Benefits

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

V_{RRM}= 650 V

$I_{F;}$ T_c<135˚C=14.5A

Q_c= 24 nC

General Features

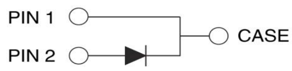
- 650-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF

Package TO-220-2

Application

- Switch Mode Power Supplies (SMPS)
- Power Factor Correction
- Motor Drives

Equivalent Circuit



Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	650	V
Surge Peak Reverse Voltage		V_{RSM}	650	V
DC Blocking Voltage		V_{DC}	650	V
Forward Current(Fig.3)	T_C≤ 25 ℃ T_C≤ 135 ℃ T_C ≤ 153 ℃	I_F	30 14.5 10	A
Non-Repetitive Forward Surge Current(Fig.8)	T_C=25˚C, t_P=10 ms, Half Sine Pulse T_C=110˚C, t_P=10 ms, Half Sine Pulse	I_{FSM}	90 71	A
Repetitive Peak Forward Surge Current	T_C=25˚C, t_P=10 ms, Half Sine Pulse T_C=110˚C, t_P=10 ms, Half Sine Pulse	I_{FRM}	46 31	A
Non-Repetitive Peak Forward Current(Fig.8)	T_C=25˚C, t_P=10 us, Pulse T_C=110˚C, t_P=10us, Pulse	$I_{F,max}$	860 680	A
Power Dissipation(Fig.4)	T_C =25℃ T_C =110 ℃	P_{tot}	136.5 59	W
Operating Junction and Storage Temperature		T_J, T_{stg}	-55 ~+175	℃
TO-220 Mounting Torque	M3 Screw 6-32 Screw		1 8.8	Nm lbf-in

Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_F	Forward Voltage(Fig.1)	I_F = 10A, T_J= 25℃	--	1.5	1.8	V
		I_F = 10A, T_J = 175℃	--	2.0	2.4	V
I_R	Reverse Current(Fig.2)	V_R = 650V, T_J = 25˚C	--	12	60	uA
		V_R = 650V, T_J = 175˚C	--	24	220	uA
Q_C	Total Capacitive Charge(Fig.5)	V_R = 400V, I_F = 10A di/dt = 500A/μs, T_J = 25˚C	--	24	--	nC
C	Total Capacitance(Fig.6)	V_R = 0V, T_J = 25˚C, f = 1MHz	--	460.5	--	pF
		V_R = 200V, T_J = 25˚C, f = 1MHz	--	44	--	pF
		V_R = 400V, T_J = 25˚C, f = 1MHz	--	40	--	pF
$R_{θJC}$	Thermal Resistance from Junction to Case (Fig.9)		--	1.1	--	℃/W
E_C	Capacitance Stored Energy(Fig.7)	V_R = 400V	--	3.6	--	uJ

