CREE POWER

PRELIMINARY **CSD01060**

ZERO RECOVERY™ RECTIFIER

Features

- 600 Volt Schottky Rectifier
- Zero Reverse Recovery
- Zero Forward Recovery
- High Frequency Operation
- Temperature Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F

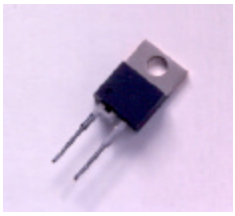
Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction Of Rectifier Heat Sink
- Parallel Devices without Thermal Runaway

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Control

Package



Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	600	V
Surge Peak Reverse Voltage	V_{RSM}	600	V
DC Blocking Voltage	V_{DC}	600	V
Average Forward Current T_C=150°C	$I_{F(AV)}$	1	A
Repetitive Peak Forward Surge Current T_C=25°C, t_P=8.3ms, Half Sine Wave	I_{FRM}	5	A
Non-Repetitive Peak Forward Surge Current T_C=25°C, t_p=10µs, Pulse	I_{FSM}	20	A
Power Dissipation T_C = 25°C	P_{tot}	21.4	W
Operating Junction and Storage Temperature	T_J , T_{stg}	-55 to +175	°C

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Units
Forward Voltage I_F = 1A T_J=25°C I_F = 1A T_J=150°C	V_F		1.6 2.0	1.8 2.4	V
Reverse Current V_R = 600V T_J=25°C V_R = 600V T_J=150°C	I_R		20 40	100 500	µA
Total Capacitive Charge V_R = 600V,I_F = 1A, d*i*/d*t* = 500 A/µs, T_J = 25°C	Q_C		3.3		nC
Total Capacitance V_R = 0V, T_J = 25 °C, f =1MHz V_R = 200V, T_J = 25 °C, f =1MHz V_R = 400V, T_J = 25 °C, f =1MHz	C		80 11 8.5		pF

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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Units
Thermal Resistance from Junction to Case	$R_{\theta JC}$		7		°C/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$		60		°C/W

