

# FFH75H60S

## 75 A, 600 V, Hyperfast Diode

### Features

- Hyperfast Recovery  $t_{rr} = 75$  ns (@  $I_F = 75$  A)
- Max Forward Voltage,  $V_F = 1.8$  V (@  $T_C = 25^\circ\text{C}$ )
- 600V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

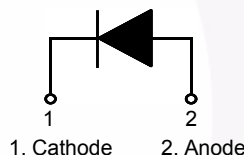
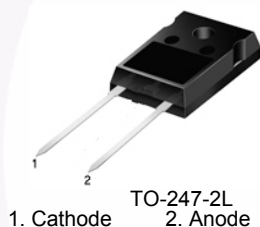
### Applications

- General Purpose
- SMPS, Solar Inverter, UPS
- Power Switching Circuits
- Solar Inverter, UPS

### Description

The FFH75H60S is a hyperfast diode with soft recovery characteristics. It has the half recovery time of ultrafast diodes and is silicon nitride passivated ionimplanted epitaxial planar construction. These devices are intended to be used as freewheeling/clamping diodes and diodes in a variety of 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	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 @ $T_C = 105^\circ\text{C}$	75	A
$I_{FSM}$	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	750	A
$T_J, T_{STG}$	Operating Junction and Storage Temperature	- 65 to +175	$^\circ\text{C}$

### Thermal Characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	0.4	$^\circ\text{C/W}$

## Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFH75H60S	FFH75H60S	TO-247-2L	Tube	N/A	N/A	30

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

Parameter	Conditions		Min.	Typ.	Max	Unit
$V_F^1$	$I_F = 75\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	-	1.8	2.2	V
	$I_F = 75\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$	-	1.6	2.0	V
$I_R^1$	$V_R = 600\text{ V}$	$T_C = 25\text{ }^{\circ}\text{C}$	-	-	100	$\mu\text{A}$
	$V_R = 600\text{ V}$	$T_C = 125\text{ }^{\circ}\text{C}$	-	-	1.0	mA
$t_{rr}$	$I_F = 75\text{ A}$ , $di_F/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 390\text{ V}$	$T_C = 25\text{ }^{\circ}\text{C}$	-	40	75	ns
		$T_C = 125\text{ }^{\circ}\text{C}$	-	85	-	ns
$t_a$	$I_F = 75\text{ A}$ , $di_F/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 390\text{ V}$	$T_C = 25\text{ }^{\circ}\text{C}$	-	23	-	ns
		$T_C = 25\text{ }^{\circ}\text{C}$	-	17	-	ns
$t_b$	$I_F = 75\text{ A}$ , $di_F/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 390\text{ V}$	$T_C = 25\text{ }^{\circ}\text{C}$	-	80	-	ns
$Q_{rr}$		$T_C = 25\text{ }^{\circ}\text{C}$	-	80	-	nC
$W_{AVL}$	Avalanche Energy (L = 40 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