Typical Performance

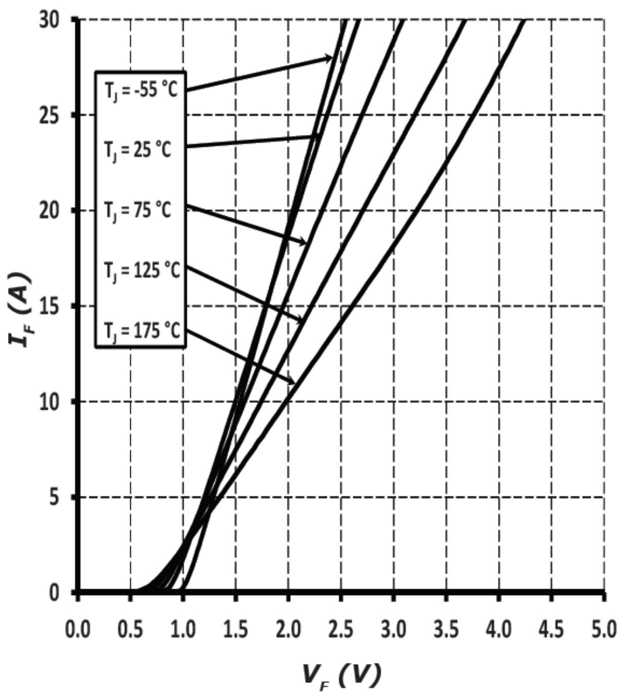


Figure 1. Forward Characteristics

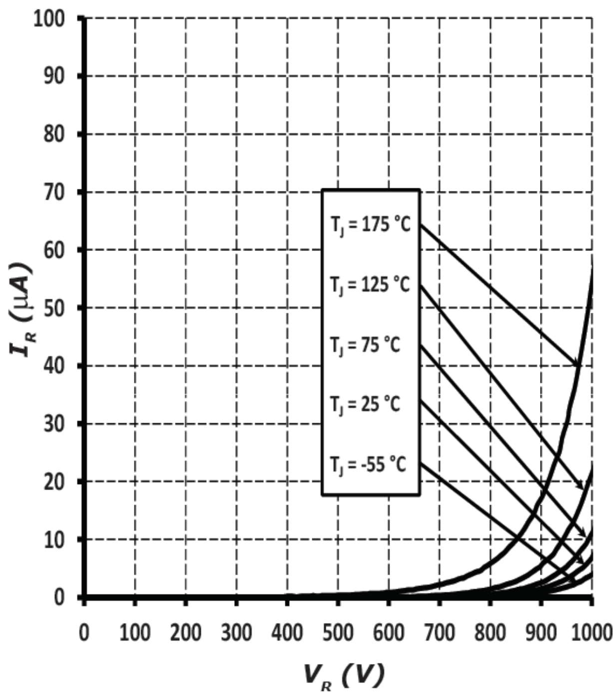


Figure 2. Reverse Characteristics

■ Typical Performance

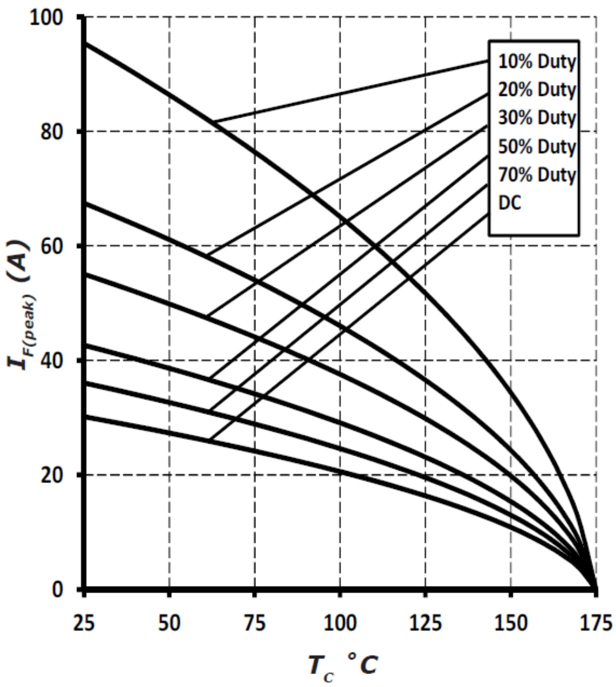


Figure 3. Current Derating

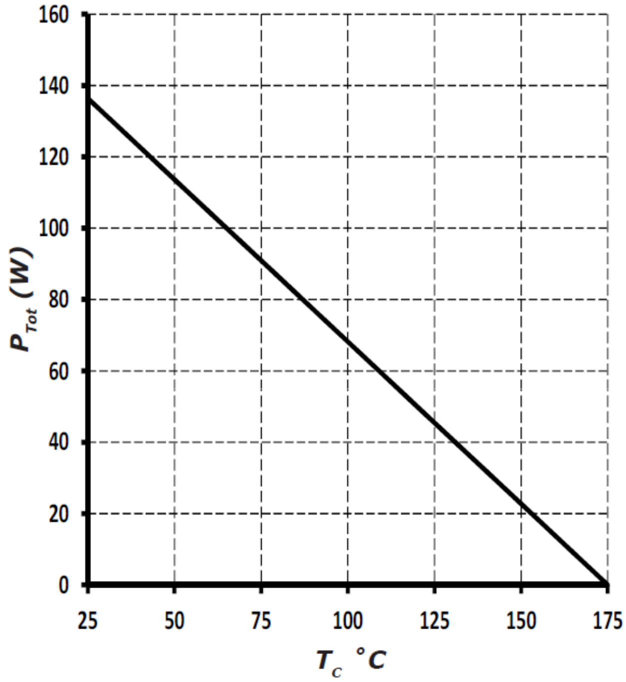


Figure 4. Power Derating

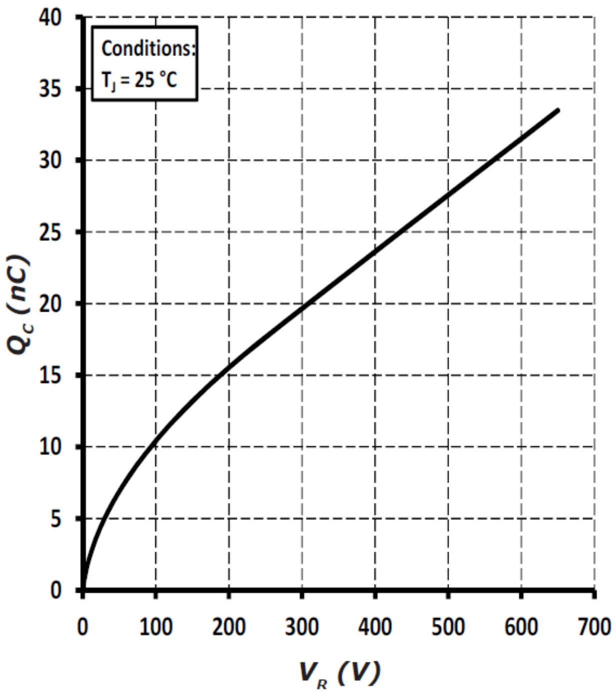


Figure 5. Total Capacitance Charge vs. Reverse Voltage

