November 2014

FFH60UP40S, FFH60UP40S3

60 A, 400 V, Ultrafast Diode

Features

- Ultrafast Recovery, T_{rr} = 85 ns (@ I_F = 60 A)
- Max Forward Voltage, V_F = 1.3 V (@ T_C = 25°C)
- Avalanche Energy Rated
- RoHS compliant

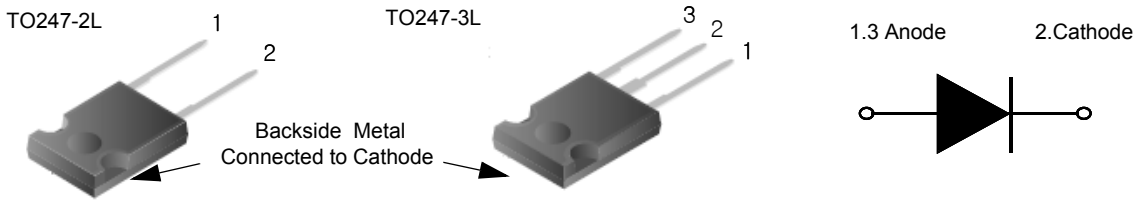
Applications

- General Purpose
- SMPS, Welder, UPS
- Free-wheeling Diode for motor application
- Power switching circuits

Description

The FFH60UP40S, FFH60UP40S3 is an ultrafast diode with low forward voltage drop and rugged UIS capability. This device is intended for use as freewheeling and clamping diodes in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial applicationa as welder and UPS application.

Pin Assignments



Absolute Maximum Ratings T_C = 25°C unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	400	V
V_{RWM}	Working Peak Reverse Voltage	400	V
V_R	DC Blocking Voltage	400	V
$I_{F(AV)}$	Average Rectified Forward Current @ T_C = 139°C	60	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	600	A
T_J, T_{STG}	Operating and Storage Temperature Range	-65 to +150	°C

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	0.2	°C/W

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Methode	Reel Size	Tape Width	Quantity
FFH60UP40S	FFH60UP40S	TO247-2L	Tube	N/A	N/A	30
FFH60UP40S3	FFH60UP40S3	TO247-3L	Tube	N/A	N/A	30

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

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_F1	I_F = 60 A	$T_C = 25^oC$ $T_C = 100^oC$	- -	1.06 0.99	1.3 -	V
I_R1	V_R = 400 V	$T_C = 25^oC$ $T_C = 100^oC$	- -	- -	100 500	μA
t_{rr}	I_F = 60 A, di_F/dt = 200 A/μs, V_R = 260 V	$T_C = 25^oC$ $T_C = 100^oC$	- -	59 96	85 -	ns
W_{AVL}	Avalanche Energy (L = 40 mH)		50	-	-	mJ

