

# 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

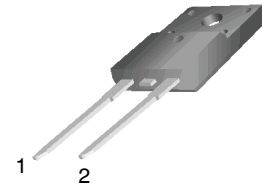
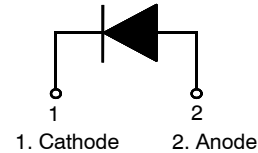
| Symbol         | Parameter  | Value        | Unit             |
|----------------|--|--------------|------------------|
| $V_{RRM}$      | Peak Repetitive Reverse Voltage                              | 600          | V                |
| $V_{RWM}$      | Working Peak Reverse Voltage                                 | 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.



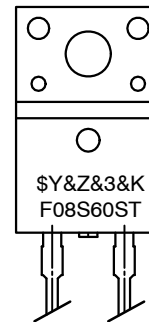
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TO-220F-2L  
CASE 221AS

### 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                           |
|--|---|------|-------------------------|-------------------|--------------------------------|
| $V_{F1}$                                     | $I_F = 8 \text{ A}$ $I_F = 8 \text{ A}$<br>$T_C = 25 \text{ }^{\circ}\text{C}$ $T_C = 125 \text{ }^{\circ}\text{C}$         | -    | 2.1<br>1.6              | 2.6<br>-          | V V                            |
| $I_{R1}$                                     | $V_R = 600 \text{ V}$ $V_R = 600 \text{ V}$<br>$T_C = 25 \text{ }^{\circ}\text{C}$ $T_C = 125 \text{ }^{\circ}\text{C}$     | -    | -                       | 100<br>500        | $\mu\text{A}$<br>$\mu\text{A}$ |
| $t_{rr}$                                     | $I_F = 1 \text{ A}$ , $di_F/dt = 100 \text{ A}/\mu\text{s}$ , $V_R = 30 \text{ V}$<br>$T_C = 25 \text{ }^{\circ}\text{C}$   | -    | -                       | 25                | ns                             |
| $T_{rr}$<br>$I_{rr}$<br>S factor<br>$Q_{rr}$ | $I_F = 8 \text{ A}$ , $di_F/dt = 200 \text{ A}/\mu\text{s}$ , $V_R = 390 \text{ V}$<br>$T_C = 25 \text{ }^{\circ}\text{C}$  | -    | 19<br>2.2<br>0.6<br>21  | 30<br>-<br>-<br>- | ns<br>A<br>-<br>nC             |
| $t_{rr}$<br>$I_{rr}$<br>S factor             | $I_F = 8 \text{ A}$ , $di_F/dt = 200 \text{ A}/\mu\text{s}$ , $V_R = 390 \text{ V}$<br>$T_C = 125 \text{ }^{\circ}\text{C}$ | -    | 58<br>4.3<br>1.3<br>125 | -<br>-<br>-<br>-  | ns<br>A<br>-<br>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

