

FFH60UP40S, FFH60UP40S3

Features

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

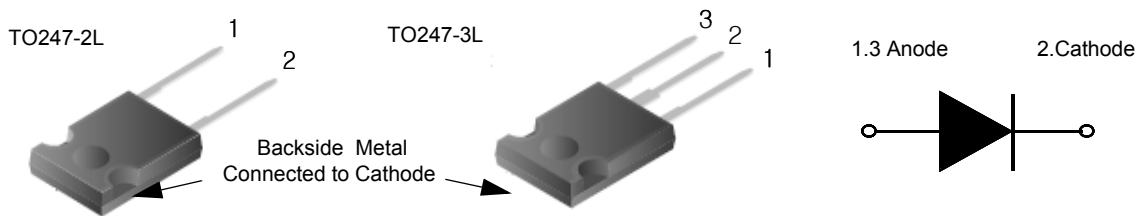
60 A, 400 V, Ultrafast Diode

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 applications as welder and UPS application.

Applications

- General Purpose
- Switching Mode Power Supply
- Free-wheeling Diode for Motor Application
- Power Switching Circuits

Pin Assignments



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ 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 @ $T_C = 139^\circ\text{C}$	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	$^\circ\text{C}$

Thermal Characteristics

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

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
FFH60UP40S	FFH60UP40S	TO247-2L	-	-	30
FFH60UP40S3	FFH60UP40S3	TO247-3L	-	-	30

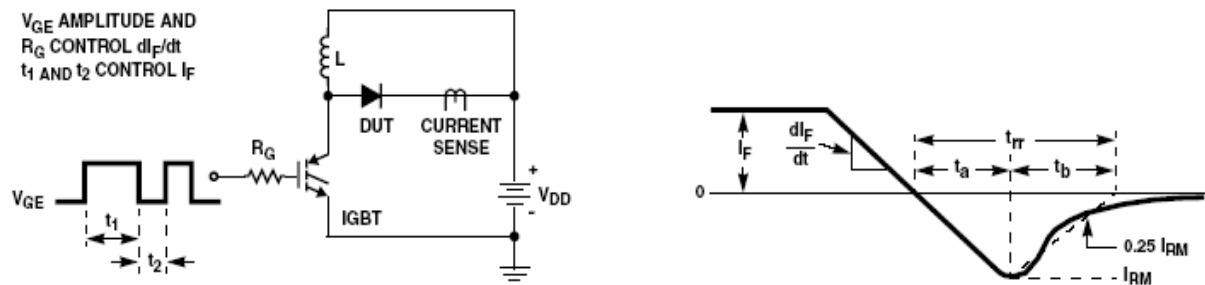
Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{F1}	$I_F = 60\text{ A}$	-	1.06	1.3	V
I_{R1}	$V_R = 400\text{ V}$	-	-	100	μA
t_{rr}	$I_F = 60\text{ A}, di/dt = 200\text{ A}/\mu\text{s}, V_{CC} = 260\text{ V}$	-	59	85	ns
W_{AVL}	Avalanche Energy ($L = 40\text{ mH}$)	50	-	-	mJ

Notes:

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

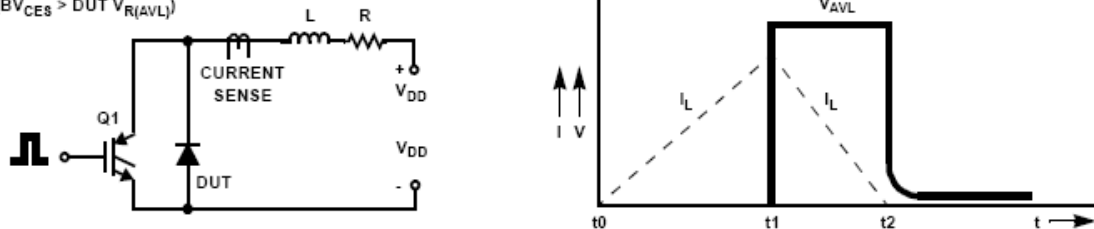
Trr test circuit and waveform



Avalanch energy test circuit and waveform

$L = 40\text{ mH}$
 $R < 0.1\Omega$
 $V_{DD} = 50\text{ V}$

$E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q1 = \text{IGBT} (BV_{CES} > \text{DUT } V_{R(AVL)})$



Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop vs. Forward Current

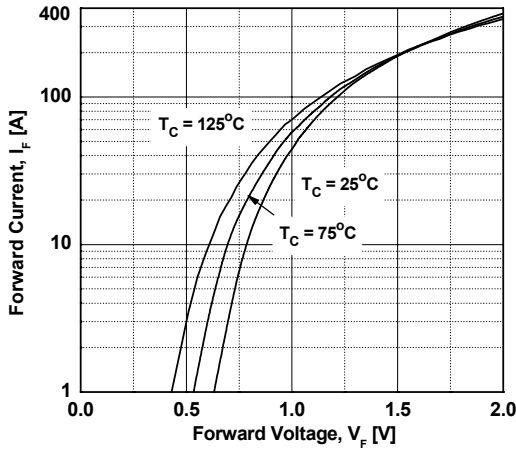


Figure 3. Typical Junction Capacitance

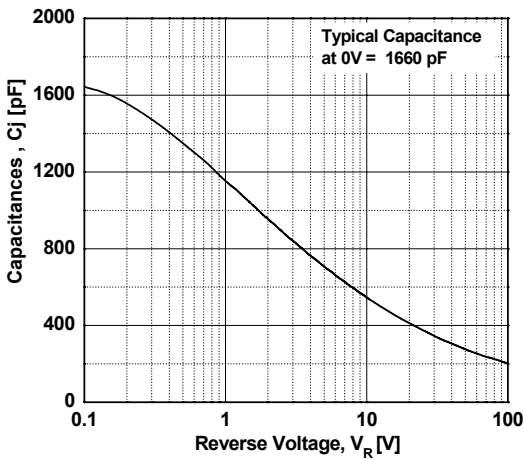


Figure 5. Typical Reverse Recovery Current vs. di/dt

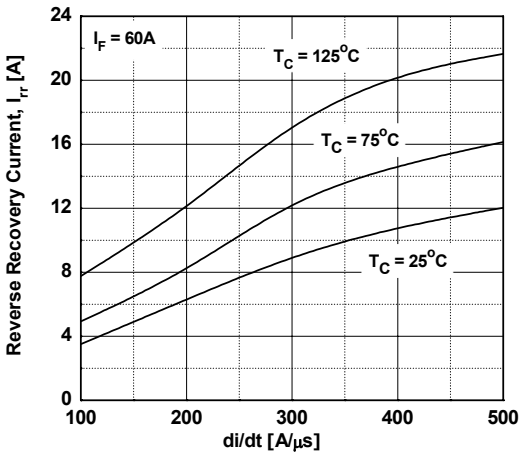


Figure 2. Typical Reverse Current vs. Reverse Voltage

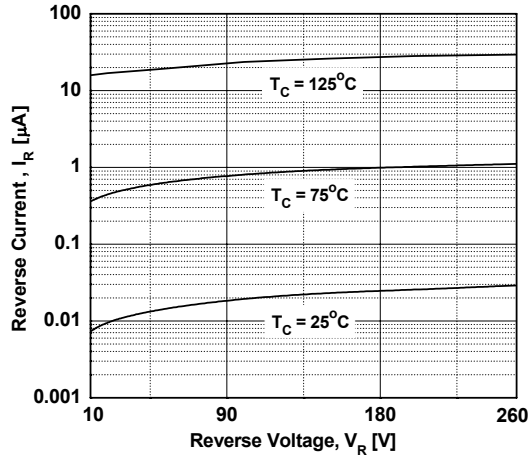


Figure 4. Typical Reverse Recovery Time vs. di/dt

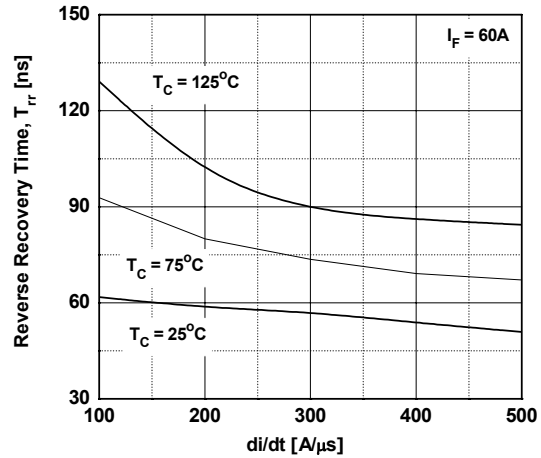
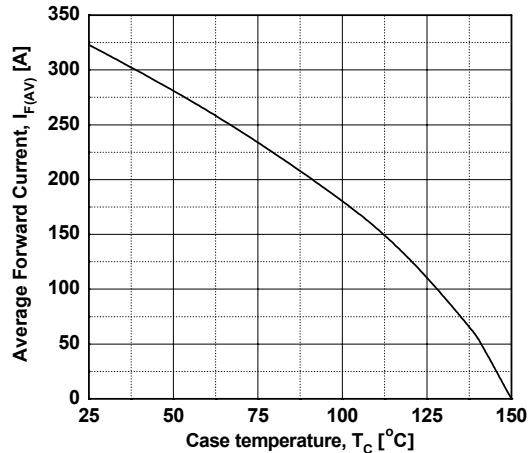
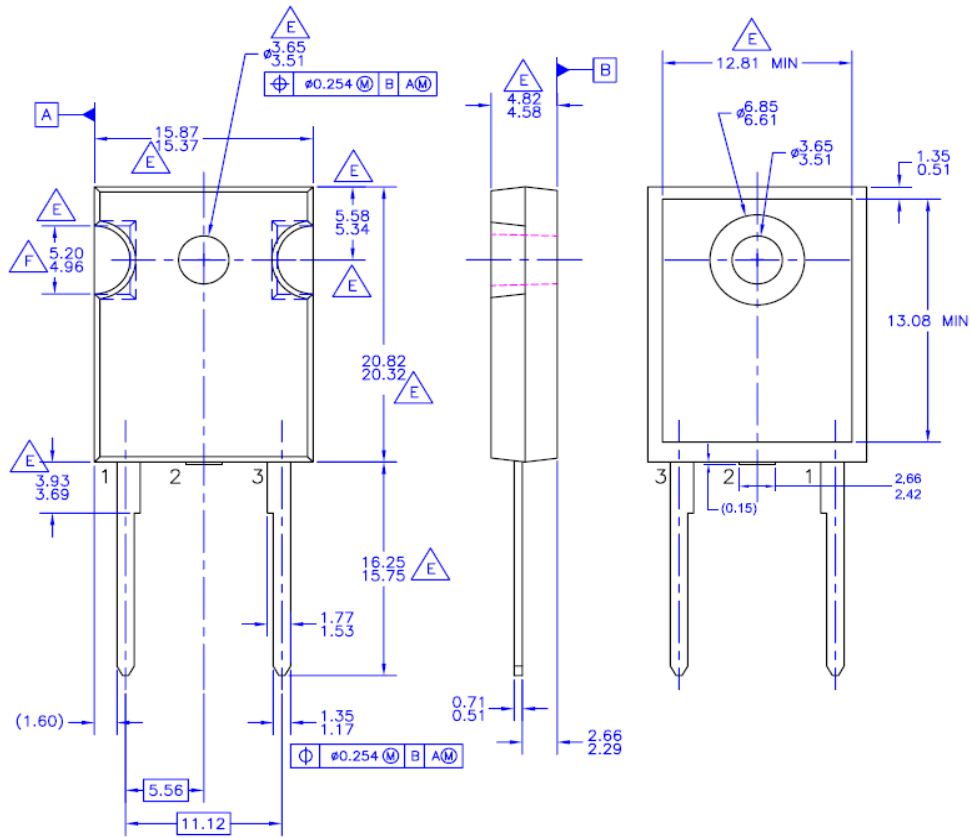