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

Test Circuit and Waveform

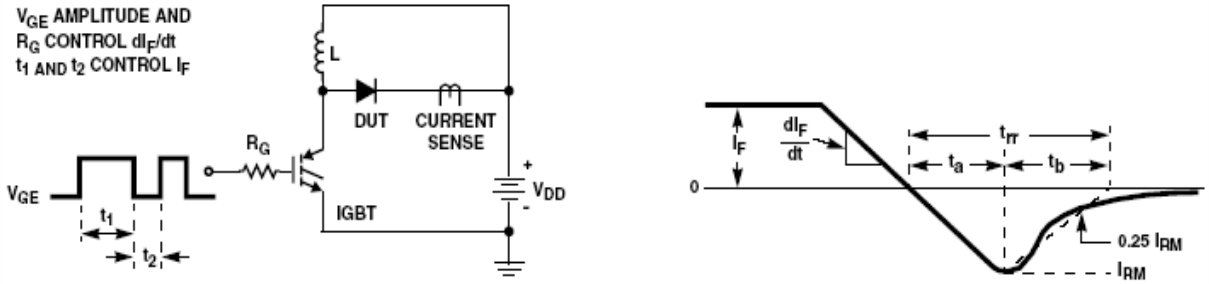


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

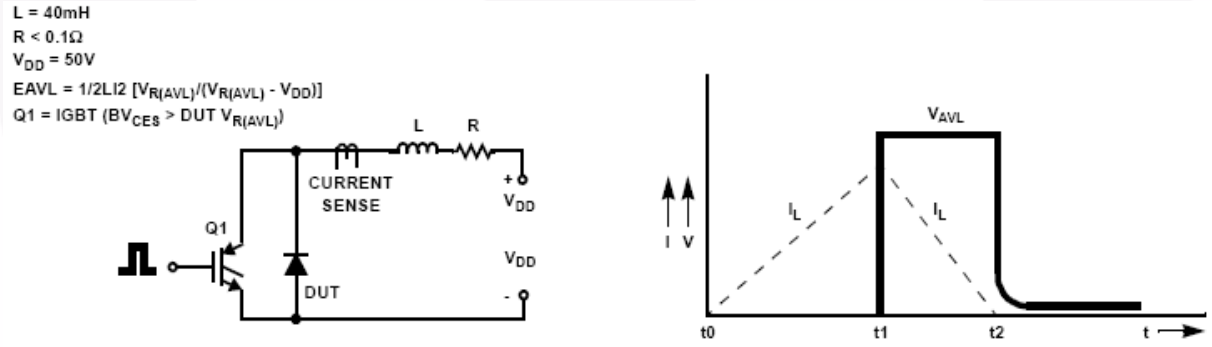


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

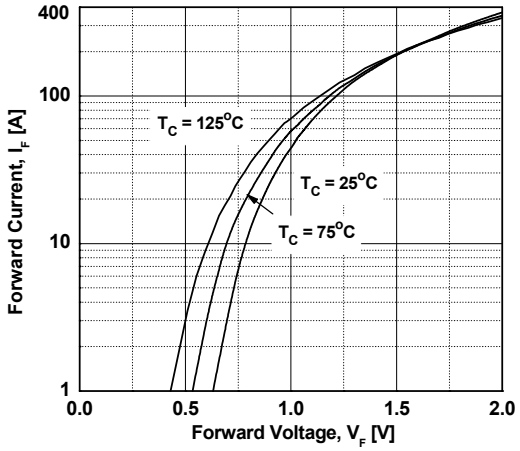


Figure 4. Typical Reverse Current vs. Reverse Voltage