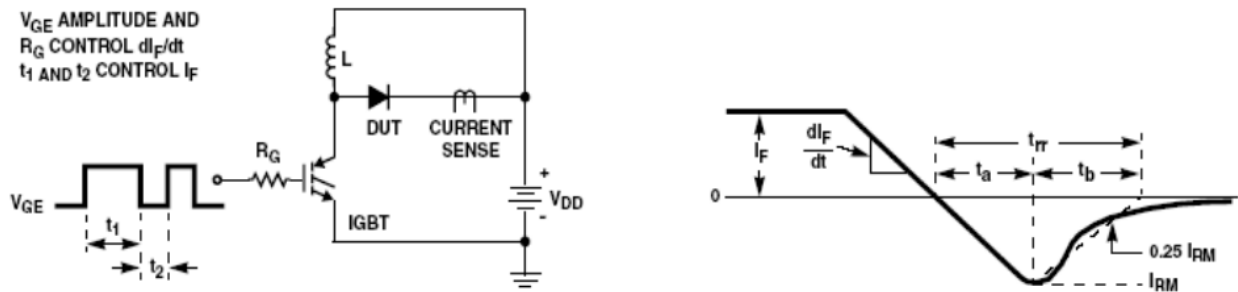


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

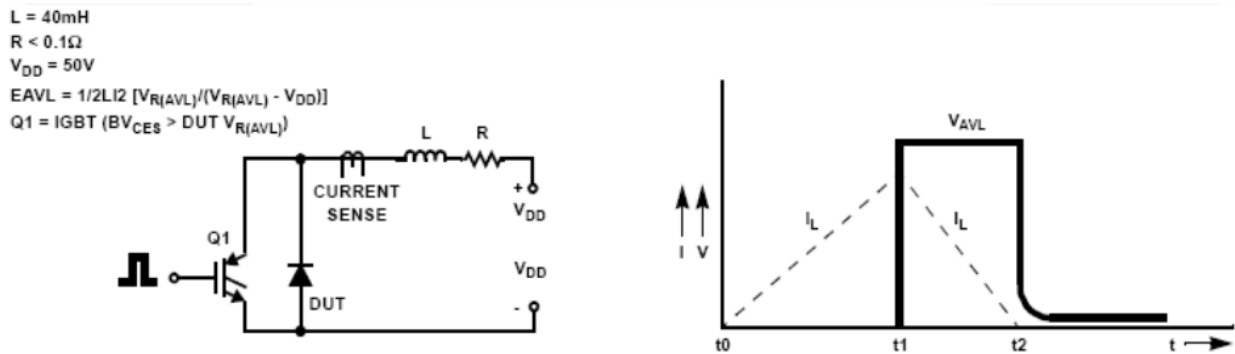


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

# FFPF08S60ST

## TYPICAL PERFORMANCE CHARACTERISTICS

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

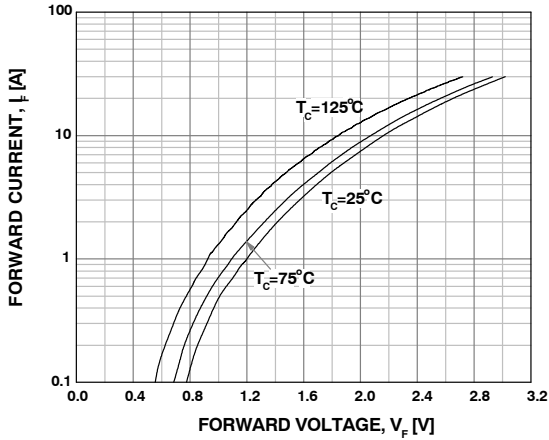


Figure 3. Typical Forward Voltage Drop

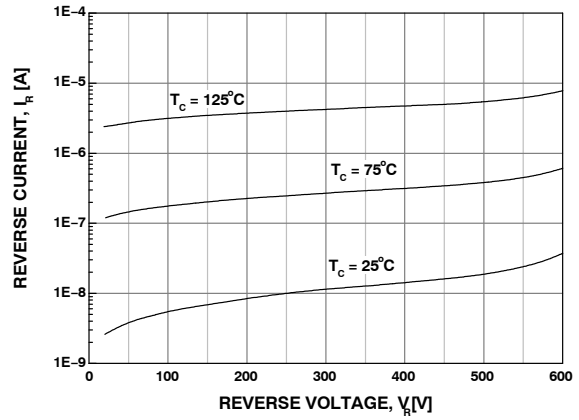


Figure 4. Typical Reverse Current

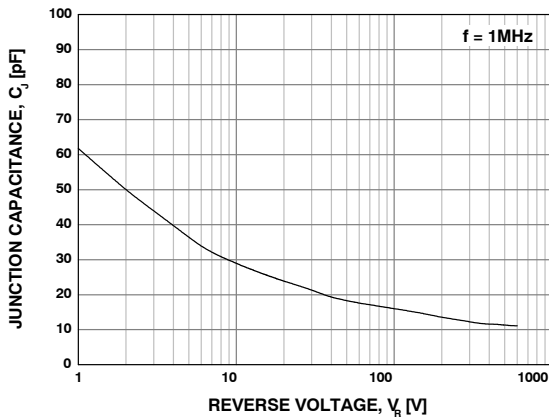


