

Features

- Low Forward Voltage (V_F) Drop with Positive Temperature Coefficient
- Zero Reverse Recovery Current / Forward Recovery Voltage
- Temperature-Independent Switching Behavior

Applications

- Battery Chargers
- Solar & Renewable Energy Power Conversion
- Industrial Power Supplies
- Boost Diodes in PFC & DC-DC

Part Number	Package	Marking
GC4D40120H	T0-247-2	GC4D40120



TO-247-2

Package



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

Parameter	Symbol	Value	Unit	Test Conditions	Note
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V		
DC Blocking Voltage	V_{DC}	1200			
Continuous Forward Current	I_F	128	A	$T_j = 25^\circ\text{C}$	
		88		$T_j = 100^\circ\text{C}$	
		41		$T_j = 155^\circ\text{C}$	
Repetitive Peak Forward Surge Current	I_{FRM}	162	A	$T_c = 25^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Pulse}$	
		91		$T_c = 110^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Pulse}$	
Non-Repetitive Forward Surge Current	I_{FSM}	247	A	$T_c = 25^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Pulse}$	
		245		$T_c = 110^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Pulse}$	
Power Dissipation	P_{tot}	667	W	$T_c = 25^\circ\text{C}$	
		289		$T_c = 110^\circ\text{C}$	
i^2t Value	$\int i^2t$	305	A^2s	$T_c = 25^\circ\text{C}, t_p = 10\text{ ms}$	
		300		$T_c = 110^\circ\text{C}, t_p = 10\text{ ms}$	

Electrical Characteristics

Parameter	Symbol	Typ.	Max.	Units	Test Conditions	Note
Forward Voltage	V_F	1.5	1.8	V	$I_F = 40\text{ A}, T_J = 25\text{ }^\circ\text{C}$	
		2.2	3		$I_F = 40\text{ A}, T_J = 175\text{ }^\circ\text{C}$	
Reverse Current	I_R	45	300	μA	$V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$	
		75	500		$V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$	
Total Capacitive Charge	Q_C	167		nC	$V_R = 800\text{ V}, T_J = 25\text{ }^\circ\text{C}$	
Total Capacitance	C	2,809		pF	$V_R = 0\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
		174			$V_R = 400\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
		145			$V_R = 800\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
Capacitance Stored Energy	E_C	36		μJ	$V_R = 800\text{ V}$	

Note:
SiC Schottky Diodes are majority carrier devices, so there is no reverse recovery charge.

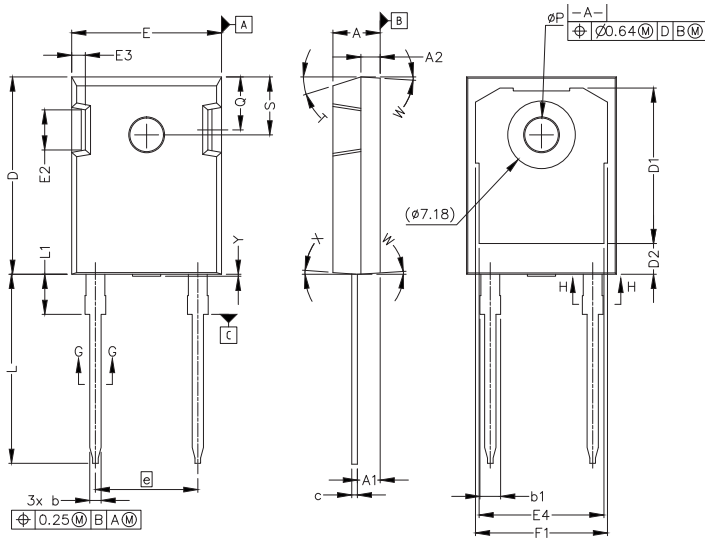
Thermal & Mechanical Characteristics

Parameter	Symbol	Value	Units	Note
Thermal Resistance, Junction to Case (Typ.)	$R_{\theta,JC}$	0.225	$^\circ\text{C} / \text{W}$	
Operating Junction & Storage Temperature	T_J, T_{stg}	-55 to +175	$^\circ\text{C}$	
Maximum Processing Temperature	T_{PROC}	325		10 min. Maximum

Package Dimensions

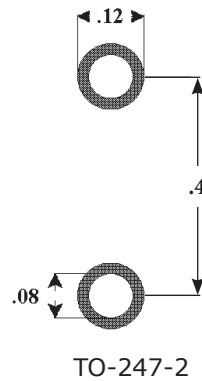
Package: TO-247-2

All dimensions in mm.



SYM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	.190	.205
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b'	1.07	1.28	.042	.050
b	1.07	1.33	.042	.052
b1	1.91	2.41	.075	.095
b2	1.91	2.16	.075	.085
c'	0.55	0.65	.022	.026
c	0.55	0.68	.022	.027
D	20.80	21.10	.819	.831
D1	16.25	17.35	.640	.683
D2	2.86	3.16	.112	.124
E	15.75	16.13	.620	.635
E1	13.10	14.15	.516	.557
E2	3.68	5.10	.145	.201
E3	1.00	1.90	.039	.075
E4	12.38	13.43	.487	.529
e	10.88 BSC		.428 BSC	
L	19.81	20.32	.780	.800
L1	4.10	4.40	.161	.173
ϕP	3.51	3.65	.138	.144
Q	5.49	6.00	.216	.236
S	6.04	6.30	.238	.248
T	17.5° REF.			
W	3.5° REF.			
X	4° REF.			
Y	0	0.50	0	0.020

Recommended Solder Pad Layout



all units are in inches