

**FFPF15S60S**

**Features**

- High Speed Switching,  $t_{rr} < 35ns$  @  $I_F = 15A$
- High Reverse Voltage and High Reliability

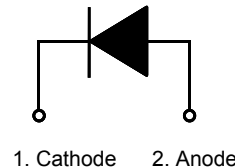
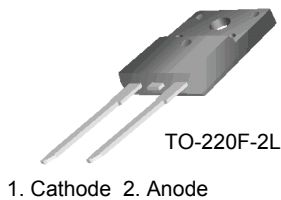
**Applications**

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

**15A, 600V STEALTH™ II Rectifier**

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 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.



**Absolute Maximum Ratings**  $T_C = 25^\circ C$  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 @ $T_C = 52^\circ C$	15	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	150	A
$T_J, T_{STG}$	Operating and Storage Temperature Range	-65 to +150	$^\circ C$

**Thermal Characteristics**

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	4.6	$^\circ C/W$

**Package Marking and Ordering Information**

Device Marking	Device	Package	Eco Status	Packing	Quantity
F15S60S	FFPF15S60STU	TO-220F-2L	Green/RoHS	Tube	50

For Fairchild's definition of "green" Eco Status, please visit: [http://www.fairchildsemi.com/company/green/rohs\\_green.html](http://www.fairchildsemi.com/company/green/rohs_green.html)

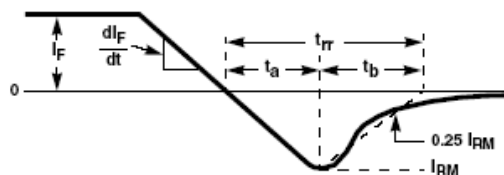
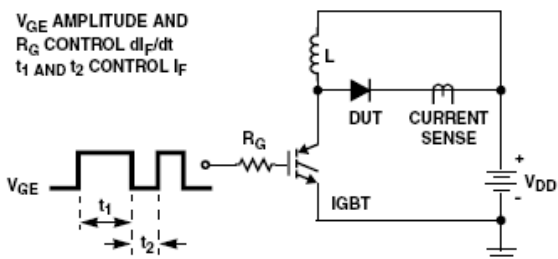
### Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Units
$V_{FM1}$	$I_F = 15\text{A}$ $I_F = 15\text{A}$	-	2.1 1.6	2.6 -	V
$I_{RM1}$	$V_R = 600\text{V}$ $V_R = 600\text{V}$	-	-	100 500	$\mu\text{A}$
$t_{rr}$	$I_F = 1\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$ , $V_R = 30\text{V}$	-	21	30	ns
$t_{rr}$ $I_{rr}$ S factor $Q_{rr}$	$I_F = 15\text{A}$ , $di/dt = 200\text{A}/\mu\text{s}$ , $V_R = 390\text{V}$	-	23 2.5 0.7 29	35 - - -	ns A - nC
$t_{rr}$ $I_{rr}$ S factor $Q_{rr}$	$I_F = 15\text{A}$ , $di/dt = 200\text{A}/\mu\text{s}$ , $V_R = 390\text{V}$	-	55 4.3 1.1 118	- - - -	ns A - nC
$W_{AVL}$	Avalanche Energy ( $L = 40\text{mH}$ )	20	-	-	mJ

**Notes:**

1: Pulse: Test Pulse width = 300 $\mu\text{s}$ , Duty Cycle = 2%

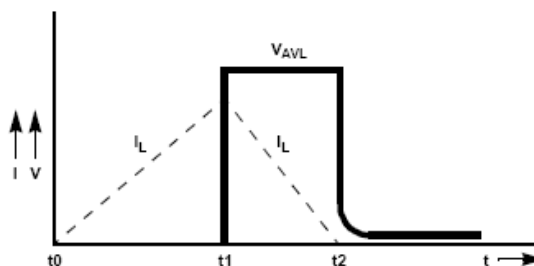
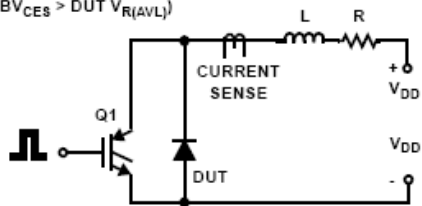
### Test Circuit and Waveforms



