V_{RRM}	=	1200 V
$I_{F\ (Tc=135°C)}$	=	35 A
Q_C	=	114 nC

S1D020120G

Silicon Carbide Schottky Diode

Feature

- 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

Package

1 2

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

Part Number	Packge	Marking
S1D020120G	TO-263-2L	S1D020120G

Maximum Ratings （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	73 35 27	A	Tc = 25°C Tc = 135°C Tc = 150°C	Fig.7
I_{FSM}	Non-Repetitive Peak Forward Surge Current	152	A	Tc = 25°C，tp = 10 ms，Half Sine Pulse	
P_{tot}	Power Dissipation	365 182	W	Tc = 25°C Tc = 100°C	Fig.6
dV/dt	Diode dV/dt ruggedness	200	V/ns	V_R = 0-960V	
$\int i^2dt$	$\int i^2dt$	115	A^2S	Tc = 25°C，tp = 10 ms	
T_{stg} ,T_J	Operating Junction Range	-55 to +175	°C		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.4 1.9	1.8 2.5	V	I_F = 20 A， T_J = 25℃ I_F = 20 A， T_J = 175℃	Fig.1
I_R	Reverse Current	1 10	100 250	μA	V_R = 1200V，T_J = 25℃ V_R = 1200V，T_J = 175℃	Fig.2
Q_c	Total Capacitive Charge	114		nC	V_R = 800V，I_F = 20A di/dt = 200A/μs，T_J = 25℃	Fig.4
C	Total Capacitance	2120 104 76		pF	V_R = 0V， T_J = 25℃，f = 1MHZ V_R = 400V， T_J = 25℃，f = 1MHZ V_R = 800V， T_J = 25℃，f = 1MHZ	Fig.3
E_C	Capacitance Stored Energy	60		μJ	V_R = 800V	Fig.5

Thermal Characteristics

symbol	parameter	Typ	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.41	°C/W	Fig. 8

