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November 2014

FFD04H60S

Hyperfast II Diode

Features

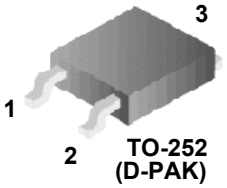
- Hyperfast Recovery, t_{rr} = 60 ns (@ I_F = 4 A)
- Max Forward Voltage, V_F = 2.1 V (@ T_C = 25°C)
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rrated
- RoHS Compliant

Applications

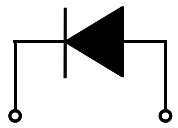
- General Purpose
- SMPS, Power Switching Circuits
- Free-Wheeling Diode for Motor Application

Description

The FFD04H60S 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.



TO-252
(D-PAK)



1,3 Cathode 2. Anode

Absolute Maximum Ratings T_C = 25°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 = 130°C	4	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	40	A
T_J, T_{STG}	Operating and Storage Temperature Range	-65 to +175	°C

Thermal Characteristics

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	4.0	°C/W

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFD04H60S	F04H60S	TO-252(D-PAK)	Reel	13” Dia	N/A	2500

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Electrical Characteristics $T_C = 25^oC$ unless otherwise noted

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_F1	I_F = 4 A I_F = 4 A	$T_C = 25^oC$ $T_C = 125^oC$	- -	- -	2.1 1.7	V
I_R1	V_R = 600 V V_R = 600 V	$T_C = 25^oC$ $T_C = 125^oC$	- -	- -	100 200	μA
t_{rr}	I_F = 1 A, di_F/dt = 100 A/μs, V_R = 30V I_F = 4 A, di_F/dt = 100 A/μs, V_R = 390V	$T_C = 25^oC$ $T_C = 25^oC$	- -	19 25	- 60	ns
I_{rr} Q_{rr}	I_F = 4 A, di_F/dt = 100 A/μs, V_R = 390V	$T_C = 25^oC$	- -	1.5 18	- -	A nC
W_{AVL}	Avalanche Energy (L = 40 mH)		4	-	-	mJ

