CREE POWER

PRELIMINARY **CSD10120**

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

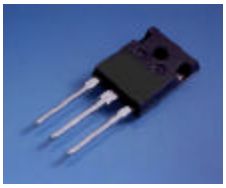
Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction Of 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}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
DC Blocking Voltage	V_{DC}	1200	V
Average Forward Current (Per Leg) T_C=149°C	$I_{F(AV)}$	5	A
Repetitive Peak Forward Surge Current T_C=25°C, t_P=8.3ms, Half Sine Wave	I_{FRM}	30	A
Non-Repetitive Peak Forward Surge Current T_C=25°C, t_P=10µs, Pulse	I_{FSM}	100	A
Power Dissipation T_C = 25°C	P_{tot}	138	W
Operating Junction and Storage Temperature	T_J , T_{stg}	-55 to +175	°C

ELECTRICAL CHARACTERISTICS (PER LEG)

Parameter	Symbol	Min	Typ	Max	Units
Forward Voltage I_F = 5A T_J=25°C I_F = 5A T_J=175°C	V_F		1.6 2.6	1.8 3.0	V
Reverse Current V_R = 1200V T_J=25°C V_R = 1200V T_J=150°C	I_R		50 100	200 1000	µA
Total Capacitive Charge V_R = 1200V,I_F = 5A, d*i*/d*t* = 500 A/µs, T_J = 25°C	Q_C		28		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		455 45 33		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	$R_{\theta JC}$		1.08		°C/W
	Both Legs	$R_{\theta JC}$		0.54		°C/W

Typical Performance (Per Leg)

