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FFP08S60S

8 A, 600 V, STEALTH™ II Diode

Features

- Stealth Recovery $t_{rr} = 30$ ns (@ $I_F = 8$ A)
- Max Forward Voltage, $V_F = 2.6$ V (@ $T_C = 25^\circ\text{C}$)
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

Applications

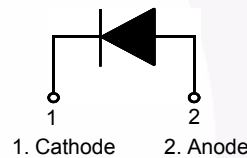
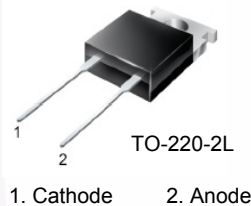
- General Purpose
- SMPS, Power Switching Circuits
- Boost Diode in Continuous Mode Power Factor Corrections

Description

The FFP08S60S is a 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 or 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.

Pin Assignments



Absolute Maximum Ratings

| Symbol | Parameter | Rating | 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 @ $T_C = 115^\circ\text{C}$ | 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 | $^\circ\text{C}$ |

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

| Symbol | Parameter | Max. | Unit |
|-----------------|--|------|--------------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 2.5 | $^\circ\text{C/W}$ |

Package Marking and Ordering Information

| Part Number | Top Mark | Package | Packing Method | Reel Size | Tape Width | Quantity |
|-------------|----------|-----------|----------------|-----------|------------|----------|
| FFP08S60STU | F08S60S | TO-220-2L | Tube | N/A | N/A | 50 |

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

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

Notes:

