GC3D10330H

Silicon Carbide Schottky Diode

Features

- 3.3kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F
- Increased Creepage/Clearance Distance

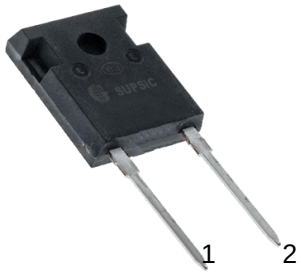
V_{RRM}	=	3300V
I_F (T_c=165°C)	=	10 A
Q_c	=	209 nC

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

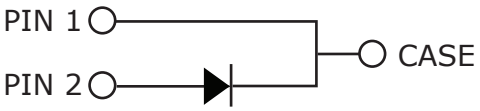
Applications

- Switch Mode Power Supplies (SMPS)
- Boost diodes in PFC or DC/DC stages
- Free Wheeling Diodes in Inverter stages
- AC/DC converters



TO-247-2

Part Number	Marking	Package
GC3D10330H	GC3D10330	TO-247-2



●Absolute Maximum Ratings (T_j = 25°C)

Parameter		Symbol	Value	Unit
Reverse voltage (repetitive peak)		V_{RM}	3300	V
Reverse voltage (DC)		V_R	3300	V
Continuous forward current (T_c=165°C)		I_F	10	A
Surge non-repetitive forward current	PW=10ms sinusoidal, T_j=25°C	I_{FSM}	40	A
	PW=10ms sinusoidal, T_j=165°C		10	A
	PW=10μs square, T_j=25°C		160	A
Junction temperature		T_j	175	°C
Range of storage temperature		T_{stg}	−55 to +175	°C

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●**Electrical characteristics** (T_j = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	I_R =0.3mA	3300	-	-	V
Forward voltage	V_F	I_F=10A,T_j=25°C	1.3	1.5	2.00	V
		I_F=10A,T_j=150°C	-	2.5	-	V
		I_F=10A,T_j=175°C	-	2.8	-	V
Reverse current	I_R	V_R=3300V,T_j=25°C	-	5	50	μA
		V_R=3300V,T_j=150°C	-	25	80	μA
		V_R=3300V,T_j=175°C	-	30	100	μA
Total capacitance	C	V_R=1V,f=1MHz	-	4600	-	pF
		V_R=3300V,f=1MHz	-	45	-	pF
Total capacitive charge	Q_C	V_R=2000V,di/dt=500A/μs	-	209	-	nC
Switching time	t_C	V_R=2000V,di/dt=500A/μs	-	48	-	ns

Thermal Characteristics

Parameter	Symbol	Values			Unit
Thermal Resistance From Junction to Case	$R_{th\ (j-c)}$		0.34		℃/W

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●Electrical characteristic curves

