

# ON Semiconductor

## Is Now

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October 2018

# FFP08H60S 8 A, 600 V, Hyperfast II Diode



FFP08H60S — Hyperfast II Diode

## Features

- Hyperfast Recovery  $t_{rr} = 45 \text{ ns}$  (@  $I_F = 8 \text{ A}$ )
- Max Forward Voltage,  $V_F = 2.6 \text{ V}$  (@  $T_C = 25^\circ\text{C}$ )
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

## Description

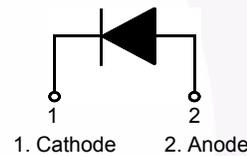
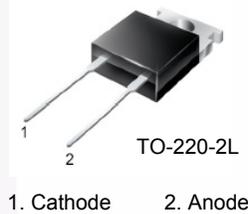
The FFP08H60S is a hyperfast II diode and silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as freewheeling/clamping diodes in a variety of switching power supplies and other power switching applications. Its 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
- SMPS, Power Switching Circuits
- Free-Wheeling Diode for Motor Application

## Pin Assignments



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

Symbol	Parameter	Ratings	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 @ $T_C = 105^\circ\text{C}$	8	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	60	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	$^\circ\text{C}/\text{W}$

## Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFP08H60STU	F08H60S	TO-220-2L	Tube	N/A	N/A	50

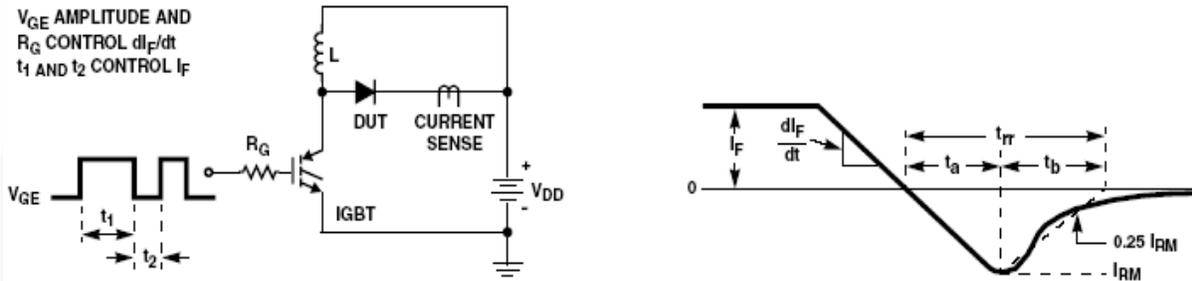
**Electrical Characteristics**  $T_C = 25^\circ\text{C}$  unless otherwise noted

Parameter	Conditions		Min.	Typ.	Max.	Unit
$V_F^1$	$I_F = 8\text{ A}$	$T_C = 25^\circ\text{C}$	-	-	2.1	V
	$I_F = 8\text{ A}$	$T_C = 125^\circ\text{C}$	-	-	1.7	V
$I_R^1$	$V_R = 600\text{ V}$	$T_C = 25^\circ\text{C}$	-	-	100	$\mu\text{A}$
	$V_R = 600\text{ V}$	$T_C = 125^\circ\text{C}$	-	-	200	$\mu\text{A}$
$t_{rr}$	$I_F = 1\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}$	$T_C = 25^\circ\text{C}$	-	-	35	ns
	$I_F = 8\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}, V_R = 390\text{ V}$	$T_C = 25^\circ\text{C}$	-	-	45	ns
$t_a$	$I_F = 8\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}, V_R = 390\text{ V}$	$T_C = 25^\circ\text{C}$	-	15	-	ns
$t_b$		$T_C = 25^\circ\text{C}$	-	16	-	ns
$Q_{rr}$		$T_C = 25^\circ\text{C}$	-	18.6	-	nC
$W_{AVL}$	Avalanche Energy ( $L = 40\text{ mH}$ )		20	-	-	mJ

**Notes:**

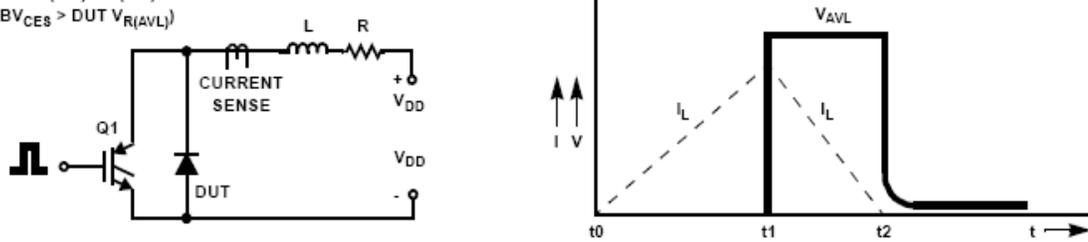
1. Pulse : Test Pulse width =  $300\mu\text{s}$ , Duty Cycle = 2%

