

# FFPF08S60ST

## 8 A, 600 V, STEALTH II Diode

### Description

The FFPF08S60S is STEALTH™ II diode 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 switching 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.

### Features

- Stealth Recovery  $t_{rr} = 30$  ns (@  $I_F = 8$  A)
  - ◆ Max Forward Voltage,  $V_F = 3.4$  V (@  $T_C = 25^\circ\text{C}$ )
- 600 V Reverse Voltage and High Reliability
- This Device is Pb-Free and are RoHS Compliant

### Applications

- General Purpose
- SMPS
- Boost Diode in Continuous Mode Power Factor Corrections
- Power Switching Circuits

### ABSOLUTE MAXIMUM RATINGS $T_C = 25^\circ\text{C}$ unless otherwise noted

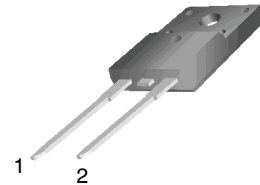
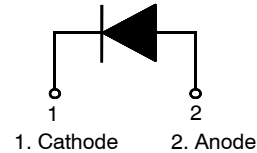
Symbol	Parameter	Value	Unit
$V_{RRM}$	Peak Repetitive Reverse Voltage	600	V
$V_{RWM}$	Working Peak Reverse Voltage	600	V
$V_R$	DC Blocking Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ $T_C = 95^\circ\text{C}$	8	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	80	A
$T_J, T_{STG}$	Operating Junction and Storage Temperature	- 65 to +175	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



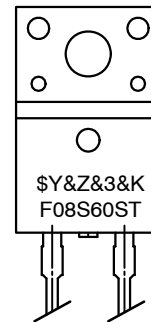
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TO-220F-2L  
CASE 221AS

### MARKING DIAGRAM



\$Y = ON Semiconductor Logo  
&Z&3 = Data Code (Year & Week)  
&K = Lot  
F08S60ST = Specific Device Code

### ORDERING INFORMATION

Device	Package	Shipping
FFPF08S60STTU	TO-220F-2L	50 / Tube

# FFPF08S60ST

## THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction-to-Case	3.4	$^{\circ}\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max	Unit
$V_{F1}$	$I_F = 8 \text{ A}$ $I_F = 8 \text{ A}$ $T_C = 25 \text{ }^{\circ}\text{C}$ $T_C = 125 \text{ }^{\circ}\text{C}$	-	2.1 1.6	2.6 -	V V
$I_{R1}$	$V_R = 600 \text{ V}$ $V_R = 600 \text{ V}$ $T_C = 25 \text{ }^{\circ}\text{C}$ $T_C = 125 \text{ }^{\circ}\text{C}$	-	-	100 500	$\mu\text{A}$ $\mu\text{A}$
$t_{rr}$	$I_F = 1 \text{ A}$ , $di_F/dt = 100 \text{ A}/\mu\text{s}$ , $V_R = 30 \text{ V}$ $T_C = 25 \text{ }^{\circ}\text{C}$	-	-	25	ns
$T_{rr}$ $I_{rr}$ S factor $Q_{rr}$	$I_F = 8 \text{ A}$ , $di_F/dt = 200 \text{ A}/\mu\text{s}$ , $V_R = 390 \text{ V}$ $T_C = 25 \text{ }^{\circ}\text{C}$	-	19 2.2 0.6 21	30 - - -	ns A - nC
$t_{rr}$ $I_{rr}$ S factor	$I_F = 8 \text{ A}$ , $di_F/dt = 200 \text{ A}/\mu\text{s}$ , $V_R = 390 \text{ V}$ $T_C = 125 \text{ }^{\circ}\text{C}$	-	58 4.3 1.3 125	- - - -	ns A - nC
$W_{AVL}$	Avalanche Energy ( $L = 40 \text{ mH}$ )	20	-	-	mJ

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse: Test Pulse width = 300  $\mu\text{s}$ , Duty Cycle = 2%