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

$$E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$$

$$Q1 = \text{IGBT } (BV_{CES} > \text{DUT } V_{R(AVL)})$$



### Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop vs. Forward Current

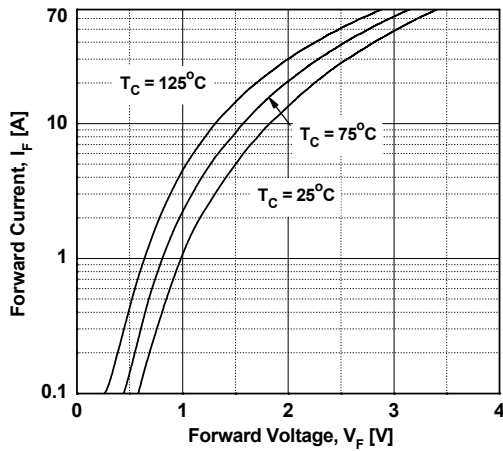


Figure 2. Typical Reverse Current vs. Reverse Voltage

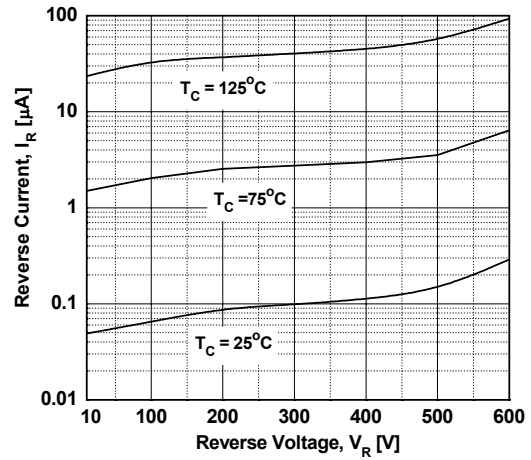


Figure 3. Typical Junction Capacitance

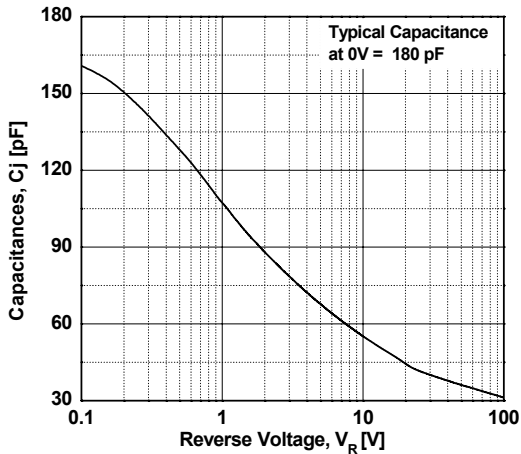


Figure 4. Typical Reverse Recovery Time vs. di/dt

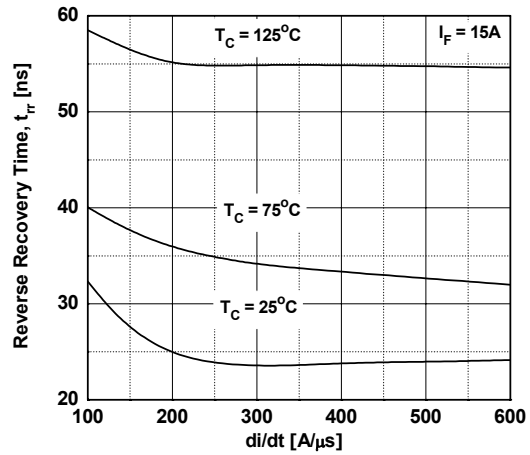


Figure 5. Typical Reverse Recovery Current vs. di/dt

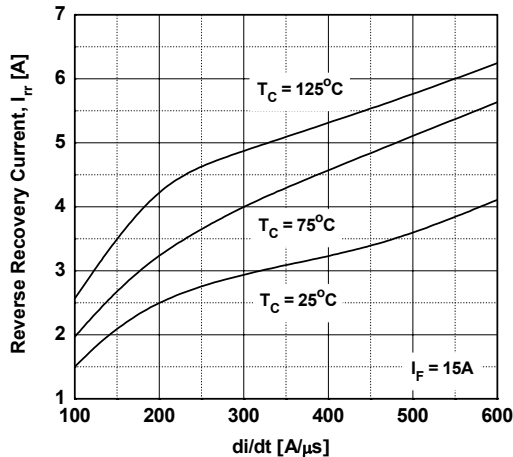
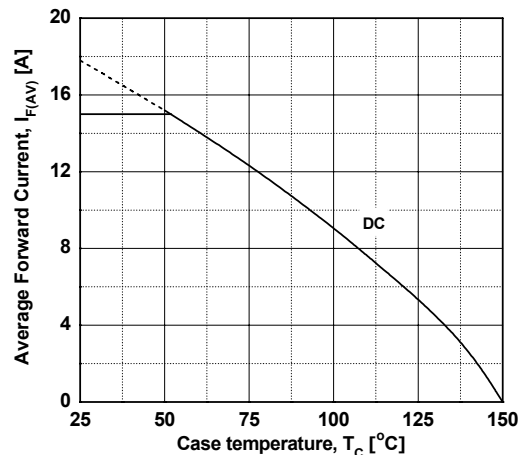


Figure 6. Forward Current Derating Curve












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