**Test Circuit and Waveforms**



**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

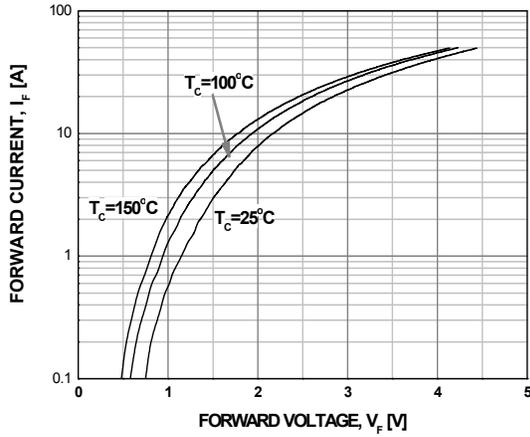


Figure 4. Typical Reverse Current

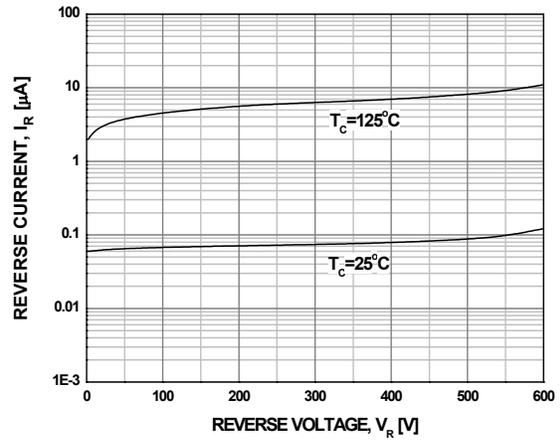


Figure 5. Typical Junction Capacitance

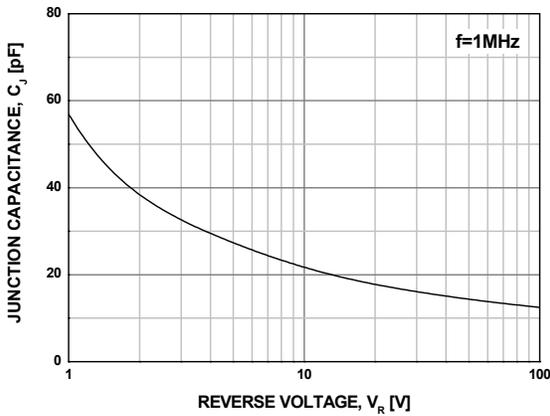


Figure 6. Typical Reverse Recovery Time

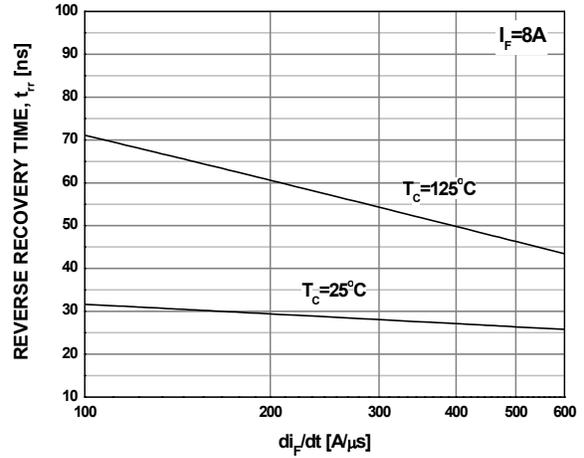


Figure 7. Typical Reverse Recovery Current

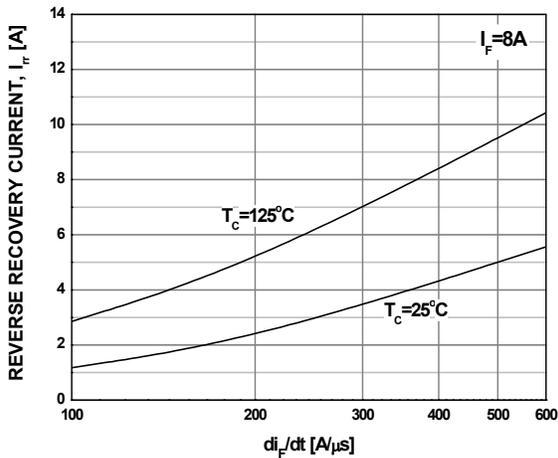
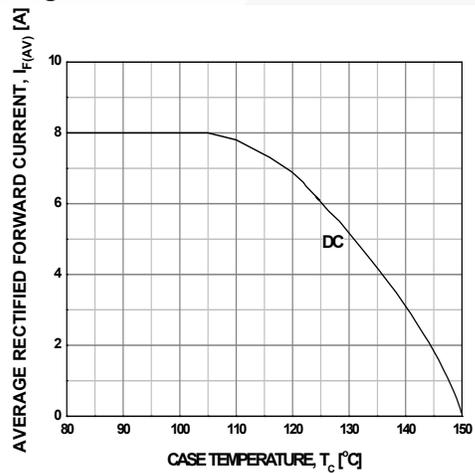


