

Features

- 1.2kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching

Benefits

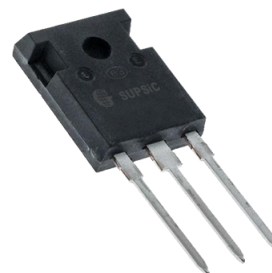
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

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

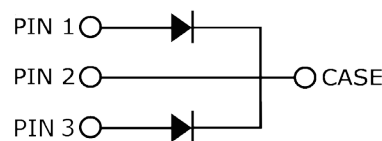
Part Number	Package	Marking
GC4D40120D	TO-247-3	GC4D40120

$$\begin{aligned}
 V_{RRM} &= 1200 \text{ V} \\
 I_F (T_c=135^\circ\text{C}) &= 54\text{A}^{**} \\
 Q_c &= 198\text{nC}^{**}
 \end{aligned}$$



TO-247-3

Package



Maximum Ratings (T_c=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V _{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V _{RSM}	Surge Peak Reverse Voltage	1300	V		
V _R	DC Peak Reverse Voltage	1200	V		
I _F	Continuous Forward Current (Per Leg/Device)	56.5/115 27/54 20/40	A	T _c =25°C T _c =135°C T _c =150°C	
I _{FRM}	Repetitive Peak Forward Surge Current	92 62	A	T _c =25°C, t _p =10 ms, Half Sine Pulse T _c =110°C, t _p =10 ms, Half Sine Pulse	
I _{FSM}	Non-Repetitive Forward Surge Current	131 110	A	T _c =25°C, t _p =10 ms, Half Sine Pulse T _c =110°C, t _p =10 ms, Half Sine Pulse	
I _{FMax}	Non-Repetitive Peak Forward Current	1152 952	A	T _c =25°C, t _p =10 μs, Pulse T _c =110°C, t _p =10 μs, Pulse	
P _{tot}	Power Dissipation (Per Leg/Device)	266/532 114/228	W	T _c =25°C T _c =110°C	
dV/dt	Diode dV/dt ruggedness	200	V/ns	V _R =0-960V	
∫i²dt	i²t value	84.7 60.5	A²s	T _c =25°C, t _p =10 ms T _c =110°C, t _p =10 ms	
T _j	Operating Junction Range	-55 to +175	°C		
T _{stg}	Storage Temperature Range	-55 to +135	°C		
	TO-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	1.5 2.2	1.8 3	V	$I_F = 20\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 20\text{ A}$ $T_J = 175^\circ\text{C}$	
I_R	Reverse Current	35 65	200 400	μA	$V_R = 1200\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1200\text{ V}$ $T_J = 175^\circ\text{C}$	
Q_C	Total Capacitive Charge	100		nC	$V_R = 800\text{ V}$, $I_F = 20\text{ A}$ $di/dt = 200\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	1500 95 67		pF	$V_R = 0\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 400\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 800\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$	
E_C	Capacitance Stored Energy	28		μJ	$V_R = 800\text{ V}$	

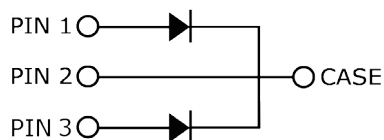
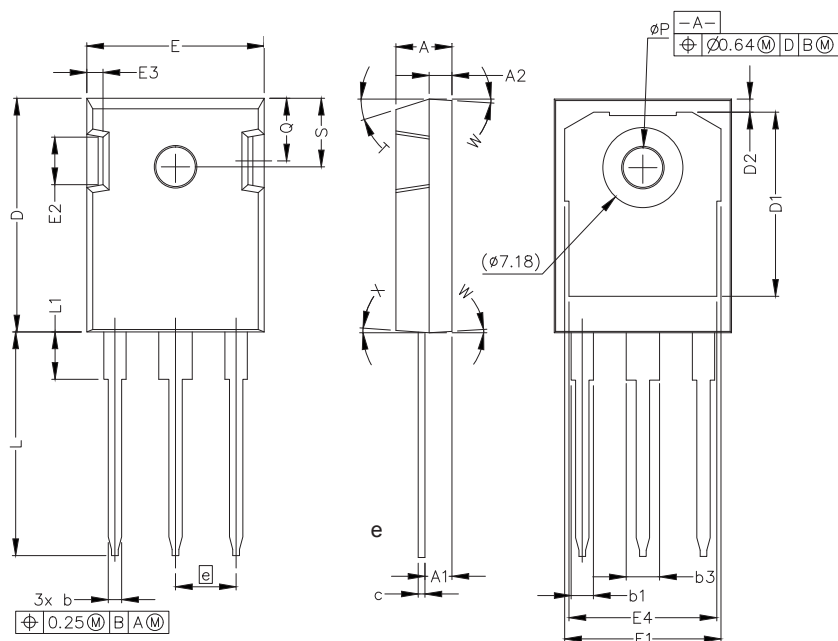
Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.29** 0.57*	$^\circ\text{C}/\text{W}$	

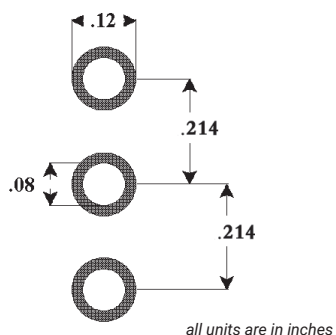
Package Dimensions

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			
ØP	.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



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GC4D40120D	TO-247-3