

# GSD10120H

## 1200V Silicon Carbide Schottky Diode



### Features

- Negligible reverse recovery
- High-speed switching
- Positive Temperature Coefficient
- Temperature-Independent Switching
- RoHS compliant

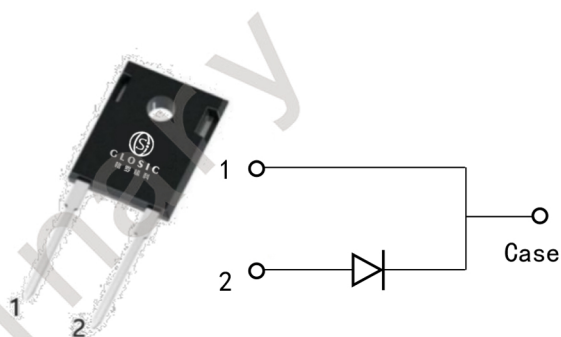
### Benefits

- Higher frequency
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability

### Applications

- Switch mode power supply
- Solar inverter
- Data Center
- Uninterruptible power supply

$V_{RRM}$	1200V
$I_F$	10A (TC=158°C)
$Q_C$	52nC



Marking	Package
GSD10120H	TO-247-2

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### Maximum Ratings (Tc=25°C unless otherwise noted)

Symbol	Parameter		Value	Unit	Note
V <sub>RRM</sub>	Repetitive peak reverse voltage		1200	V	
I <sub>F</sub>	Continuous forward current	Tc=25°C	35	A	Figure 3
		Tc=135°C	17	A	
		Tc=158°C	10	A	
I <sub>FSM</sub>	Non-repetitive forward surge current	Tc=25°C, t <sub>p</sub> =10ms, Half sine pulse	59	A	
		Tc=110°C, t <sub>p</sub> =10ms, Half sine pulse	45	A	
I <sub>FRM</sub>	Repetitive Peak Forward Surge Current	Tc=25°C, t <sub>p</sub> =10ms, Half sine pulse	50	A	
∫i <sup>2</sup> dt	i <sup>2</sup> t value	Tc=25°C, t <sub>p</sub> =10ms	17	A <sup>2</sup> S	
		Tc=110°C, t <sub>p</sub> =10ms	10	A <sup>2</sup> S	
P <sub>tot</sub>	Power Dissipation	Tc=25°C	191	W	Figure 4
		Tc=110°C	83	W	
		Tc=150°C	32	W	
T <sub>j</sub> , T <sub>stg</sub>	Operating and Storage Temperature		-55 to +175	°C	

### Electrical Characteristics (Tc=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
V <sub>DC</sub>	DC blocking voltage		1200	-	-	V	
V <sub>F</sub>	Forward voltage	I <sub>F</sub> =5A	-	1.20	-	V	Figure 1
		I <sub>F</sub> =10A, Tc=25°C	-	1.43	1.70	V	
		I <sub>F</sub> =10A, Tc=175°C	-	2.0	-	V	
I <sub>R</sub>	Reverse current	V <sub>R</sub> =1200V, Tc=25°C	-	2.0	60	uA	Figure 2
		V <sub>R</sub> =1200V, Tc=175°C	-	4.0	-	uA	
Q <sub>C</sub>	Total capacitive charge	V <sub>R</sub> =800V	-	52	-	nC	Figure 6
C	Total capacitance	V <sub>R</sub> =1V, f=1MHZ	-	546	-	pF	Figure 5
		V <sub>R</sub> =400V, f=1MHZ	-	47	-	pF	
		V <sub>R</sub> =800V, f=1MHZ	-	41	-	pF	
E <sub>C</sub>	Capacitance Stored Energy	V <sub>R</sub> =800V	-	15.86	-	uJ	Figure 7

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### Thermal Characteristics

Symbol	Parameter	Value		Unit	Note
		Typ.	Max.		
$R_{th(j-c)}$	Thermal resistance (Junction to case)	0.787	-	$^{\circ}\text{C}/\text{W}$	Figure 8

