

S1D004065B

TriQSiC™ 650V Silicon Carbide Schottky Diode G1

Features

- 650V 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



Chip Outline

Type	Die size (W x L) mm	Anode	Cathode
S1D004065B	1.070x 1.070	Al	Ag

Table 1 Key performance and package parameters

Type	V_{RRM}	$I_F(T_C = 135^\circ\text{C})$	Q_C	$T_{J,max}$
S1D004065B	650V	7A	9.5nC	175°C

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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	650	V	-	
V _{RSM}	Surge Peak Reverse Voltage	700	V	-	
V _R	DC Peak Reverse Voltage	650	V	-	
I _F	Continuous Forward Current	14 7 4	A	Tc = 25°C Tc = 135°C Tc = 155°C	Note1
I _{FSM}	Non-Repetitive Peak Forward Surge Current	30	A	Tc = 25°C, tp = 10ms, Half Sine Pulse	
T _{stg} , T _J	Operating Junction Range	-55 to +175	°C	-	

Note1. Assumes R_{θJC} Thermal Resistance of 3°C/W or less

2、Electrical characteristics

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

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V _F	Forward Voltage	1.35 1.55	1.6 1.9	V	I _F = 4A, T _J = 25°C I _F = 4A, T _J = 175°C	Fig.1
I _R	Reverse Current	0.4 4.3	100 200	μA	V _R = 650V, T _J = 25°C V _R = 650V, T _J = 175°C	Fig.2
Q _c	Total Capacitive Charge	9.5	-	nC	V _R = 400V, I _F = 4A di/dt = 200A/μs, T _J = 25°C	Fig.4
C	Total Capacitance	222 17.5 13.5	-	pF	V _R = 0V, T _J = 25°C, f = 1MHz V _R = 200V, T _J = 25°C, f = 1MHz V _R = 400V, T _J = 25°C, f = 1MHz	Fig.3
E _c	Capacitance Stored Energy	2.5	-	μJ	V _R = 400V	Fig.5

