

# GSD100120H

## 1200V Silicon Carbide Schottky Diode



$V_{RRM}$	1200V
$I_F$	100A ( $T_c=139^{\circ}\text{C}$ )
$Q_C$	453nC

### Features

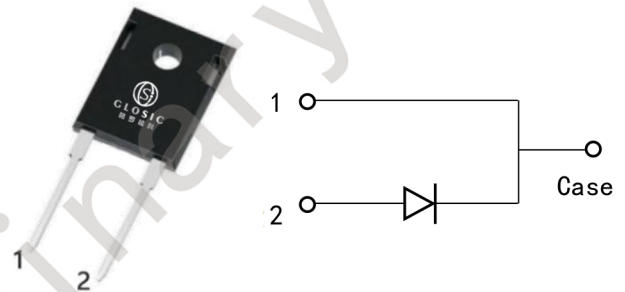
- Negligible reverse recovery
- High-speed switching
- Positive Temperature Coefficient
- Temperature-Independent Switching
- RoHS compliant

### 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



Marking	Package
GSD100120H	TO-247-2

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

Symbol	Parameter	Value	Unit	Note	
$V_{RRM}$	Repetitive peak reverse voltage	1200	V		
$I_F$	Continuous forward current	Tc=25°C	218	A	Figure 3
		Tc=135°C	107	A	
		Tc=139°C	100	A	
$I_{FSM}$	Non-repetitive forward surge current	Tc=25°C, $t_p=10ms$ , Half sine pulse	412	A	
		Tc=110°C, $t_p=10ms$ , Half sine pulse	320	A	
$I_{FRM}$	Repetitive Peak Forward Surge Current	Tc=25°C, $t_p=10ms$ , Half sine pulse	326	A	
$\int i^2 dt$	$i^2t$ value	Tc=25°C, $t_p=10ms$	849	A <sup>2</sup> S	
		Tc=110°C, $t_p=10ms$	512	A <sup>2</sup> S	
$P_{tot}$	Power Dissipation	Tc=25°C	1154	W	Figure 4
		Tc=110°C	500	W	
		Tc=150°C	192	W	
$T_j, T_{stg}$	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.		
$V_{DC}$	DC blocking voltage	$I_R=200\mu A$	1200	-	-	V	
$V_F$	Forward voltage	$I_F=50A$	-	1.30	-	V	Figure 1
		$I_F=100A, T_c=25^\circ C$	-	1.65	1.90	V	
		$I_F=100A, T_c=175^\circ C$	-	2.74	-	V	
$I_R$	Reverse current	$V_R=1200V, T_c=25^\circ C$	-	12	150	$\mu A$	Figure 2
		$V_R=1200V, T_c=175^\circ C$	-	51	-	$\mu A$	
$Q_C$	Total capacitive charge	$V_R=800V$	-	453	-	nC	Figure 6
C	Total capacitance	$V_R=1V, f=1MHZ$	-	4350	-	pF	Figure 5
		$V_R=400V, f=1MHZ$	-	396	-	pF	
		$V_R=800V, f=1MHZ$	-	325	-	pF	
$E_C$	Capacitance Stored Energy	$V_R=800V$	-	125	-	$\mu J$	Figure 7

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### Thermal Characteristics

Symbol	Parameter	Value		Unit	Note
		Typ.	Max.		
$R_{th(j-c)}$	Thermal resistance (Junction to case)	0.130	-	$^{\circ}\text{C}/\text{W}$	Figure 8

