



### Features

- 1700-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Halogen-Free; RoHS Compliant

### Benefits

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



T0247-2L  
Package



Part Number	Package	Marking
HC3D10170H	TO247-2L	HC3D10170H

### Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	1700	V		
$V_{RSM}$	Surge Peak Reverse Voltage	1700	V		
$V_{DC}$	DC Blocking Voltage	1700	V		
$I_F$	Continuous Forward Current	14.4	A	$T_c < 135^\circ\text{C}$	
$I_{FRM}$	Repetitive Peak Forward Surge Current	45 26	A	$T_c = 25^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Wave}, D = 1$ $T_c = 110^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Wave}, D = 1$	
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	55 41	A	$T_c = 25^\circ\text{C}, t_p = 10\text{ms}, \text{Half Sine Wave}, D = 1$ $T_c = 110^\circ\text{C}, t_p = 10\text{ ms}, \text{Half Sine Wave}, D = 1$	
$P_{tot}$	Power Dissipation	231 100	W	$T_c = 25^\circ\text{C}$ $T_c = 110^\circ\text{C}$	
$T_c$	Maximum Case Temperature	135	$^\circ\text{C}$		
$T_j$	Operating Junction Range	-55 to +175	$^\circ\text{C}$		
$T_{stg}$	Storage Temperature Range	-55 to +135	$^\circ\text{C}$		
	TO-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	



### Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.7 3	2 3.5	V	$I_F = 10\text{ A}$ , $T_J = 25^\circ\text{C}$ $I_F = 10\text{ A}$ , $T_J = 175^\circ\text{C}$	
$I_R$	Reverse Current	20 100	60 300	$\mu\text{A}$	$V_R = 1700\text{ V}$ , $T_J = 25^\circ\text{C}$ $V_R = 1700\text{ V}$ , $T_J = 175^\circ\text{C}$	
$Q_C$	Total Capacitive Charge	96		nC	$V_R = 1700\text{ V}$ , $I_F = 10\text{ A}$ $di/dt = 200\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	827 78 41		pF	$V_R = 0\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 200\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 800\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$	

Note:

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

### Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.65	$^\circ\text{C}/\text{W}$

