

# ZERO RECOVERY<sup>®</sup> RECTIFIER

$V_{RRM}=600V$   
 $I_F=4A$

## 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  $V_F$

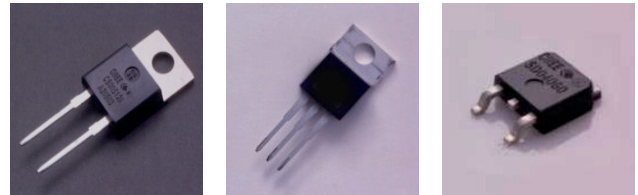
## Applications

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

## Benefits

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

## Package



CSD04060A    CSD04060B    CSD04060E

## 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 $T_C=150^\circ C$	$I_{F(AV)}$	4	A
Repetitive Peak Forward Surge Current $T_C=25^\circ C, t_p=8.3ms, \text{Half Sine Wave}$	$I_{FRM}$	20	A
Non-Repetitive Peak Forward Surge Current $T_C=25^\circ C, t_p=10\mu s, \text{Pulse}$	$I_{FSM}$	110	A
Power Dissipation $T_C = 25^\circ C$	$P_{tot}$	62.5	W
Operating Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +175	$^\circ C$

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Units
Forward Voltage $I_F = 4A$ $T_J = 25^\circ C$ $I_F = 4A$ $T_J = 175^\circ C$	$V_F$		1.5 2.0	1.8 2.4	V
Reverse Current $V_R = 600V$ $T_J = 25^\circ C$ $V_R = 600V$ $T_J = 175^\circ C$	$I_R$		25 50	200 1000	$\mu A$
Total Capacitive Charge $V_R = 600V, I_F = 4A, di/dt = 500 A/\mu s, T_J = 25^\circ C$	$Q_C$		9		nC
Total Capacitance $V_R = 0V, T_J = 25^\circ C, f = 1MHz$ $V_R = 200V, T_J = 25^\circ C, f = 1MHz$ $V_R = 400V, T_J = 25^\circ C, f = 1MHz$	C		220 26 20		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	$R_{\theta JC}$		2.4		$^\circ C/W$

Typical Performance

Figure 1. Forward Characteristics

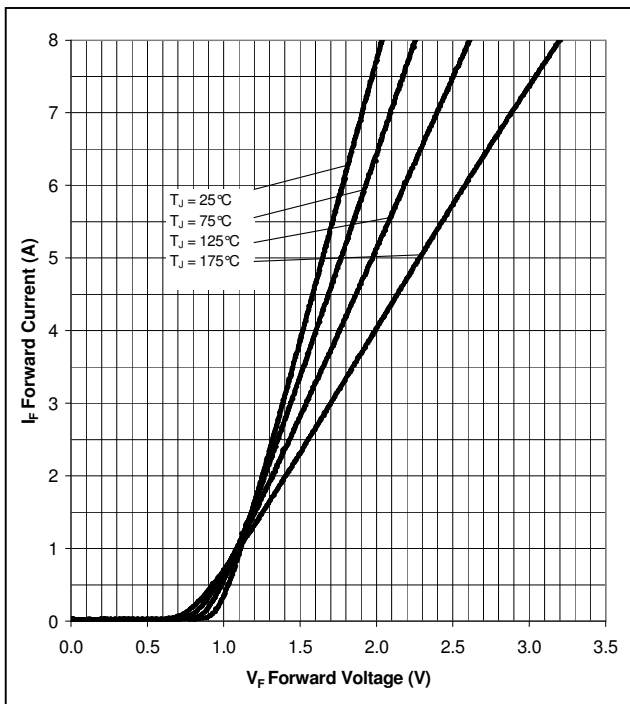
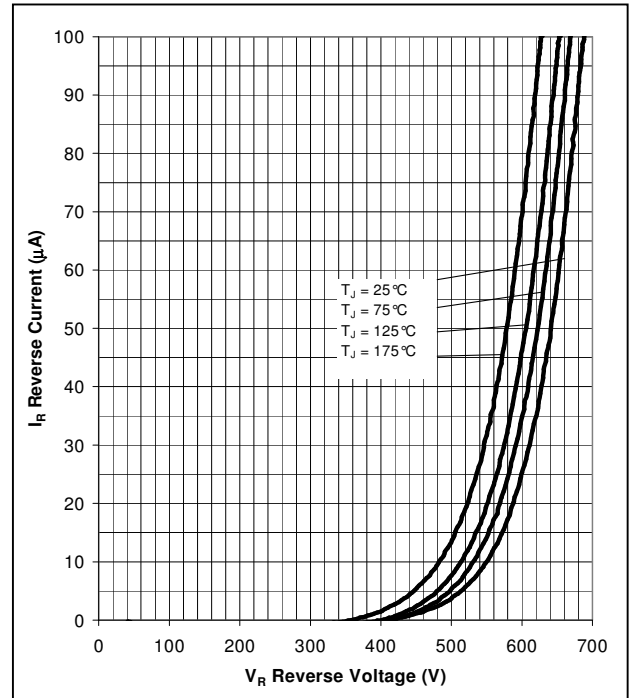
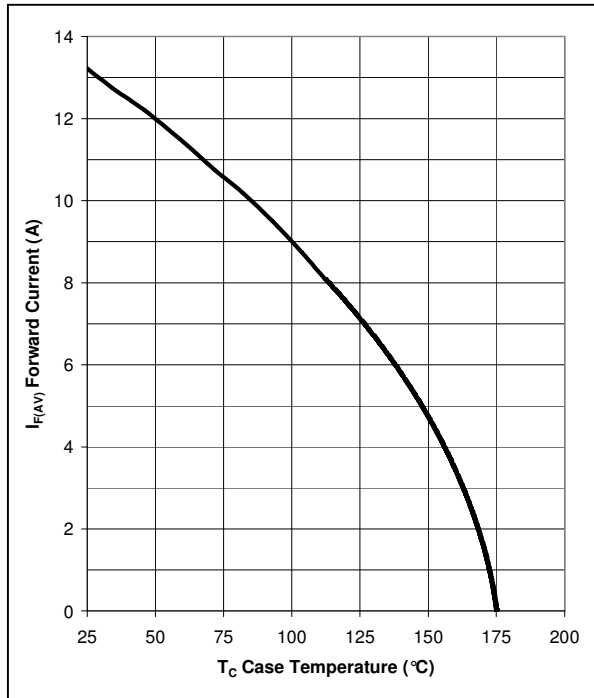


