S1D020120G

TriQSiC™ 1200V Silicon Carbide Schottky Diode

Features

- 1.2kv schottky Rectifier
- Zero Reverse Recovery Current / Zero forward recovery
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Low forward voltage
- Positive Temperature Coefficient on V_F
- Increased Creepage/Clearance Distance



TO-263-2L



Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- High Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway





Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives
- AC/DC converters

Table 1 Key performance and package parameters

Type	V_{RRM}	I_F(T_C = 135)	Q_C	Marking	Package
S1D020120G	1200V	32A	110nC	S1D020120G	TO-263-2L

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1 Maximum ratings

Table 2 Maximum rating (Tc = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	-	
V_{RSM}	Surge Peak Reverse Voltage	1300	V	-	
V_R	DC Peak Reverse Voltage	1200	V	-	
I_F	Continuous Forward Current	67 32 20	A	Tc = 25˚C Tc = 135˚C Tc = 156˚C	Fig.7
I_{FSM}	Non-Repetitive Peak Forward Surge Current	180	A	Tc = 25 tp = 10ms Half Sine Pulse	
P_{tot}	Power Dissipation	312 135	W	Tc = 25˚C Tc = 110˚C	Fig.6
$\int i^2dt$	$\int i^2dt$	160	A^2S	Tc = 25 tp = 10ms	
T_{stg} ,T_J	Operating Junction Range	-55 to +175		-	

2 Thermal characteristics

Table 3 Thermal characteristics

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
$R_{th(j-c)}$	Thermal resistance from junction to case	0.48	°C/W	-	Fig.8

3 Electrical characteristics

Table 4 Electrical characteristics (Tc = 25°C unless otherwise specified)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.38 1.85	1.6 2.2	V	I_F = 20A T_J = 25 I_F = 20A T_J = 175	Fig.1
I_R	Reverse Current	1 10	100 200	μA	V_R = 1200V T_J = 25 V_R = 1200V T_J = 175	

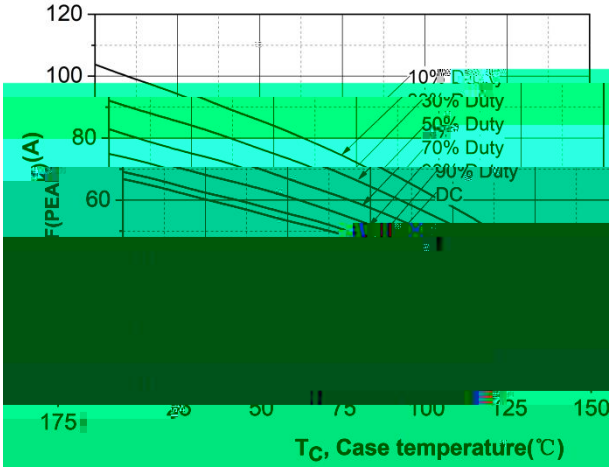


Figure 7. Current Derating

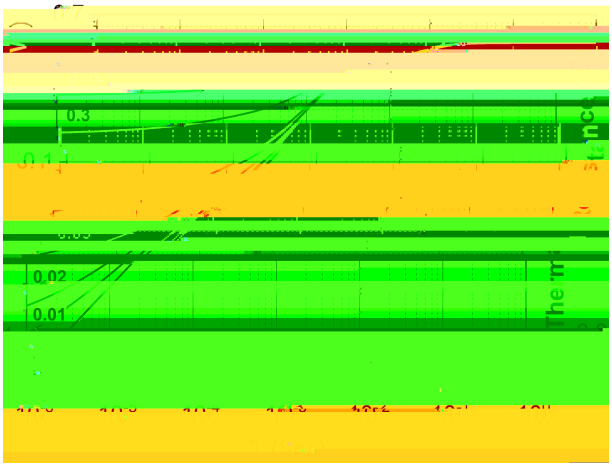


Figure 8. Transient Thermal Impedance

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7. Except as otherwise explicitly approved by Sichain in a written document signed by authorized representatives of Sichain, Sichain' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.

8. For use of our products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a Sichain representatives, for example but not limited to: transportation equipment,primary communication equipment,traffic lights,fire/crime prevention, safety equipment, medical systems, and power transmission systems.