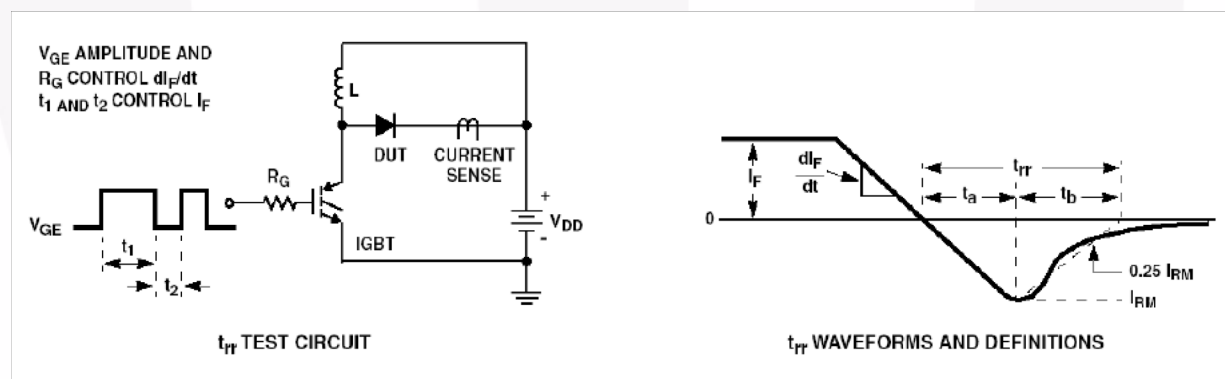
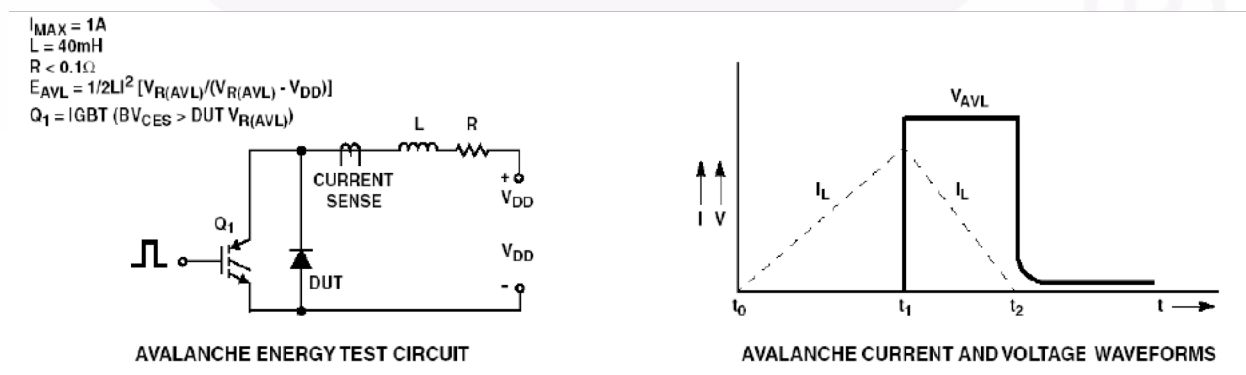