Figure 8. Forward Current Deration Curve



## Mechanical Dimensions

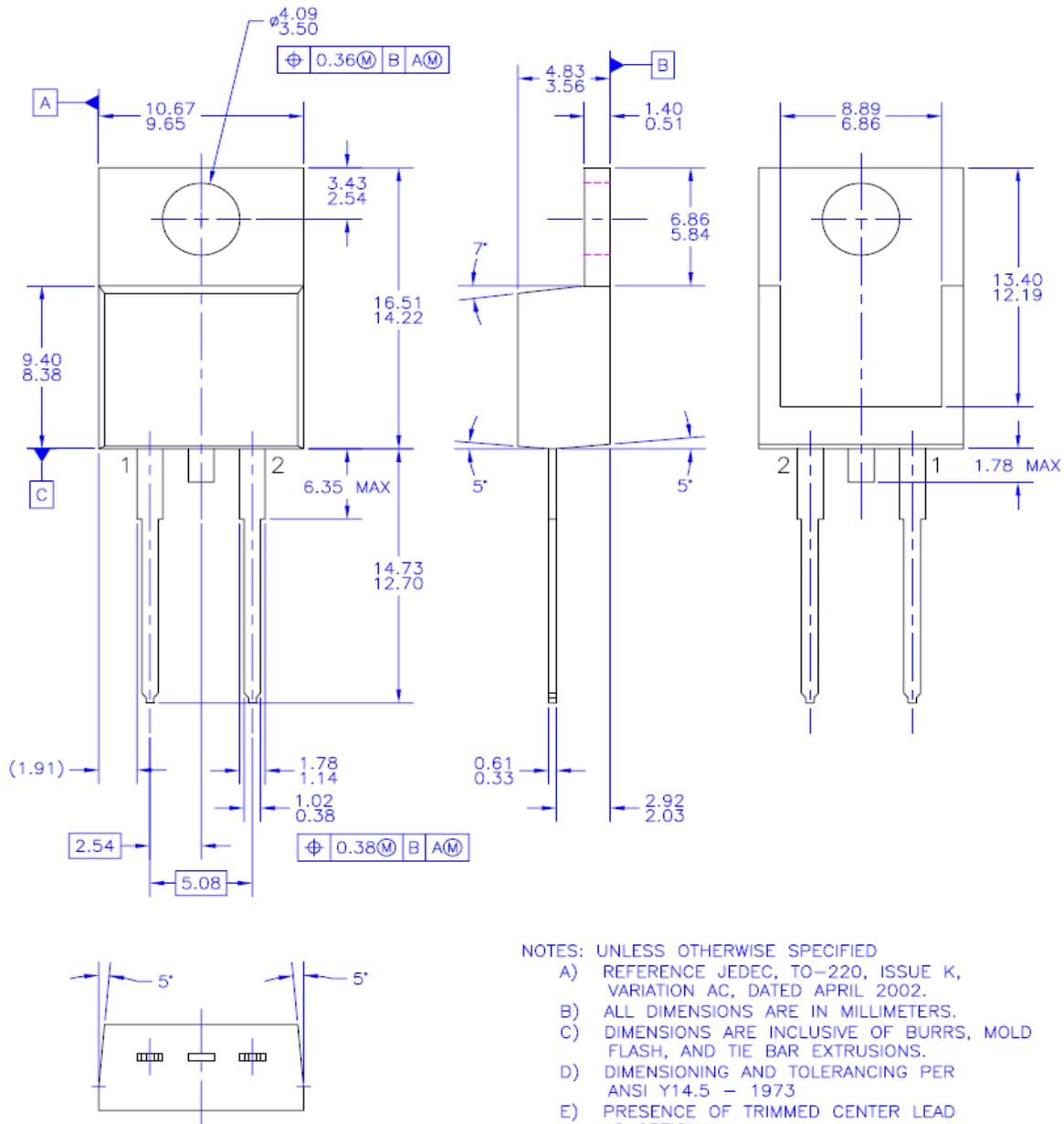


Figure 9. TO-220 2L - 2LD, TO220, JEDEC TO-220 VARIATION AC

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