3、Electrical characteristic diagrams

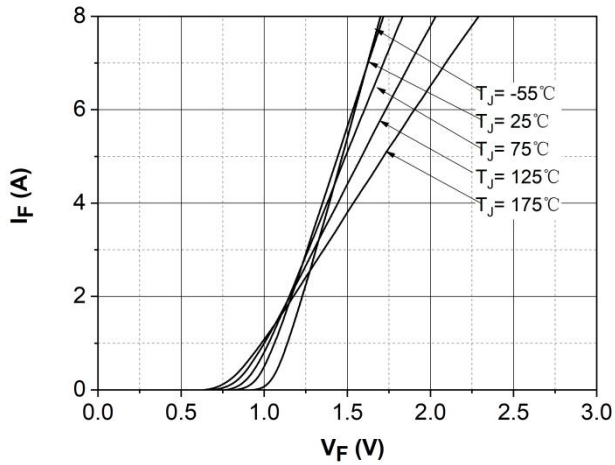


Figure 1. Forward Characteristics

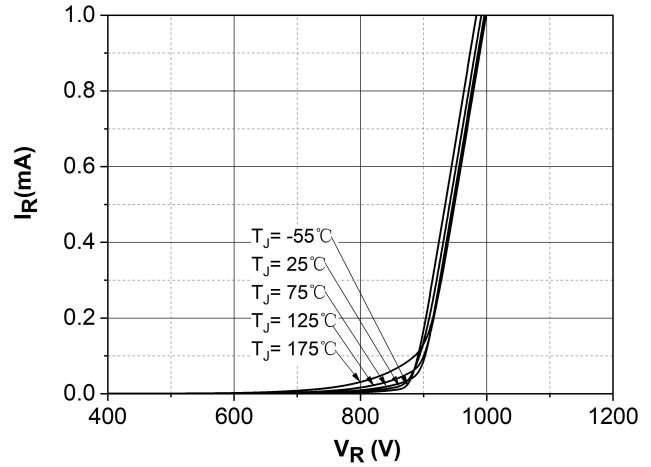


Figure 2. Reverse Characteristics

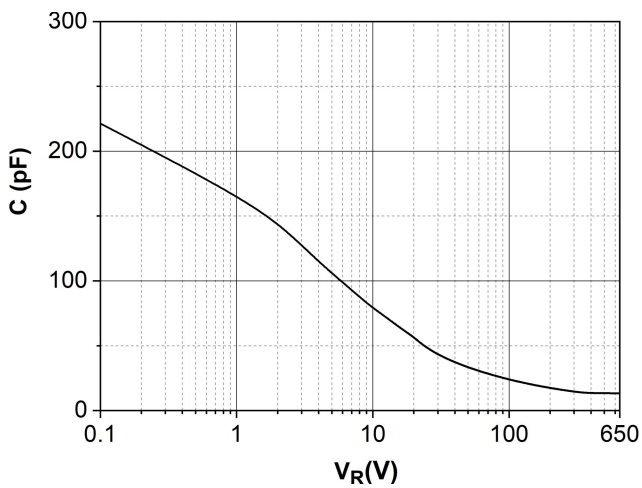


Figure 3. Capacitance vs. Reverse Voltage

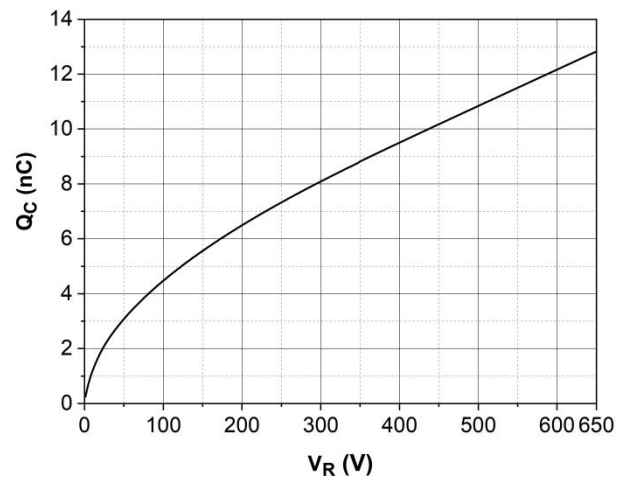


Figure 4. Recovery Charge vs. Reverse Voltage

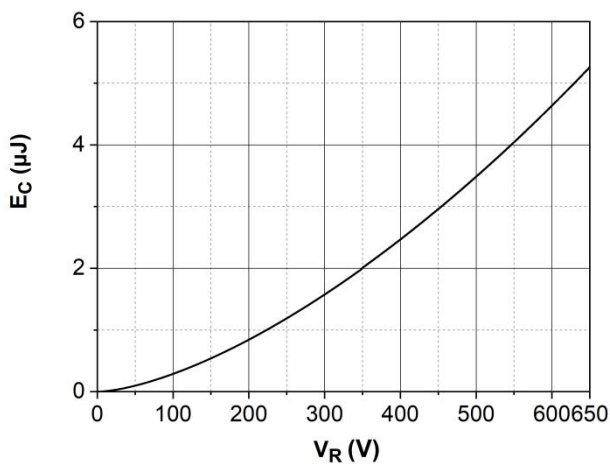
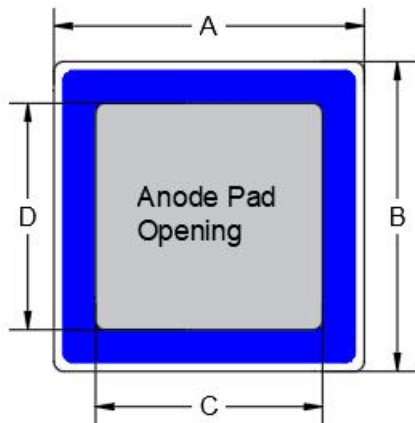


Figure 5. Typical Capacitance Stored Energy

4、 Mechanical Parameters

Parameter	Typ.	Unit
Die Size	1.070* 1.070	mm
Anode Pad Opening	0.600 * 0.600	mm
Thickness	175	μm
Anode Metallization (Al)	4	μm
Cathode Metallization (Ag)	1	μm

5、 Chip Dimensions



Symbol	Dimension / mm
A	1.070
B	1.070
C	0.600
D	0.600

Revision history

Document version	Date of release	Description of changes
V01_00	2025-04-30	--

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.

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.