

GSD30060H

650V Silicon Carbide Schottky Diode



Features

- High surge current capability
- No reverse recovery
- Positive Temperature Coefficient
- Easy to paralleling
- Pb-free lead plating / RoHS compliant

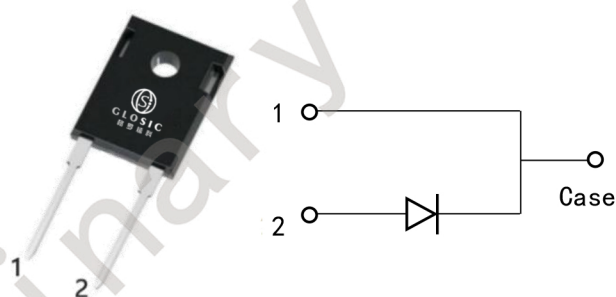
Benefits

- High-speed switching
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability
- System efficiency improvement

Applications

- Free Wheeling Diodes in Inverter stages
- Power factor correction
- Data Center
- Switch mode power supply

V_{RRM}	650V
I_F	30A (TC=148°C)
Q_C	87nC



Marking	Package
GSD30060H	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		650	V	
I_F	Continuous forward current	Tc=25°C	80	A	Figure 3
		Tc=135°C	38	A	
		Tc=148°C	30	A	
I_{FSM}	Non-repetitive forward surge current	Tc=25°C, $t_p=10ms$, Half sine pulse	234	A	
		Tc=110°C, $t_p=10ms$, Half sine pulse	208	A	
I_{FRM}	Repetitive Peak Forward Surge Current	Tc=25°C, $t_p=10ms$, Half sine pulse	205	A	
$\int i^2 dt$	i^2t value	Tc=25°C, $t_p=10ms$	273	A ² S	
		Tc=110°C, $t_p=10ms$	216	A ² S	
P_{tot}	Power Dissipation	Tc=25°C	310	W	Figure 4
		Tc=110°C	134	W	
		Tc=150°C	52	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		650	-	-	V	
V_F	Forward voltage	$I_F=15A$	-	1.21	-	V	Figure 1
		$I_F=30A, T_c=25^\circ C$	-	1.42	1.6	V	
		$I_F=30A, T_c=175^\circ C$	-	1.8	-	V	
I_R	Reverse current	$V_R=650V, T_c=25^\circ C$	-	7	100	uA	Figure 2
		$V_R=650V, T_c=175^\circ C$	-	21	-	uA	
Q_C	Total capacitive charge	$V_R=400V$	-	87	-	nC	Figure 6
C	Total capacitance	$V_R=1V, f=1MHZ$	-	1233	-	pF	Figure 5
		$V_R=200V, f=1MHZ$	-	167	-	pF	
		$V_R=400V, f=1MHZ$	-	164	-	pF	
E_C	Capacitance Stored Energy	$V_R=400V$	-	14	-	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)	0.483	-	$^{\circ}\text{C}/\text{W}$	Figure 8

