FAIRCHILD SEMICONDUCTOR®

May 2012

FFPF08S60ST

STEALTH™ II Rectifier

Features

- High Speed Switching, t_{rr} < 30ns @ I_F = 8A
- High Reverse Voltage and High Reliability
- RoHS component

Applications

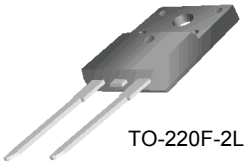
- General Purpose
- Switching Mode Power Supply
- Boost Diode in continuous mode power factor corrections
- Power switching circuits

8A, 600V STEALTH™ II Rectifier

The FFPF08S60ST is STEALTH™ II rectifier with soft recovery characteristics. It is silicon nitride passivated ion-implanted epitaxial planar construction.

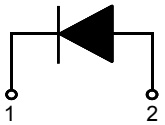
This device is intended for use as freewheeling of boost diode in switching power supplies and other power swithching applications. Their low stored charge and hyperfast soft recovery minimize ringing and electrical noise in many power switching circuits reducing power loss in the switching transistors.

Pin Assignments



TO-220F-2L

1. Cathode 2. Anode



1. Cathode 2. Anode

Absolute Maximum Ratings T_C = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_{RWM}	Working Peak Reverse Voltage	600	V
V_R	DC Blocking Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ T_C = 95 °C	8	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	80	A
T_J, T_{STG}	Operating Junction and Storage Temperature	- 65 to +150	°C

Thermal Characteristics

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.4	°C/W

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F08S60ST	FFPF08S60STTU	TO-220F-2L	-	-	50

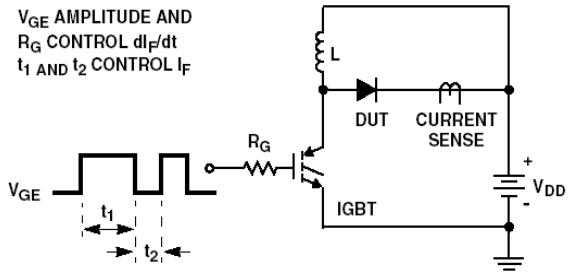
Electrical Characteristics T_C = 25°C unless otherwise noted

Parameter	Conditions		Min.	Typ.	Max	Units
V_{FM}[1]	I_F = 8A I_F = 8A	T_C = 25 °C T_C = 125 °C	- -	2.1 1.6	2.6 -	V V
I_{RM}[1]	V_R = 600V V_R = 600V	T_C = 25 °C T_C = 125 °C	- -	- -	100 500	μA μA
t_{rr}	I_F =1A, di/dt = 100A/μs, V_R= 30V	T_C = 25 °C	-	-	25	ns
trr Irr S factor Q_{rr}	I_F =8A, di/dt = 200A/μs, V_R = 390V	T_C = 25 °C	- - - -	19 2.2 0.6 21	30 - - -	ns A nC
trr Irr S factor Q_{rr}	I_F =8A, di/dt = 200A/μs, V_R= 390V	T_C = 125 °C	- - - -	58 4.3 1.3 125	- - - -	ns A nC
W_{AVL}	Avalanche Energy (L = 40mH)		20	-	-	mJ

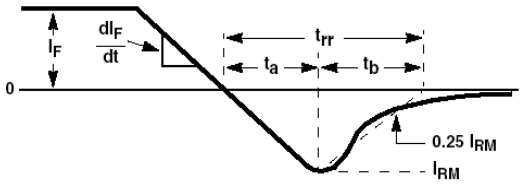
Notes:

1. Pulse : Test Pulse width = 300μs, Duty Cycle = 2%

Test Circuit and Waveforms

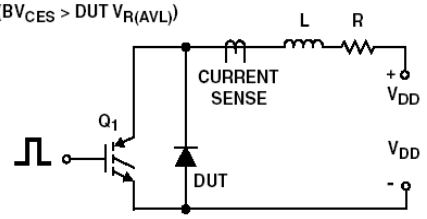


t_{rr} TEST CIRCUIT

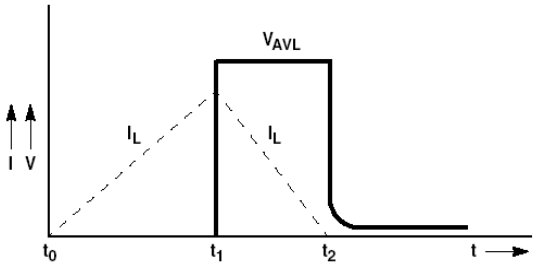


t_{rr} WAVEFORMS AND DEFINITIONS

I_{MAX} = 1A
L = 40mH
R < 0.1Ω
$E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
Q_1 = IGBT (BV_{CES} > DUT $V_{R(AVL)}$)