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

Test Circuit and Waveforms

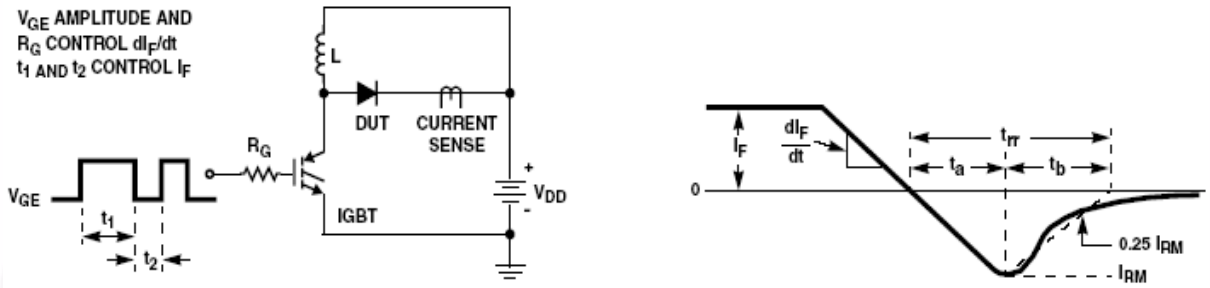


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

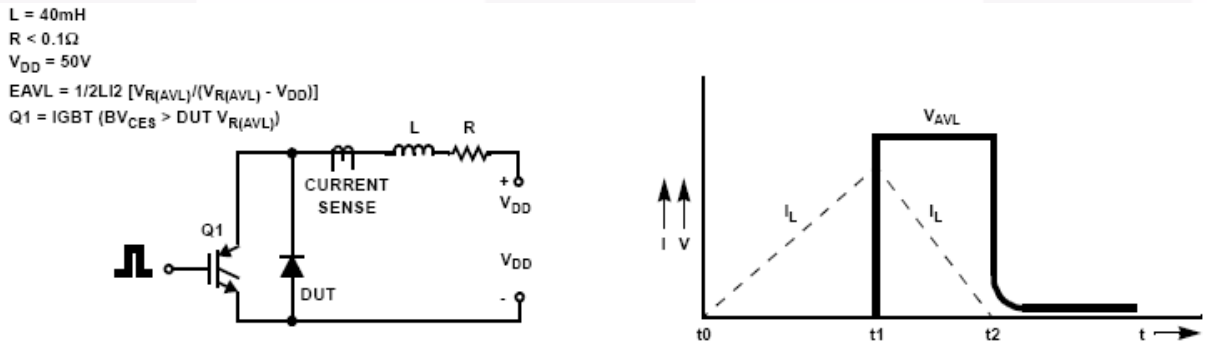


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

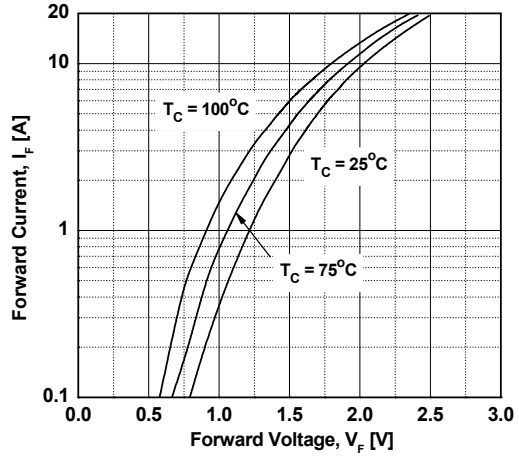


Figure 4. Typical Reverse Current vs. Reverse Voltage

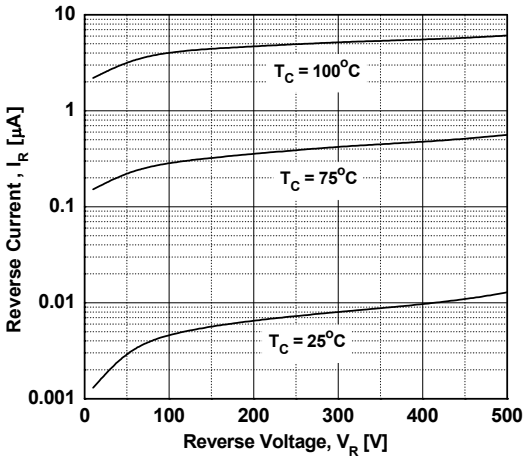


Figure 5.Typical Junction Capacitance

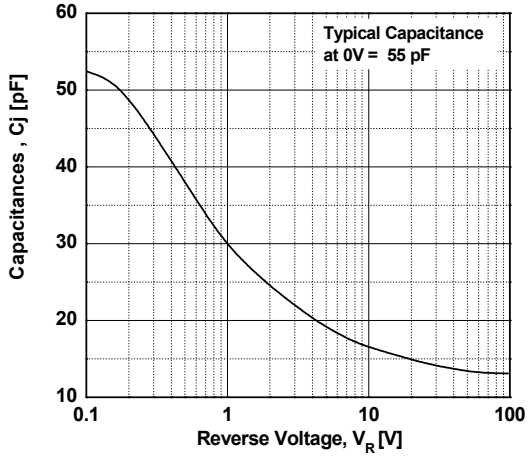