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform



## Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

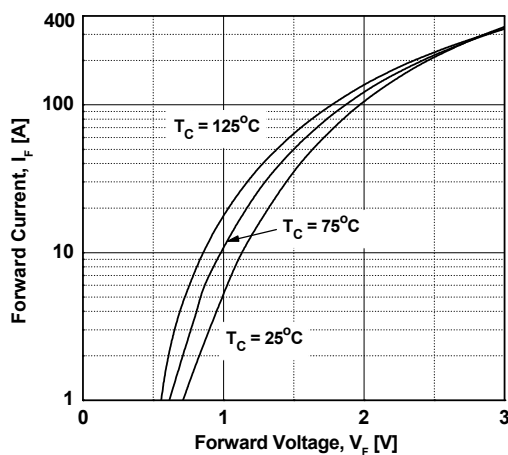


Figure 4. Typical Reverse Current vs. Reverse Voltage

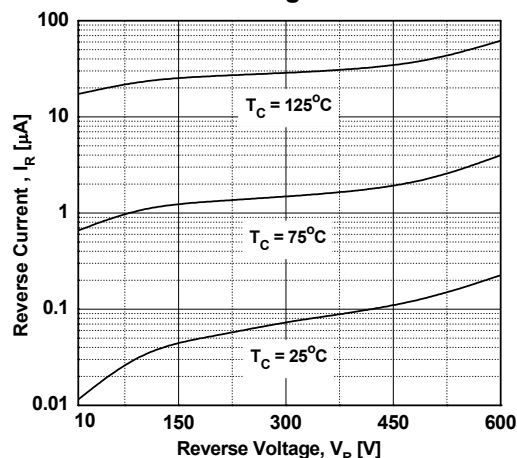


Figure 5. Typical Junction Capacitance

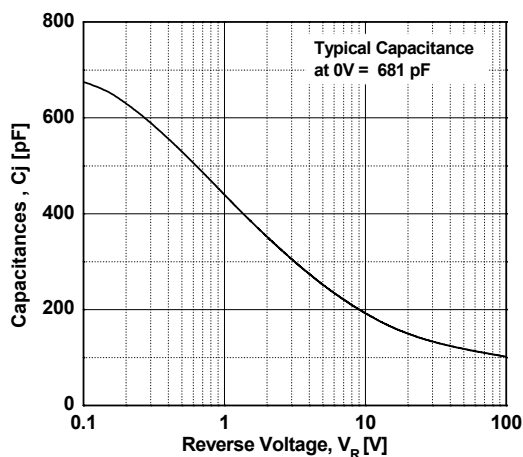


Figure 6. Typical Reverse Recovery Time vs. di/dt

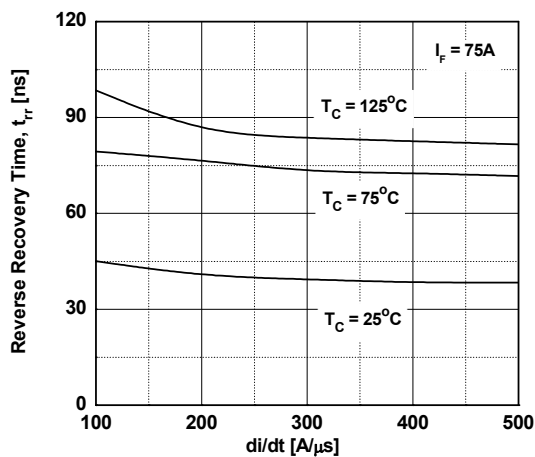


Figure 7. Typical Reverse Recovery Current vs. di/dt

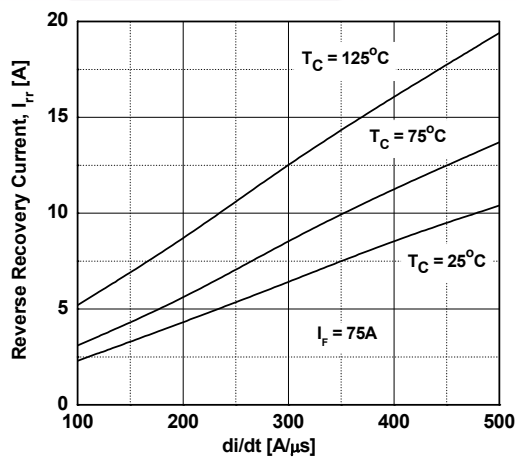
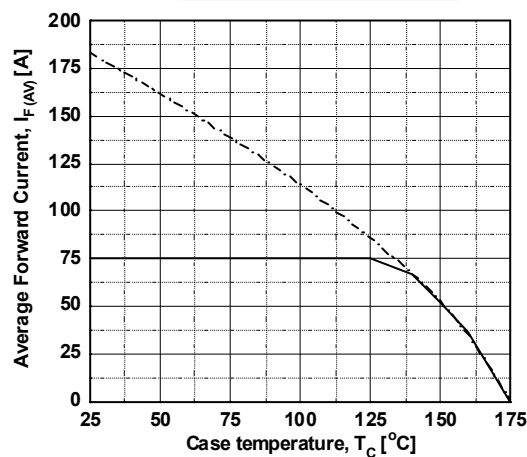
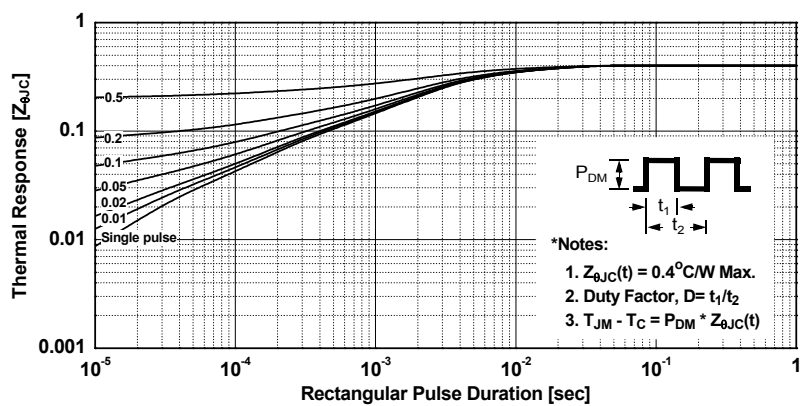