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

Test Circuit and Waveforms

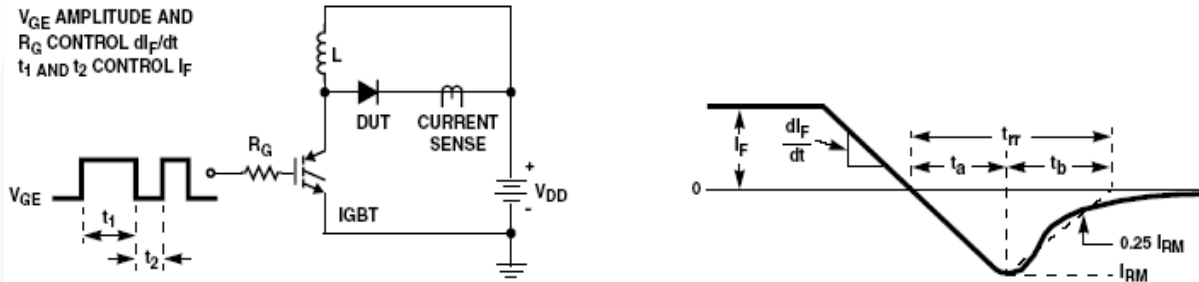


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

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

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

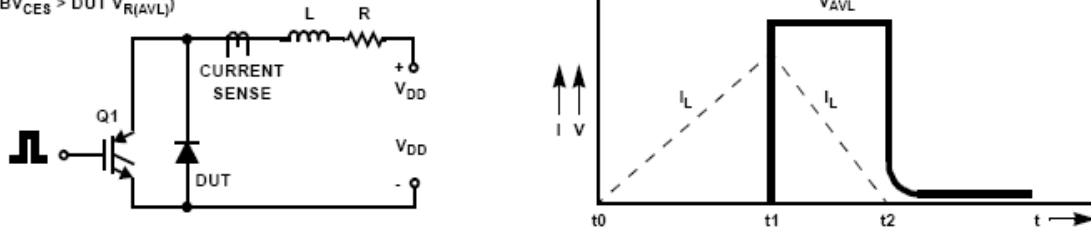


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

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

Figure 3. Typical Forward Voltage Drop

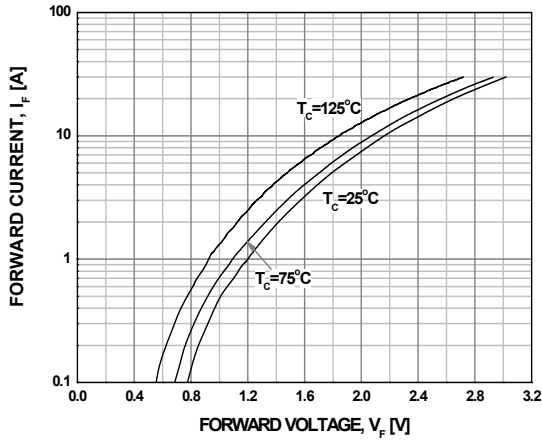


Figure 4. Typical Reverse Current

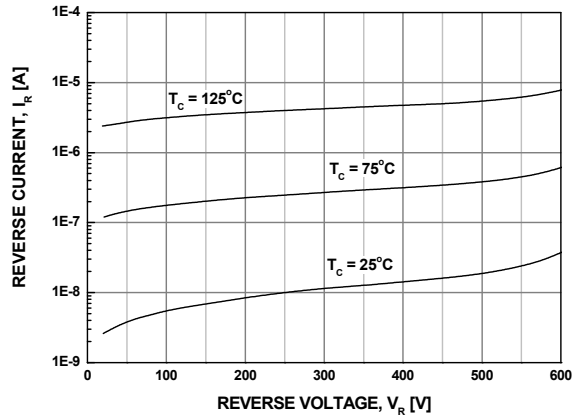


Figure 5. Typical Junction Capacitance

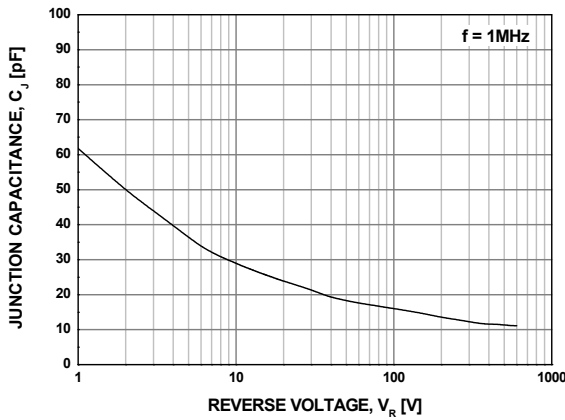


Figure 6. Typical Reverse Recovery Time

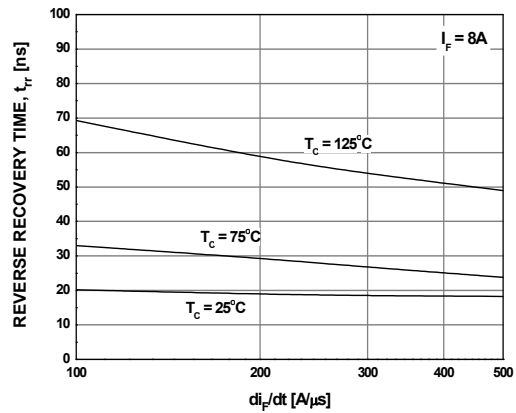


Figure 7. Typical Reverse Recovery Current

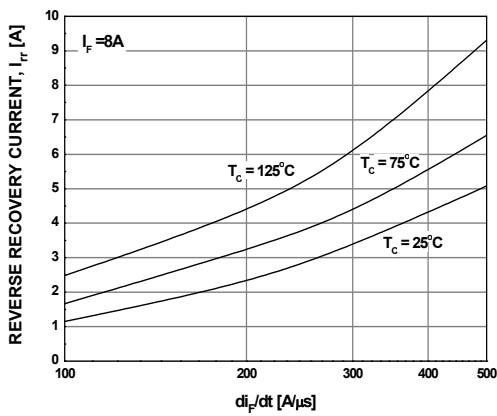
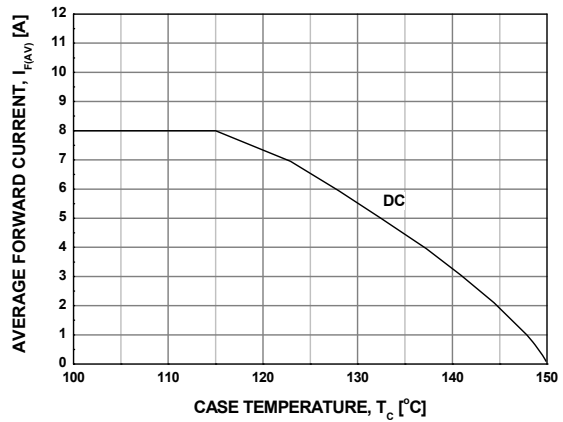


