S1D020120B

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

Chip Outline

Type	Die size（W x L）mm	Anode	Cathode
S1D020120B	3.082 x 3.082	Al	Ag

Table 1 Key performance and package parameters

Type	V_{RRM}	I_F(T_C = 135℃)	Q_C	$T_{J,max}$
S1D020120B	1200V	29A	110nC	175℃

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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	61 29 20	A	Tc = 25˚C Tc = 135˚C Tc = 153˚C	Note1
I_{FSM}	Non-Repetitive Peak Forward Surge Current	180	A	Tc = 25℃，tp = 10ms，Half Sine Pulse	
T_{stg} ,T_J	Operating Junction Range	-55 to +175	℃	-	

Note1. Assumes $R_{\theta JC}$ Thermal Resistance of 0.56 ˚C/W or less

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°C I_F = 20A，T_J = 175°C	Fig.1
I_R	Reverse Current	1 10	100 200	μA	V_R = 1200V，T_J = 25°C V_R = 1200V，T_J = 175°C	Fig.2
Q_c	Total Capacitive Charge	110	-	nC	V_R = 800V，I_F = 20A di/dt = 200A/μs，T_J = 25°C	Fig.4
C	Total Capacitance	2120 104 76	-	pF	V_R = 0V，T_J = 25°C，f = 1MHz V_R = 400V，T_J = 25°C，f = 1MHz V_R = 800V，T_J = 25°C，f = 1MHz	Fig.3
E_C	Capacitance Stored Energy	60	-	μJ	V_R = 800V	Fig.5