Typical Performance

Figure 1. Forward Characteristics

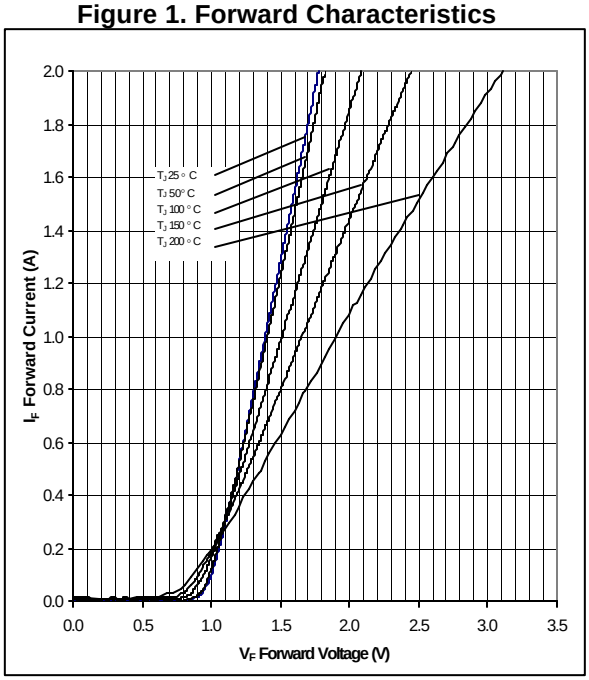


Figure 2. Reverse Characteristics

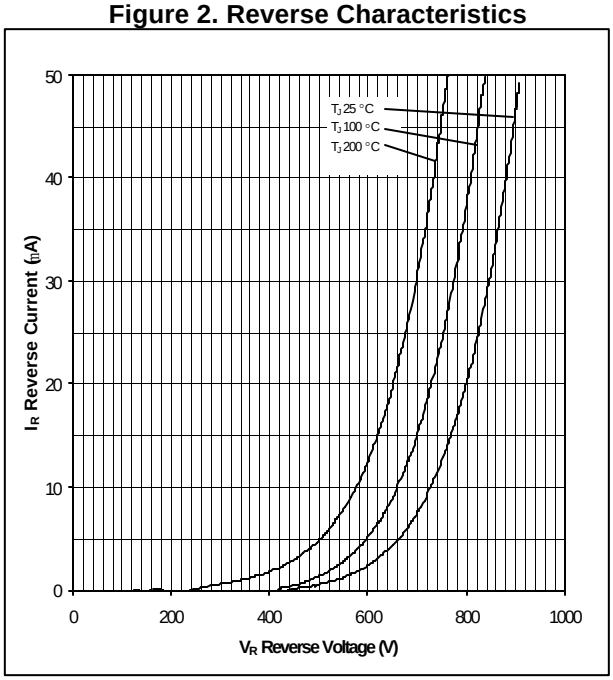


Figure 3. Current Derating

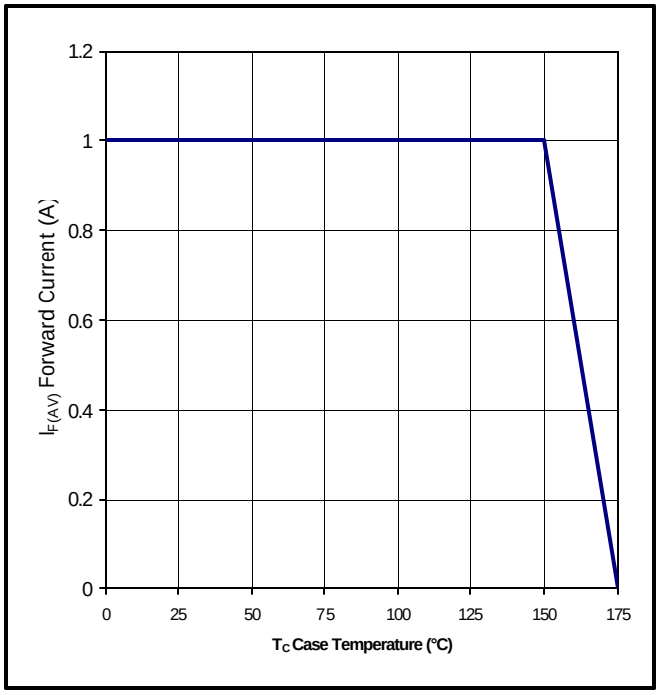
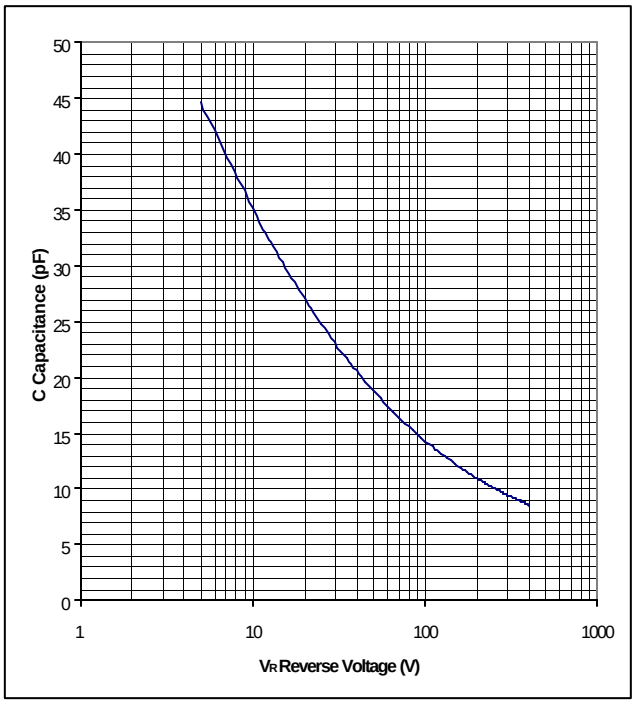
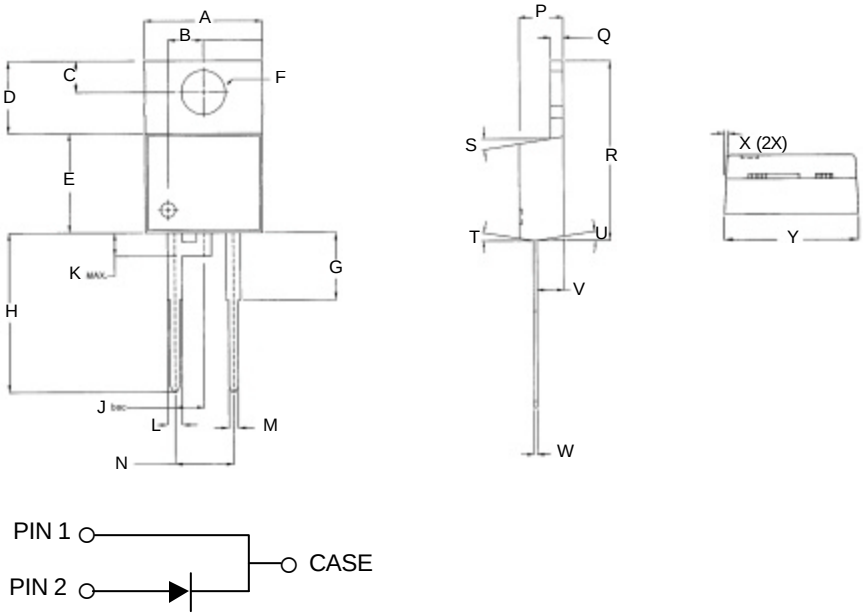


