

S1D040120B



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



Chip Outline

Type	Die size (W x L) mm	Anode	Cathode
S1D040120B	4.300 x 4.300	Al	Ag

Table 1 Key performance and package parameters

Type	V_{RRM}	$I_F(T_C = 135^\circ C)$	Q_C	$T_{J,max}$
S1D040120B	1200V	58A	206nC	175°C

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1、Maximum ratings

Table 2 Maximum rating ($T_c = 25^{\circ}\text{C}$ 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	120 58 40	A	$T_c = 25^{\circ}\text{C}$ $T_c = 135^{\circ}\text{C}$ $T_c = 152^{\circ}\text{C}$	Note1
I_{FSM}	Non-Repetitive Peak Forward Surge Current	330	A	$T_c = 25^{\circ}\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	
T_{stg}, T_J	Operating Junction Range	-55 to +175	$^{\circ}\text{C}$	-	

Note1. Assumes $R_{\theta JC}$ Thermal Resistance of 0.3°C/W or less

2、Electrical characteristics

Table 4 Electrical characteristics ($T_c = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.4 1.88	1.6 2.2	V	$I_F = 40\text{A}$, $T_J = 25^{\circ}\text{C}$ $I_F = 40\text{A}$, $T_J = 175^{\circ}\text{C}$	Fig.1
I_R	Reverse Current	1 12	100 200	μA	$V_R = 1200\text{V}$, $T_J = 25^{\circ}\text{C}$ $V_R = 1200\text{V}$, $T_J = 175^{\circ}\text{C}$	Fig.2
Q_c	Total Capacitive Charge	206	-	nC	$V_R = 800\text{V}$, $I_F = 40\text{A}$ $di/dt = 200\text{A}/\mu\text{s}$, $T_J = 25^{\circ}\text{C}$	Fig.4
C	Total Capacitance	4140 182 130	-	pF	$V_R = 0\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$ $V_R = 400\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$ $V_R = 800\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$	Fig.3
E_C	Capacitance Stored Energy	110	-	μJ	$V_R = 800\text{V}$	Fig.5