Electrical Characteristic Curves

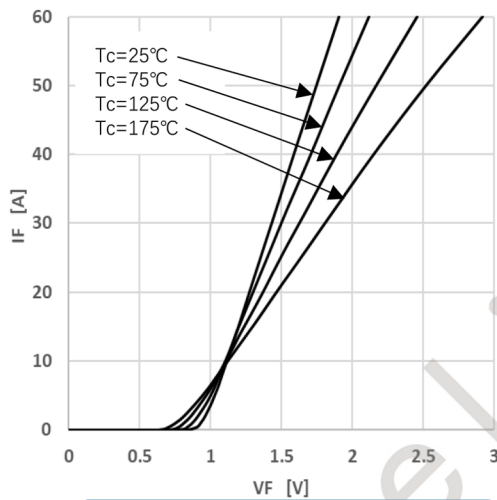


Figure 1 Forward Characteristics

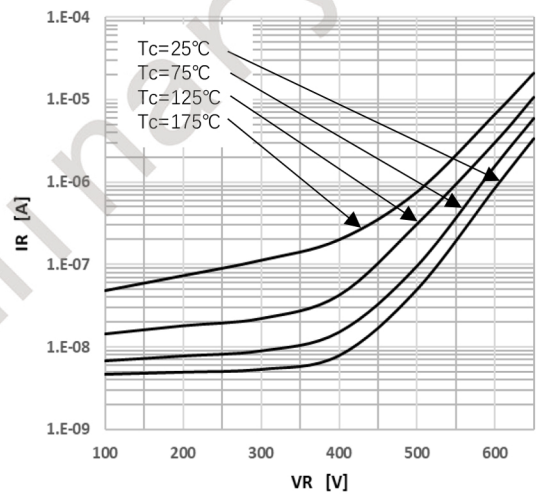


Figure 2 Reverse Characteristics

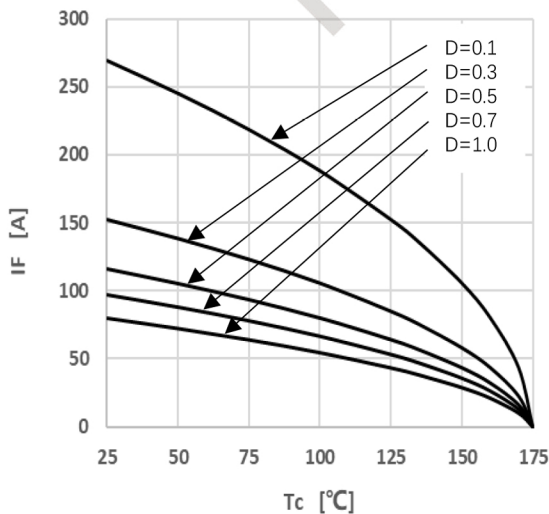


Figure 3 Peak Forward Current Derating

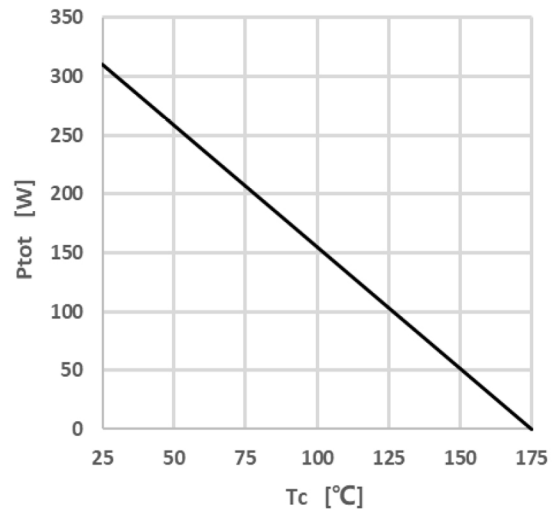


Figure 4 Power Dissipation



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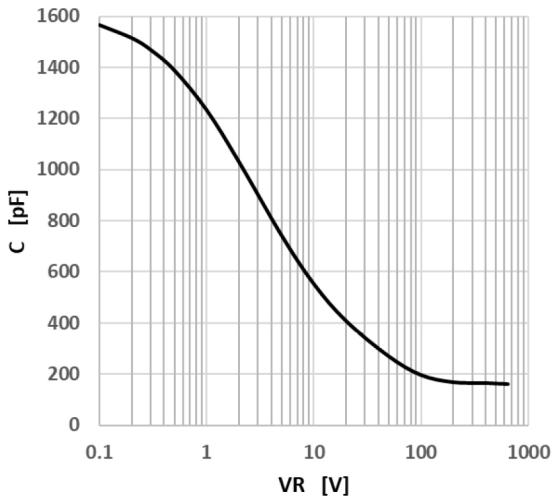