AVALANCHE ENERGY TEST CIRCUIT



AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Typical Performance Characteristics T_C = 25°C unless otherwise noted

Figure 1. Typical Forward Voltage Drop

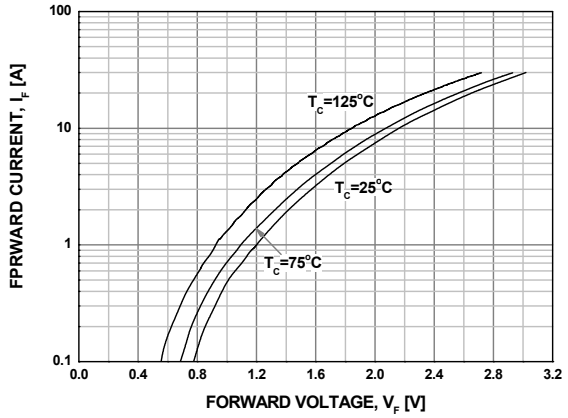


Figure 2. Typical Reverse Current

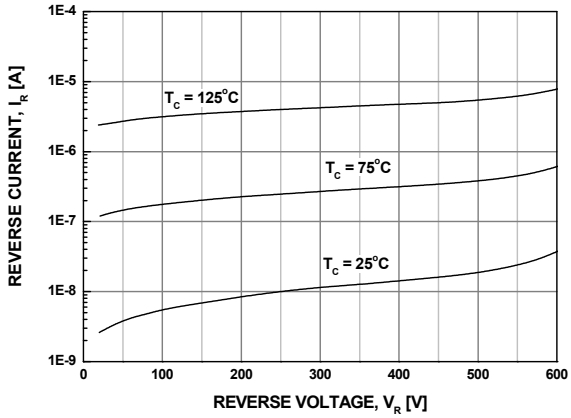


Figure 3. Typical Junction Capacitance

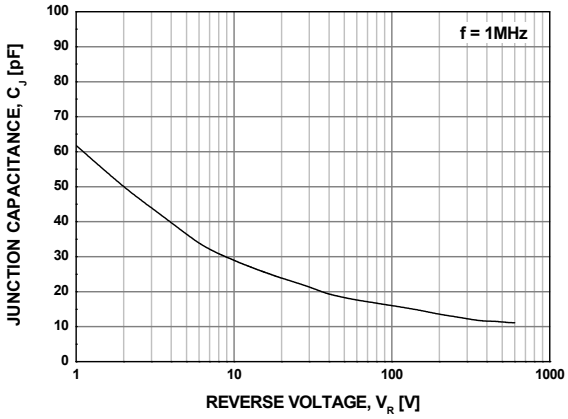


Figure 4. Typical Reverse Recovery Time

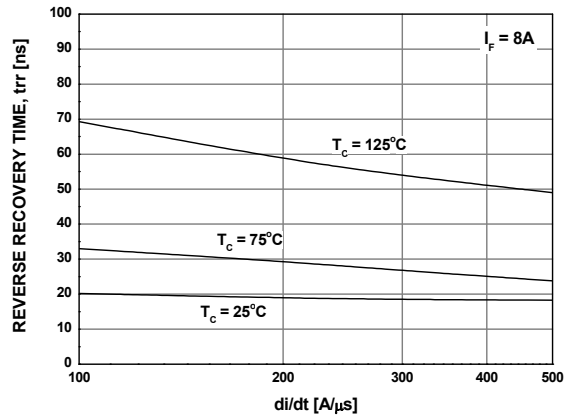


Figure 5. Typical Reverse Recovery Current

