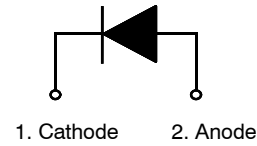


15 A, 600 V, STEALTH™ II Diode

FFPF15S60S



Description

The FFPF15S60S 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 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.

Features

- Stealth Recovery $T_{rr} = 35$ ns (@ $I_F = 15$ A)
- Max Forward Voltage, $V_F = 2.6$ V (@ $T_C = 25^\circ\text{C}$)
- 600 V Reverse Voltage and High Reliability
- Improved dv/dt Capability
- This Device is Pb-Free and is RoHS Compliant

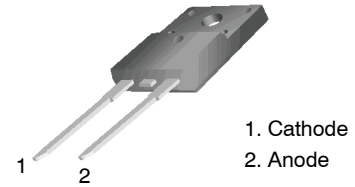
Applications

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

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

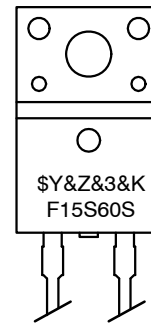
| Symbol | Parameter | Value | Unit |
|----------------|---|--------------|------------------|
| V_{RRM} | Peak Repetitive Reverse Voltage | 600 | V |
| V_{RWM} | Working Peak Reverse Voltage | 600 | V |
| V_R | DC Blocking Voltage | 600 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current @ $T_C = 52^\circ\text{C}$ | 15 | A |
| I_{FSM} | Non-repetitive Peak Surge Current 60 Hz Single Half-Sine Wave | 150 | A |
| T_J, T_{STG} | Operating and Storage Temperature Range | - 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.



TO-220F-2L
CASE 221AS

MARKING DIAGRAM



- \$Y = onsemi Logo
- &Z&3 = Date Code (Year & Week)
- &K = Lot
- F15S60S = Specific Device Code

ORDERING INFORMATION

| Device | Package | Shipping |
|--------------|------------|-----------|
| FFPF15S60STU | TO-220F-2L | 50 / Tube |

FFPF15S60S

THERMAL CHARACTERISTICS

| Symbol | Parameter | Value | Unit |
|-----------------|--|-------|---------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 4.6 | $^{\circ}C/W$ |

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}C$ unless otherwise noted)

| Symbol | Parameter | Min. | Typ. | Max | Unit | |
|--|--|----------------------|------|-----|------|---------|
| V_{FM} (Note 1) | $I_F = 15 A$ | $T_C = 25^{\circ}C$ | - | 2.1 | 2.6 | V |
| | $I_F = 15 A$ | $T_C = 125^{\circ}C$ | - | 1.6 | - | |
| I_{RM} (Note 1) | $V_R = 600 V$ | $T_C = 25^{\circ}C$ | - | - | 100 | μA |
| | $V_R = 600 V$ | $T_C = 125^{\circ}C$ | - | - | 500 | |
| t_{rr} | $I_F = 1 A, di_F/dt = 100 A/\mu s, V_R = 30 V$ | $T_C = 25^{\circ}C$ | - | 21 | 30 | ns |
| t_{rr} I_{rr} S factor Q_{rr} | $I_F = 15 A, di_F/dt = 200 A/\mu s, V_R = 390 V$ | $T_C = 25^{\circ}C$ | - | 23 | 35 | ns |
| | | | - | 2.5 | - | A |
| | | | - | 0.7 | - | |
| | | | - | 29 | - | nC |
| t_{rr} I_{rr} S factor Q_{rr} | $I_F = 15 A, di_F/dt = 200 A/\mu s, V_R = 390 V$ | $T_C = 125^{\circ}C$ | - | 55 | - | ns |
| | | | - | 4.3 | - | A |
| | | | - | 1.1 | - | |
| | | | - | 118 | - | nC |
| W_{AVL} | Avalanche Energy ($L = 40 mH$) | 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 μs , Duty Cycle = 2%