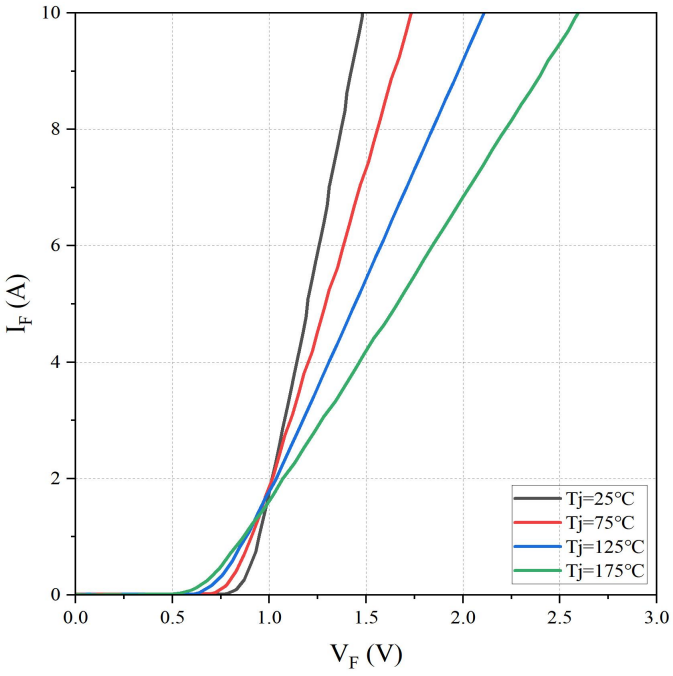


Fig 1. Forward Characteristics

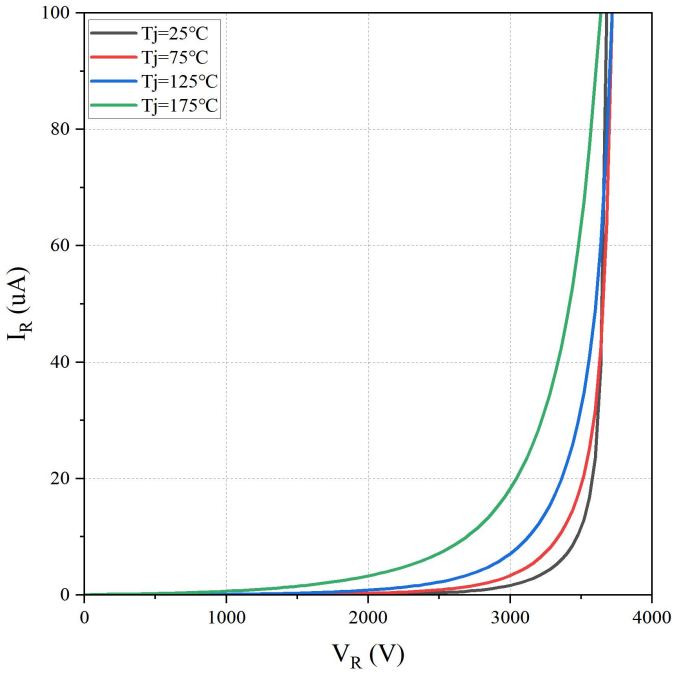


Fig 2. Reverse Characteristics

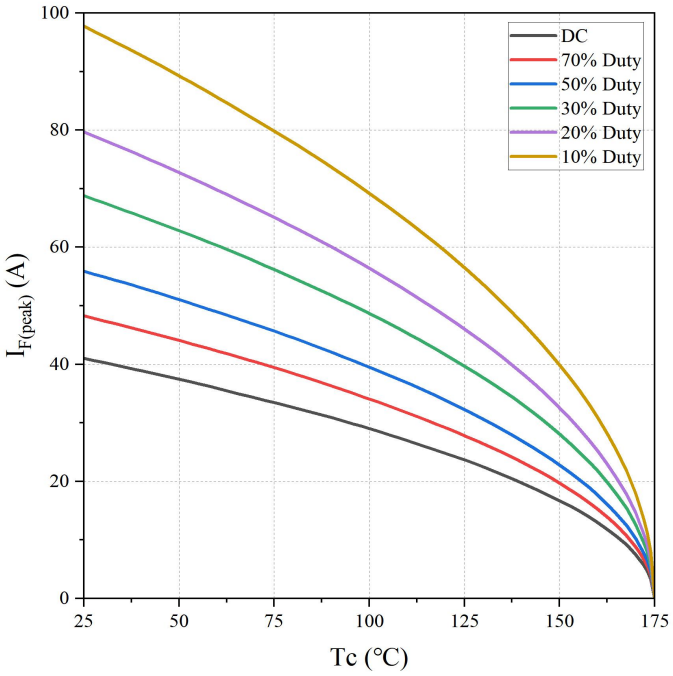


Fig 3. Current Derating

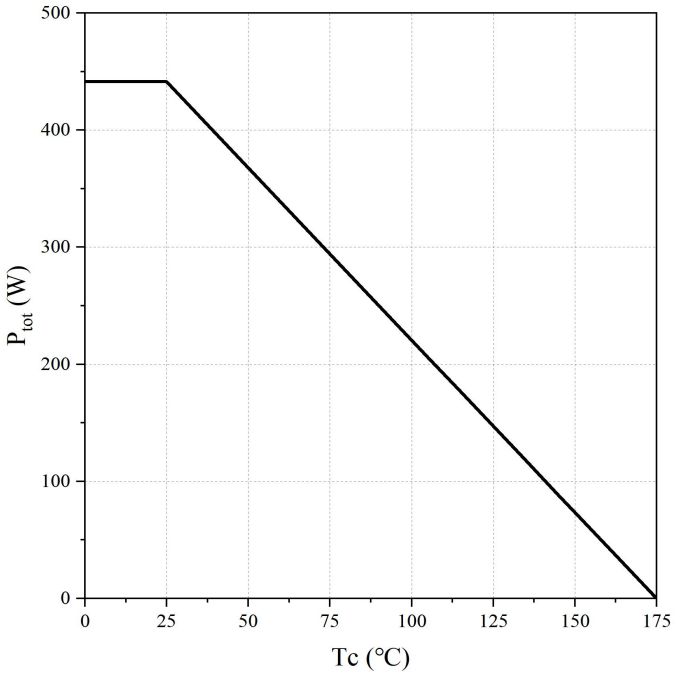


Fig 4. Power Derating

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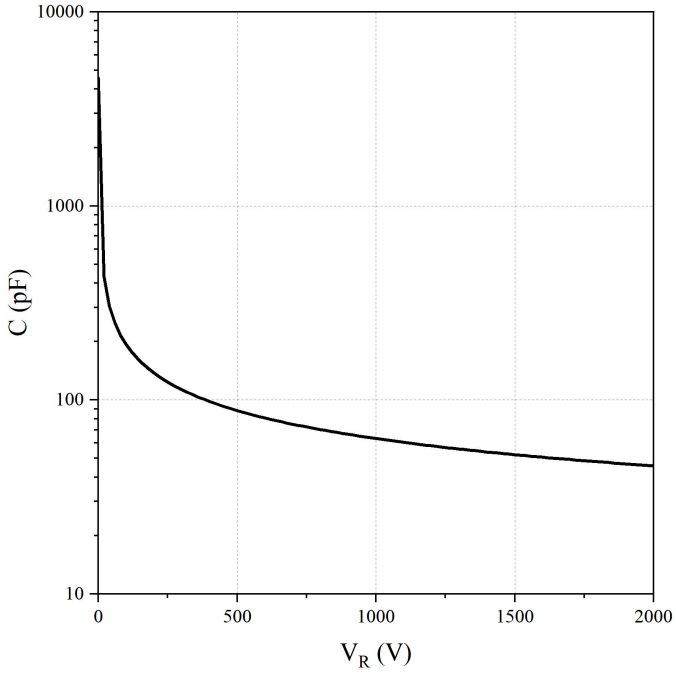


