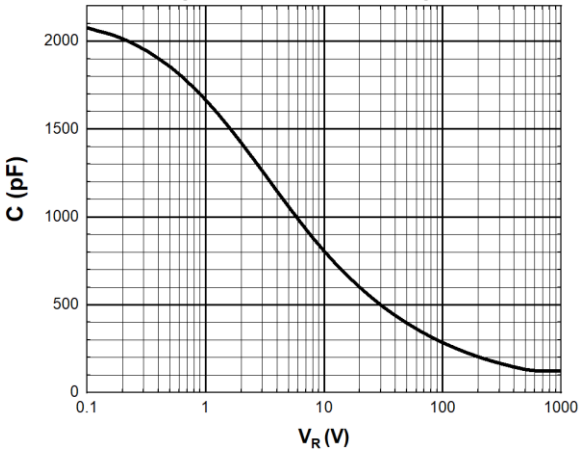


Fig. 5 Capacitance vs. Reverse Voltage

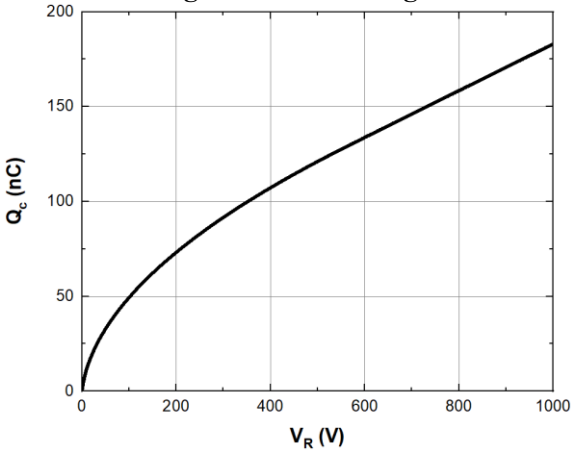


Fig. 6 Recovery Charge vs. Reverse Voltage

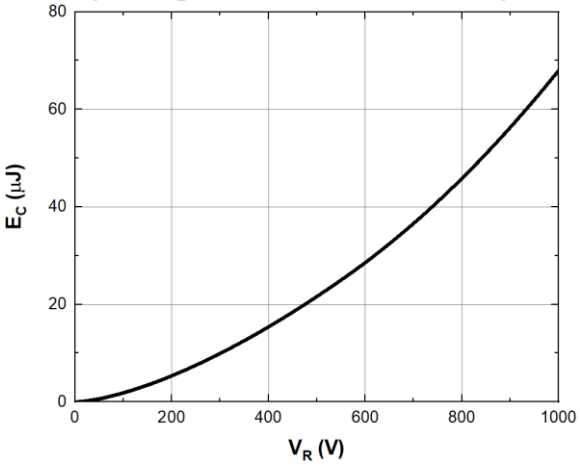


Fig. 7 Capacitance stored Energy

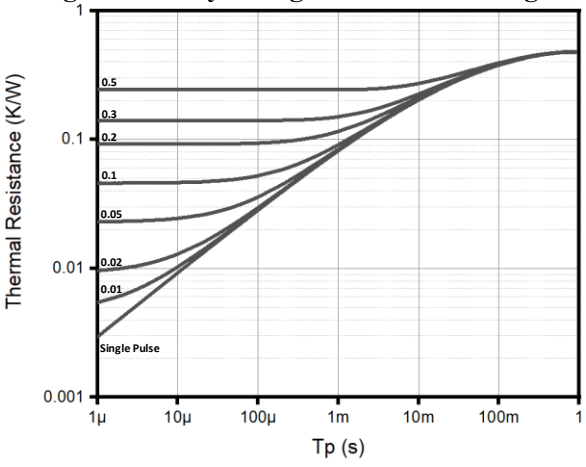
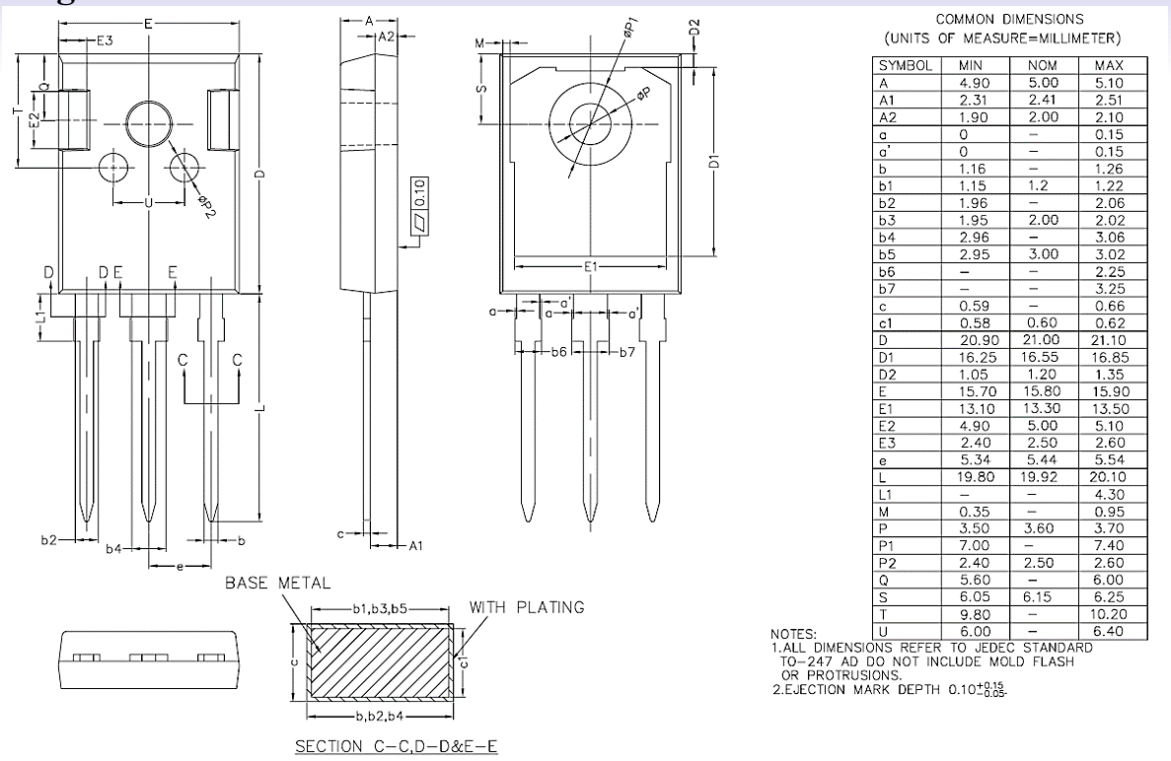


Fig. 8 Transient Thermal Impedance

Package TO-247-3 （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
α	0	–	0.15
α'	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	2.96	–	3.06
b5	2.95	3.00	3.02
b6	–	–	2.25
b7	–	–	3.25
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	1.20	1.35
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	5.34	5.44	5.54
L	19.80	19.92	20.10
L1	–	–	4.30
M	0.35	–	0.95
P	3.50	3.60	3.70
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

NOTES:
1. ALL DIMENSIONS REFER TO JEDEC STANDARD TO-247 AD DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.
2. EJECTION MARK DEPTH $0.10^{+0.15}_{-0.05}$.

This Product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, systems, or air-traffic control systems.

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