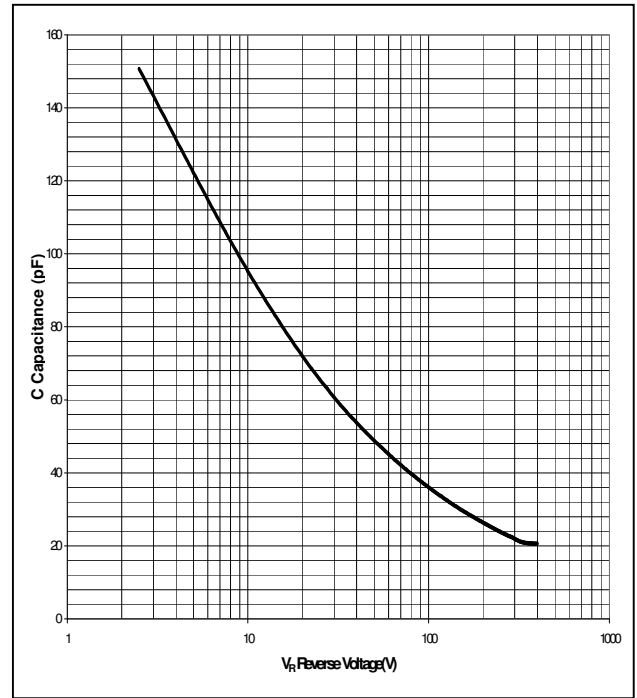
Figure 2. Reverse Characteristics



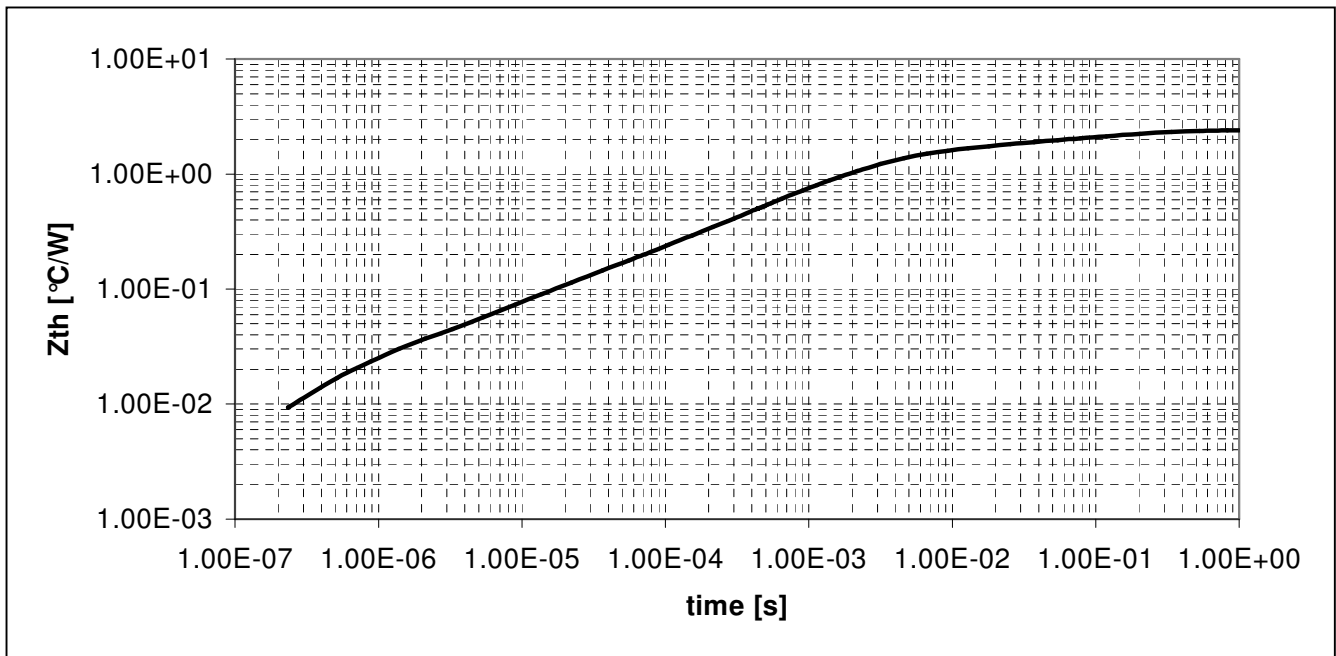
**Figure 3. Current Derating**



**Figure 4. Capacitance vs. Reverse Voltage**

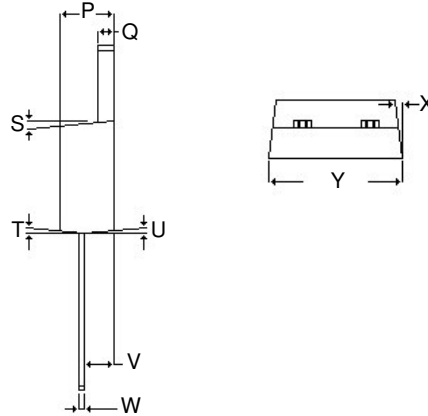