Figure 6. Forward Current Derating Curve



Mechanical Dimensions

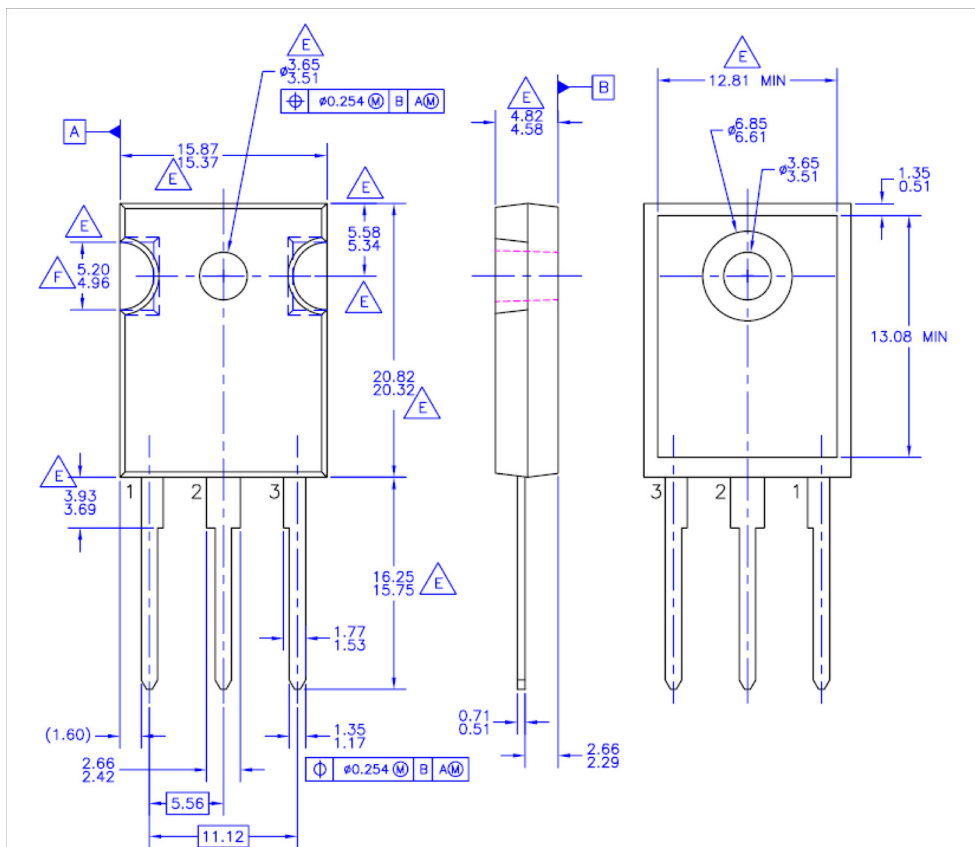
TO247-2L



Dimensions in Millimeters

FFH60UP40S , FFH60UP40S3 60 A, 400 V, Ultrafast Diode





TO247-3L





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