



FFH30S60S

Stealth 2 Rectifier

Features

- High Speed Switching, $t_{rr} < 40\text{ns}$ @ $I_F = 30\text{A}$
- High Reverse Voltage and High Reliability
- RoHS compliant

Applications

- General Purpose
- Switching Mode Power Supply
- Boost Diode in continuous mode power factor corrections
- Power switching circuits

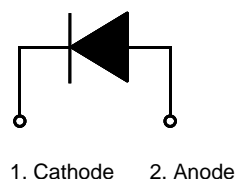
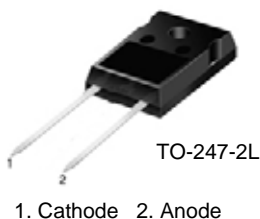
30A, 600V Stealth 2 Rectifier

The FFH30S60S is stealth2 rectifier 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.



Pin Assignments



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

| Symbol | Parameter | Ratings | Units |
|----------------|---|-------------|------------------|
| 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 @ $T_C = 102^\circ\text{C}$ | 30 | A |
| I_{FSM} | Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave | 300 | A |
| T_J, T_{STG} | Operating and Storage Temperature Range | -65 to +150 | $^\circ\text{C}$ |

Thermal Characteristics

| Symbol | Parameter | Ratings | Units |
|-----------------|--|---------|--------------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 1.1 | $^\circ\text{C/W}$ |

Package Marking and Ordering Information

| Device Marking | Device | Package | Reel Size | Tape Width | Quantity |
|----------------|-------------|-----------|-----------|------------|----------|
| F30S60S | FFH30S60STU | TO-247-2L | - | - | 50 |

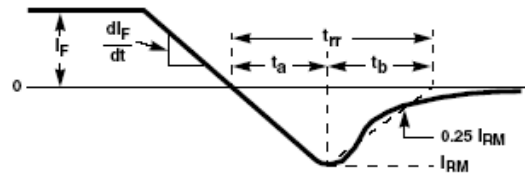
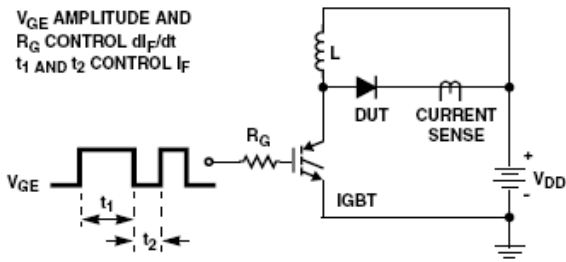
Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Min. | Typ. | Max. | Units |
|--|--|------------------|-------------------------|-------------------|--------------------|
| V_{FM1} | $I_F = 30\text{A}$ $I_F = 30\text{A}$ | - | 2.1 1.6 | 2.6 - | V |
| I_{RM1} | $V_R = 600\text{V}$ $V_R = 600\text{V}$ | - | - | 100 500 | μA |
| t_{rr} | $I_F = 1\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$, $V_R = 30\text{V}$ | - | 25 | 35 | ns |
| t_{rr} I_{rr} S factor Q_{rr} | $I_F = 30\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$, $V_R = 390\text{V}$ | - - - - | 28 2.4 0.9 34 | 40 - - - | ns A - nC |
| t_{rr} I_{rr} S factor Q_{rr} | $I_F = 30\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$, $V_R = 390\text{V}$ | - - - - | 75 6.3 0.9 236 | - - - - | ns A - nC |
| W_{AVL} | Avalanche Energy ($L = 40\text{mH}$) | 20 | - | - | mJ |

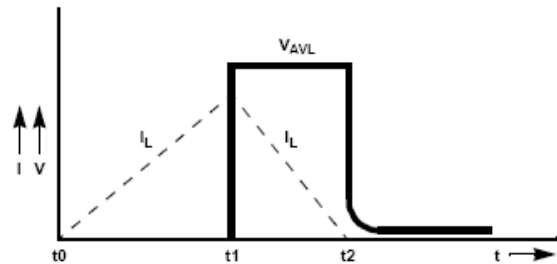
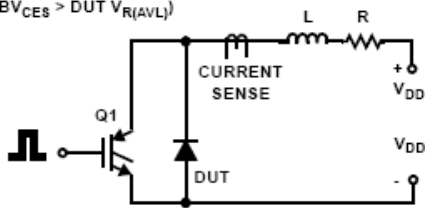
Notes:

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

Test Circuit and Waveforms



$L = 40\text{mH}$
 $R < 0.1\Omega$
 $V_{DD} = 50\text{V}$
 $E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q1 = \text{IGBT } (BV_{CES} > \text{DUT } V_{R(AVL)})$



Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop vs. Forward Current

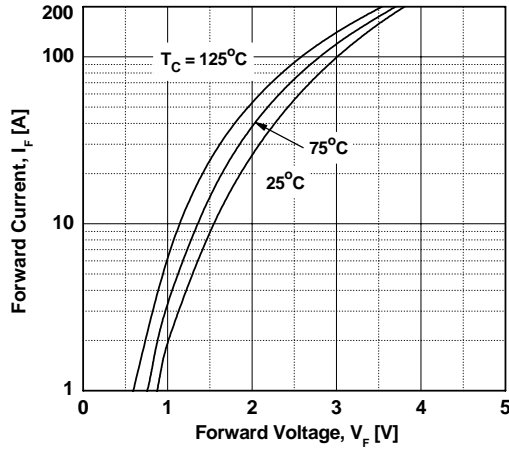


Figure 2. Typical Reverse Current vs. Reverse Voltage

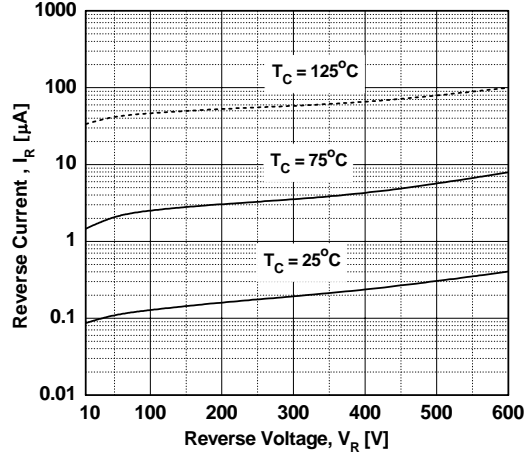


Figure 3. Typical Junction Capacitance

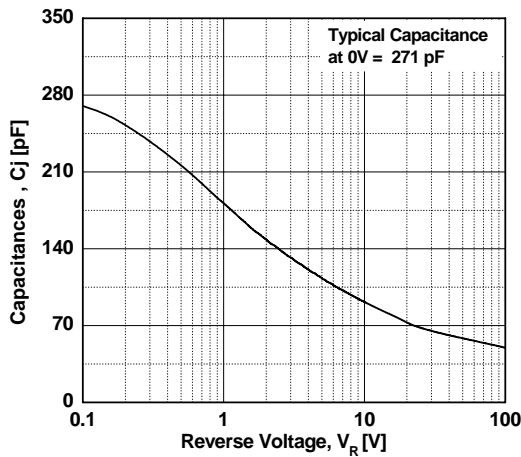


Figure 4. Typical Reverse Recovery Time vs. di/dt

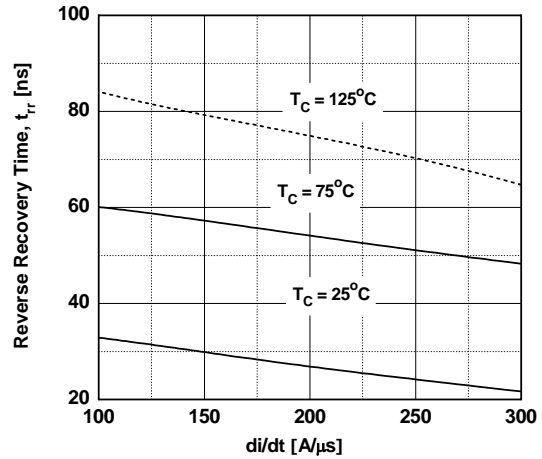


Figure 5. Typical Reverse Recovery Current vs. di/dt

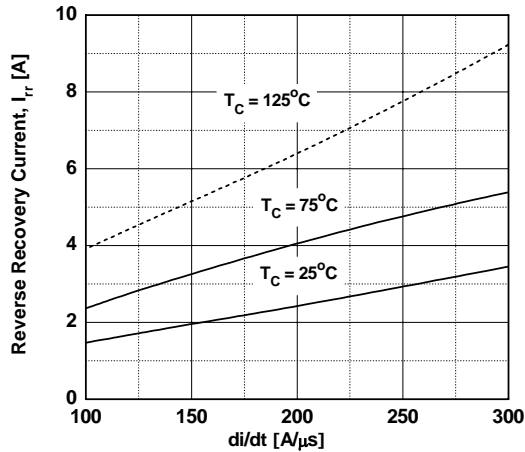
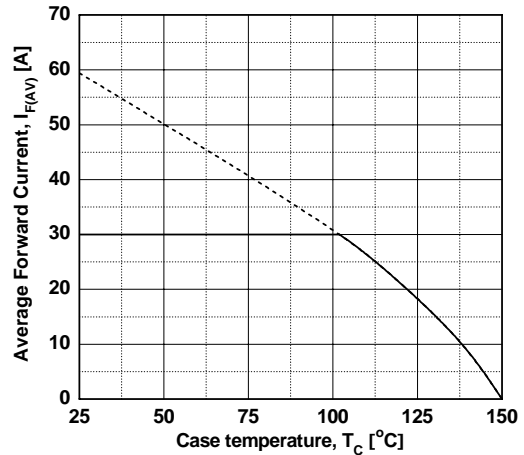



Figure 6. Forward Current Derating Curve





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