

Silicon Carbide Schottky Diode

QSD-HCS002X120

Features

- 1200v schottky rectifier
- Zero reverse recovery current
- High-frequency operation
- Temperature-independent switching behavior
- Extremely fast switching

V _{rrm} =	1200 V
I _f (T _c =160 °C)	2 A
Q _c =	12 nC

Benefits

- Replace bipolar with unipolar rectifiers
- Essentially no switching losses
- Higher efficiency
- Reduction of heat sink requirements
- Parallel devices without thermal runaway

Package



Applications

- Switch mode power supplies (SMPS)
- Power factor correction
- Motor drives

Part Number	Package	Marking
QSD-HCS002X120	Die Only	Q

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Maximum Rated Values (Tc=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	TestConditions	Note
Vrrm	Repetitive Peak Reverse Voltage	1200	V		
If	Continuous Forward Current	8.8	A	Tc=25°C	Fig.3
		4.1		Tc=135°C	
		2.0		Tc=160°C	
Ifrm	Repetitive Peak Forward Surge Current	12	A	Tc=25°C, Tp=10ms,HalfSinePulse	
		10		Tc=110°C, Tp=10ms,HalfSinePulse	
Ifsm	Non-Repetitive Forward Surge Current	16	A	Tc=25°C, Tp=10ms,HalfSinePulse	
		14		Tc=110°C, Tp=10ms,HalfSinePulse	
Ptot	Power Dissipation	57	W	Tc=25°C	Fig.4
		25		Tc=110°C	
Tj	Operating Temperature	-55 to +175	°C		
Tstg	Storage Temperature	-55 to +175	°C		

Electrical Characteristics (Tj=25°C)

Symbol	Parameter	Value			Unit	TestConditions	Note
		Min.	Typ.	Max.			
Vf	Forward Voltage		1.4	1.8	V	If=2A, Tj=25°C	Fig.1
			1.9	3		If=2A, Tj=175°C	
Ir	Reverse Current		1	50	µA	Vr=1200V, Tj=25°C	Fig.2
			5.0	150		Vr=1200V, Tj=175°C	
Qc	Total Capacitive Charge		12		nC	Vr=800V, Tj=25°C	Fig.5
C	Total Capacitance		146		pF	Vr=0V, Tj=25°C, f=1MHz	Fig.6
			11			Vr=400V, Tj=25°C, f=1MHz	
			10.8			Vr=800V, Tj=25°C, f=1MHz	
Ec	Capacitance Stored Energy		2.9		µJ	Vr=800V	Fig.7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
Rθjc	Thermal Resistance (Junction to Case) ¹	2.65	°C/W	Fig.8

