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[Fairchild Semiconductor](#)
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February 2014

FFH75H60S 75 A, 600 V, Hyperfast Diode

Features

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

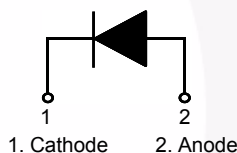
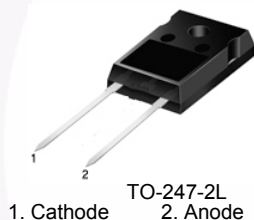
Applications

- 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	$I_F = 75\text{ A}$	$T_C = 25^\circ\text{C}$	-	1.8	2.2	V
	$I_F = 75\text{ A}$	$T_C = 125^\circ\text{C}$	-	1.6	2.0	V
I_R^1	$V_R = 600\text{ V}$	$T_C = 25^\circ\text{C}$	-	-	100	μA
	$V_R = 600\text{ V}$	$T_C = 125^\circ\text{C}$	-	-	1.0	mA
t_{rr}	$I_F = 75\text{ A}, di_F/dt = 200\text{ A}/\mu\text{s}, V_R = 390\text{ V}$	$T_C = 25^\circ\text{C}$	-	40	75	ns
		$T_C = 125^\circ\text{C}$	-	85	-	ns
t_a t_b Q_{rr}	$I_F = 75\text{ A}, di_F/dt = 200\text{ A}/\mu\text{s}, V_R = 390\text{ V}$	$T_C = 25^\circ\text{C}$	-	23	-	ns
		$T_C = 25^\circ\text{C}$	-	17	-	ns
		$T_C = 25^\circ\text{C}$	-	80	-	nC
W_{AVL}	Avalanche Energy (L = 40 mH)	20	-	-	mJ	

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

Test Circuit and Waveforms

Figure 1. Diode Reverse Recovery Test Circuit & Waveform

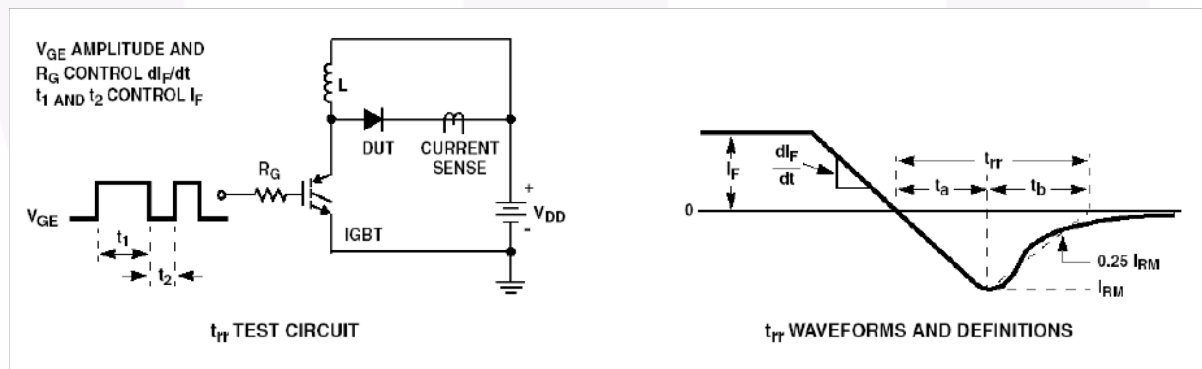
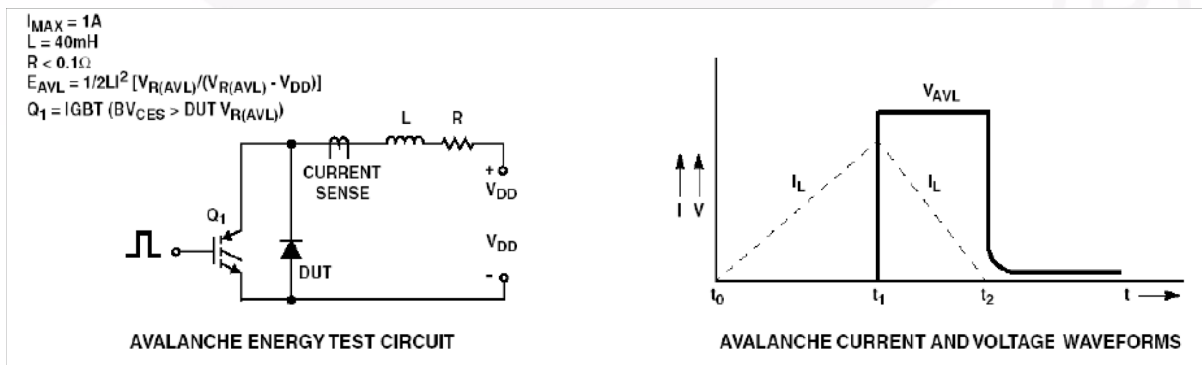


