

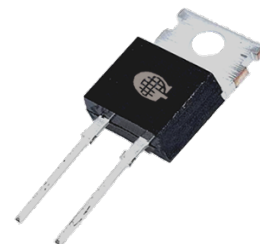
Features

- 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

$$\begin{aligned} V_{RRM} &= 1700 \text{ V} \\ I_F, T_c < 135^\circ \text{C} &= 14.4 \text{ A} \\ Q_c &= 96 \text{ nC} \end{aligned}$$

Benefits

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



TO-220-2

Package



Part Number	Package	Marking
C3D10170A	TO-220-2	C3D10170

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions
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	$T_c = 25^\circ \text{C}$, $t_p = 10 \text{ ms}$, Half Sine Wave, $D = 1$ $T_c = 110^\circ \text{C}$, $t_p = 10 \text{ ms}$, Half Sine Wave, $D = 1$
I_{FSM}	Non-Repetitive Peak Forward Surge Current	55 41	A	$T_c = 25^\circ \text{C}$, $t_p = 10 \text{ ms}$, Half Sine Wave, $D = 1$ $T_c = 110^\circ \text{C}$, $t_p = 10 \text{ ms}$, 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
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	μA	$V_R = 1700\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1700\text{ V}$ $T_J = 175^\circ\text{C}$
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:

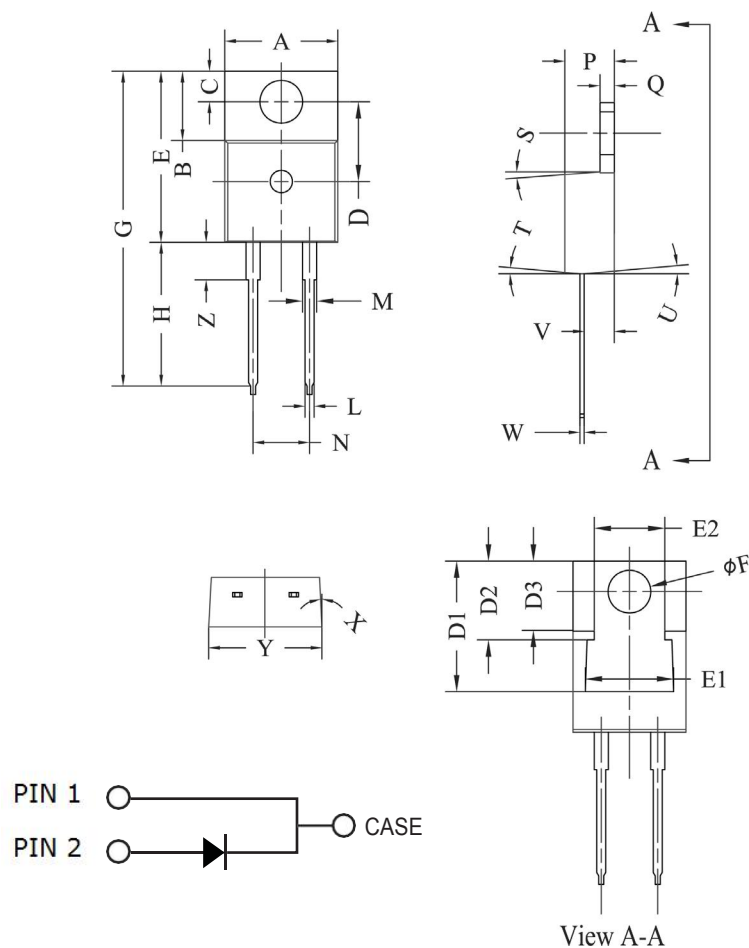
1. This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

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

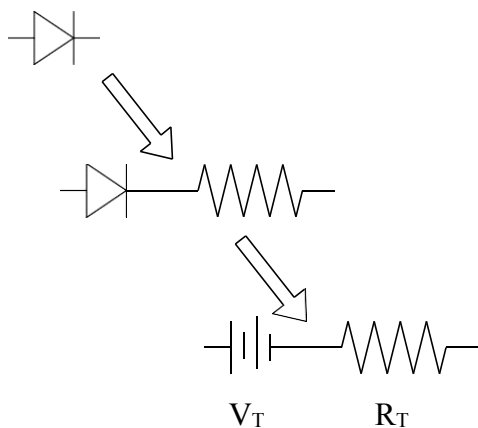
Package Dimensions

Package TO-220-2



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.381	.410	9.677	10.414
B	.235	.255	5.969	6.477
C	.100	.120	2.540	3.048
D	.223	.337	5.664	8.560
D1	.457-.490		11.60-12.45 typ	
D2	.277-.303 typ		7.04-7.70 typ	
D3	.244-.252 typ		6.22-6.4 typ	
E	.590	.615	14.986	15.621
E1	.302	.326	7.68	8.28
E2	.227	.251	5.77	6.37
F	.143	.153	3.632	3.886
G	1.105	1.147	28.067	29.134
H	.500	.550	12.700	13.970
L	.025	.036	.635	.914
M	.045	.055	1.143	1.550
N	.195	.205	4.953	5.207
P	.165	.185	4.191	4.699
Q	.048	.054	1.219	1.372
S	3°	6°	3°	6°
T	3°	6°	3°	6°
U	3°	6°	3°	6°
V	.094	.110	2.388	2.794
W	.014	.025	.356	.635
X	3°	5.5°	3°	5.5°
Y	.385	.410	9.779	10.414
Z	.130	.150	3.302	3.810

Diode Model



$$V_{fT} = V_T + I_f \cdot R_T$$

$$V_T = 0.975 + (T_J \cdot -1.4 \cdot 10^{-3})$$

$$R_T = 0.053 + (T_J \cdot 1.1 \cdot 10^{-3})$$

Note: T_J = Diode Junction Temperature In Degrees Celcius