Figure 8. Forward Current Deration Curve



Mechanical Dimensions

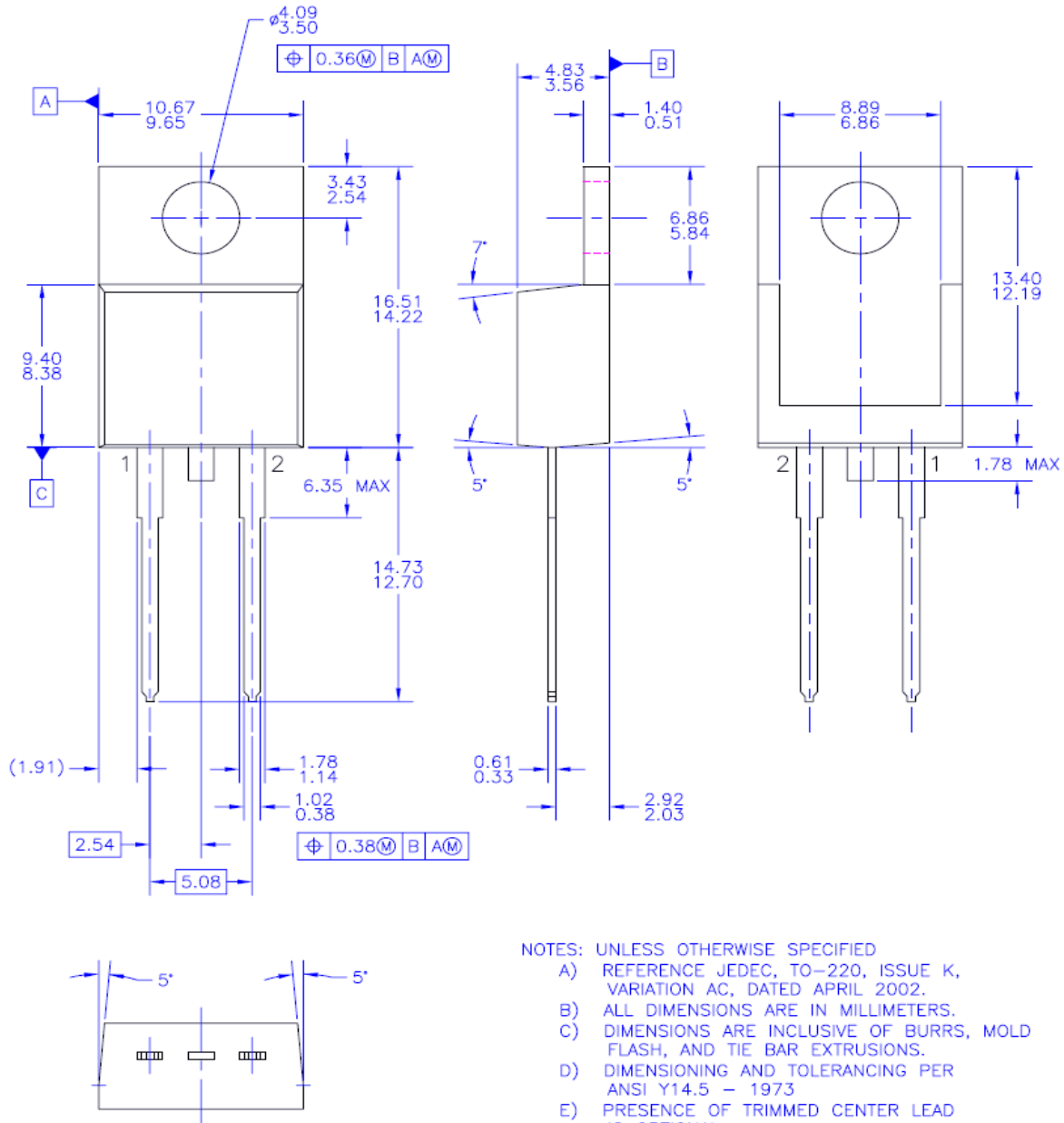


Figure 9. TO-220 2L - 2LD, TO220, JEDEC TO-220 VARIATION AC

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