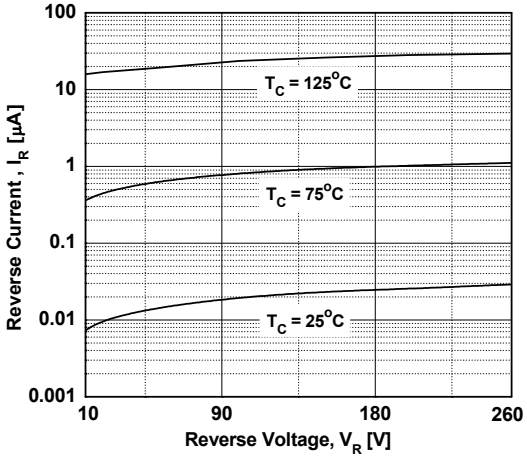


Figure 5.Typical Junction Capacitance

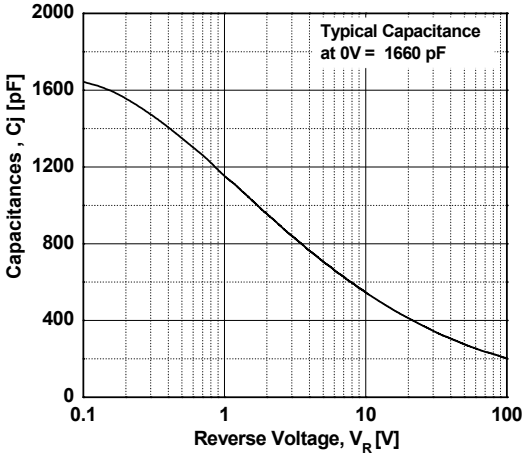


Figure 6. Typical Reverse Recovery Time vs. di/dt

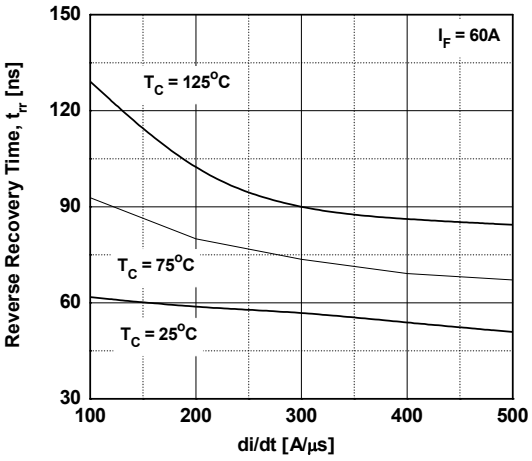


Figure 7. Typical Reverse Recovery Current vs. di/dt

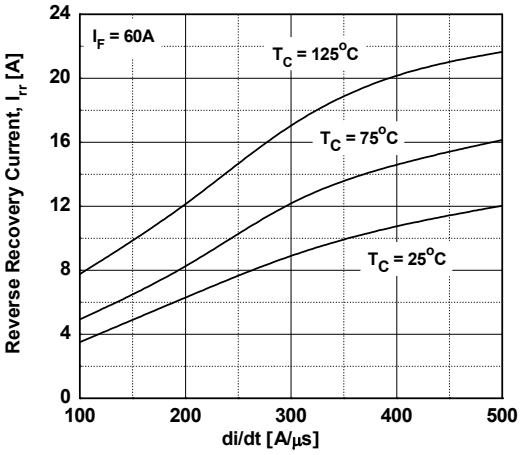
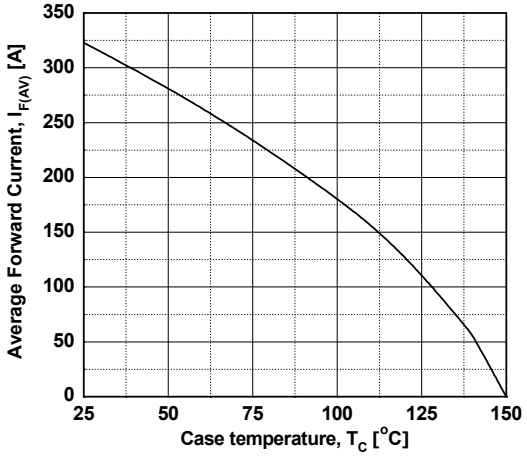
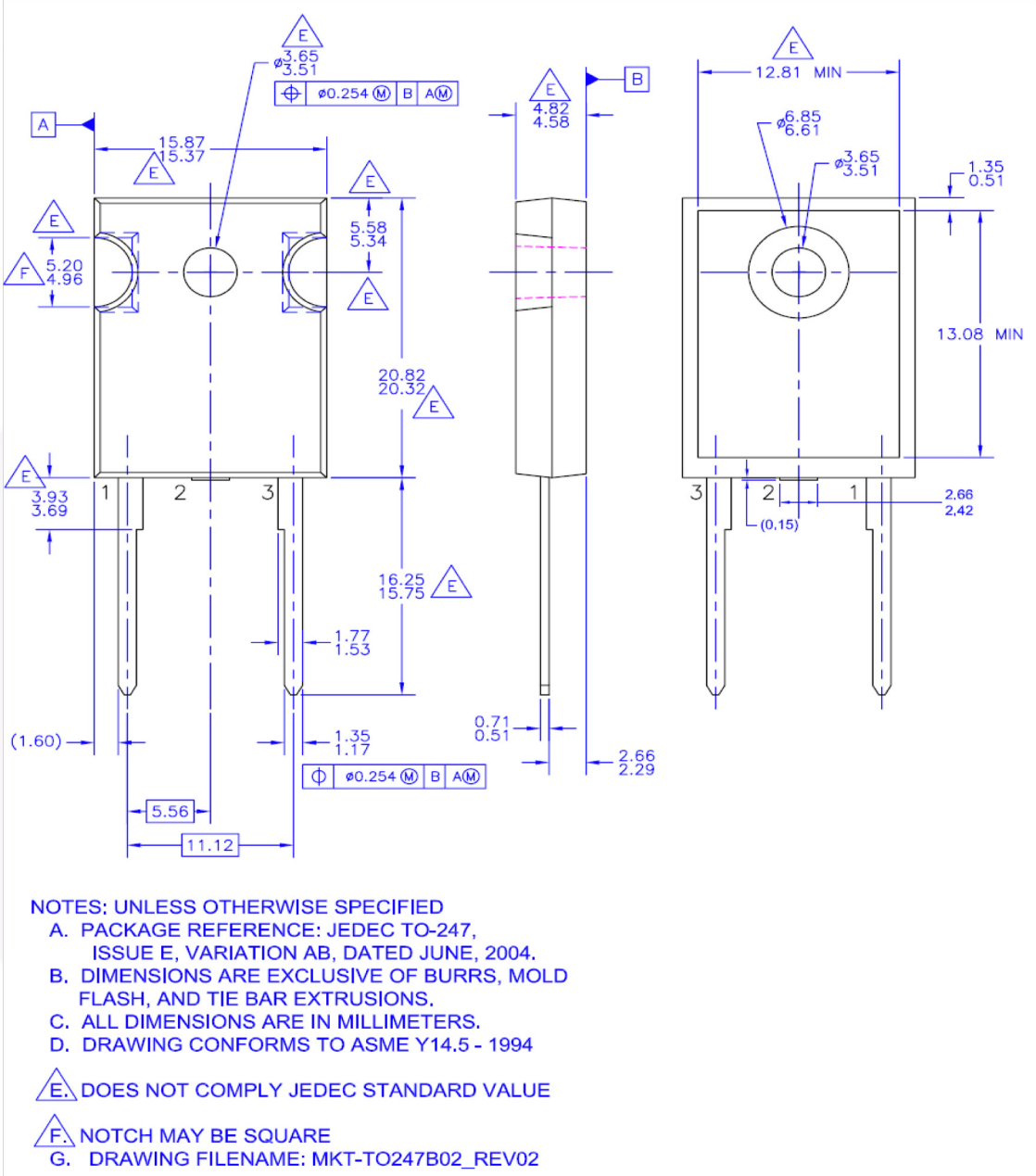