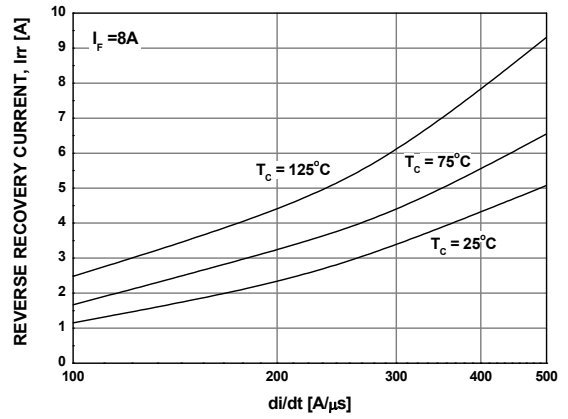
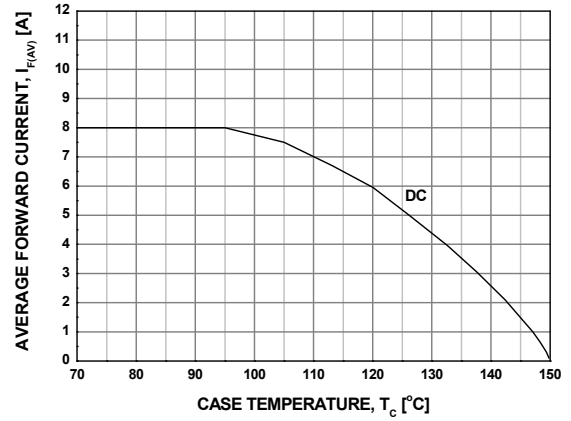
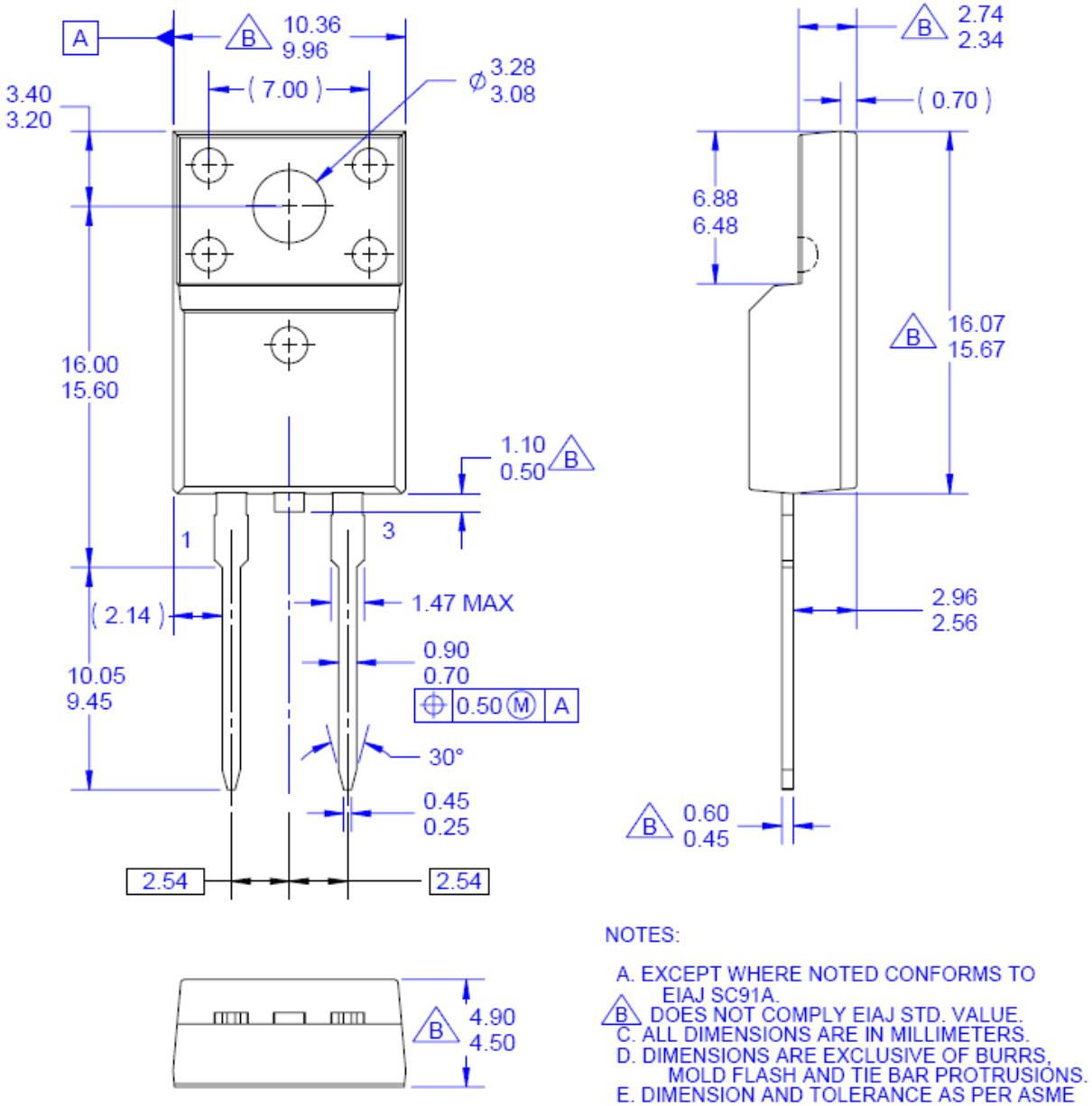


Figure 6. Forward Current Deration Curve



Mechanical Dimensions

TO-220F 2L Potting Type



NOTES:

A. EXCEPT WHERE NOTED CONFORMS TO EIAJ SC91A.
B. DOES NOT COMPLY EIAJ STD. VALUE.
C. ALL DIMENSIONS ARE IN MILLIMETERS.
D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
F. DRAWING FILE NAME: TO220C02REV2

Dimensions in Millimeters

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