### Typical Performance

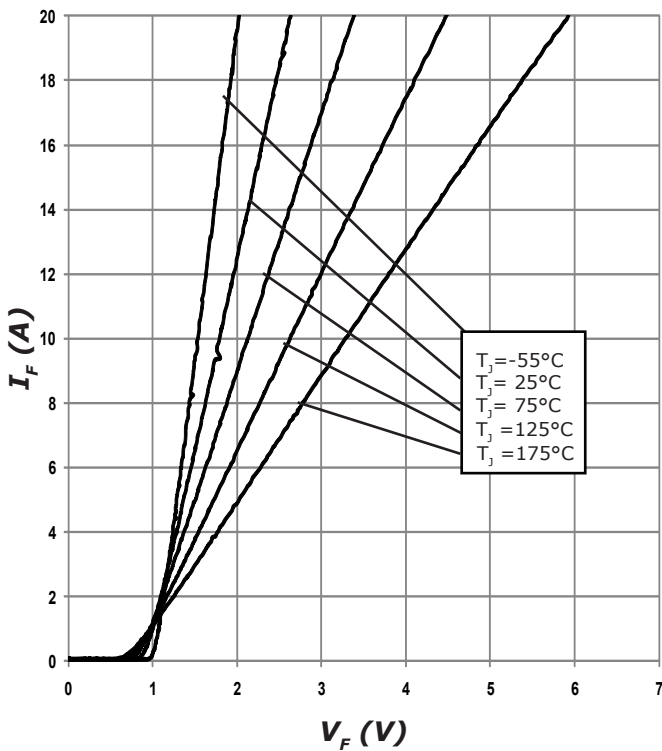


Figure 1. Forward Characteristics

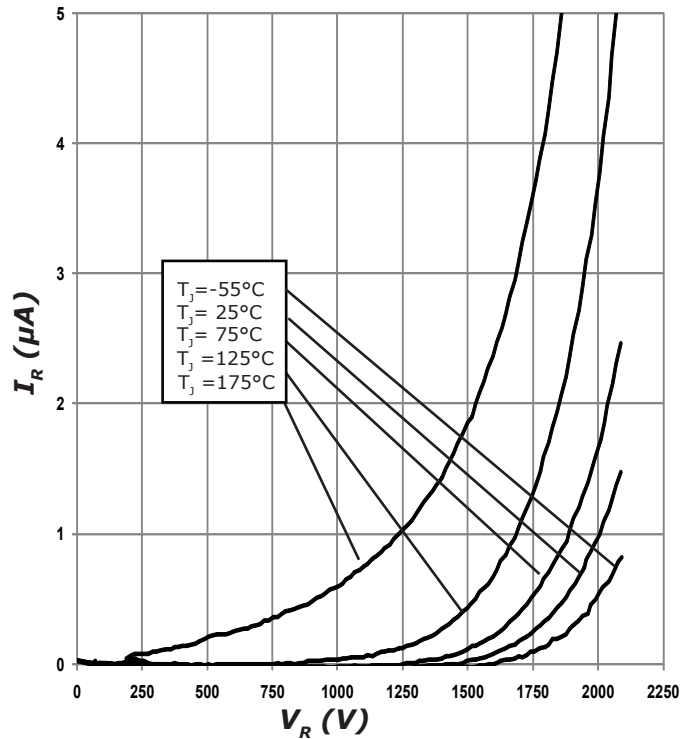


Figure 2. Reverse Characteristics



### Typical Performance

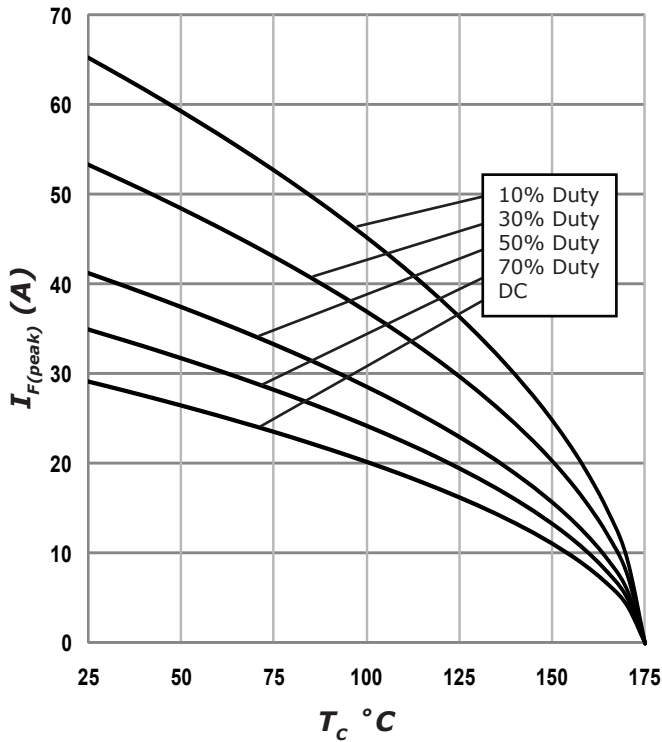


Figure 3. Current Derating

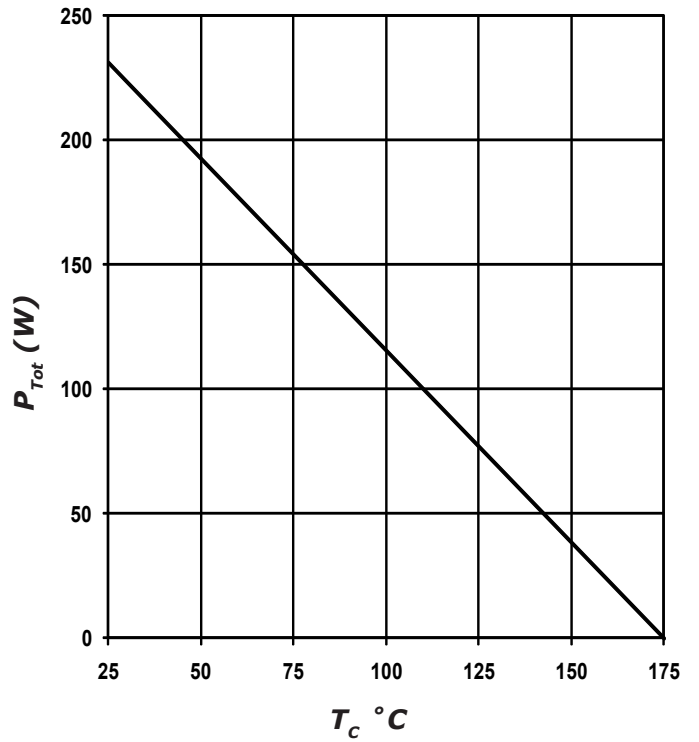