Figure 6. Typical Reverse Recovery Time vs. di/dt

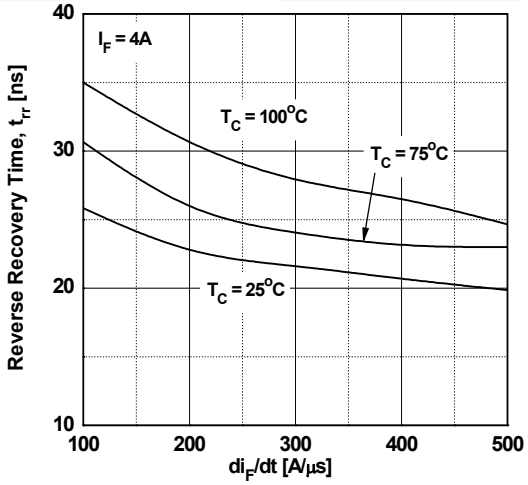


Figure 7. Typical Reverse Recovery Current vs. di/dt

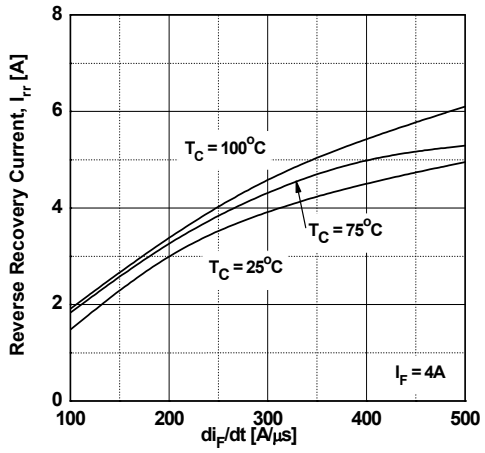
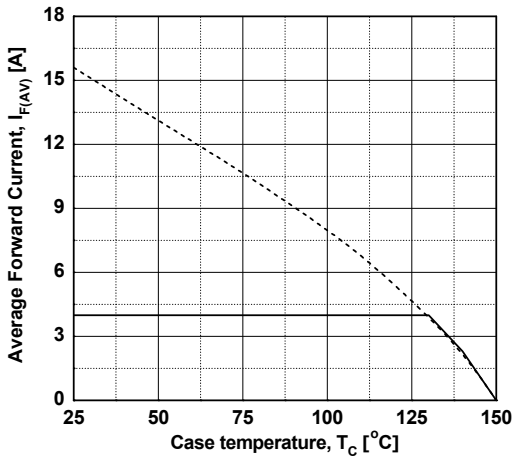


Figure 8. Forward Current Derating Curve



Mechanical Dimensions

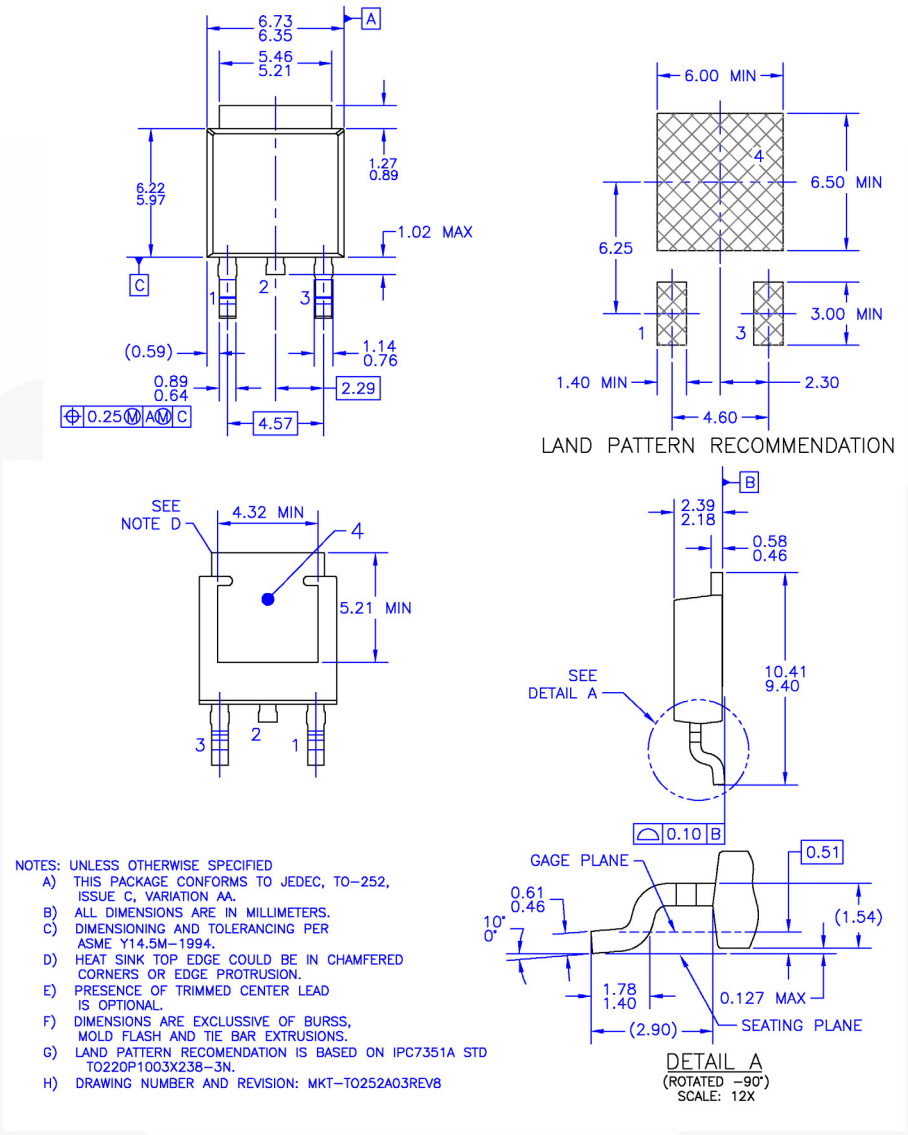


Figure 9. TO-252 3L (DPAK) - TO252 (D-PAK), MOLDED, 3 LEAD,OPTION AA&AB

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