Figure 4. Capacitance vs. Reverse Voltage



Package Dimensions

Package TO-220-2

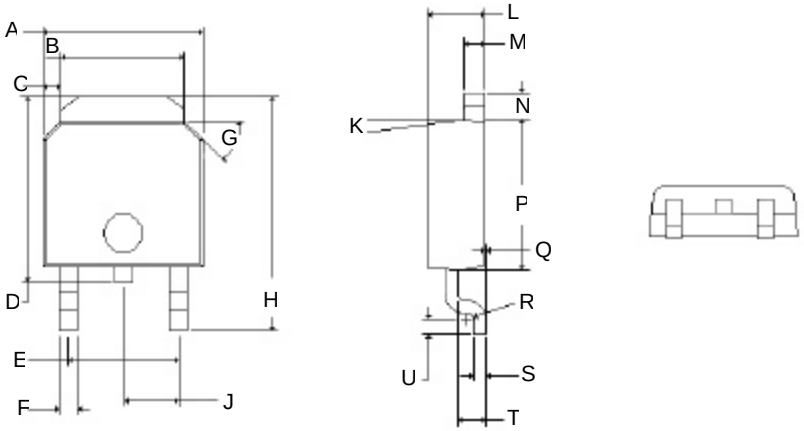


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.402	.408	10.211	10.364
B	.120	.124	3.048	3.150
C	.106	.110	2.692	2.794
D	.245	.251	6.223	6.375
E	.335	.345	8.509	8.763
F	.149	.153	3.784	3.886
G	.220	.240	5.588	6.096
H	.540	.550	13.716	13.970
J	.100 REF		2.540 REF	
K		.080		2.032
L	.050	.056	1.270	1.422
M	.032	.038	.813	.956
N	.197	.203	5.004	5.156
P	.170	.180	4.318	4.572
Q	.048	.052	1.219	1.321
R	.583	.593	14.808	15.062
S	6.5°	8.5°	6.5°	8.5°
T	6.5°	8.5°	6.5°	8.5°
U	6.5°	8.5°	6.5°	8.5°
V	.103	.107	2.616	2.718
W	.015	.021	.381	.533
X	2.0°	4.0°	2.0°	4.0°
Y	.396	.406	10.058	10.312

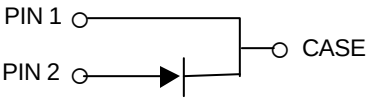
NOTE:

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

Package TO-252-2



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.255	.265	6.477	6.731
B	.197	.205	5.004	5.207
C	.027	.033	.686	.838
D	.292	.322	7.417	8.179
E	.178	.182	4.521	4.623
F	.025	.035	.635	.889
G	44°	46°	44°	46°
H	.382	.397	9.703	10.084
J	.090TYP		2.286TYP	
K	6°	8°	6°	8°
L	.086	.094	2.184	2.388
M	.030	.034	.762	.864
N	.040	.044	1.016	1.118
P	.235	.245	5.969	6.223
Q	0.00	.004	0.00	.102
R	R0.01TYP		R0.31TYP	
S	.017	.023	.428	.588
T	.040	.044	1.016	1.118
U	.021	.027	.534	.686



Part Number	Package	Marking
CSD01060A	TO-220-2	SD01060
CSD01060E	TO-252-2	SD01060

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