

Features

- 650 Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F

Benefits

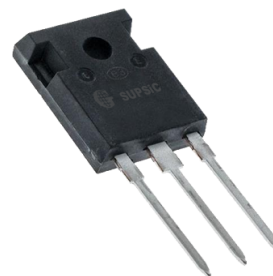
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

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

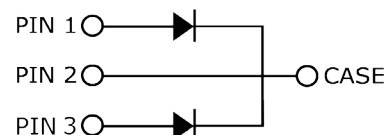
Part Number	Package	Marking
GC3D30065D	T0-247-3	GC3D30065

$$\begin{aligned} V_{RRM} &= 650 \text{ V} \\ I_F (T_c=135^\circ\text{C}) &= 36 \text{ A}^{**} \\ Q_c &= 89 \text{ nC}^{**} \end{aligned}$$



T0-247-3

Package



Maximum Ratings ($T_c=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value		Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V		
V_{RSM}	Surge Peak Reverse Voltage	650	V		
V_{DC}	DC Blocking Voltage	650	V		
I_F	Continuous Forward Current (Per Leg/Device)	40/78 18/36 15/30	A	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=145^\circ\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	65 45	A	$T_c=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse $T_c=110^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	162 150	A	$T_c=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse $T_c=110^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
I_{FMax}	Non-Repetitive Peak Forward Current	1400 1200	A	$T_c=25^\circ\text{C}$, $t_p=10$ μs , Pulse $T_c=110^\circ\text{C}$, $t_p=10$ μs , Pulse	
P_{tot}	Power Dissipation(Per Leg/Device)	150 65	W	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	
dV/dt	Diode dV/dt ruggedness	200	V/ns	$V_R=0-600\text{V}$	
$\int i^2 dt$	i^2t value	131* 112.5*	A ² s	$T_c=25^\circ\text{C}$, $t_p=10$ ms $T_c=110^\circ\text{C}$, $t_p=10$ ms	
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		
	T0-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

Electrical Characteristics (Per Leg)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.45 2.0	1.8 2.4	V	$I_F = 16\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 16\text{ A}$ $T_J = 175^\circ\text{C}$	
I_R	Reverse Current	18.5 38.5	94 378	μA	$V_R = 650\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 650\text{ V}$ $T_J = 175^\circ\text{C}$	
Q_C	Total Capacitive Charge	45.5		nC	$V_R = 400\text{ V}$, $I_F = 16\text{ A}$ $di/dt = 500\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	876 80 64		pF	$V_R = 0\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 200\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 400\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$	
E_C	Capacitance Stored Energy	6.2		μJ	$V_R = 400\text{ V}$	

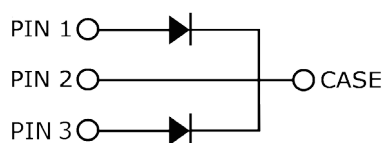
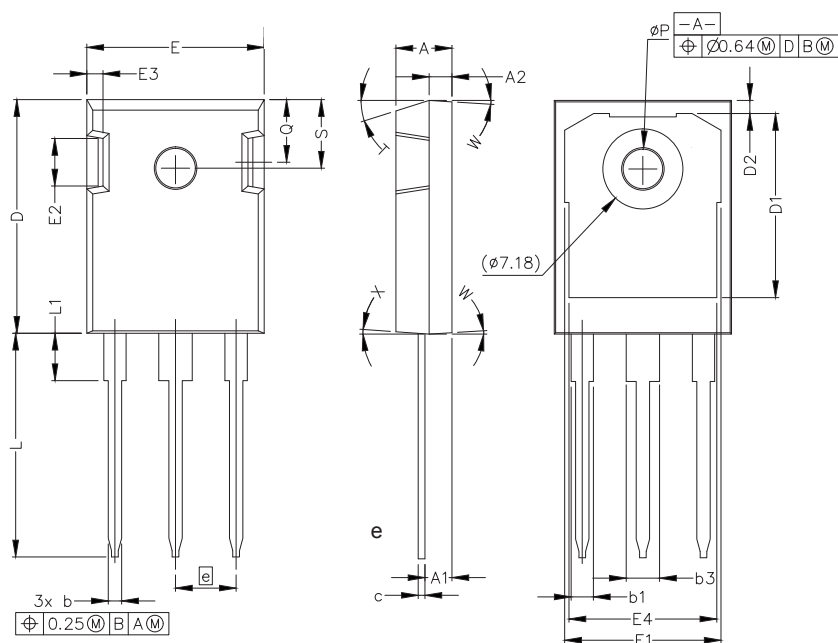
Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1* 0.5**	$^\circ\text{C}/\text{W}$	

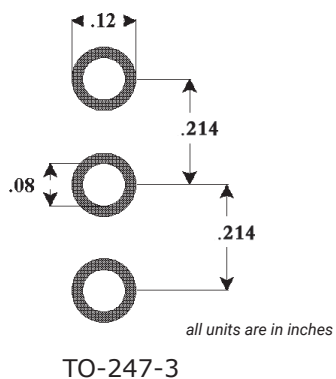
Package Dimensions

Package TO-247-3



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.042	.052	1.07	1.33
b1	.075	.095	1.91	2.41
b3	.113	.133	2.87	3.38
c	.022	.027	0.55	0.68
D	.819	.831	20.80	21.10
D1	.640	.695	16.25	17.65
D2	.037	.049	0.95	1.25
E	.620	.635	15.75	16.13
E1	.516	.557	13.10	14.15
E2	.145	.201	3.68	5.10
E3	.039	.075	1.00	1.90
E4	.487	.529	12.38	13.43
e	.214 BSC		5.44 BSC	
L	.780	.800	19.81	20.32
L1	.161	.173	4.10	4.40
N	3			
ϕP	.138	.144	3.51	3.65
Q	.216	.236	5.49	6.00
S	.238	.248	6.04	6.30
T	17.5° REF			
W	3.5° REF			
X	4° REF			

Recommended Solder Pad Layout



Part Number	Package
GC3D30065D	TO-247-3