### Electrical Characteristic Curves

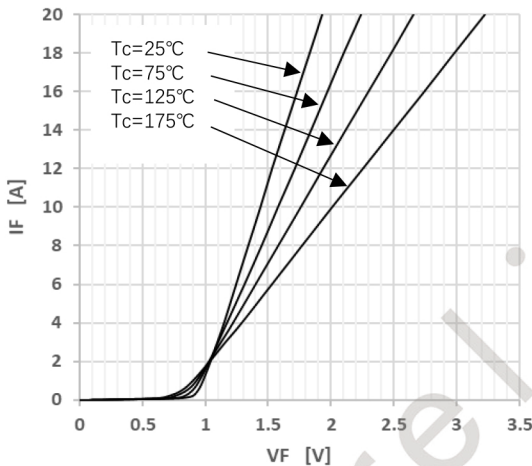


Figure 1 Forward Characteristics

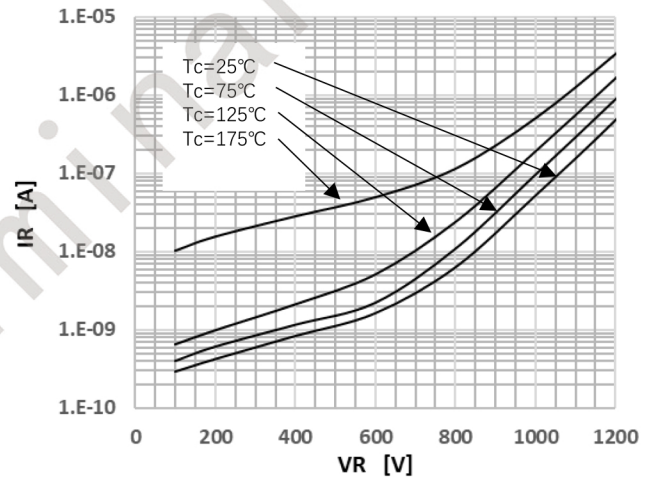


Figure 2 Reverse Characteristics

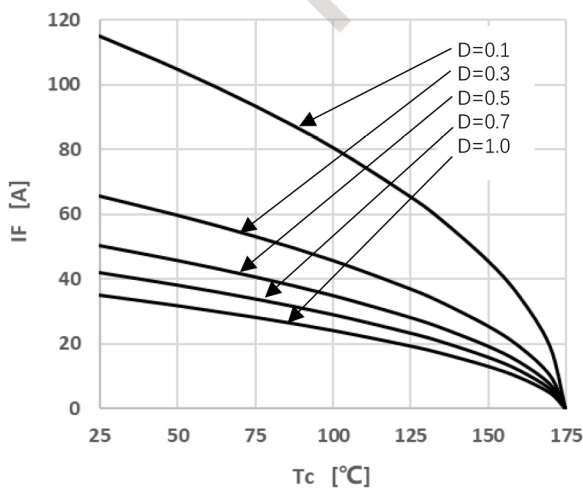


Figure 3 Peak Forward Current Derating

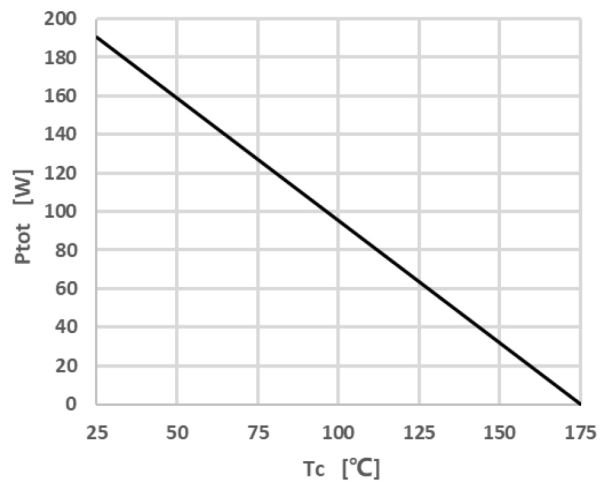


Figure 4 Power Dissipation

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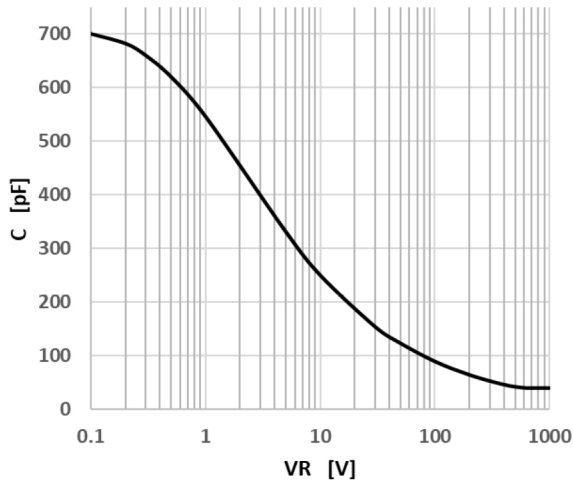