Figure 1. Forward Characteristics

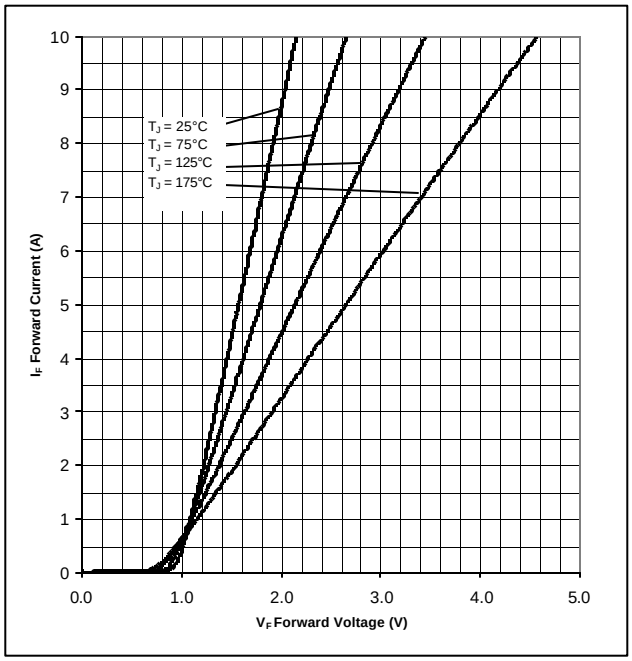


Figure 2. Reverse Characteristics

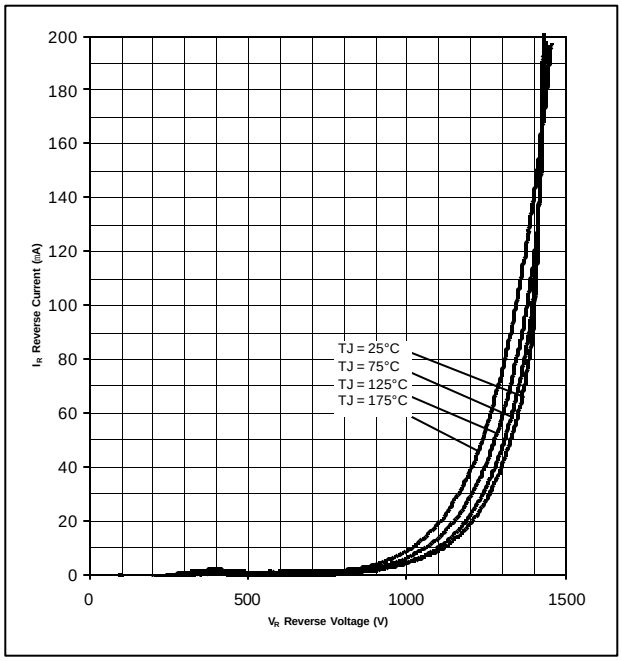


Figure 3. Current Derating

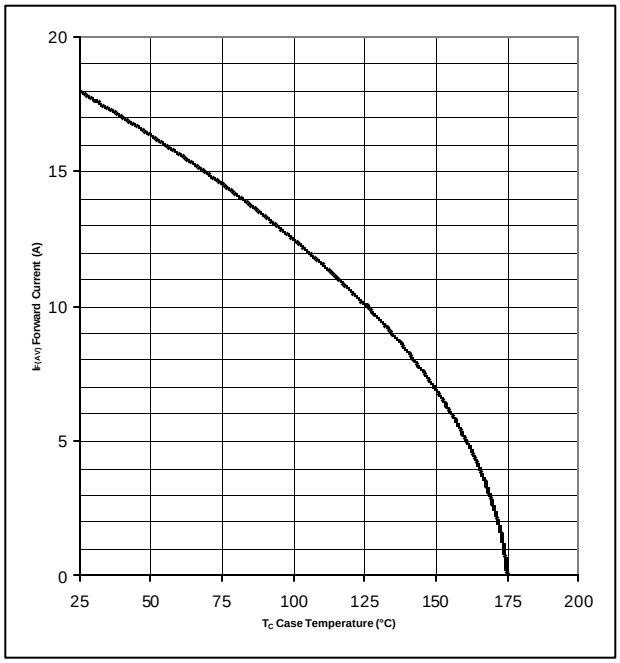


Figure 4. Capacitance vs. Reverse Voltage

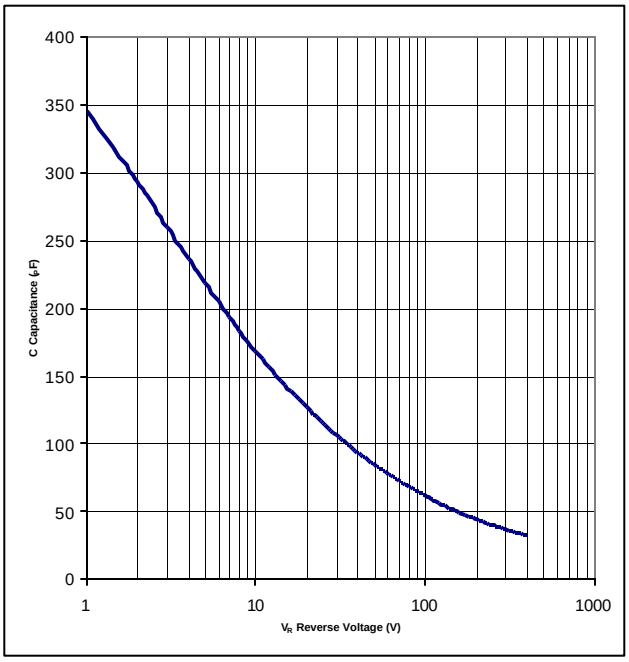
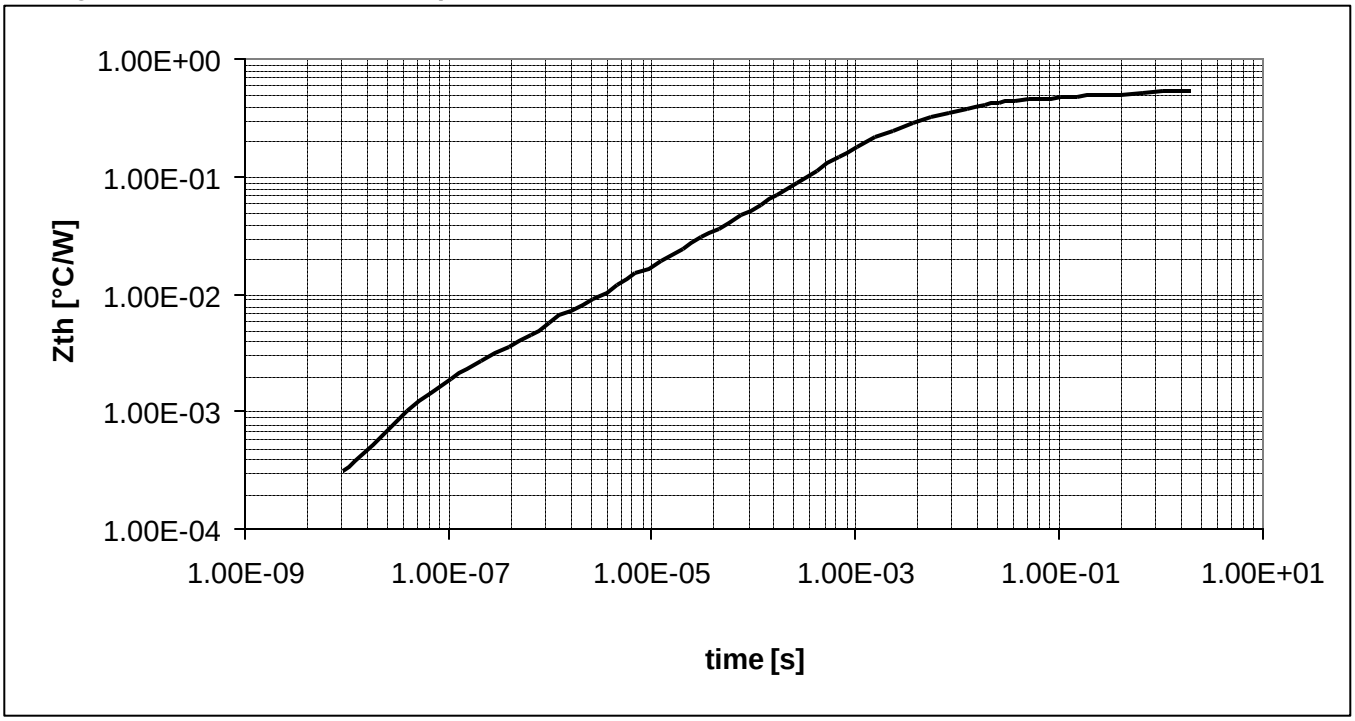