Figure 5 Capacitance vs. Reverse Voltage

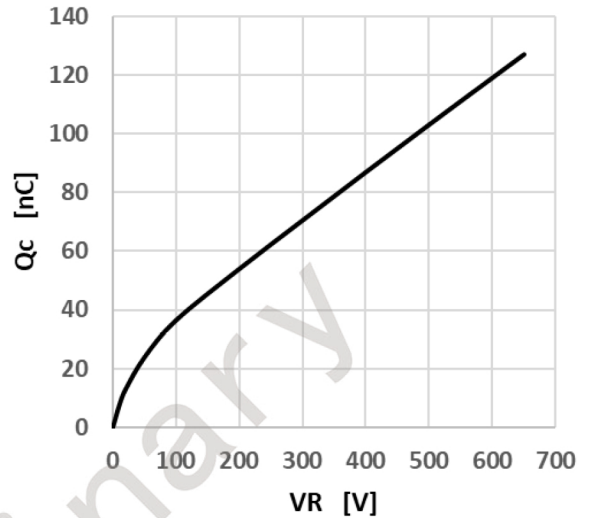


Figure 6 Capacitance Charge vs. Reverse Voltage

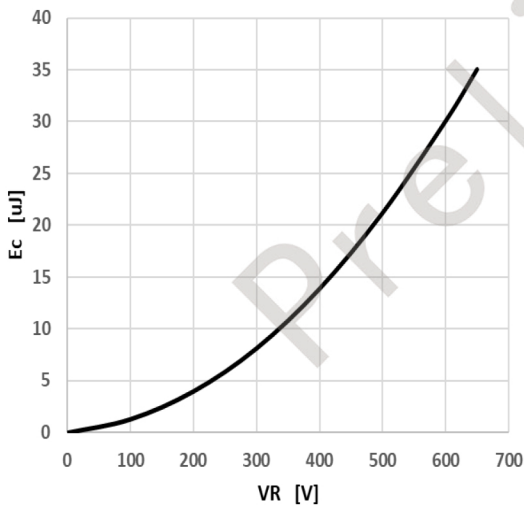


Figure 7 Capacitance Stored Energy

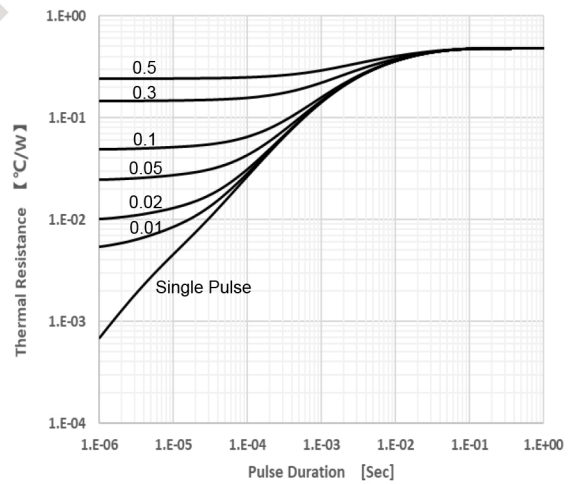


Figure 8 Transient Thermal Impedance

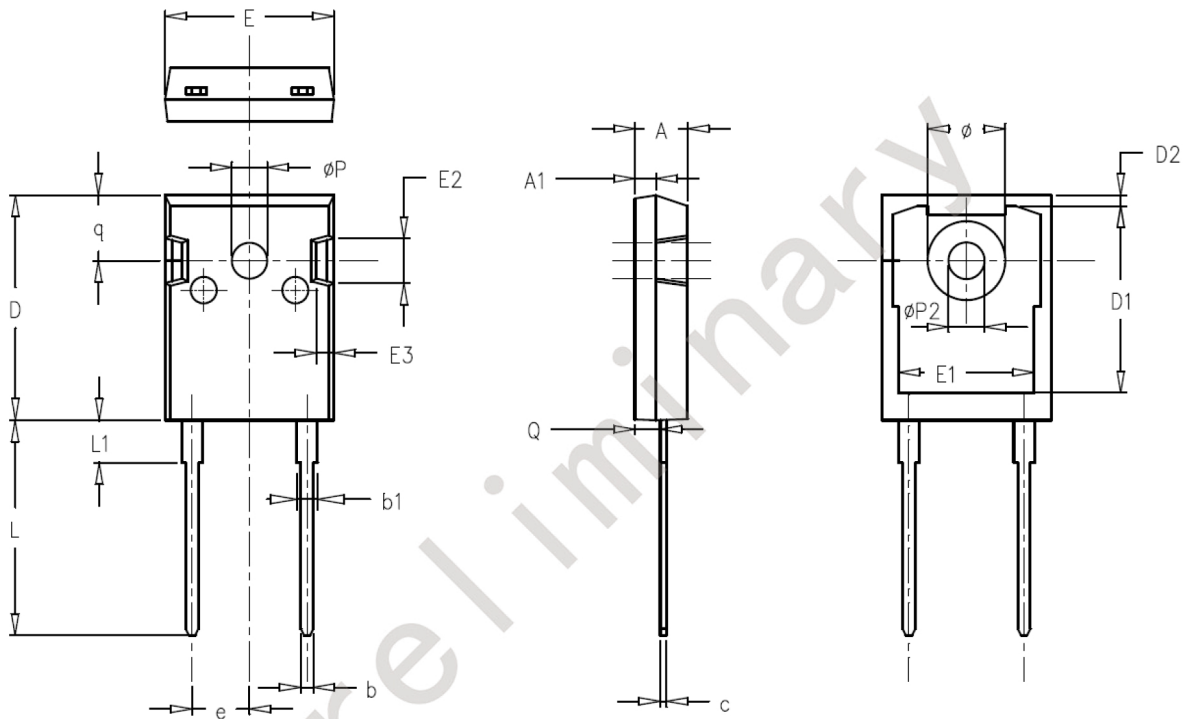


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Package Dimensions

To-247-2



SYMBOL	MILLIMETERS			NOTES	SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.			Normal	MIN.	MAX.	
A	4.98	4.68	5.36		ϕP	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		ϕ	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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