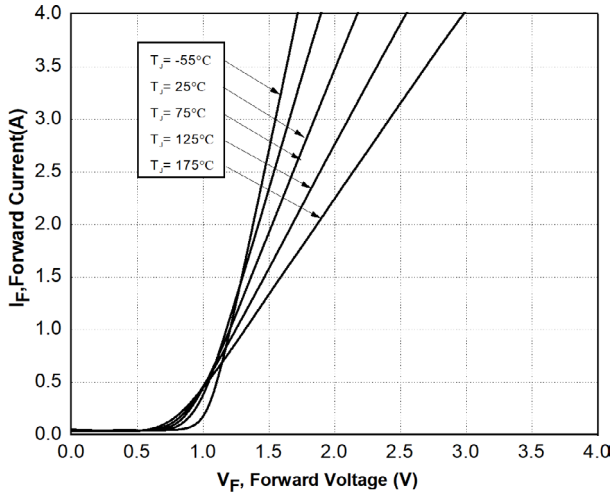


Figure 1. Forward Characteristics

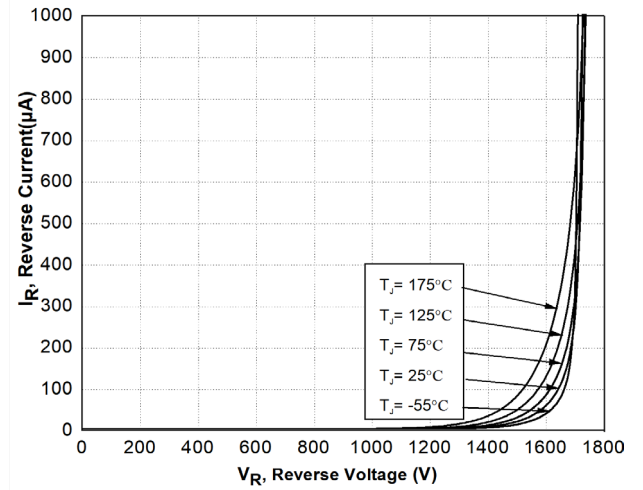


Figure 2. Reverse Characteristics

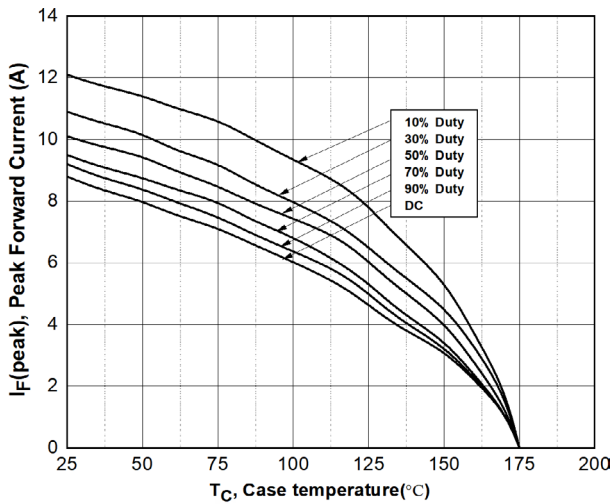


Figure 3. Current Derating

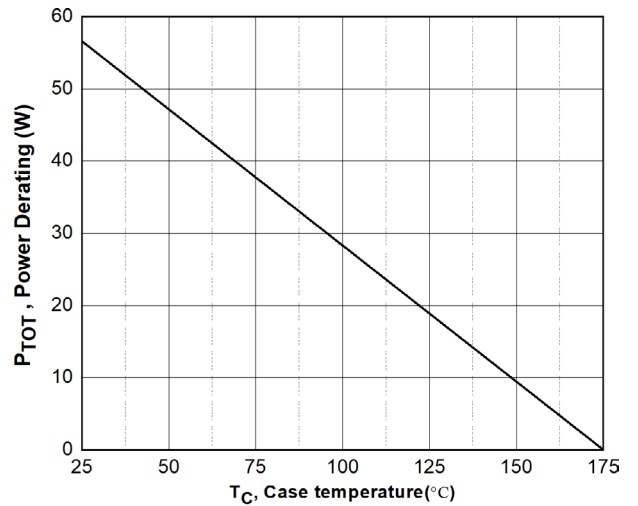


Figure 4. Power Derating

Typical Performance

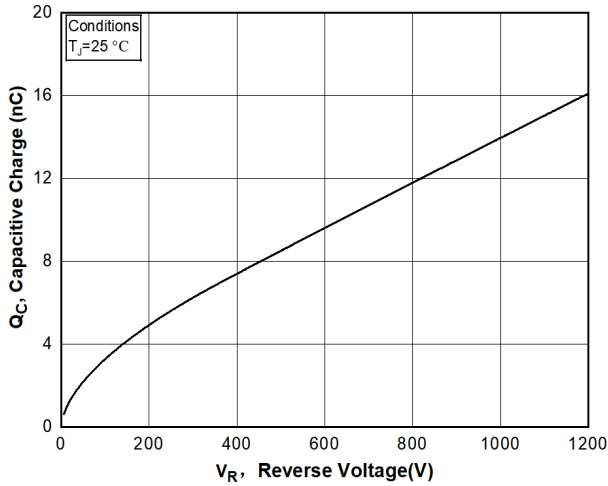


Figure 5. Capacitance Charge Vs. Reverse Voltage

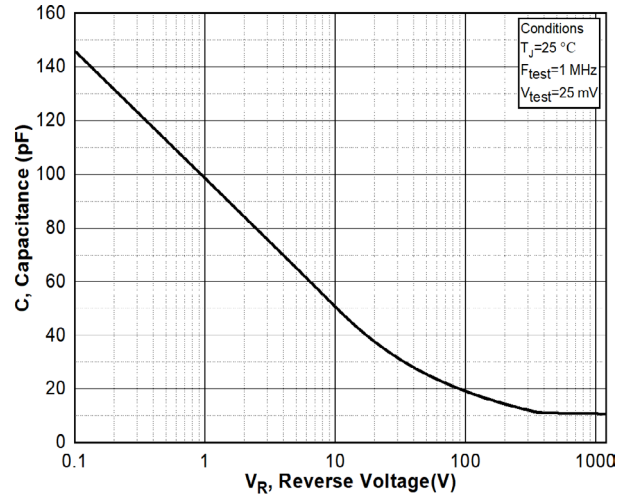


Figure 6. Capacitance Vs. Reverse Voltage

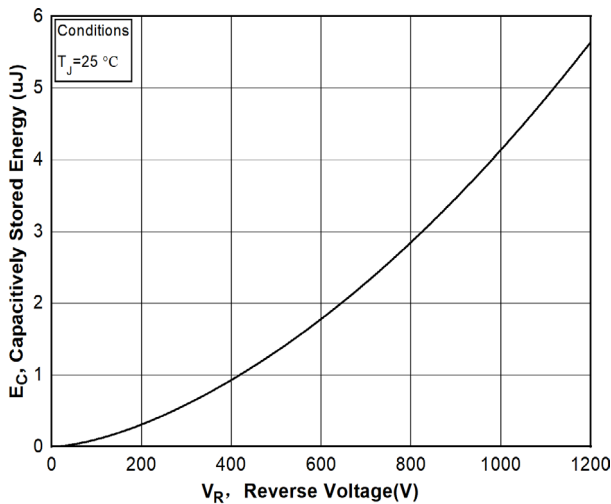


Figure 7. Capacitance Stored Energy

