



## Features

- 1.2-KVolt Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- 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

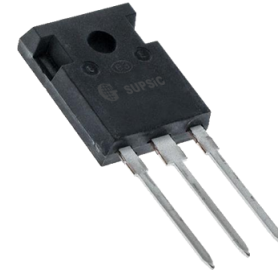
## Applications

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

$$V_{RRM} = 1200 \text{ V}$$

$$I_F (T_c=135^\circ\text{C}) = 24 \text{ A}^{**}$$

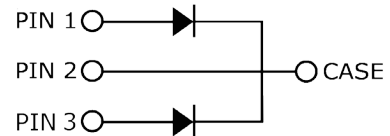
$$Q_c = 74 \text{ nC}^{**}$$



TO-247-3

## Package

Part Number	Package	Marking
GC4D15120D	TO-247-3	GC4D15120



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

Symbol	Parameter	Value		Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	1200	V		
$V_{RSM}$	Surge Peak Reverse Voltage	1300	V		
$V_{DC}$	DC Blocking Voltage	1200	V		
$I_F$	Continuous Forward Current (Per Leg/Device)	24.5/50 12/24 7.5/15	A	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=157^\circ\text{C}$	
$I_{FRM}$	Repetitive Peak Forward Surge Current	38 26	A	$T_c=25^\circ\text{C}, t_p=10 \text{ ms}$ , Half Sine Pulse $T_c=110^\circ\text{C}, t_p=10 \text{ ms}$ , Half Sine Pulse	
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	66 49.5	A	$T_c=25^\circ\text{C}, t_p=10 \text{ ms}$ , Half Sine Pulse $T_c=110^\circ\text{C}, t_p=10 \text{ ms}$ , Half Sine Pulse	
$I_{FMax}$	Non-Repetitive Peak Forward Current	602 482	A	$T_c=25^\circ\text{C}, t_p=10 \mu\text{s}$ , Pulse $T_c=110^\circ\text{C}, t_p=10 \mu\text{s}$ , Pulse	
$P_{tot}$	Power Dissipation(Per Leg/Device)	135/270 58.5/117	W	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	
dV/dt	Diode dV/dt ruggedness	200	V/ns	$V_R=0-960\text{V}$	
$\int i^2 dt$	$i^2t$ value	20.5* 12.25*	A <sup>2</sup> s	$T_c=25^\circ\text{C}, t_p=10 \text{ ms}$ $T_c=110^\circ\text{C}, t_p=10 \text{ ms}$	
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	°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	$I_F = 8\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 8\text{ A}$ $T_J = 175^\circ\text{C}$	
$I_R$	Reverse Current	35 100	250 350	$\mu\text{A}$	$V_R = 1200\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1200\text{ V}$ $T_J = 175^\circ\text{C}$	
$Q_C$	Total Capacitive Charge	38		nC	$V_R = 800\text{ V}$ , $I_F = 8\text{ A}$ $di/dt = 200\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	560 37 27		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	10.5		$\mu\text{J}$	$V_R = 800\text{ V}$	

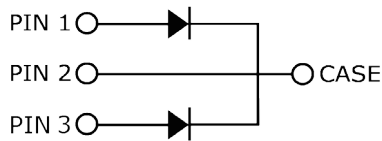
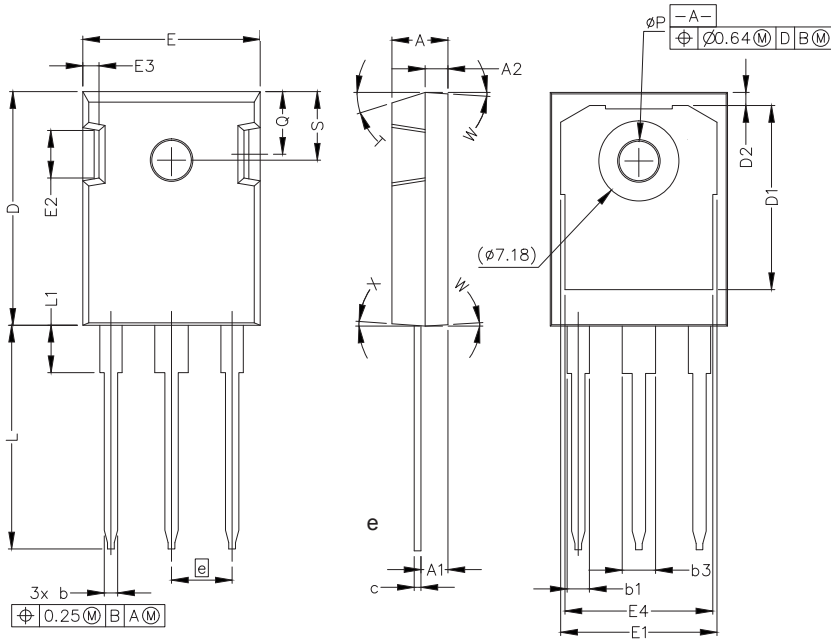
Note: This is a majority carrier diode, so there is no reverse recovery charge.

### Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.11 0.56		$^\circ\text{C}/\text{W}$	

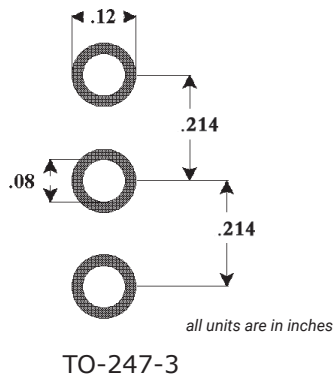
### Package Dimensions

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



Part Number	Package
GC4D15120D	TO-247-3