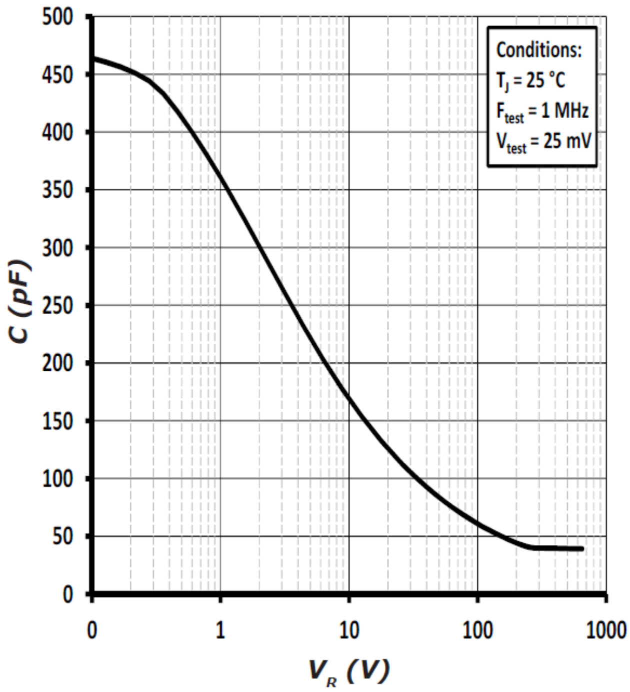


Figure 6. Capacitance vs. Reverse Voltage

■ Typical Performance

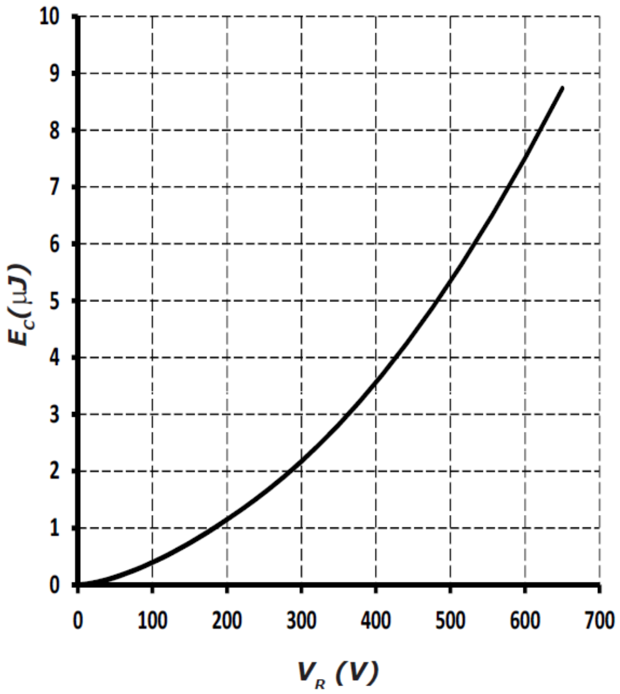


Figure 7. Capacitance Stored Energy

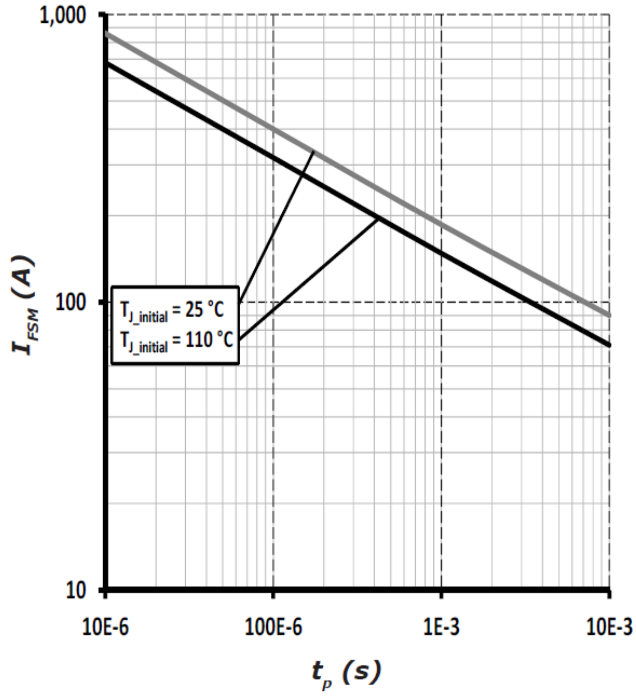


Figure 8. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

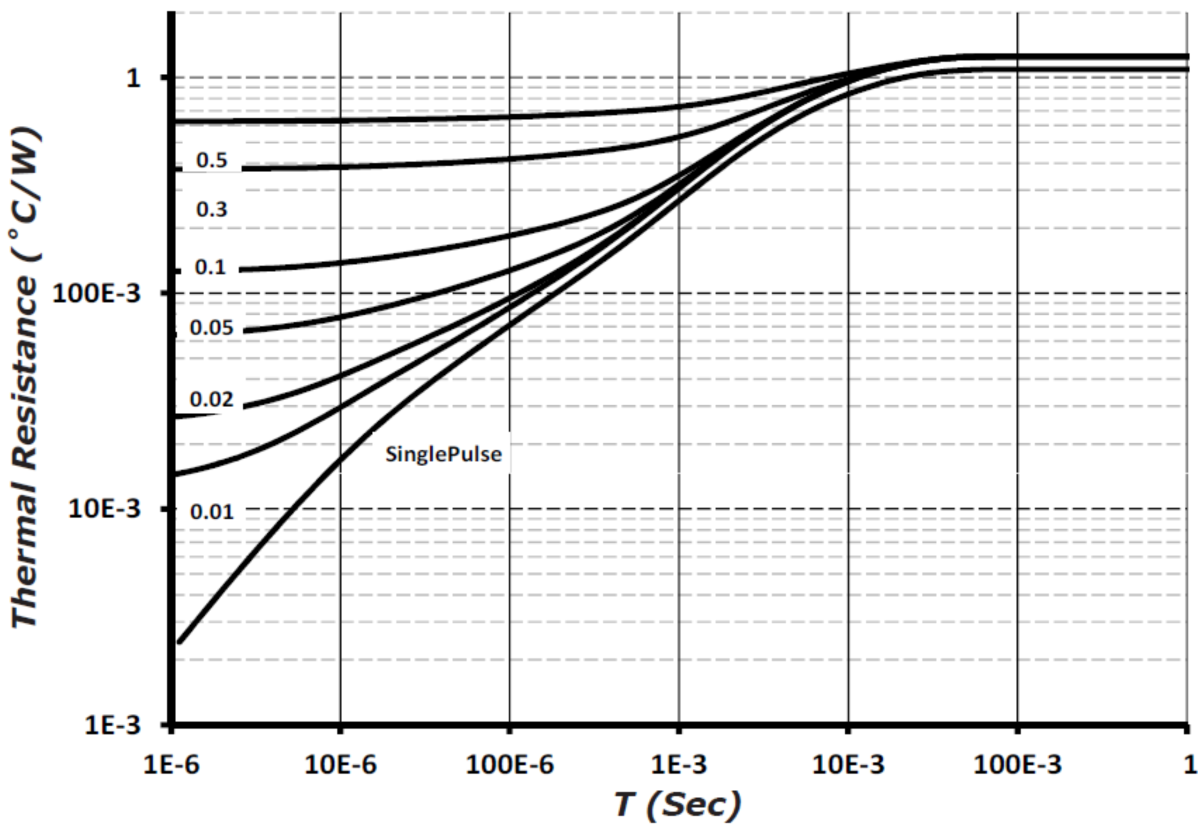
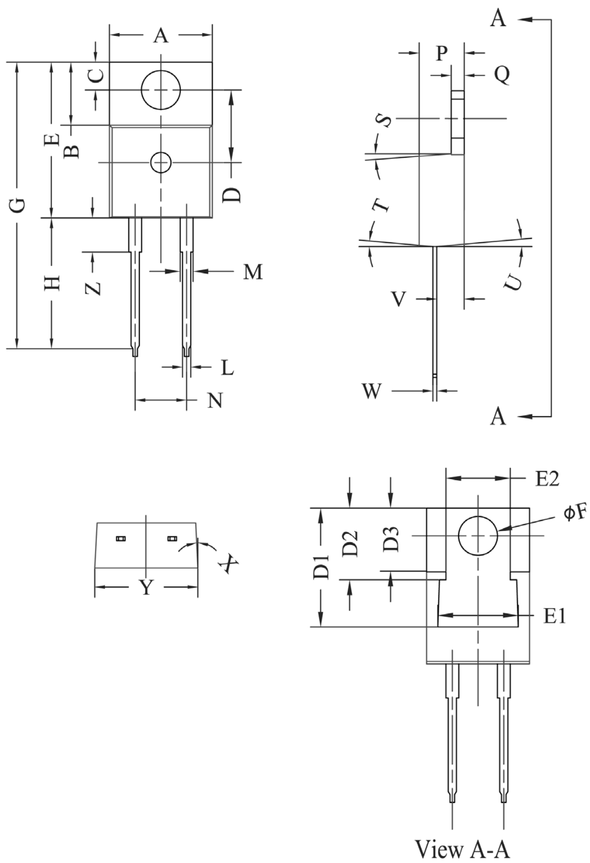