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform



Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

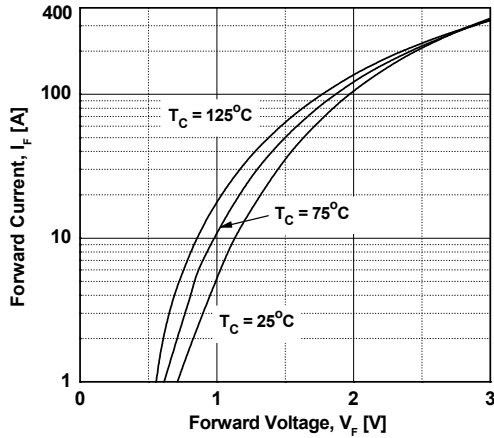


Figure 4. Typical Reverse Current vs. Reverse Voltage

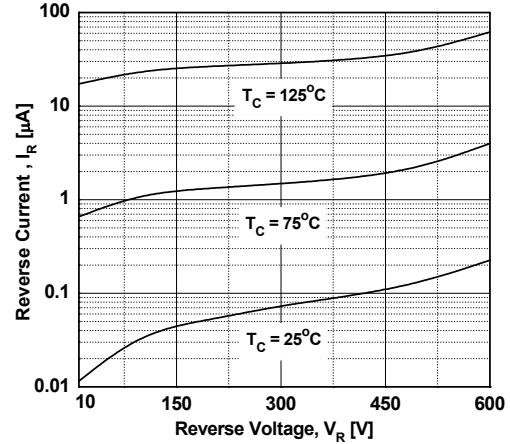


Figure 5. Typical Junction Capacitance

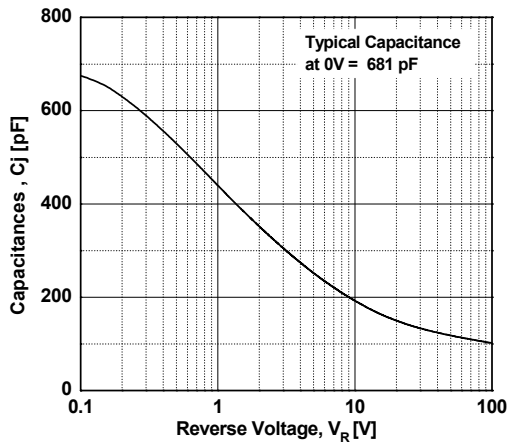


Figure 6. Typical Reverse Recovery Time vs. di/dt

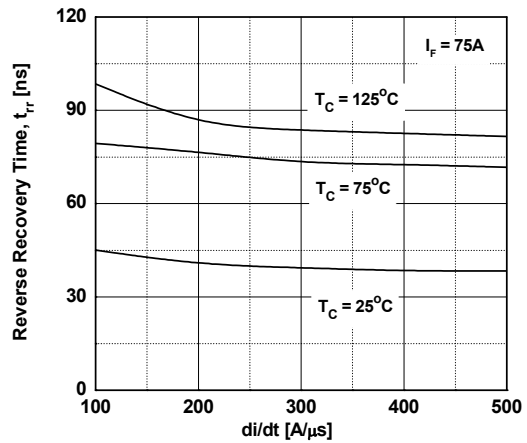


Figure 7. Typical Reverse Recovery Current vs. di/dt

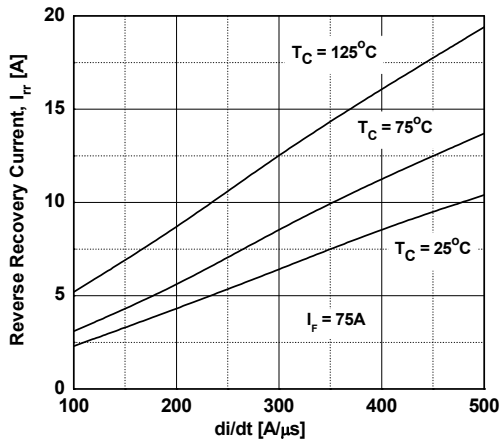
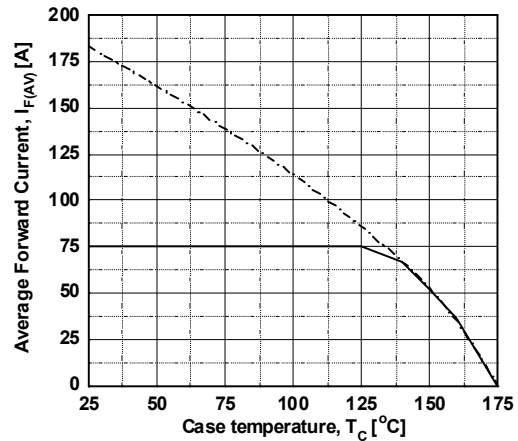
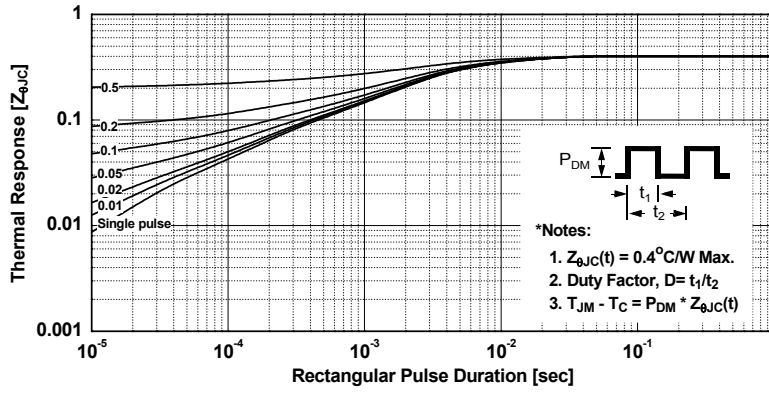


