



# FFP30S60S

## Features

- Stealth Recovery  $t_r = 40$  ns (@  $I_F = 30$  A)
- Max Forward Voltage,  $V_F = 2.6$  V (@  $T_C = 25^\circ\text{C}$ )
- 600V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

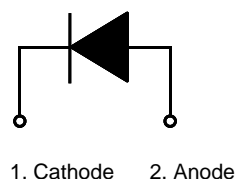
## 30 A, 600 V, STEALTH™ II Diode

The FFP30S60S 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 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.

## Applications

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

## Pin Assignments



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

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 @ $T_C = 103^\circ\text{C}$	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	Rating	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	FFP30S60STU	TO-220-2L	-	-	50

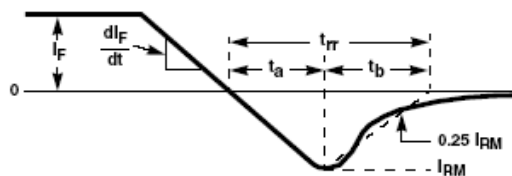
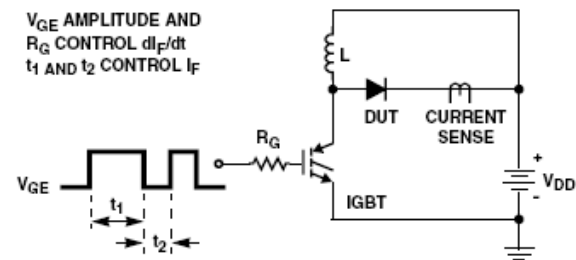
**Electrical Characteristics**  $T_C = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{F1}$	$I_F = 30\text{ A}$ $I_F = 30\text{ A}$	-	2.1	2.6	V
$I_{R1}$	$V_R = 600\text{ V}$ $V_R = 600\text{ V}$	-	-	100 500	$\mu\text{A}$
$t_{rr}$	$I_F = 1\text{ A}$ , $di/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$	-	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:**

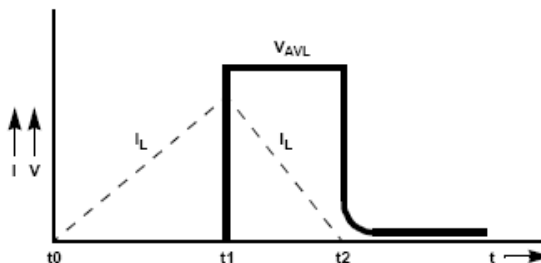
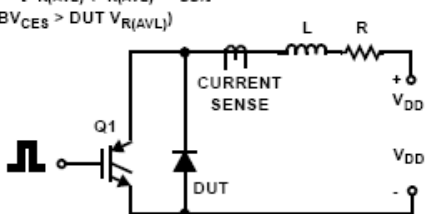
1: Pulse: Test Pulse width = 300  $\mu\text{s}$ , Duty Cycle = 2%

**Test Circuit and Waveforms**



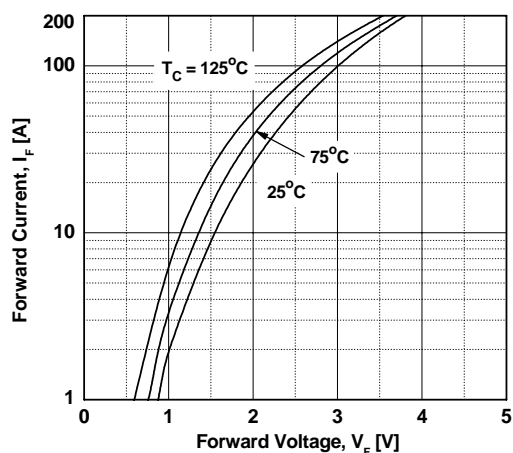
$L = 40\text{mH}$   
 $R < 0.1\Omega$   
 $V_{DD} = 50\text{V}$

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

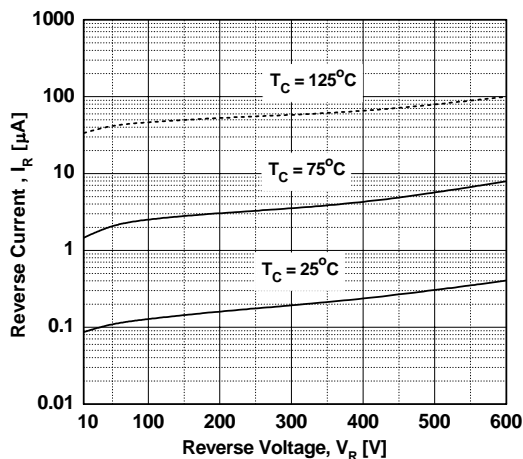


## Typical Performance Characteristics

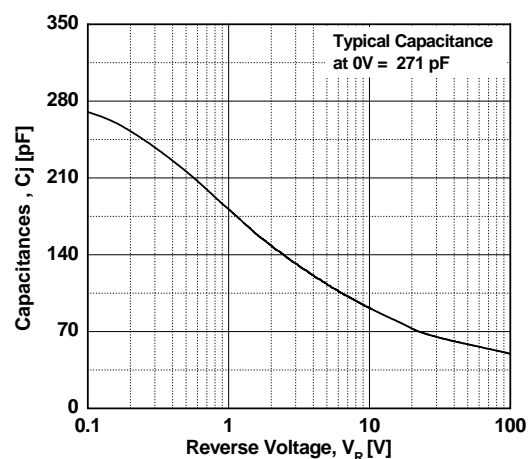
**Figure 1. Typical Forward Voltage Drop vs. Forward Current**