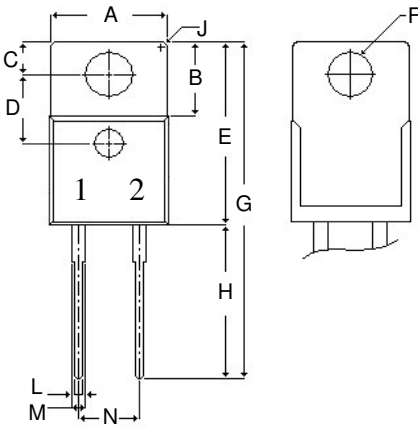


**Figure 5. Transient Thermal Impedance**



# Package Dimensions

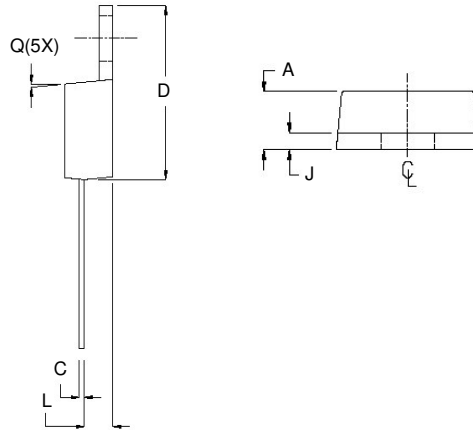
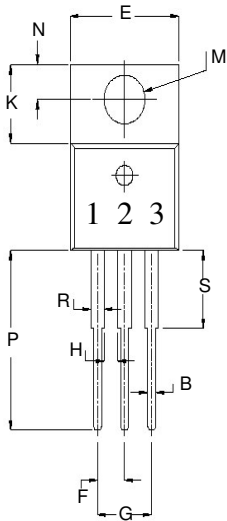
## Package TO-220-2