3、Electrical characteristic diagrams

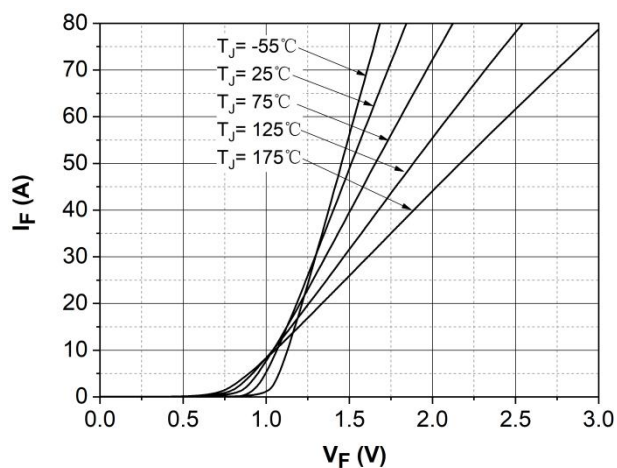


Figure 1. Forward Characteristics

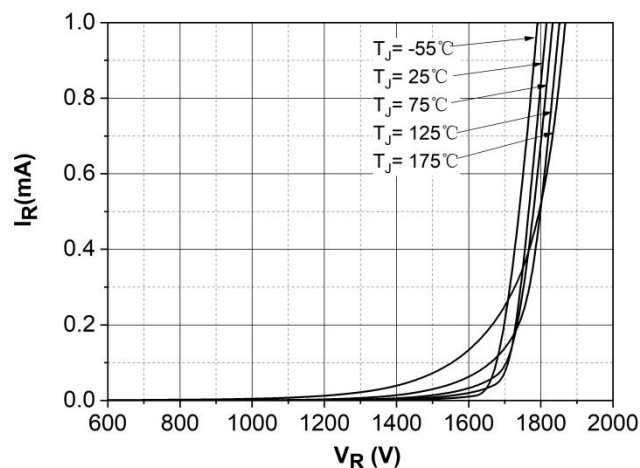


Figure 2. Reverse Characteristics

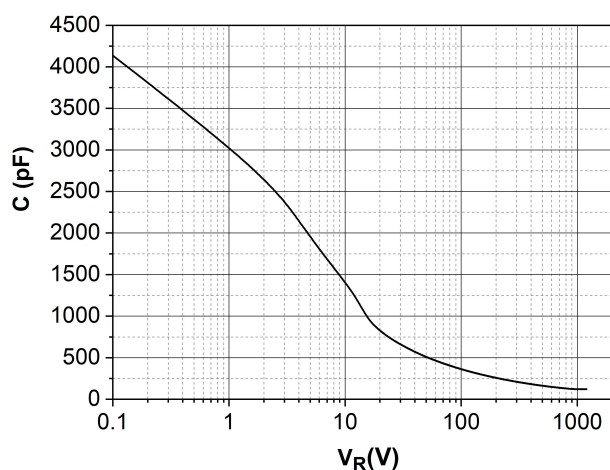


Figure 3. Capacitance vs. Reverse Voltage

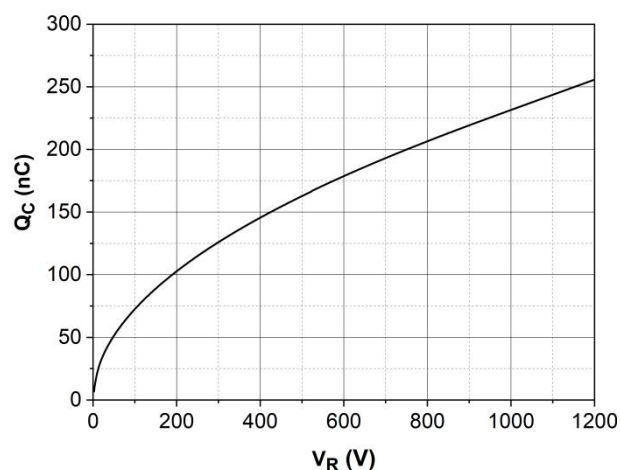


Figure 4. Recovery Charge vs. Reverse Voltage

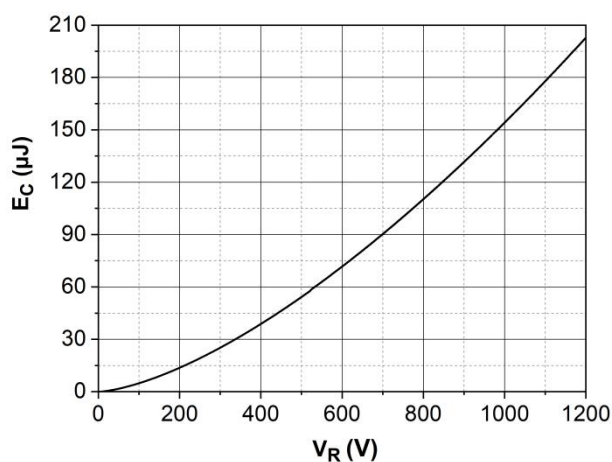


Figure 5. Typical Capacitance Stored Energy

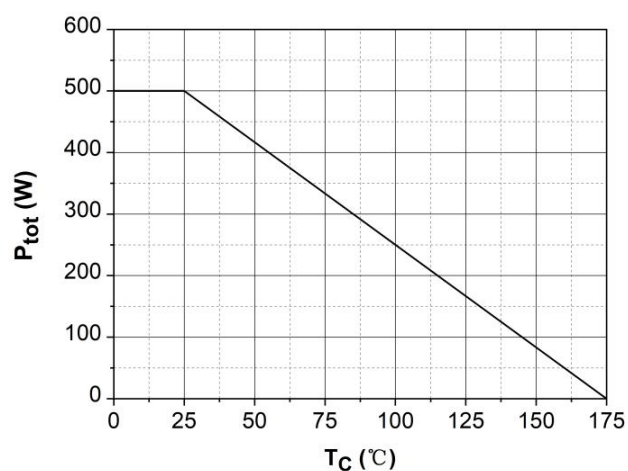


Figure 6. Power Derating

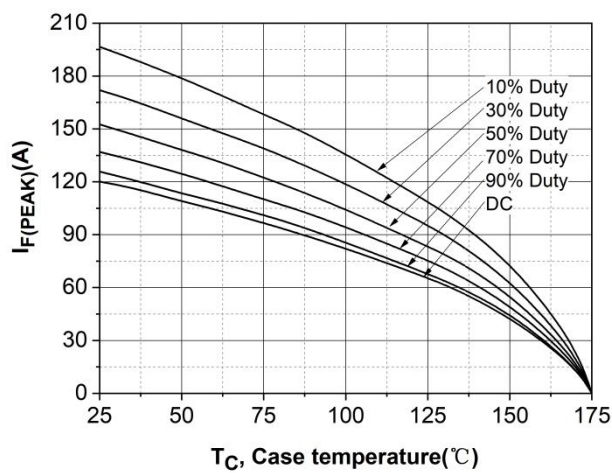


Figure 7. Current Derating

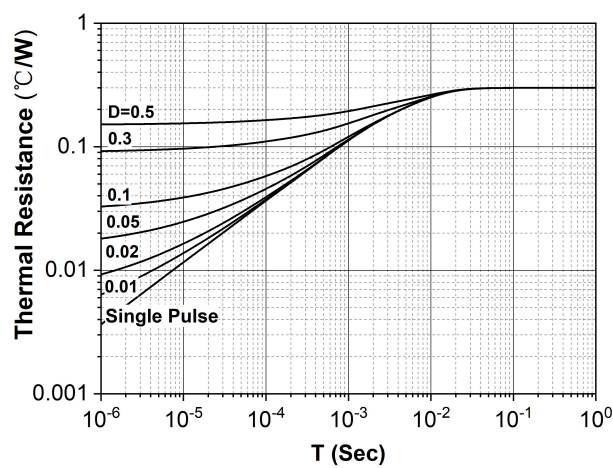
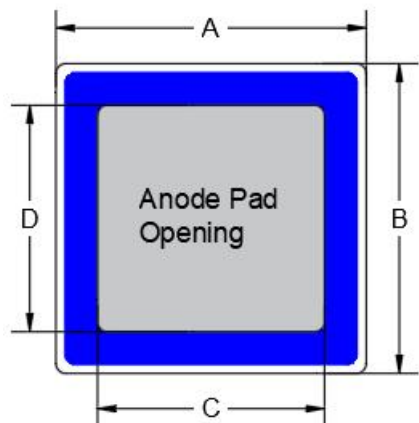


Figure 8. Transient Thermal Impedance

4、Mechanical Parameters

Parameter	Typ.	Unit
Die Size	4.300*4.300	mm
Anode Pad Opening	2.800*2.800	mm
Thickness	175	μm
Anode Metallization (Al)	4	μm
Cathode Metallization (Ag)	1	μm

5、Chip Dimensions



Symbol	Dimension / mm
A	4.300
B	4.300
C	2.800
D	2.800

Revision history

Document version	Date of release	Description of changes
V01_00	2025-05-27	—

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.

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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.

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