

# ZERO RECOVERY™ RECTIFIER

## Features

- 1200 Volt Schottky Rectifier
- Zero Reverse Recovery
- Zero Forward Recovery
- High Frequency Operation
- Temperature Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on  $V_F$

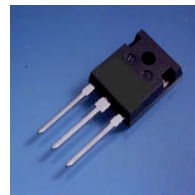
## Benefits

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

## Applications

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

## Package



CSD20120D

## Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$	1200	V
Surge Peak Reverse Voltage	$V_{RSM}$	1200	V
DC Blocking Voltage	$V_{DC}$	1200	V
Average Forward Current (Per Device) $T_C=160^\circ\text{C}$ (Per Leg)	$I_{F(AV)}$	20 10	A
Repetitive Peak Forward Surge Current (Per Leg) $T_C=25^\circ\text{C}$ , $t_P=8.3\text{ms}$ , Half Sine Wave	$I_{FRM}$	50	A
Non-Repetitive Peak Forward Surge Current (Per Leg) $T_C=25^\circ\text{C}$ , $t_P=10\mu\text{s}$ , Pulse	$I_{FSM}$	250	A
Power Dissipation (Per Leg) $T_C = 25^\circ\text{C}$	$P_{tot}$	312	W
Operating Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +175	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS (PER LEG)

Parameter	Symbol	Min	Typ	Max	Units
Forward Voltage $I_F = 10A$ $T_J = 25^\circ C$ $I_F = 10A$ $T_J = 175^\circ C$	$V_F$		1.6 2.5	1.8 3.0	V
Reverse Current $V_R = 1200V$ $T_J = 25^\circ C$ $V_R = 1200V$ $T_J = 175^\circ C$	$I_R$		10 20	200 1000	$\mu A$
Total Capacitive Charge $V_R = 1200V, I_F = 10A, di/dt = 500 A/\mu s, T_J = 25^\circ C$	$Q_C$		61		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		1000 80 59		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	Per Leg	$R_{\theta JC}$		0.48		$^\circ C/W$
	Per Device	$R_{\theta JC}$		0.24		$^\circ C/W$

Typical Performance (Per Leg)

Figure 1. Forward Characteristics

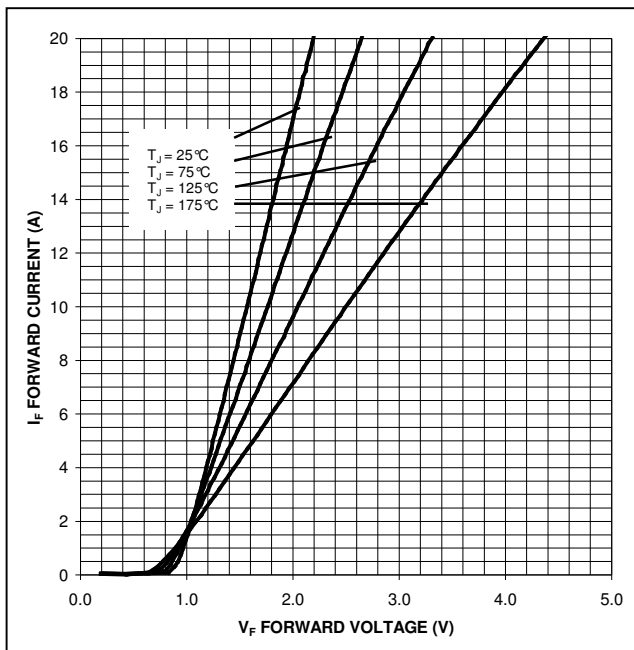
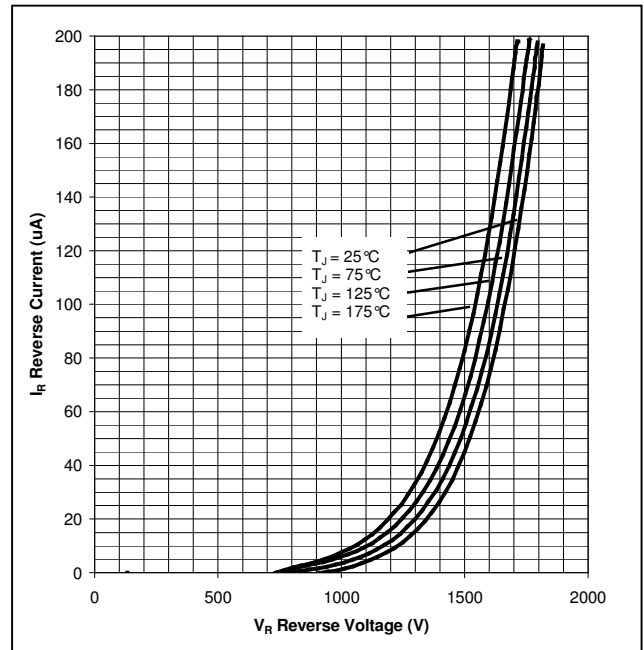
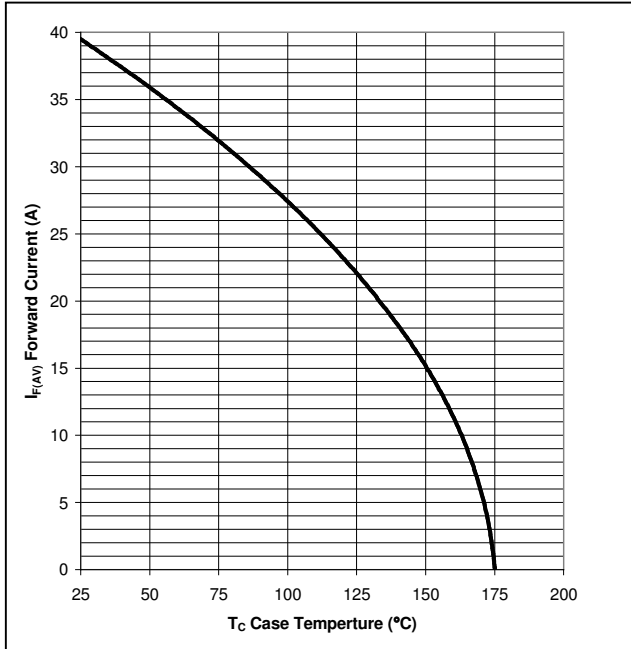