Figure 8. Forward Current Derating Curve



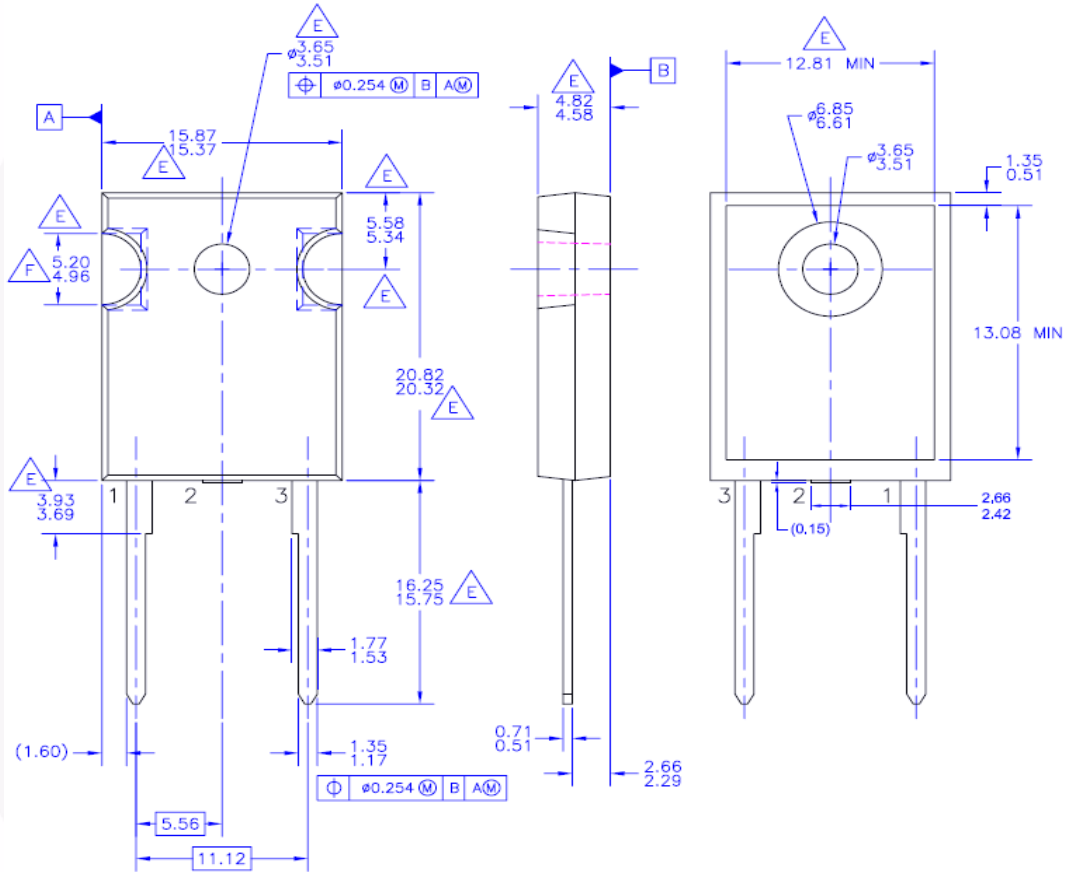
Typical Performance Characteristics (Continued)

Figure 9. Transient Thermal Response Curve



Mechanical Dimensions

TO-247 2L



- NOTES: UNLESS OTHERWISE SPECIFIED
- A. PACKAGE REFERENCE: JEDEC TO-247, ISSUE E, VARIATION AB, DATED JUNE, 2004.
 - B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
 - C. ALL DIMENSIONS ARE IN MILLIMETERS.
 - D. DRAWING CONFORMS TO ASME Y14.5 - 1994
- E.** DOES NOT COMPLY JEDEC STANDARD VALUE
- F.** NOTCH MAY BE SQUARE
- G.** DRAWING FILENAME: MKT-TO247B02_REV02

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

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