Typical Performance

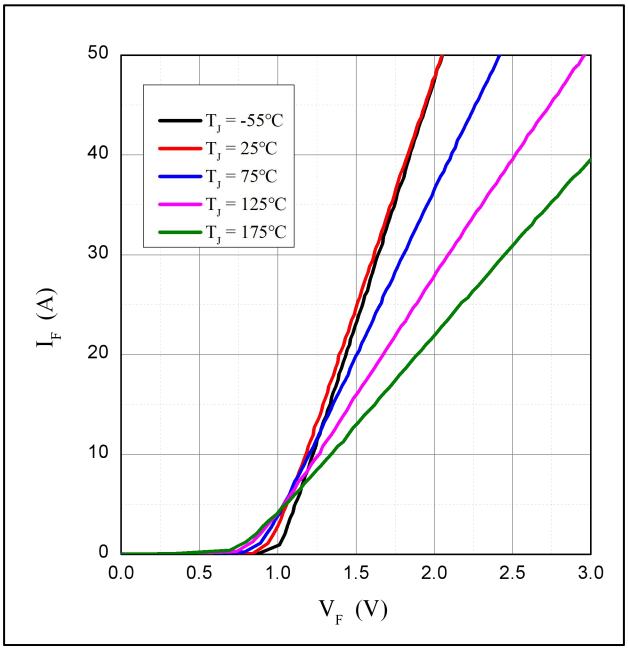


Figure 1: Forward Characteristics

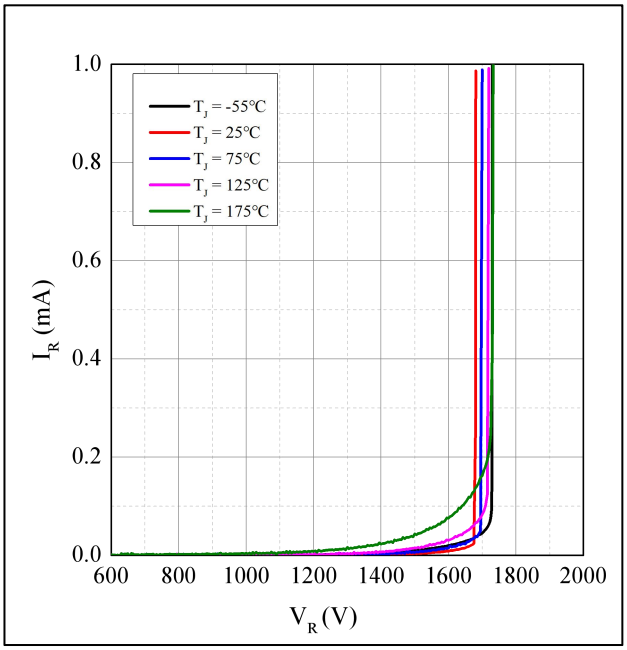


Figure 2: Reverse Characteristics

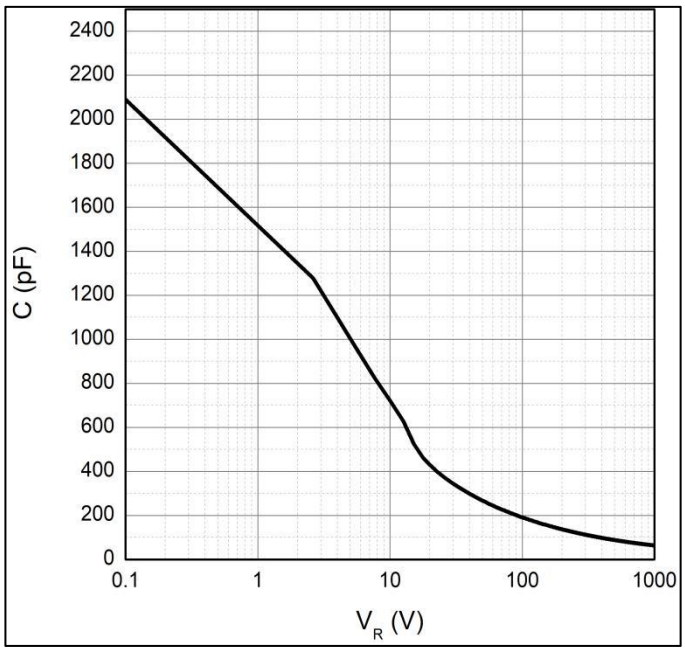


Figure 3: Capacitance vs. Reverse Voltage

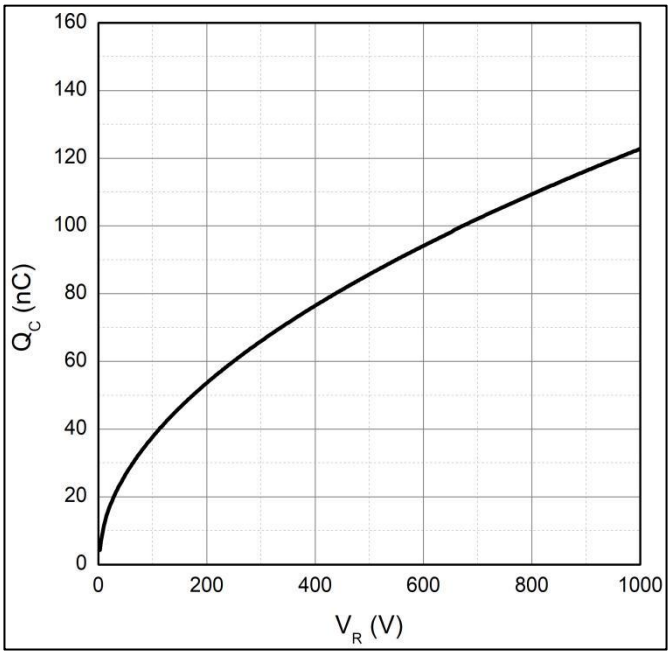


Figure 4: Recovery Charge vs. Reverse Voltage

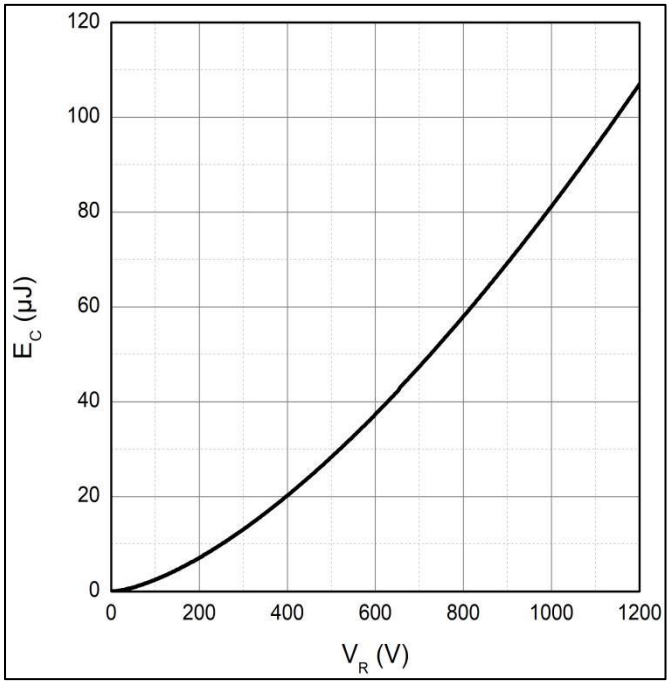


Figure 5: Typical Capacitance Stored Energy

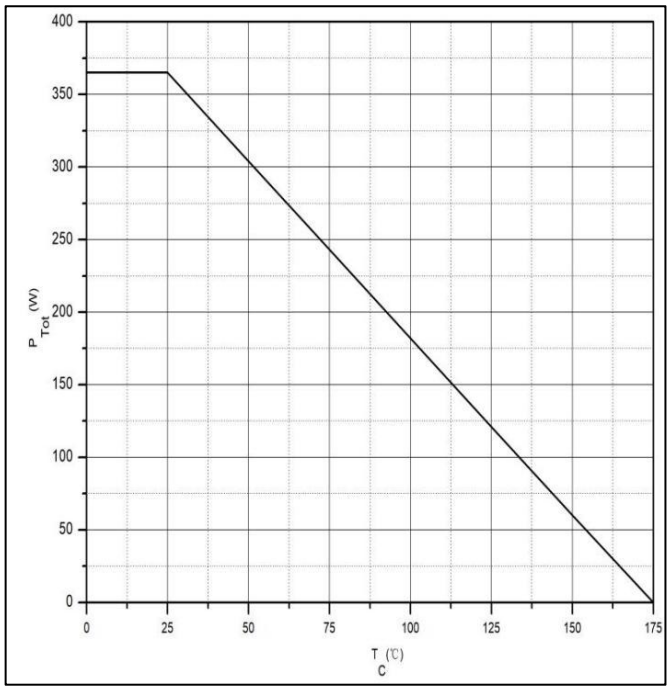


Figure 6: Power Derating

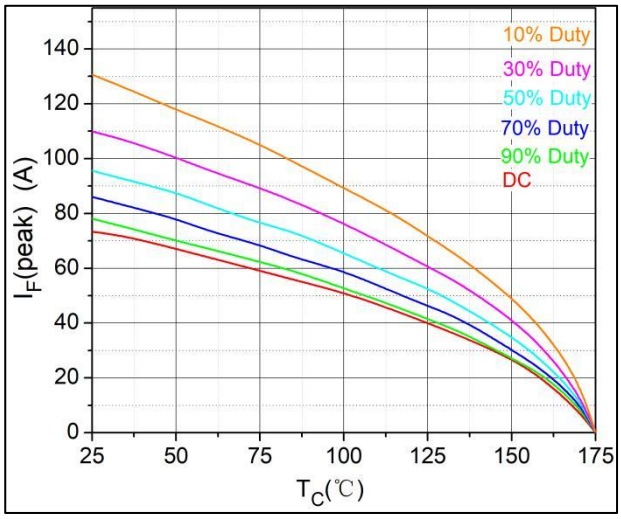


Figure 7: Current Derating

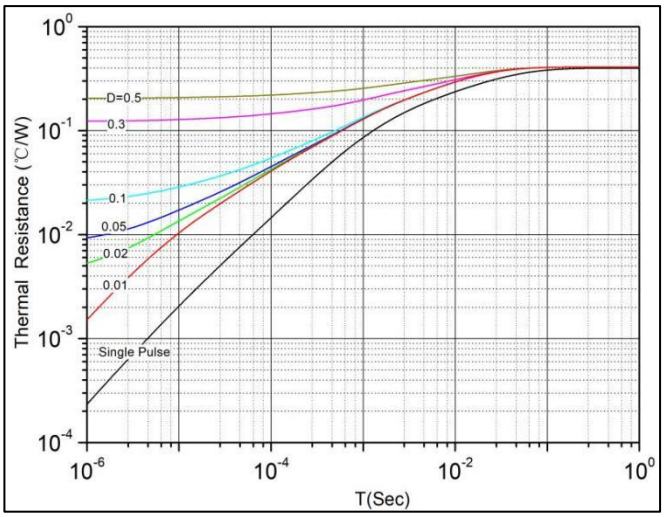
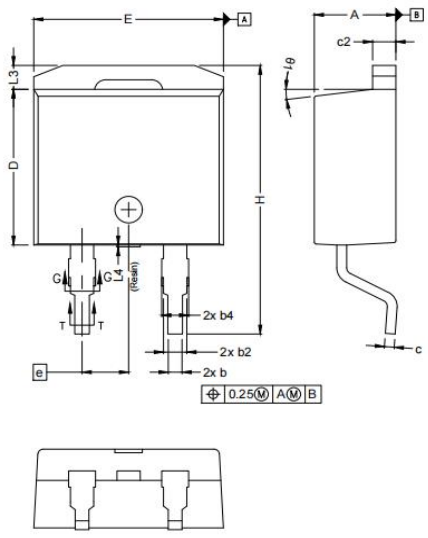
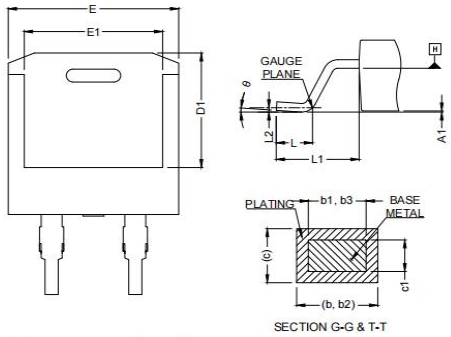


Figure 8: Transient Thermal Impedance

Package Dimensions

Package TO-263-2L





SECTION G-G & T-T

NOTE
1.0 DIMENSIONING & TOLERANCEING CONFIRM TO ASME Y14.5M-1994.