## Test Circuit and Waveforms

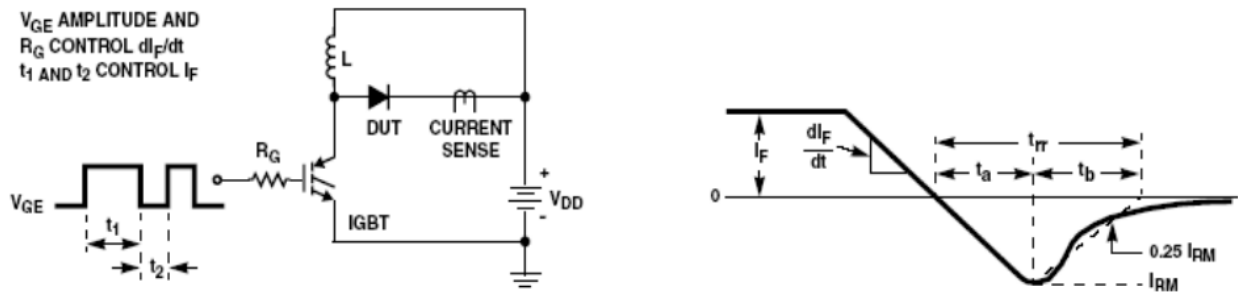


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

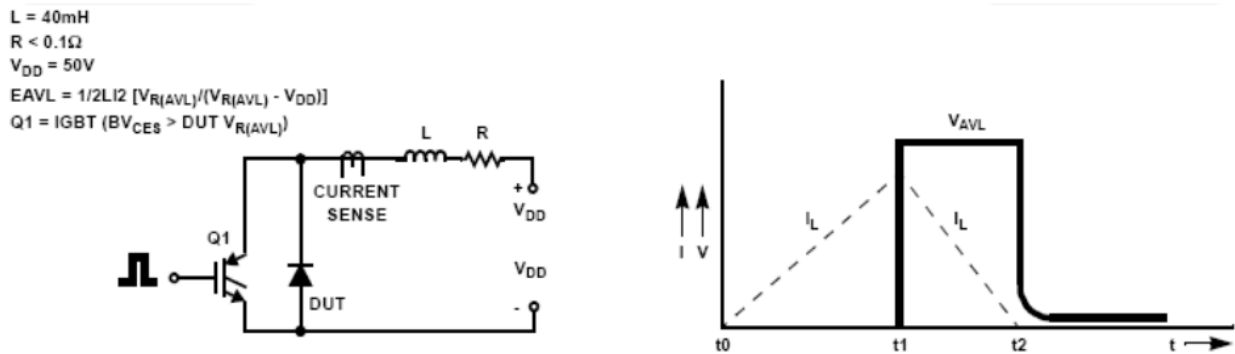


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

# FFPF08S60ST

## TYPICAL PERFORMANCE CHARACTERISTICS

$T_c = 25^\circ\text{C}$  unless otherwise noted

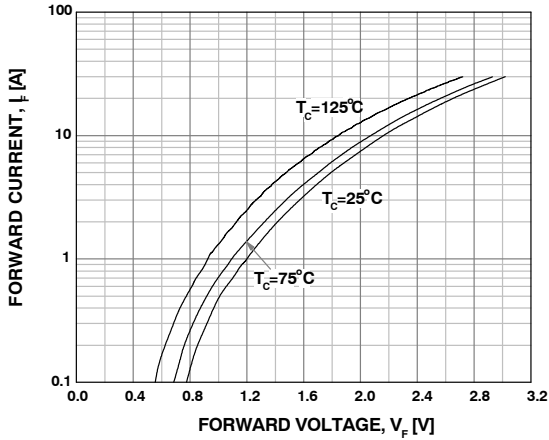