TEST CIRCUIT AND WAVEFORMS

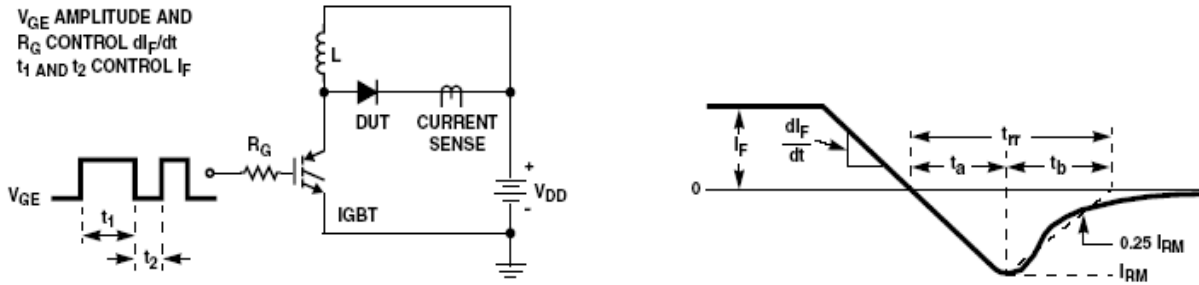


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

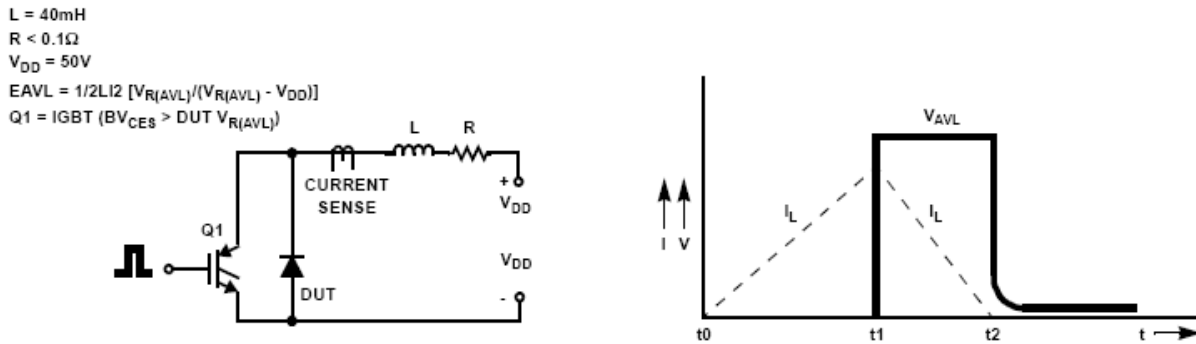


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

TYPICAL PERFORMANCE CHARACTERISTICS

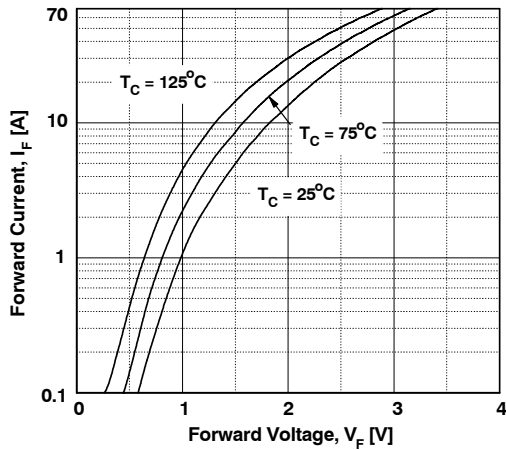


Figure 3. Typical Forward Voltage Drop vs. Forward Current

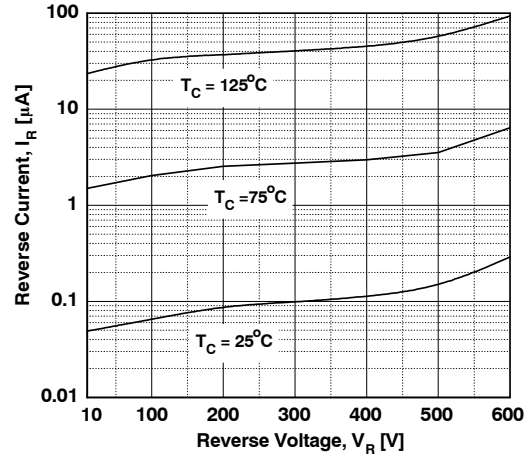


Figure 4. Typical Reverse Current vs. Reverse Voltage