### Electrical Characteristic Curves

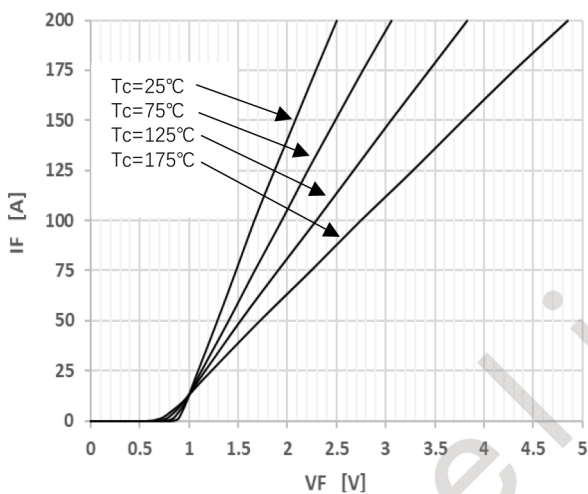


Figure 1 Forward Characteristics

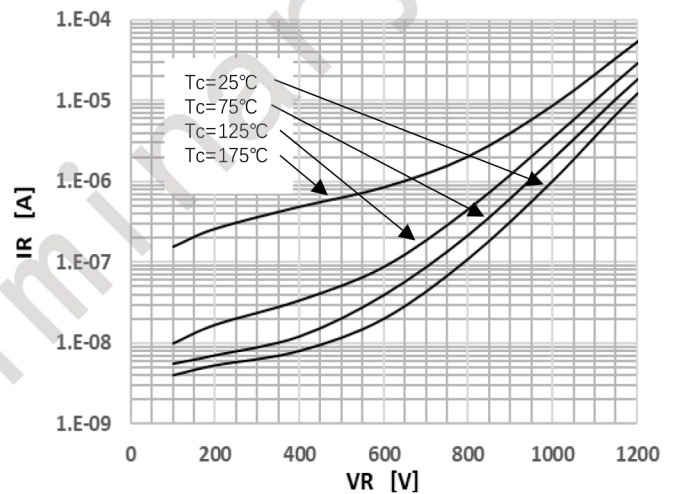


Figure 2 Reverse Characteristics

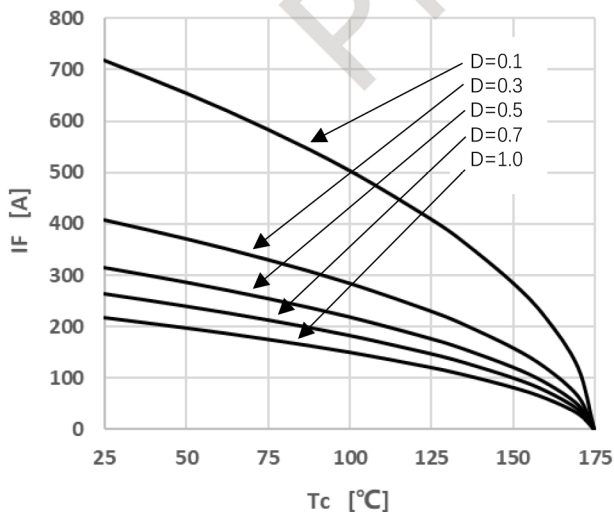


Figure 3 Peak Forward Current Derating

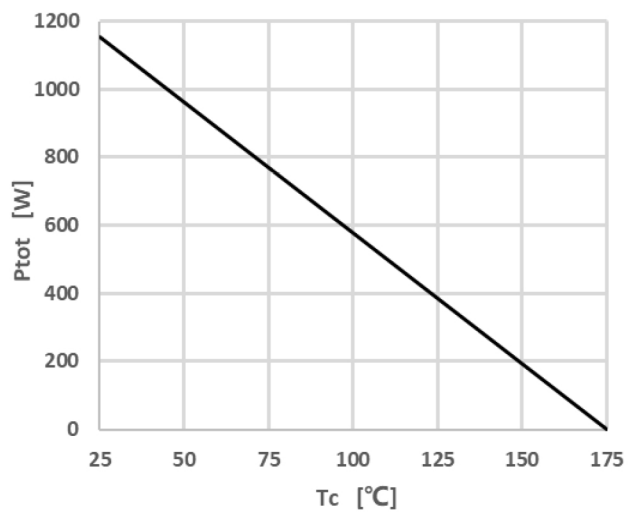


Figure 4 Power Dissipation

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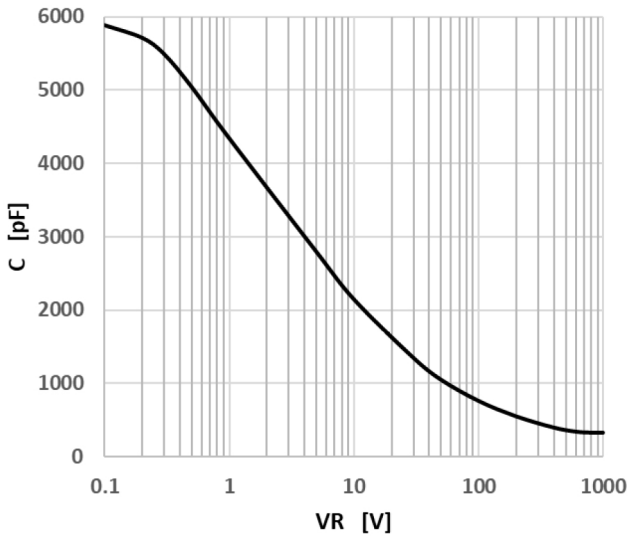