Figure 3. Typical Forward Voltage Drop

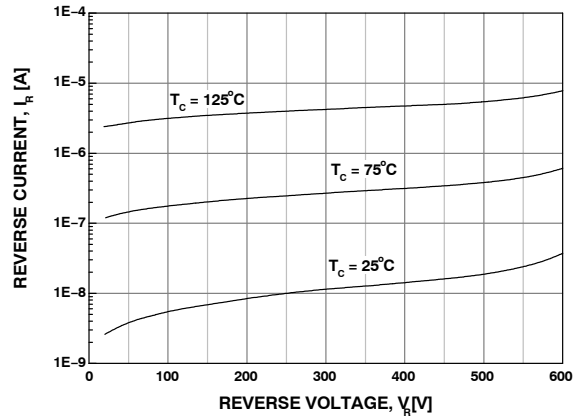


Figure 4. Typical Reverse Current

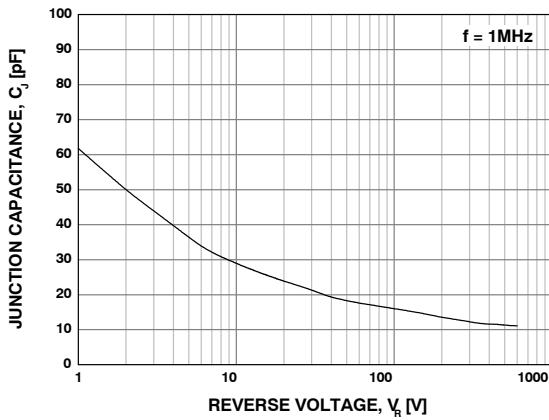


Figure 5. Typical Junction Capacitance

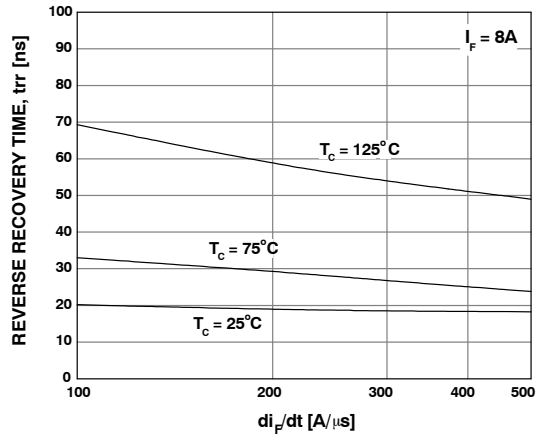


Figure 6. Typical Reverse Recovery Time

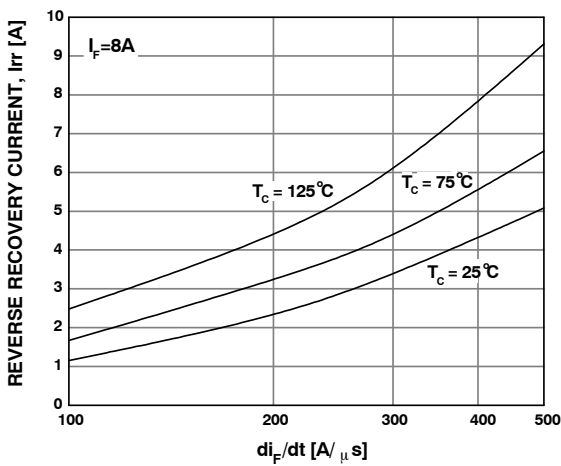