2.0 ALL DIMENSIONS ARE IN MILLIMETERS. ANGLES ARE IN DEGREES.
3.0 HEAT SINK SIDE FLASH IS MAX. 0.8mm.
4.0 RADIUS ON TERMINAL IS OPTIONAL.

SYMBOL	MIN.	MAX.	SYMBOL	MIN.	MAX.
A	4.36	4.56	E	10.15	10.55
A1	0.00	0.25	E1	8.10	8.70
b	0.70	0.90	e	2.54 BSC	
b1	0.51	0.89	H	15.00	15.60
b2	1.20	1.46	L	1.90	2.50
b3	1.17	1.37	L1	4.78	5.28
b4	1.20	1.57	L2	0.25 TYP	
c	0.38	0.69	L3	1.05	1.65
c1	0.38	0.53	L4	0	0.50
c2	1.19	1.34	θ	0°	10°
D	8.60	9.00	θ1	0°	15°
D1	6.90	7.50			

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Attention

1. **Rohs compliance**

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/ EC (RoHS2), as implemented January 2, 2013.

2. **REACH compliance**

REACh substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a SiChain representative to insure you get the most up-to-date REACh SVHC Declaration. REACh banned substance information (REACh Article 67) is also available upon request.

3. With respect to information regarding the application of the product, Sichain hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

4. Any information given in this documents subject to customer's compliance with its obligations and any applicable legal requirements, norms and standards concerning any use of the product of Sichain in any customer's applications.

5. Specifications of any and all products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance,characteristics,and functions of the described products as mounted in the customer's products or equipment.

6. Due to technical requirements products may contain dangerous substances. For information on the types in question please contact Sichain office.

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 there of 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.