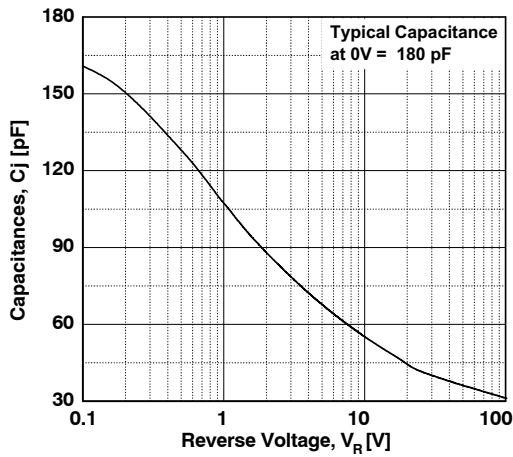


Figure 5. Typical Junction Capacitance

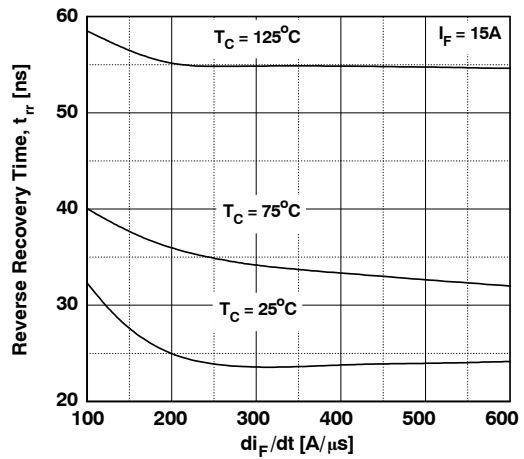


Figure 6. Typical Reverse Recovery Time vs. di/dt

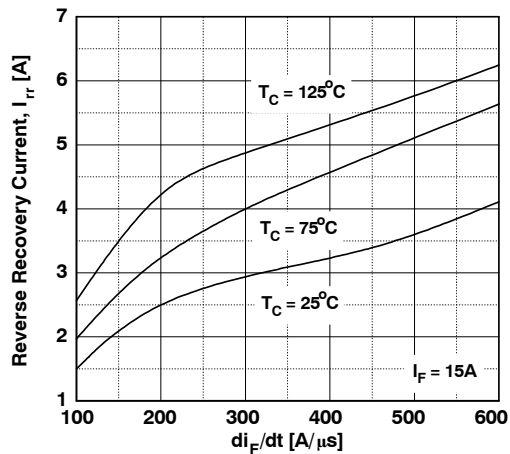


Figure 7. Typical Reverse Recovery Current vs. di/dt

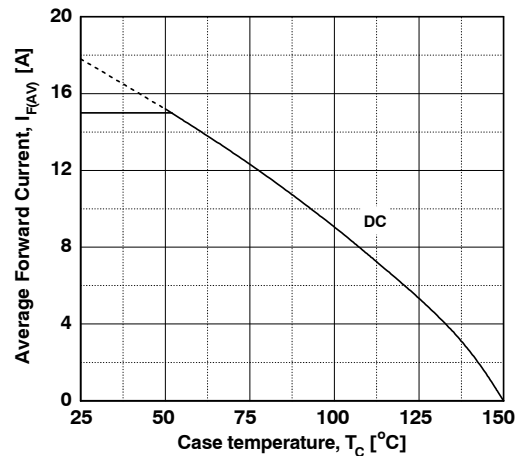


Figure 8. Forward Current Derating Curve

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