Figure 7. Typical Reverse Recovery Current

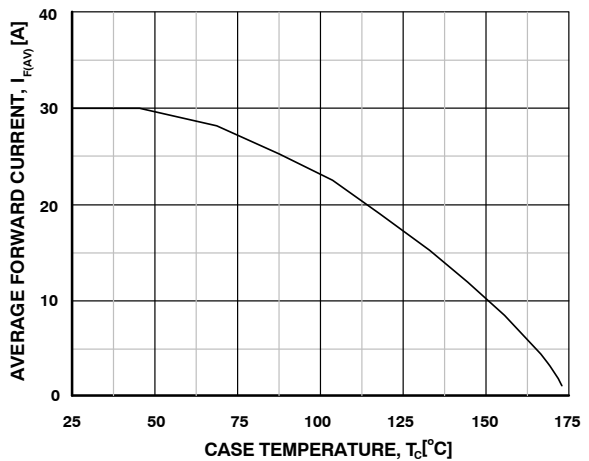


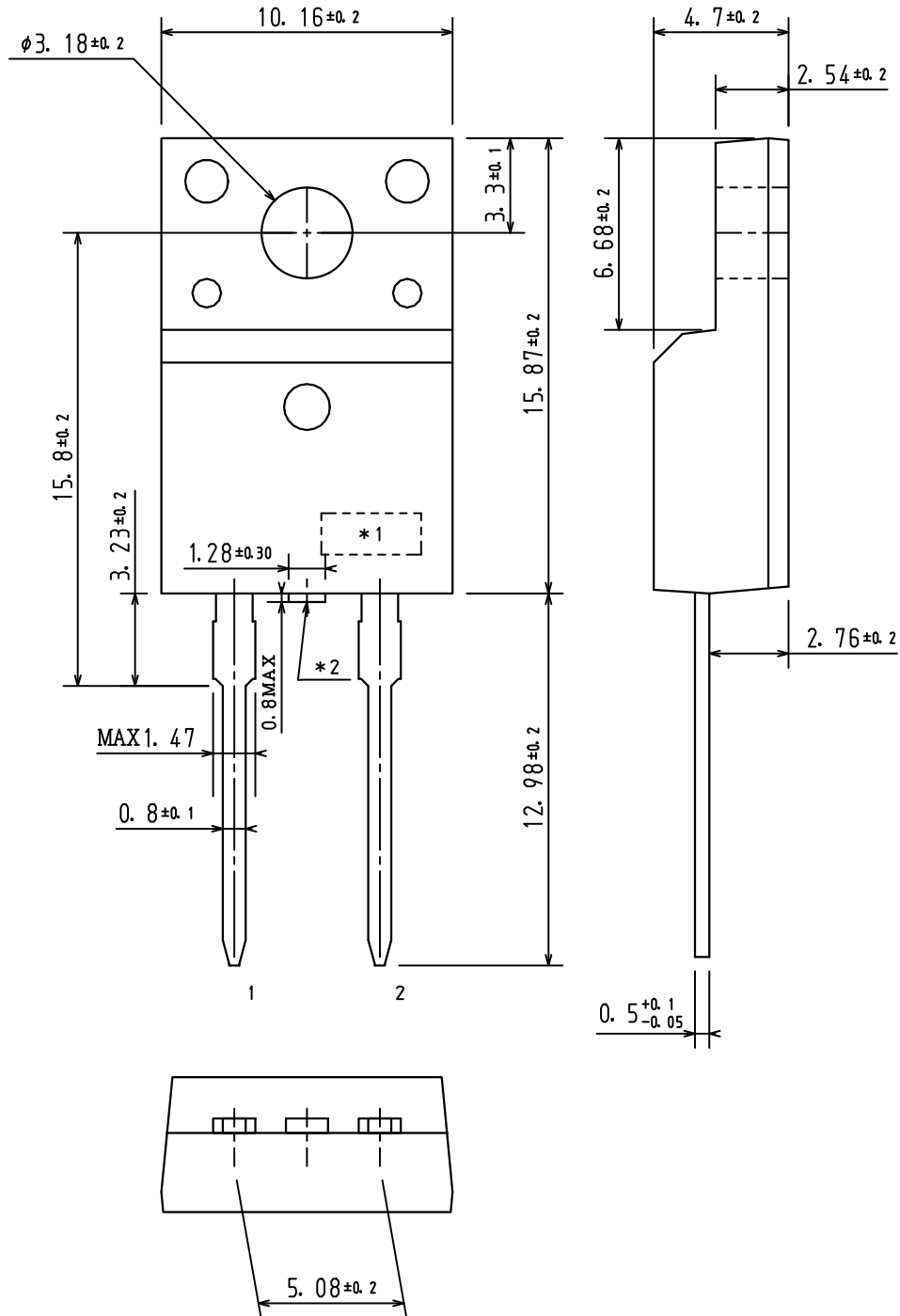
Figure 8. Forward Current Deration Curve

**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**



TO-220 Fullpack, 2-Lead / TO-220F-2FS  
CASE 221AS  
ISSUE 0

DATE 29 FEB 2012



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