Figure 8. Forward Current Derating Curve



Mechanical Dimensions

TO247-2L



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E. DOES NOT COMPLY JEDEC STANDARD VALUE

F. NOTCH MAY BE SQUARE

G. DRAWING FILENAME: MKT-TO247B02_REV02

Figure 9. TO-247,Molded, 2LD, Jedec Option AB

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TO247-3L

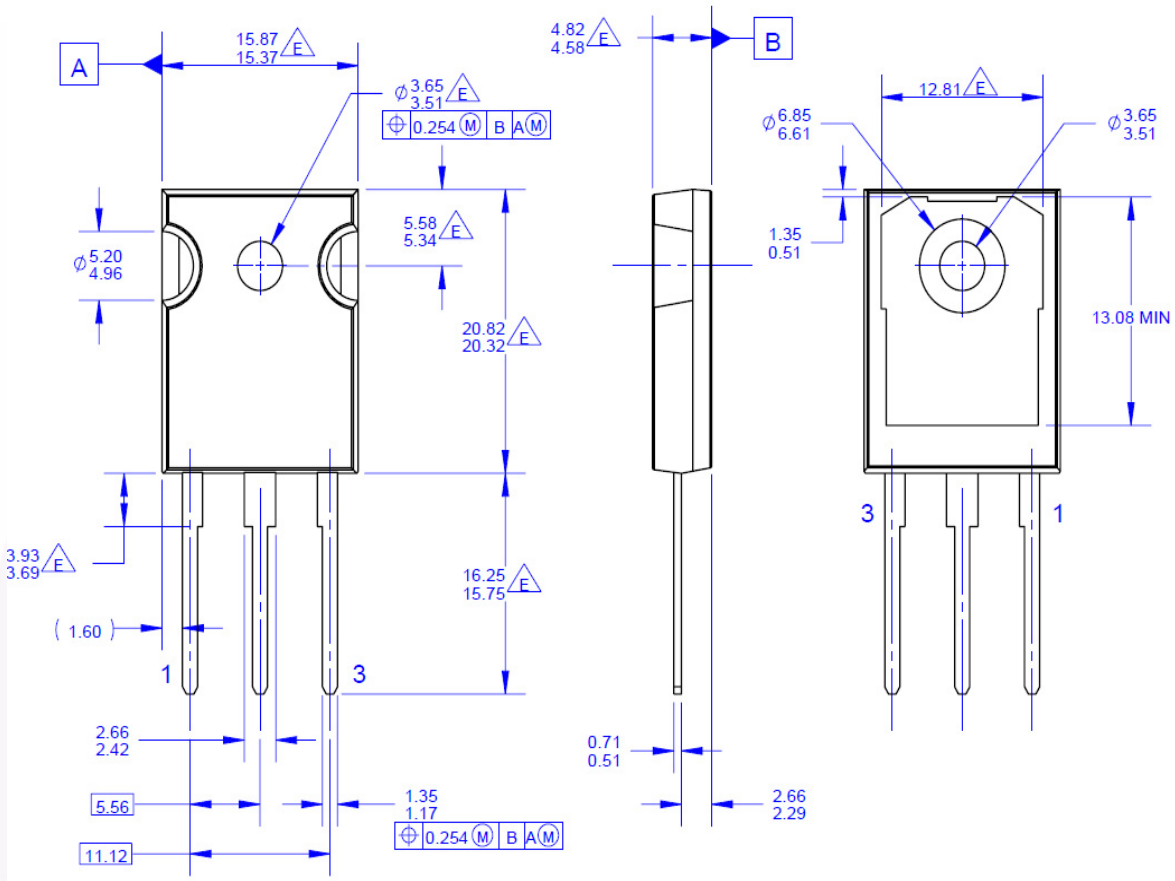

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Figure 10. TO-247,Molded, 3LD, Jedec Option AB

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