Figure 4. Power Derating

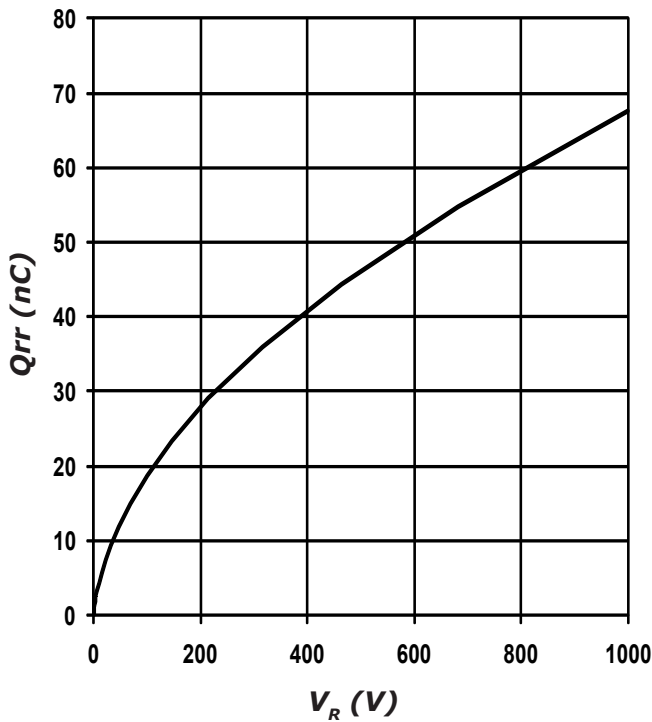


Figure 5. Recovery Charge vs. Reverse Voltage

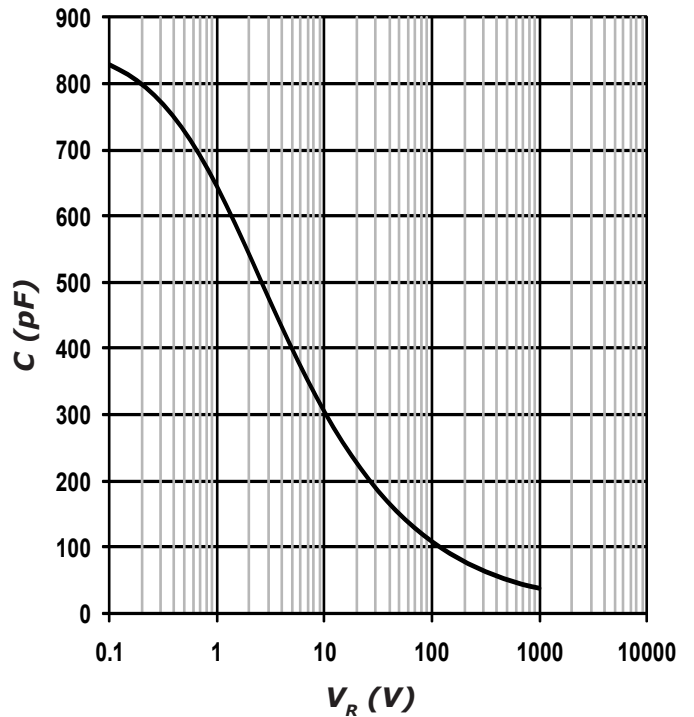


Figure 6. Capacitance vs. Reverse Voltage



### Typical Performance

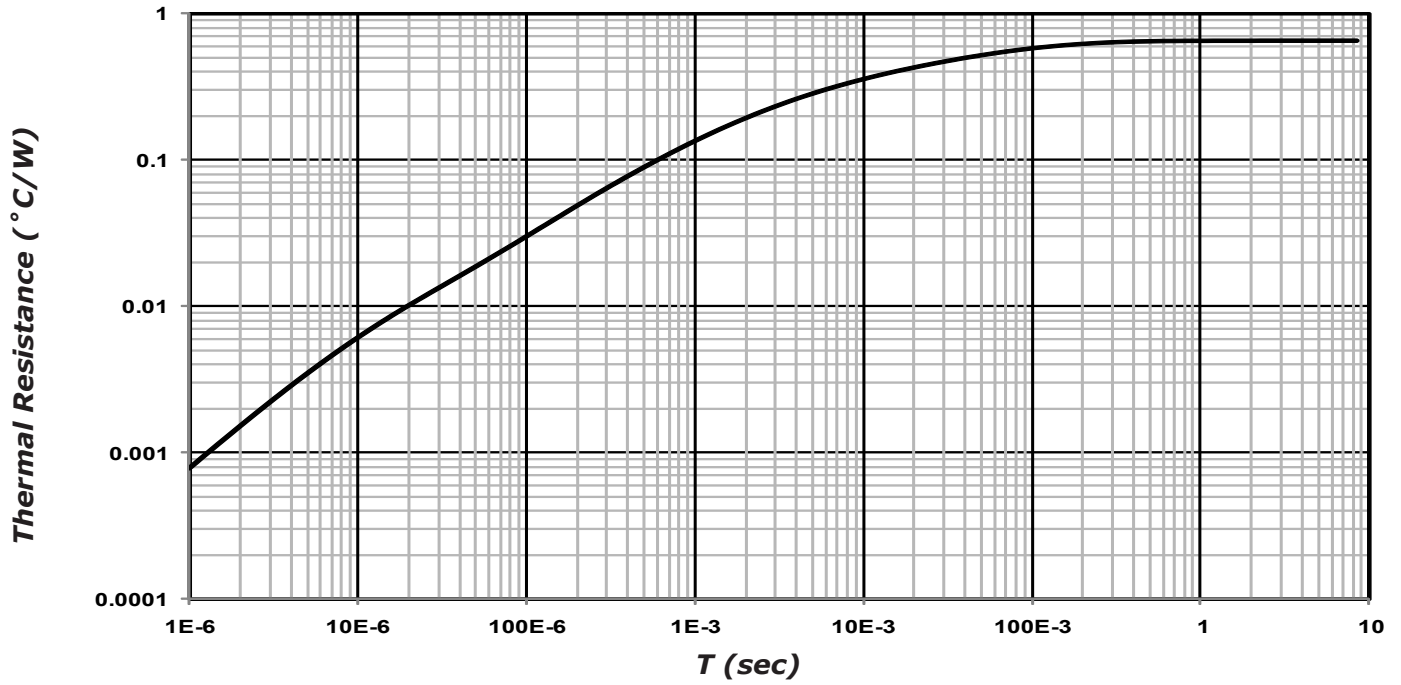


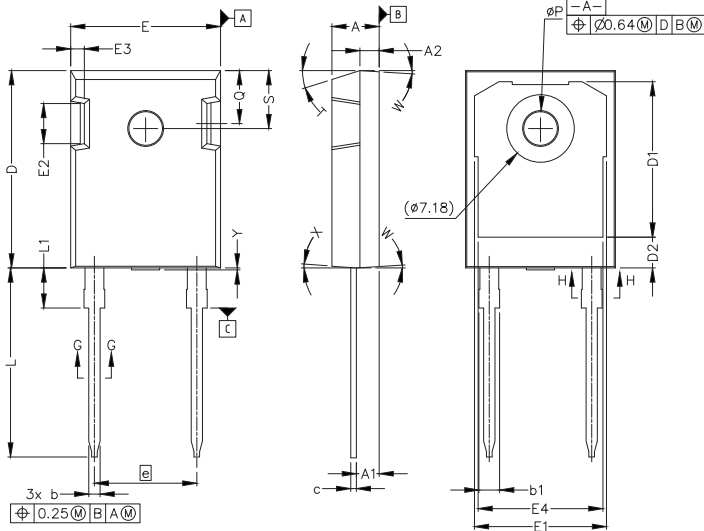
Figure 7. Transient Thermal Impedance



### Package Dimensions

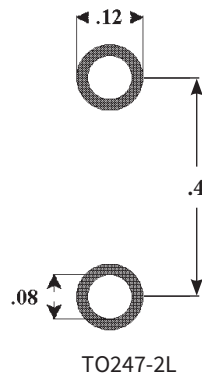
Package: TO247-2L

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
$\phi P$	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



TO247-2L

*all units are in inches*



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