4、Electrical characteristic diagrams

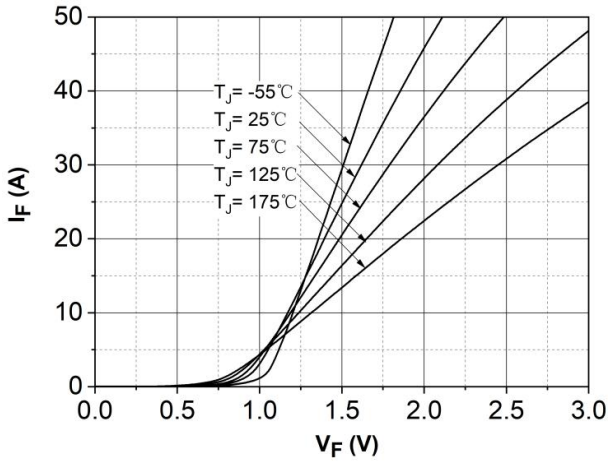


Figure 1. Forward Characteristics

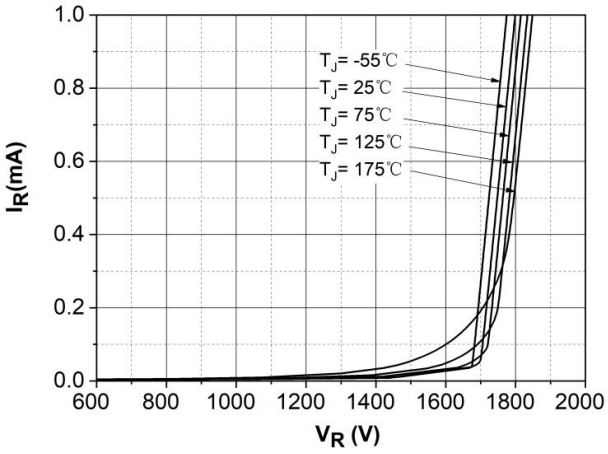


Figure 2. Reverse Characteristics

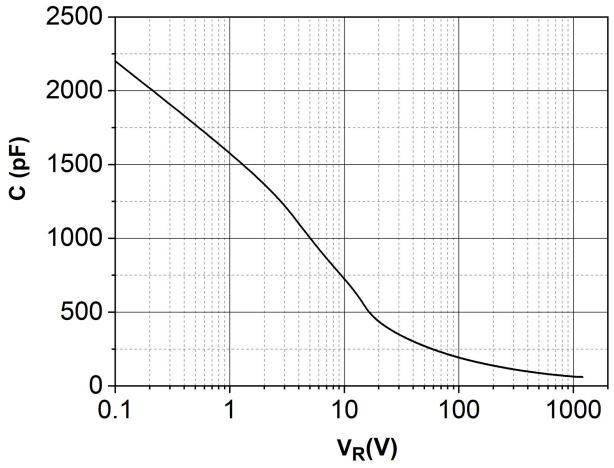


Figure 3. Capacitance vs. Reverse Voltage

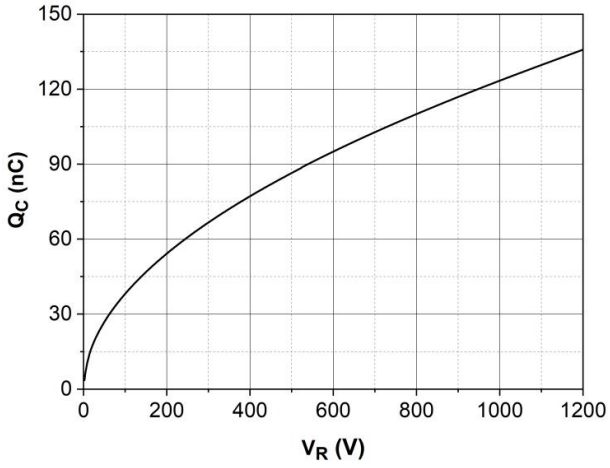


Figure 4. Recovery Charge vs. Reverse Voltage

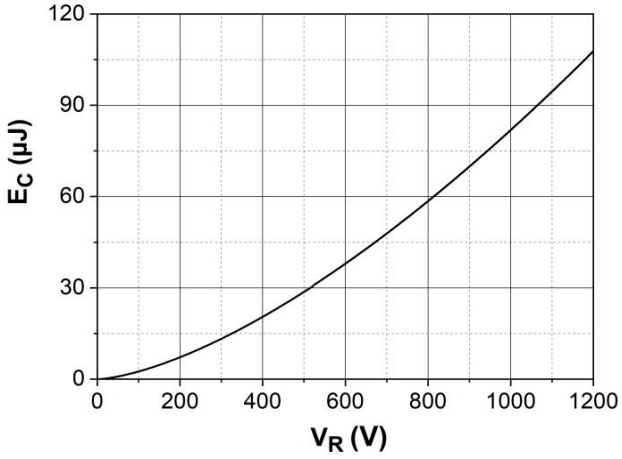
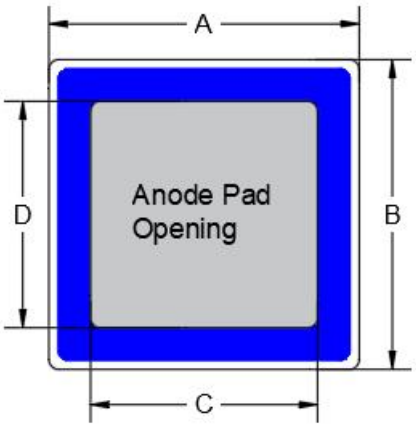


Figure 5. Typical Capacitance Stored Energy

5、Mechanical Parameters

Parameter	Typ.	Unit
Die Size	3.082 * 3.082	mm
Anode Pad Opening	2.154 * 2.154	mm
Thickness	175	μm
Anode Metallization (Al)	4	μm
Cathode Metallization (Ag)	1	μm

6、Chip Dimensions



Symbol	Dimension / mm
A	3.082
B	3.082
C	2.154
D	2.154

Revision history

Document version	Date of release	Description of changes
V02_00	2024-09-06	——
V02_01	2024-10-28	——

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.

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