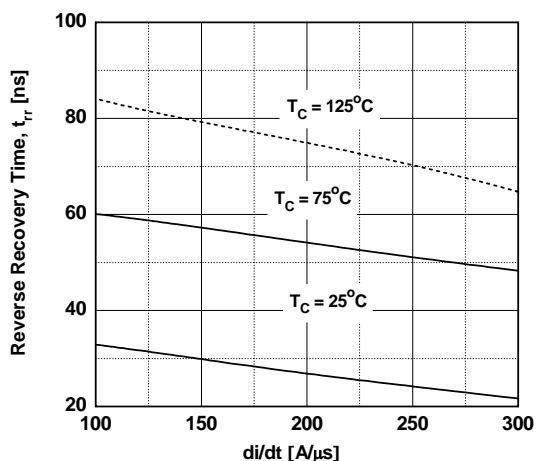
**Figure 2. Typical Reverse Current vs. Reverse Voltage**



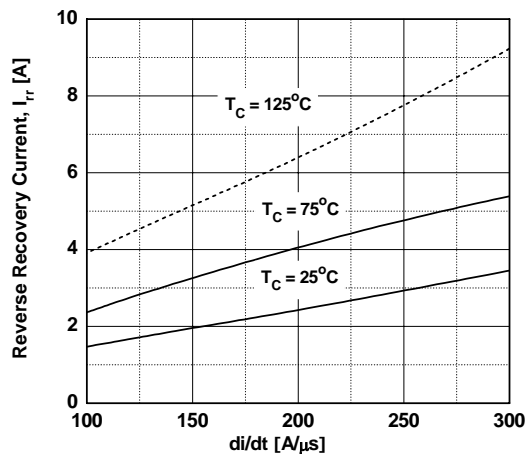
**Figure 3. Typical Junction Capacitance**



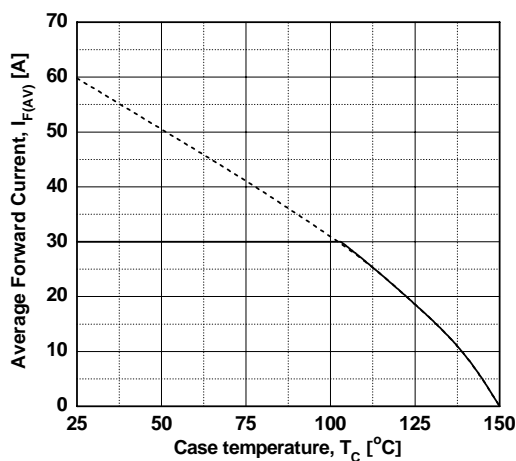
**Figure 4. Typical Reverse Recovery Time vs. di/dt**



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

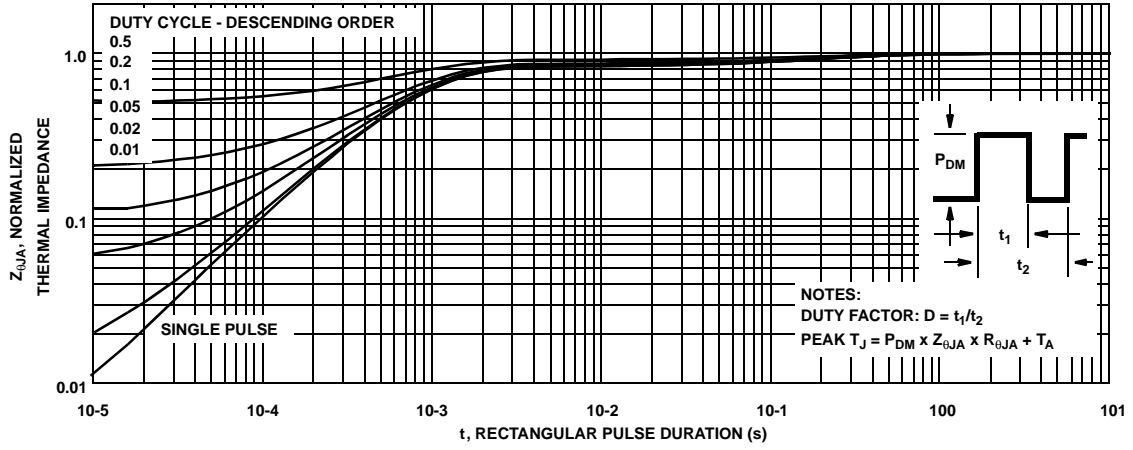


**Figure 6. Forward Current Derating Curve**



Typical Performance Characteristics

Figure 7. Normalized Maximum Transient Thermal Impedance







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