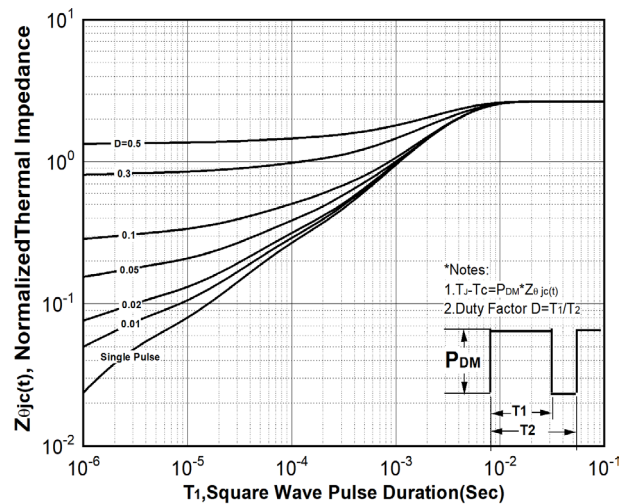
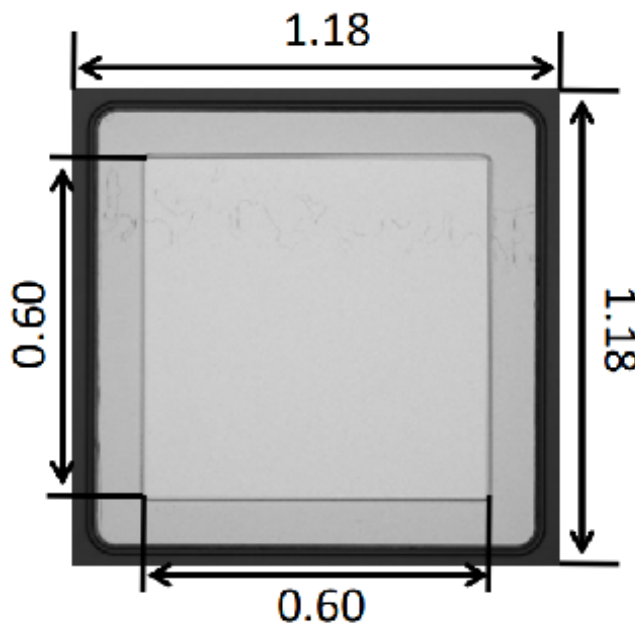


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

Package Dimensions



Product Dimensions

Parameter	Typical	Units
DieSize(LxW)	1.18x1.18	mm
Anode Pad Opening	0.60x0.60	mm
DieThickness ¹	364±10%	µm
Top side Anode Metalization (Al)	4	µm
Back side Cathode Metalization (Ni/Ti/Ag)	2.05	µm
Front side Passivation (polyimide)	SiO ₂ Polyimide	

Attention

- 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. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
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