Figure 5 Capacitance vs. Reverse Voltage

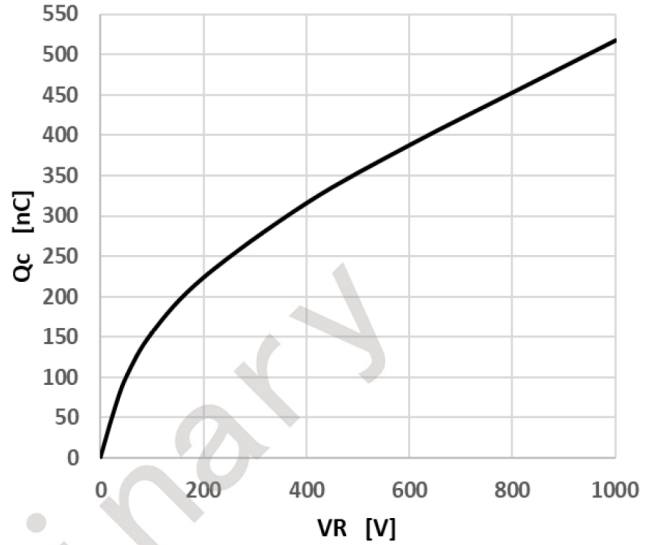


Figure 6 Capacitance Charge vs. Reverse Voltage

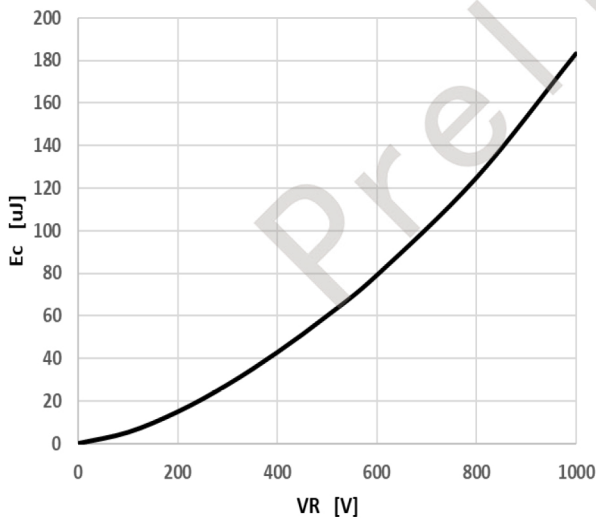


Figure 7 Capacitance Stored Energy

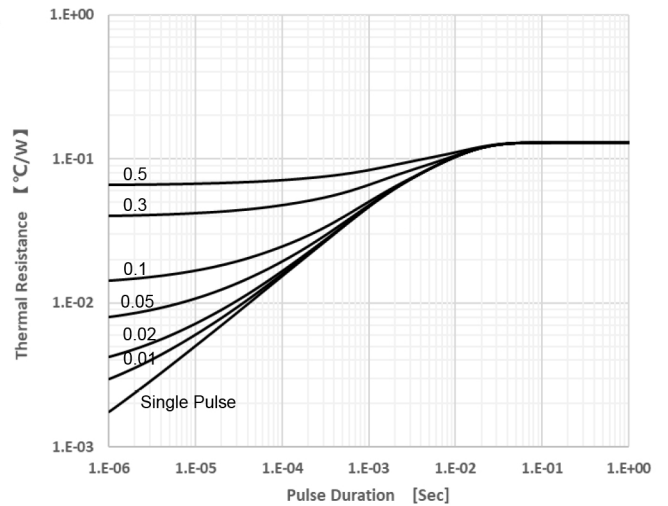


