S5D120V020B

SiC Schottky Diode

Features:

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

Benefits:

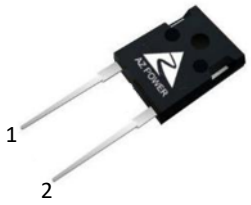
- Unipolar Rectifier
- Minimal switching loss
- Higher Efficiency
- Low cooling requirement

Symbol	Value	Unit
V_{RRM}	1200	V
I_F (Tc=161℃)	20	A
Q_C	186	nC

Applications:

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

Outline



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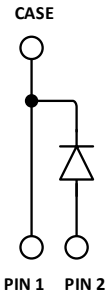
Circuit



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 Voltage	1200	V	T_J =25°C
V_{RSM}	Surge Peak Reverse Voltage	1300	V	T_J =25°C
I_F	Continuous Forward Current	85 40 20	A	T_C =25°C T_C =135°C T_C =161°C
I_{FRM}	Repetitive Peak Forward Surge Current		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		A	T_C =25°C, T_P =10ms, Half Sine Wave Tc=125°C, T_P =10ms, Half Sine Wave
P_D	Power Dissipation	395 131	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	

Thermal characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Thermal resistance		0.38		℃/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		1.3 1.7	1.55 2.0	V	I_F=20A, T_J=25°C I_F=20A, T_J=175°C
I_R	Reverse Current		5 20	100 500	μA	V_R=1200V, T_J =25°C V_R=1200V, T_J =175°C
Q_C	Total Capacitive Charge		186		nC	I_F=20A, dI/dt=275A/μs T_J =25°C, V_R=800V
C	Total Capacitance		1873 172 148		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