Figure 5. Typical Junction Capacitance

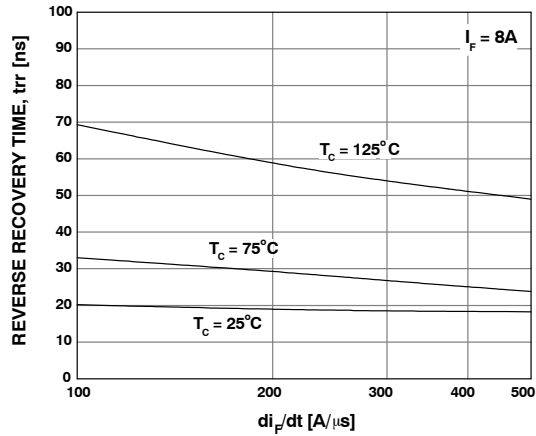


Figure 6. Typical Reverse Recovery Time

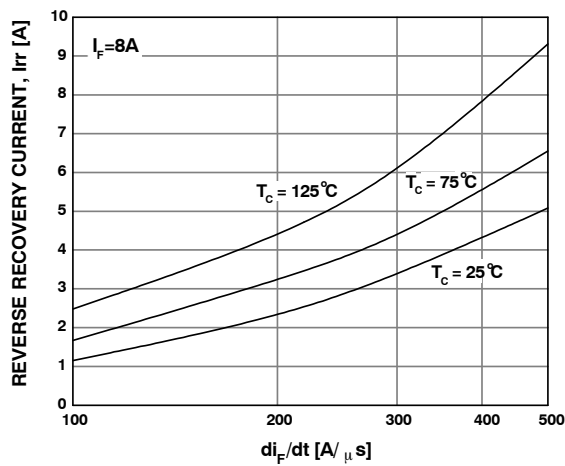


Figure 7. Typical Reverse Recovery Current

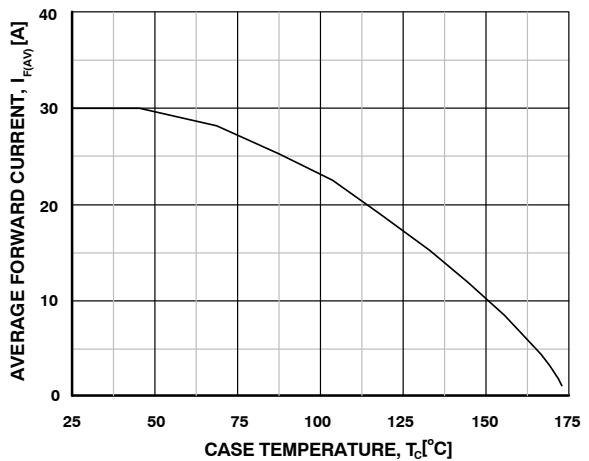


Figure 8. Forward Current Deration Curve

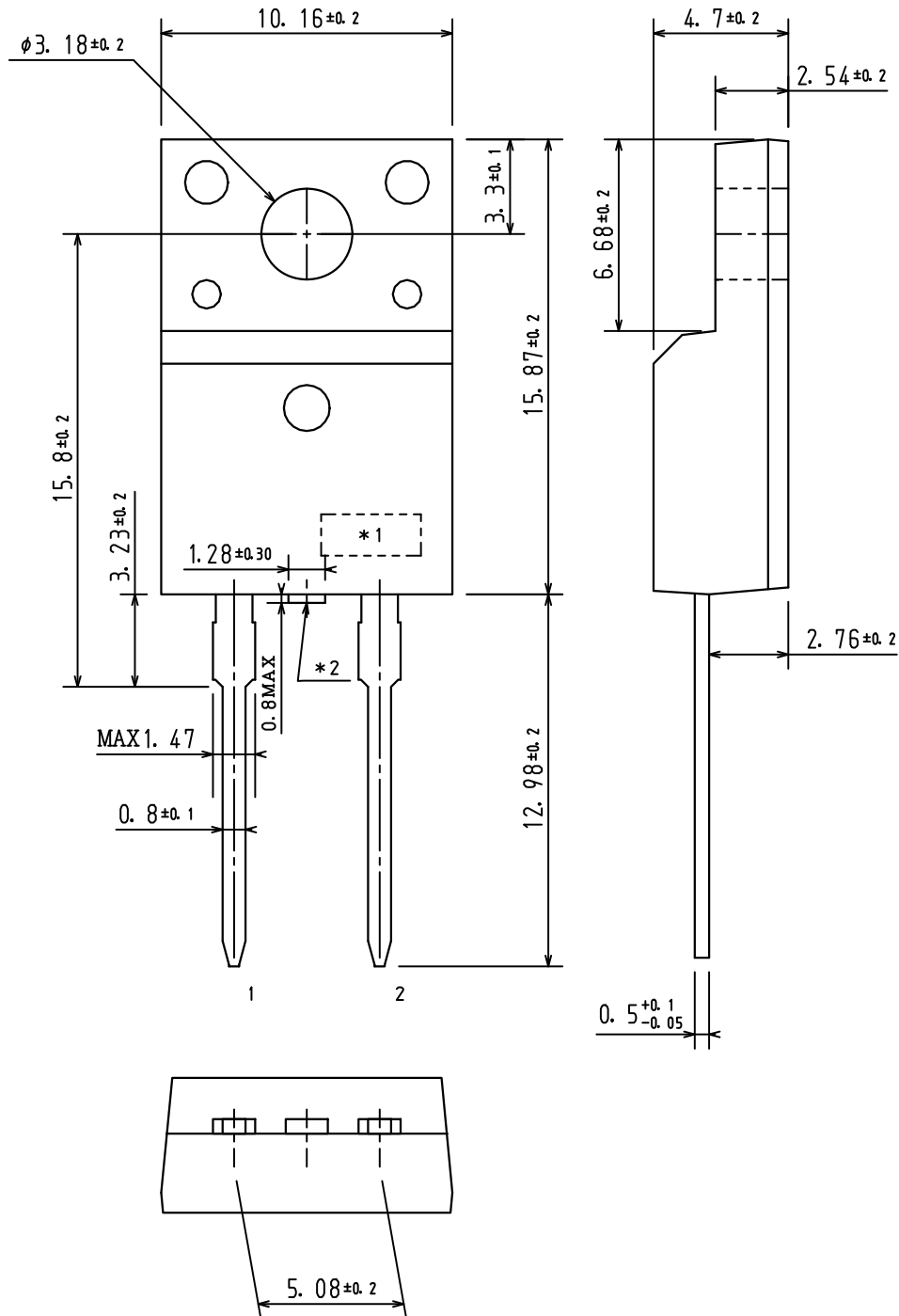
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®



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

DATE 29 FEB 2012



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