Figure 8. Forward Current Derating Curve



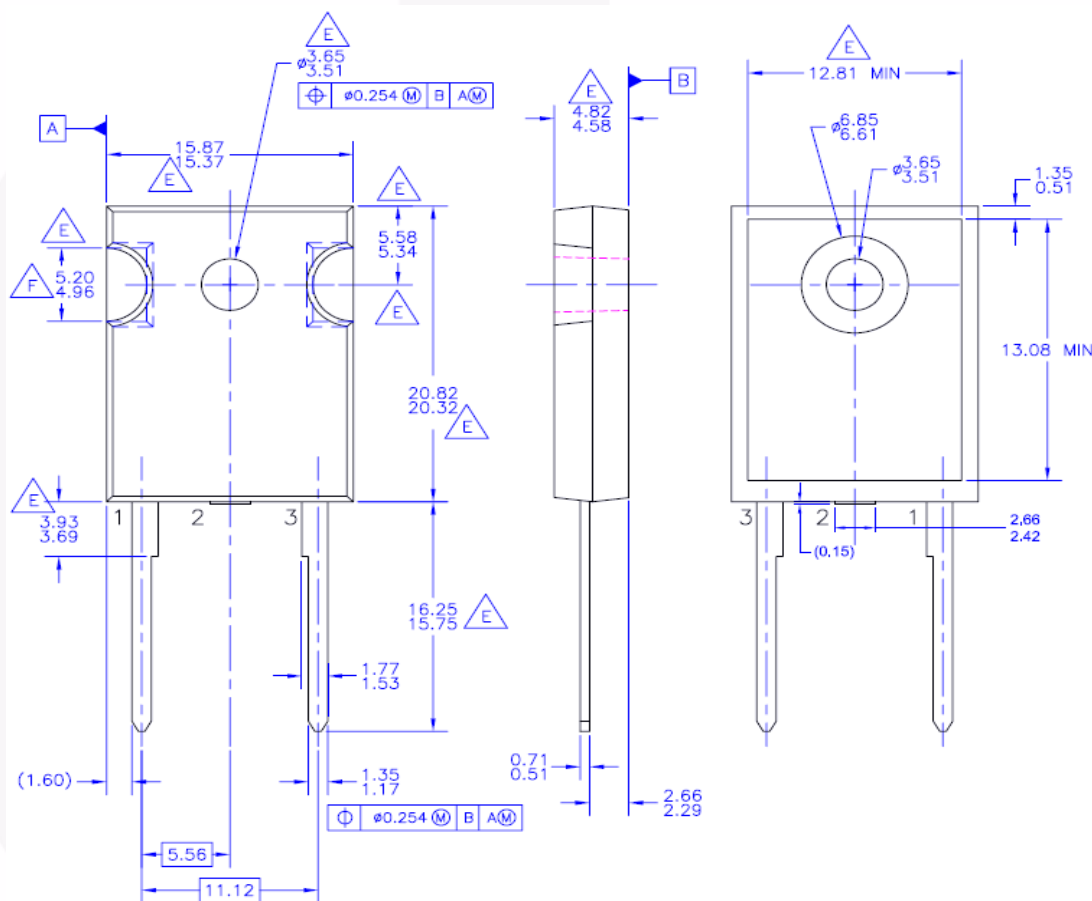
## Typical Performance Characteristics (Continued)

Figure 9. Transient Thermal Response Curve



## Mechanical Dimensions

## TO-247 2L



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**Figure 10. TO-247, Molded, 2LD, Jedec Option AB**

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