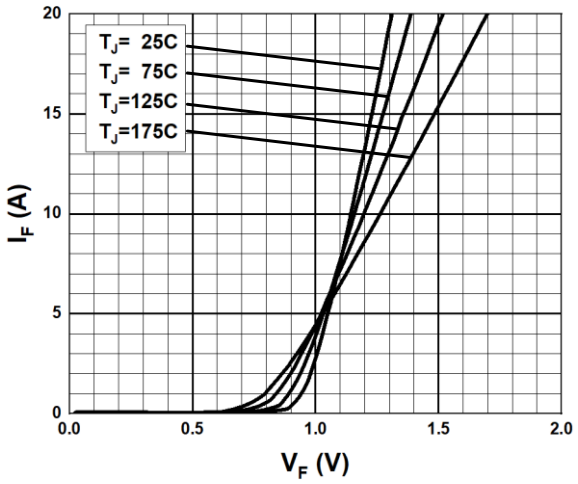


Fig. 1 Forward Characteristics

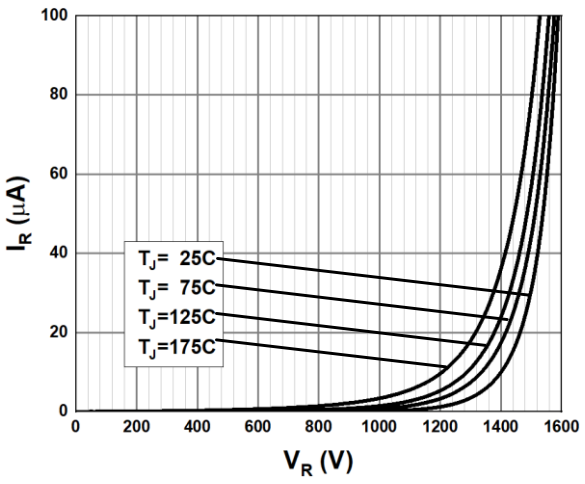


Fig. 2 Reverse Characteristics

Typical Performance

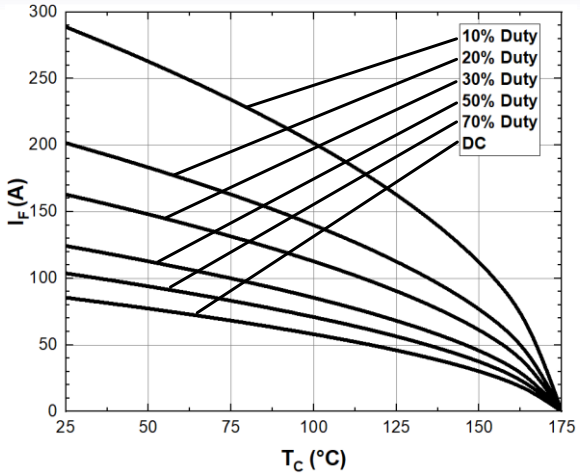


Fig. 3 Current Derating

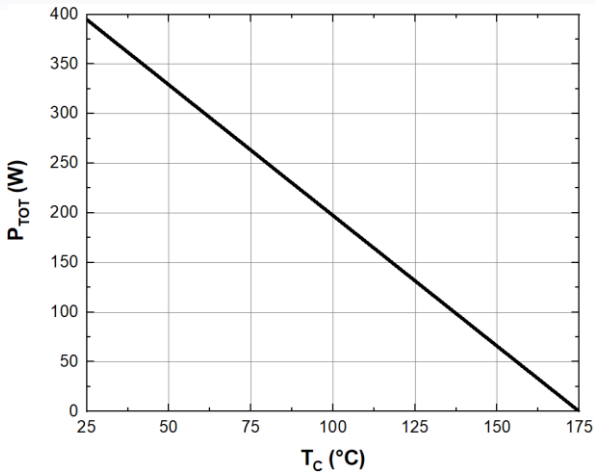


Fig. 4 Power Derating

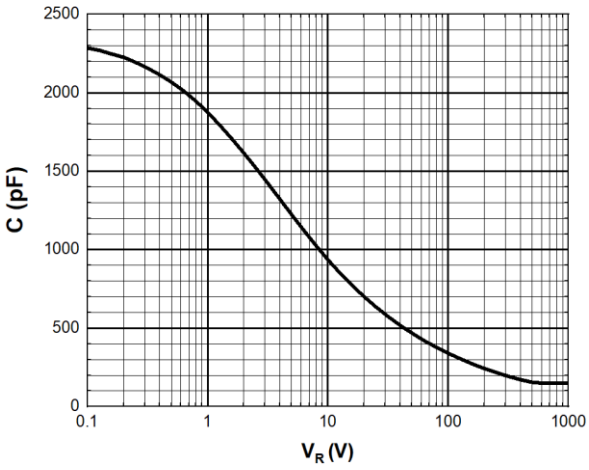


Fig. 5 Capacitance vs. Reverse Voltage

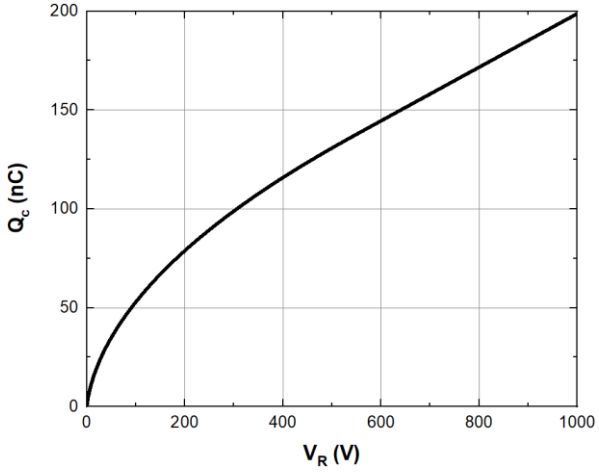


Fig. 6 Recovery Charge vs. Reverse Voltage

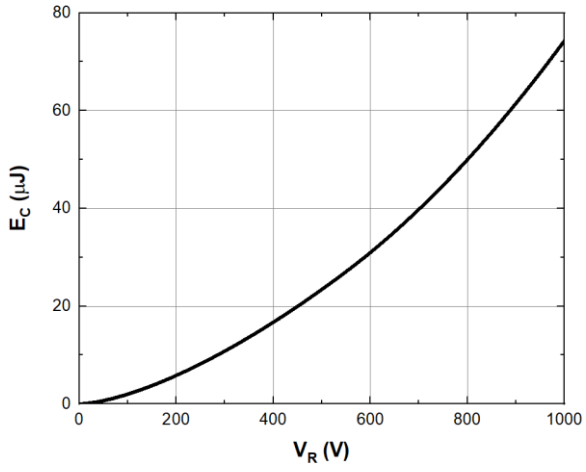


Fig. 7 Capacitance stored Energy

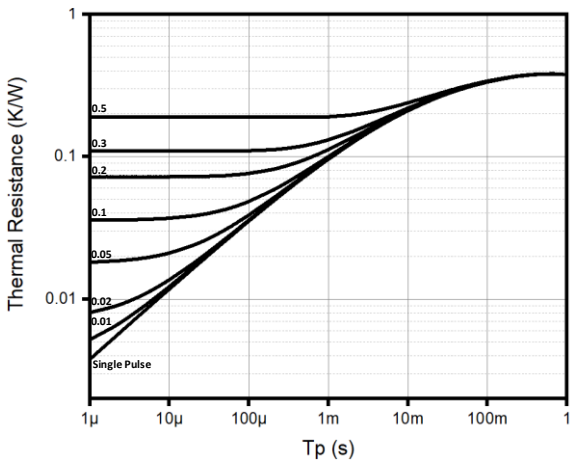


Fig. 8 Transient Thermal Impedance

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