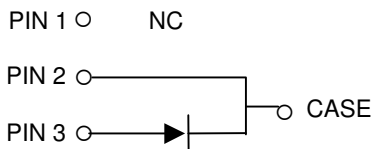
POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.381	.391	9.677	9.931
B	.240	.250	6.096	6.350
C	.100	.120	2.540	3.048
D	.223	.227	5.664	5.766
E	.595	.615	15.113	15.621
F	.143	.147	3.632	3.734
G	1.105	1.115	28.067	28.321
H	.500	.510	12.700	12.954
J	R 0.197		R 5.004	
L	.025	.035	.635	.889
M	.045	.055	1.143	1.397
N	.198	.202	5.029	5.131
P	.165	.185	4.191	4.699
Q	.048	.052	1.219	1.321
S	4°	6°	4°	6°
T	4°	6°	4°	6°
U	4°	6°	4°	6°
V	.094	.098	2.387	2.489
W	.018	.025	.458	.635
X	4.5°	5.5°	4.5°	5.5°
Y	.385	.405	9.779	10.287



## Package TO-220-3



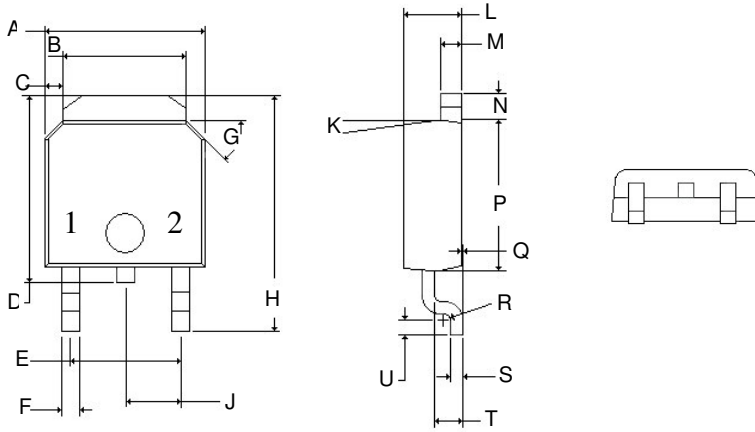
POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.160	.190	4.06	4.83
B	.025	.040	0.63	1.02
C	.015	.022	0.38	0.56
D	.560	.590	14.22	14.99
E	.385	.415	9.78	10.54
F	.090	.110	2.29	2.79
G	.190	.210	4.83	5.33
H	.045	.055	1.14	1.40
J	.045	.055	1.14	1.40
K	.234	.258	5.94	6.55
L	.090	.115	2.29	2.92
M	.146	.156	3.71	3.96
N	.103	.113	2.62	2.87
P	.540	.560	13.72	14.22
Q	3°	7°	3°	7°
R	.045	.060	1.14	1.52
S	.243 REF		6.17 REF	



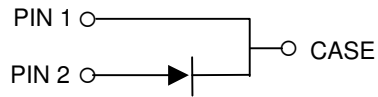
NOTE:  
1. Dimension C apply for Solder Plate Finish.

**Package Dimensions (Cont.)**

**Package TO-252-2**

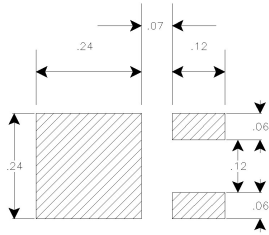


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.255	.265	6.477	6.731
B	.197	.205	5.004	5.207
C	.027	.033	.686	.838
D	.292	.322	7.417	8.179
E	.178	.182	4.521	4.623
F	.025	.035	.635	.889
G	44°	46°	44°	46°
H	.382	.397	9.703	10.084
J	.0901TYP		2.286TYP	
K	6°	8°	6°	8°
L	.086	.094	2.184	2.388
M	.030	.034	.762	.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

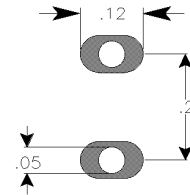


Part Number	Package	Marking
CSD04060A	TO-220-2	CSD04060
CSD04060B	TO-220-3	CSD04060
CSD04060E	TO-252-2	CSD04060

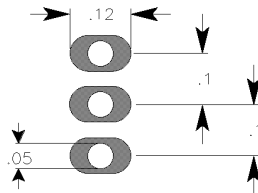
**Recommended solder pad layout.**



**TO-252-2**



**TO-220-2**



**TO-220-3**

This product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, cardiac defibrillators or similar emergency medical equipment, aircraft navigation or communication or control systems, air traffic control systems, or weapons systems.

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