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November 2014



FFPF08H60S 8 A, 600 V, Hyperfast II Diode

Features

- Hyperfast Recovery $t_{rr} = 45 \text{ ns}$ (@ $I_F = 8 \text{ A}$)
- Max Forward Voltage, $V_F = 2.6 \text{ V}$ (@ $T_C = 25^\circ\text{C}$)
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

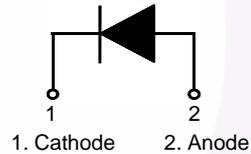
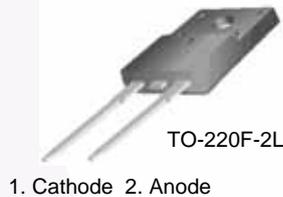
Description

The FFPF08H60S is a hyperfast II diode with soft recovery characteristics. It has the half recovery time of ultrafast diodes and is silicon nitride passivated ionimplanted epitaxial planar construction. These devices are intended to be used as freewheeling/ clamping diodes and diodes in a variety of 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.

Applications

- General Purpose
- Switching Mode Power Supply
- Free-Wheeling Diode for Motor Application
- Power Switching Circuits

Pin Assignments



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Ratings | 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 @ $T_C = 105^\circ\text{C}$ | 8 | A |
| I_{FSM} | Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave | 60 | A |
| T_J, T_{STG} | Operating Junction and Storage Temperature | - 65 to +175 | $^\circ\text{C}$ |

Thermal Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

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

Package Marking and Ordering Information

| Part Number | Top Mark | Package | Packing Method | Reel Size | Tape Width | Quantity |
|--------------|------------|------------|----------------|-----------|------------|----------|
| FFPF08H60STU | FFPF08H60S | TO-220F-2L | Tube | N/A | N/A | 60 |

Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

| Parameter | Conditions | Min. | Typ. | Max | Unit |
|----------------------------|--|--------------------------|------|------|---------------|
| V_F^1 | $I_F = 8\text{ A}$ | | | 2.1 | V |
| | $I_F = 8\text{ A}$ | | | 1.7 | V |
| I_R^1 | $V_R = 600\text{ V}$ | | | 100 | μA |
| | $V_R = 600\text{ V}$ | | | 200 | μA |
| t_{rr} | $I_F = 1\text{ A}$, $di_F/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$ | | | 35 | ns |
| | $I_F = 8\text{ A}$, $di_F/dt = 100\text{ A}/\mu\text{s}$, $V_R = 390\text{ V}$ | | | 45 | ns |
| t_a t_b Q_{rr} | $I_F = 8\text{ A}$, $di_F/dt = 100\text{ A}/\mu\text{s}$, $V_R = 390\text{ V}$ | $T_C = 25^\circ\text{C}$ | | 15 | ns |
| | | $T_C = 25^\circ\text{C}$ | | 16 | ns |
| | | $T_C = 25^\circ\text{C}$ | | 18.6 | nC |
| W_{AVL} | Avalanche Energy (L = 40 mH) | 20 | - | - | mJ |

Notes:

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

Test Circuit and Waveforms

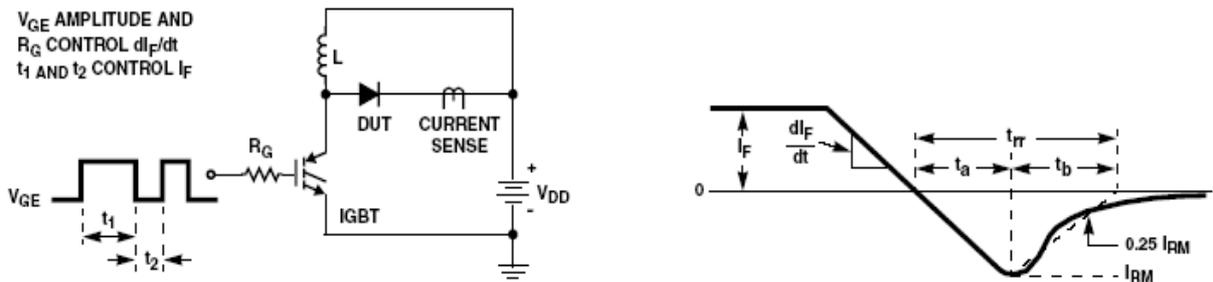


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

L = 40mH
R < 0.1 Ω
 $V_{DD} = 50\text{V}$

$E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q1 = \text{IGBT } (BV_{CEs} > \text{DUT } V_{R(AVL)})$