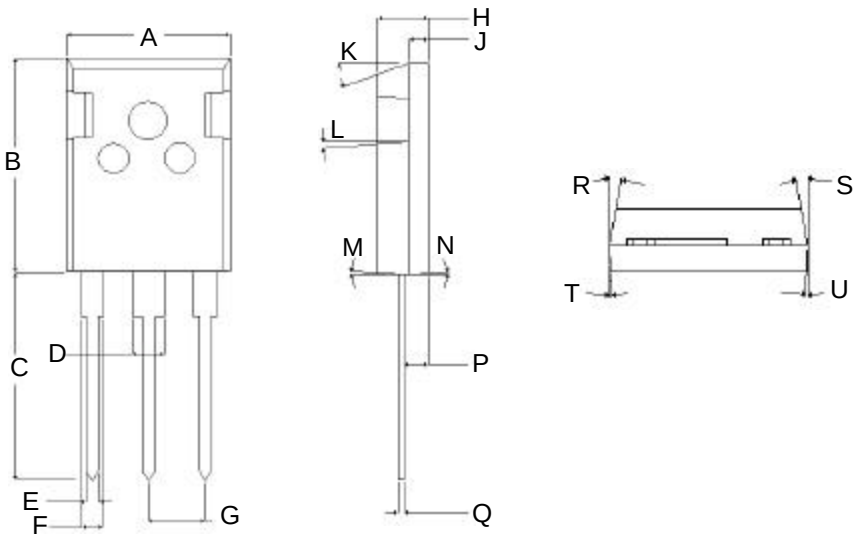


Figure 5. Transient Thermal Impedance

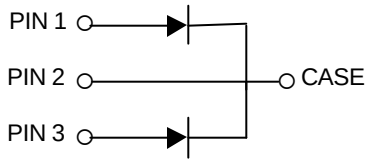


Package Dimensions

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°



Part Number	Package	Marking
CSD10120D	TO-247-3	CSD10120

Cree, Inc.
Power Products
4600 Silicon Drive
Durham, NC 27703 • USA
tel: 919-313-5300
fax: 919-313-5451
www.cree.com