Fig 5. Capacitance vs. Reverse Voltage

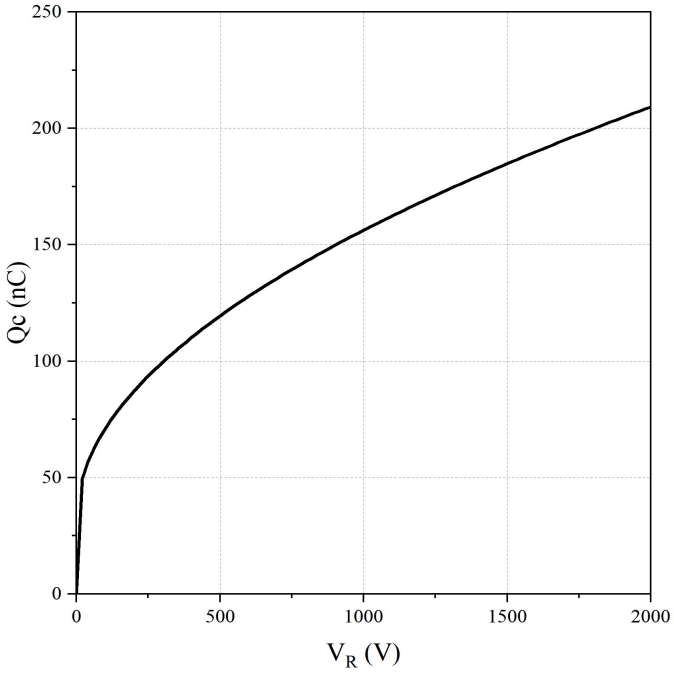


Fig 6. Reverse Charge vs. Reverse Voltage

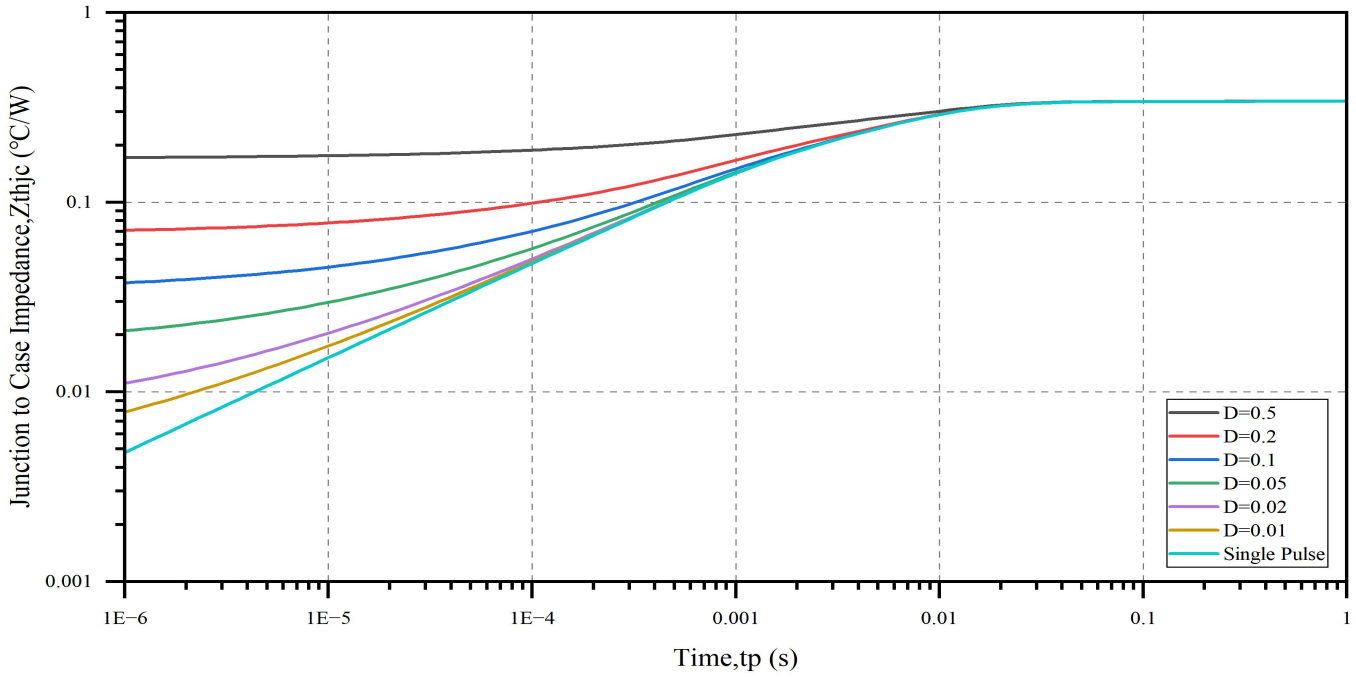
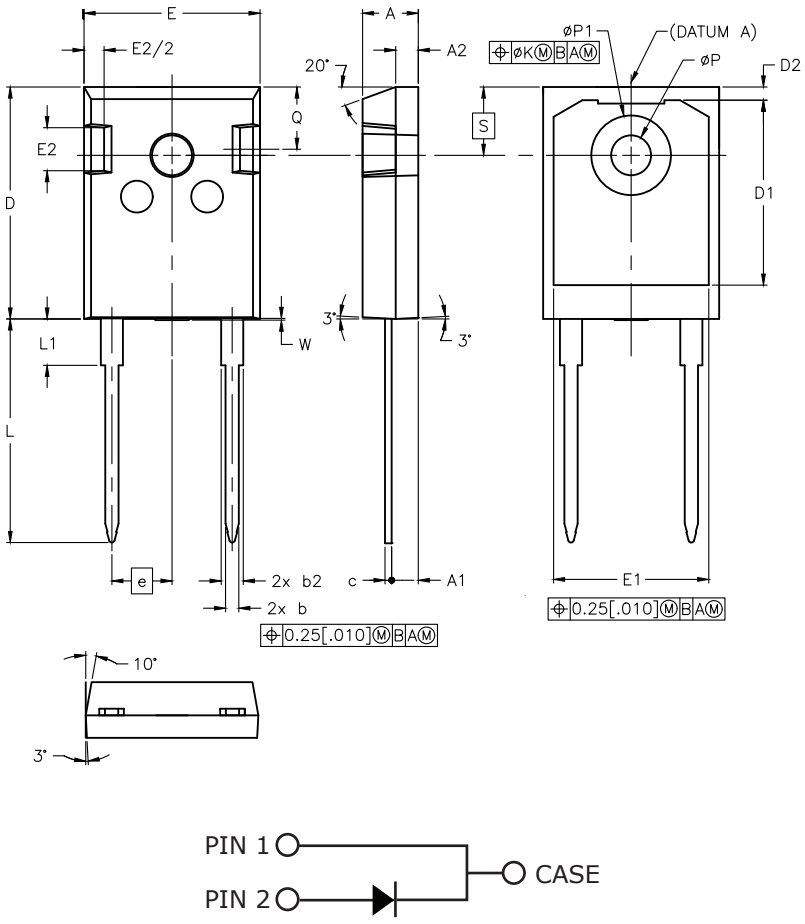


Fig 7. Current Derating

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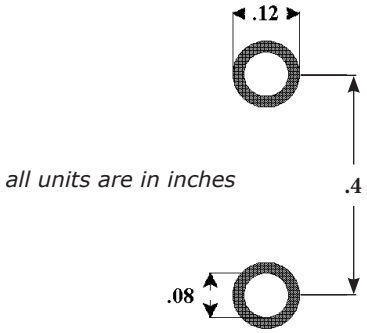
Package Dimensions

Package TO-247-2



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.70	5.31
A1	.087	.102	2.21	2.59
A2	.059	.098	1.50	2.49
b	.039	.055	0.99	1.40
b2	.065	.094	1.65	2.39
c	.015	.035	0.38	0.89
D	.819	.845	20.80	21.46
D1	.515	-	13.08	-
D2	.020	.053	0.51	1.35
E	.620	.640	15.49	16.26
E1	.530	-	13.46	-
E2	.135	.157	3.43	3.99
e	.214		5.44	
ØK	.010		0.25	
L	.780	.800	19.81	20.32
L1	-	.177	-	4.50
ØP	.140	.144	3.56	3.66
ØP1	.278	.291	7.06	7.39
Q	.212	.244	5.38	6.20
S	.243		6.17	
W	-	.006	-	0.15

Recommended Solder Pad Layout



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