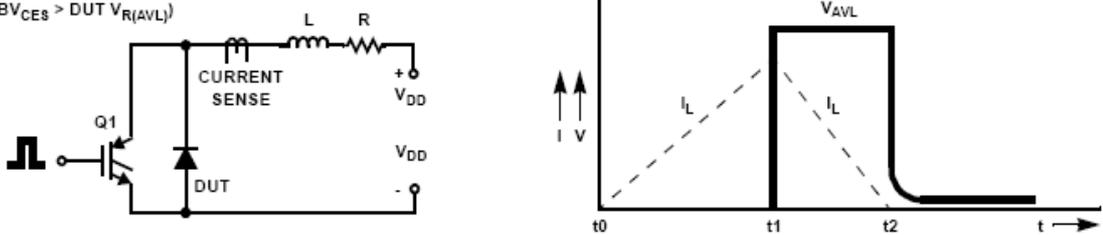


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Typical Performance Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Figure 3. Typical Forward Voltage Drop

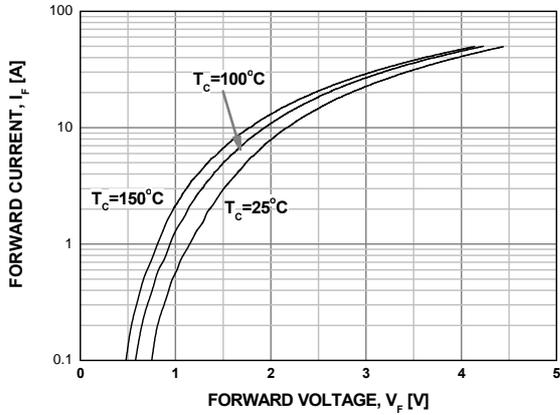


Figure 4. Typical Reverse Current

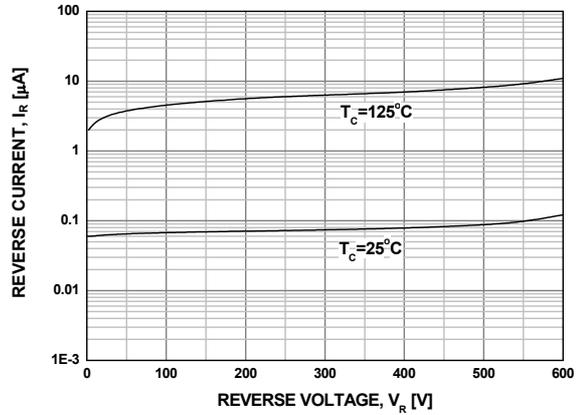


Figure 5. Typical Junction Capacitance

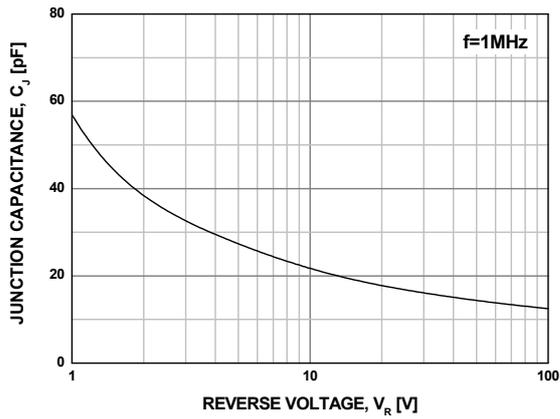


Figure 6. Typical Reverse Recovery Time

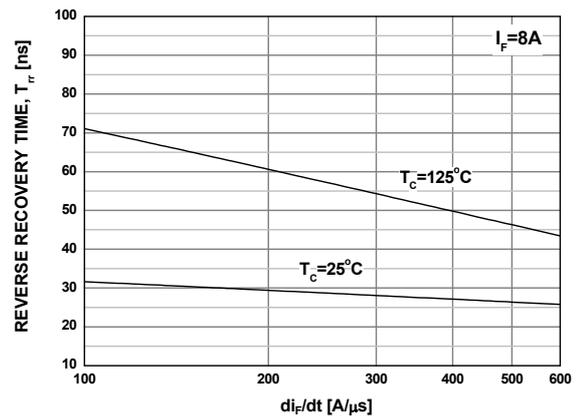


Figure 7. Typical Reverse Recovery Current

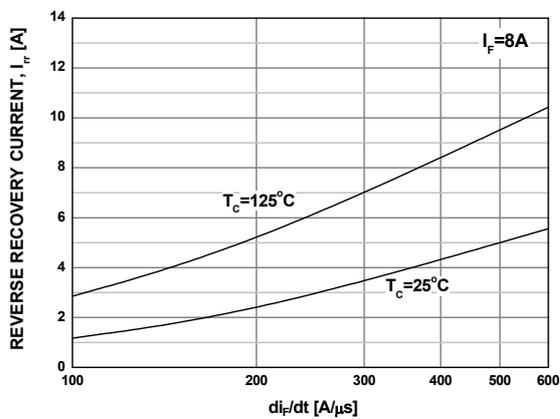
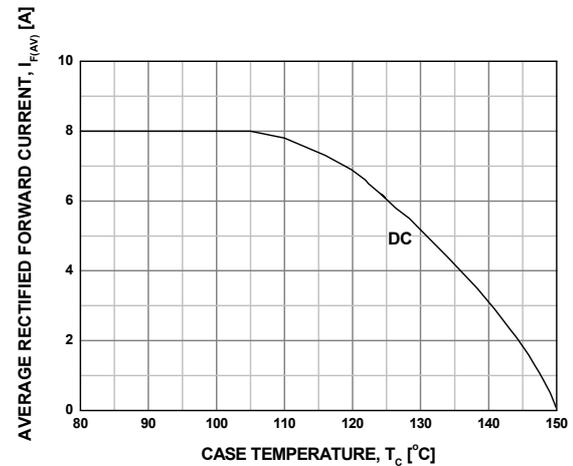