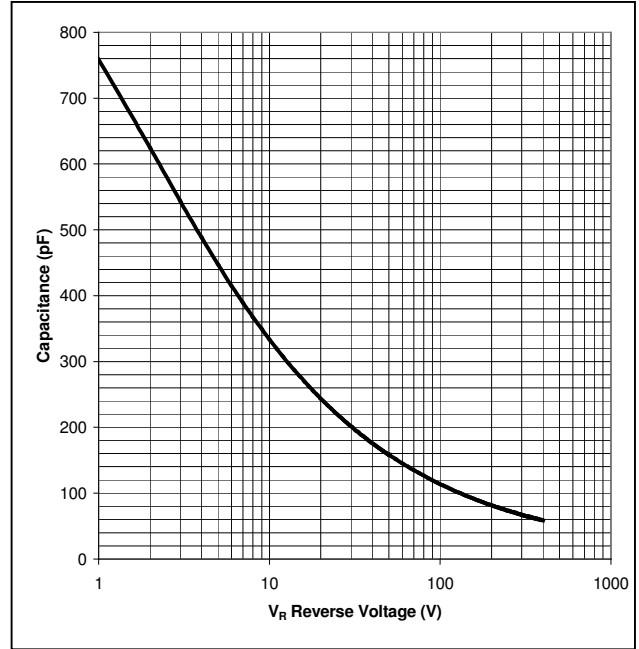
Figure 2. Reverse Characteristics



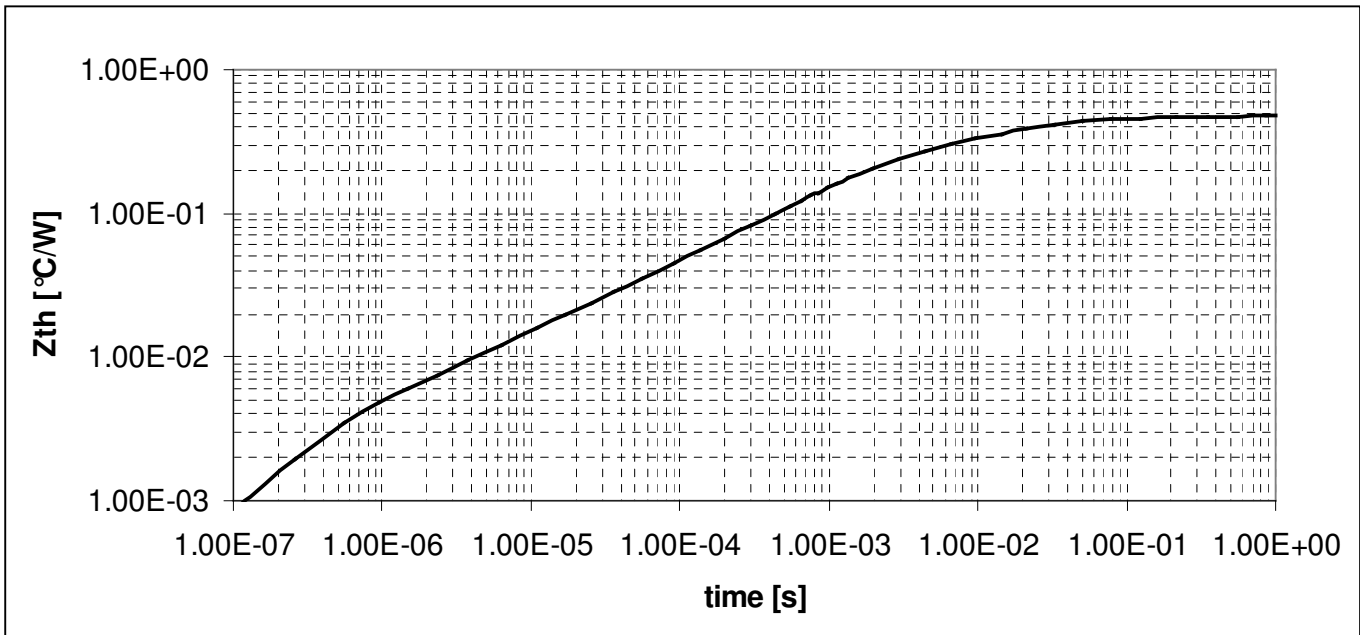
**Figure 3. Current Derating**



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

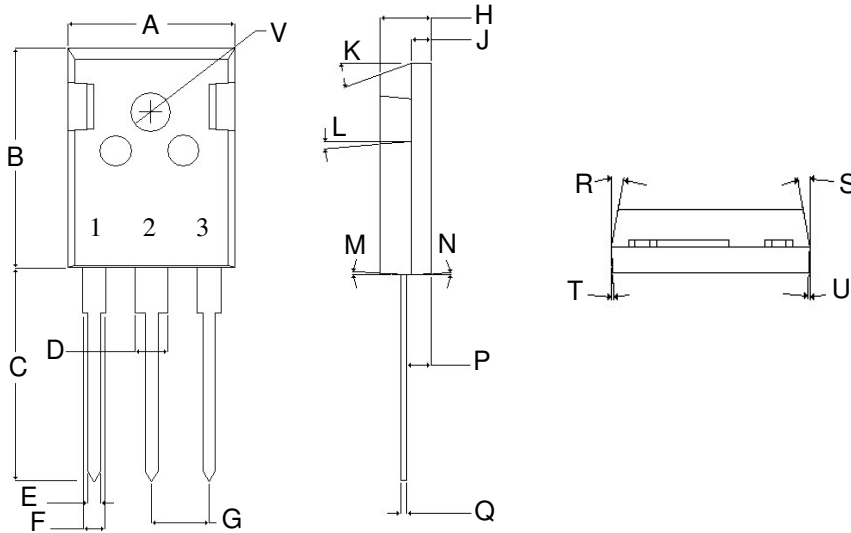


**Figure 5. Transient Thermal Impedance**

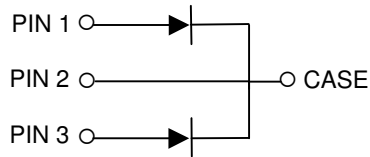


## Package Dimensions

### Package TO-247-3

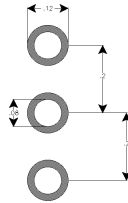


POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.621	.631	15.773	16.027
B	.820	.830	20.823	21.077
C	.789	.799	20.053	20.307
D	.120	.126	3.044	3.196
E	.047	.052	1.200	1.327
F	.075	.084	1.903	2.132
G	.215 TYP		5.450 TYP	
H	.193	.203	4.903	5.157
J	.075	.081	1.904	2.056
K	19°	21°	19°	21°
L	4°	6°	4°	6°
M	2°	4°	2°	4°
N	2°	4°	2°	4°
P	.093	.097	2.349	2.451
Q	.024	.030	.600	.752
R	9°	11°	9°	11°
S	9°	11°	9°	11°
T	2°	4°	2°	4°
U	2°	4°	2°	4°
V	.140	.144	3.560	3.660



Part Number	Package	Marking
CSD20120D	TO-247-3	CSD20120

**Recommended solder pad layout.**



**TO-247-3**

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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Cree, Inc.  
Power Products  
4600 Silicon Drive • Durham, NC 27703 • USA  
Tel: 919-313-5300 • Fax: 919-313-5451  
[www.cree.com](http://www.cree.com)