Figure 9. Transient Thermal Impedance

Outlitne Drawing

TO-220-2 Package Outline Dimensions

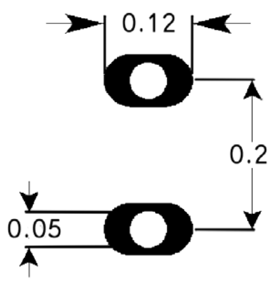


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.381	.410	9.677	10.414
B	.235	.255	5.969	6.477
C	.100	.120	2.540	3.048
D	.223	.337	5.664	8.560
D1	.457-.490		11.60-12.45 typ	
D2	.277-.303 typ		7.04-7.70 typ	
D3	.244-.252 typ		6.22-6.4 typ	
E	.590	.615	14.986	15.621
E1	.302	.326	7.68	8.28
E2	.227	251	5.77	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

NOTE:

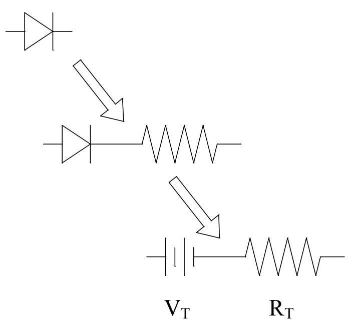
1. Dimension L, M, W apply for Solder Dip Finish

Recommended Solder Pad Layout



all units are in inches

Diode Model



$Vf_T = V_T + If * R_T$

$V_T = 0.94 + (T_J * -1.3*10^{-3})$
$R_T = 0.044 + (T_J * 4.4*10^{-4})$

Note: T_j = Diode Junction Temperature In Degrees Celsius, valid from 25°C to 175°C