Figure 8 Transient Thermal Impedance

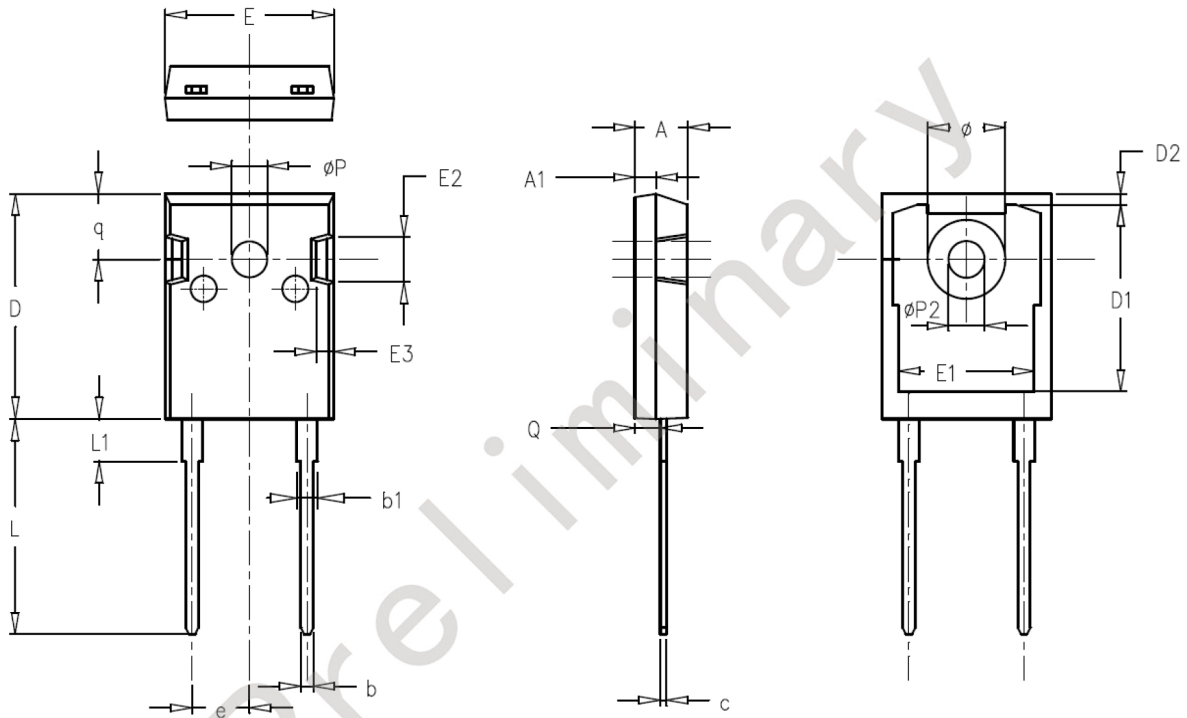


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## Package Dimensions

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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