Figure 8. Forward Current Deration Curve



Mechanical Dimensions

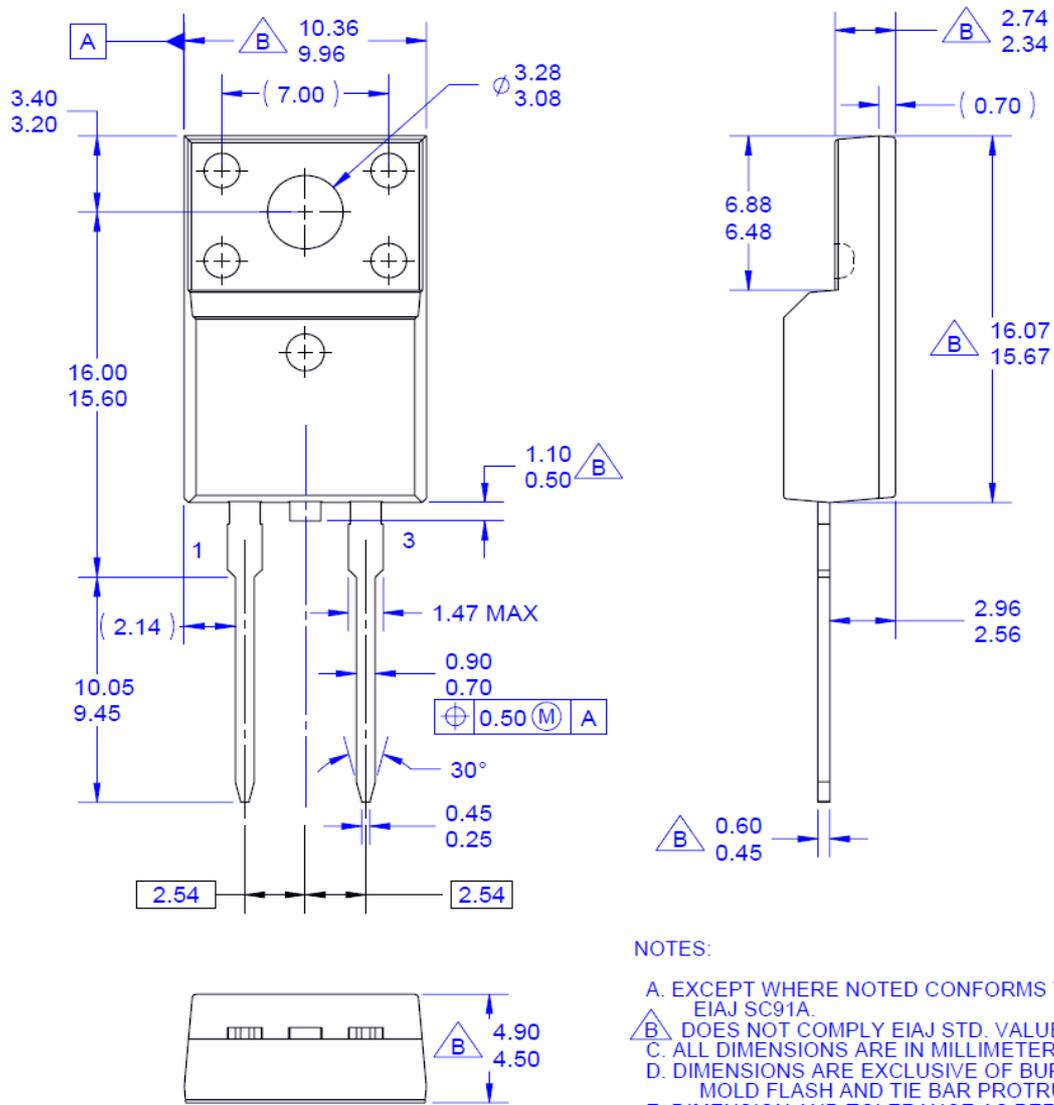


Figure 9. TO-220F 2L - 2LD; TO220; MOLDED; FULL PACK

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