Figure 5 Capacitance vs. Reverse Voltage

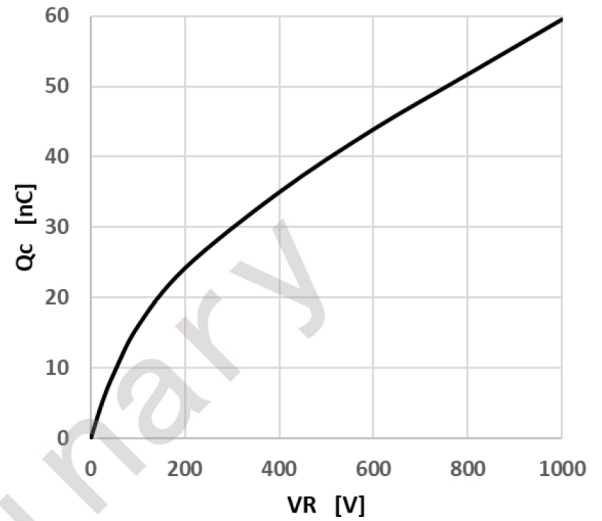


Figure 6 Capacitance Charge vs. Reverse Voltage

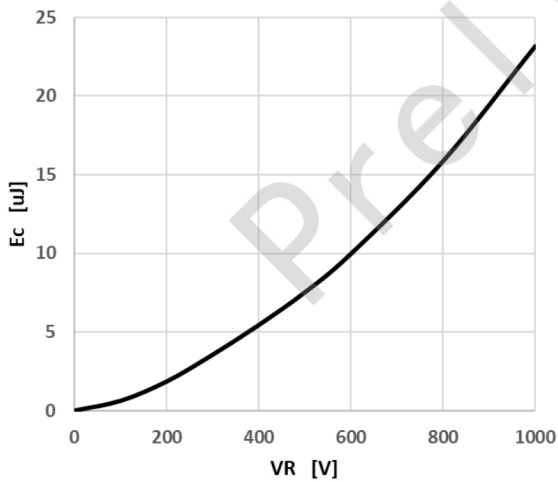


Figure 7 Capacitance Stored Energy

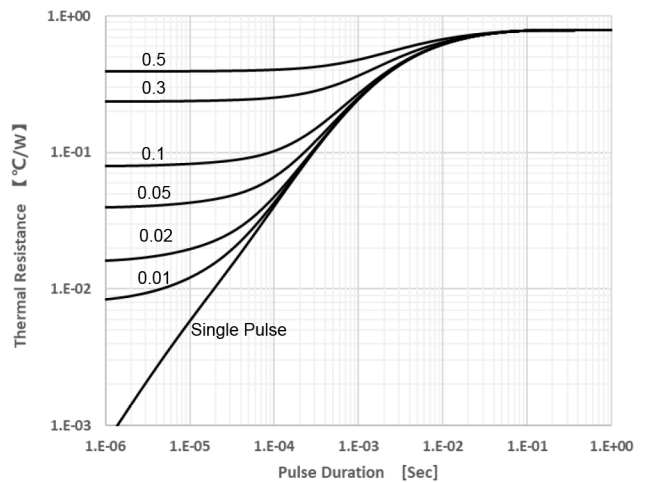


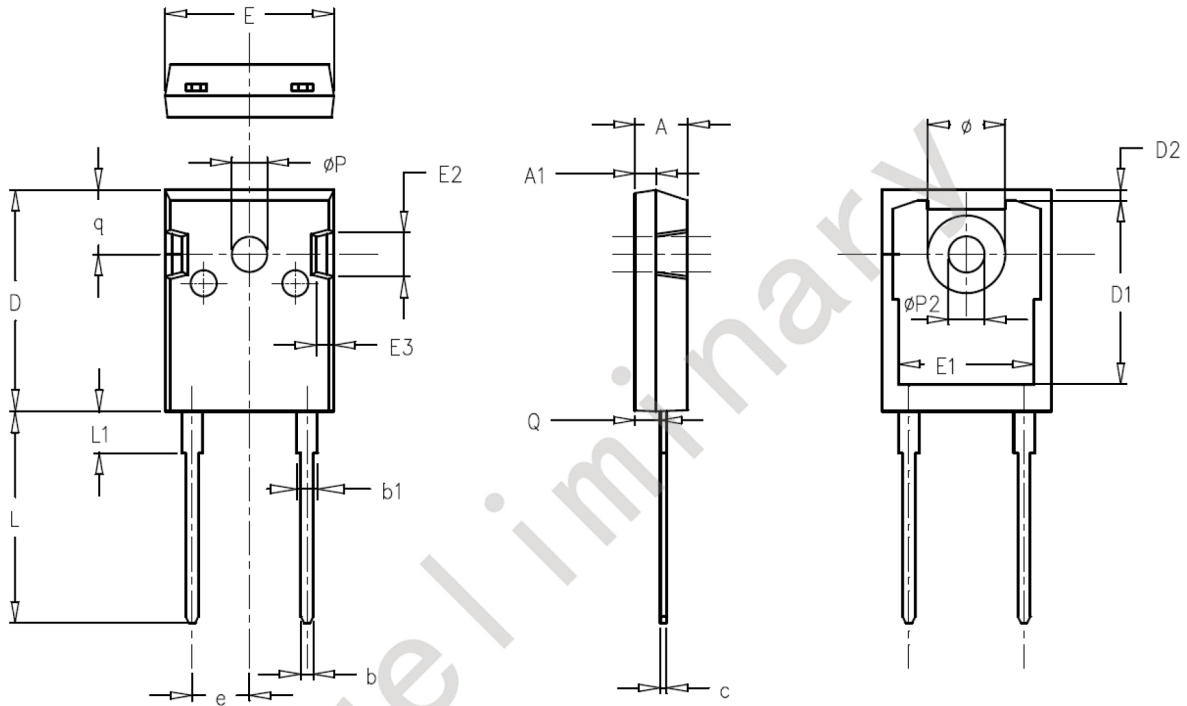
Figure 8 Transient Thermal Impedance

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Schottky Diode**

## Package Dimensions

To-247-2



SYMBOL	MILLIMETERS			NOTES	SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.			Normal	MIN.	MAX.	
A	4.98	4.68	5.36		phi P	3.66	3.45	3.85	
A1	1.99	1.90	2.10		e	5.44	BSC		
Q	2.41	2.30	2.60		q	6.24	5.99	6.58	
c	0.60	0.48	0.72		phi P2	3.45	3.24	3.64	
b	1.20	1.00	1.40		phi	7.14	7.10	7.30	
b1	2.07	1.90	2.30		D1	16.56	16.10	17.10	
D	21.10	20.80	21.80		D2	0.98	0.80	1.36	
E	15.98	15.38	16.20		E1	13.30	13.00	13.52	
L	20.28	19.50	20.50		E2	5.64	5.10	6.10	
L1	4.01	3.75	4.35		E3	2.33	1.90	2.70	

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