FAIRCHILD SEMICONDUCTOR®

November 2007

FFP04H60S

Features

- High Speed Switching, t_{rr} < 45ns @ I_F = 4A
- High Reverse Voltage and High Reliability
- Low Forward Voltage, V_F < 2.1V @ 4A
- RoHS compliant

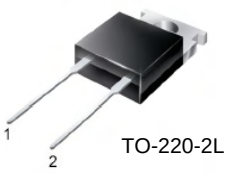
Applications

- General Purpose
- Switching Mode Power Supply
- Free-wheeling diode for motor application
- Power switching circuits

4A, 600V Hyperfast 2 Rectifier

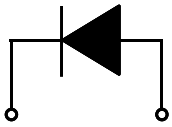
The FFP04H60S is a hyperfast 2 rectifier and silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as freewheeling/clamping rectifiers in a variety of switching power supplies and other power swithching 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-220-2L

1. Cathode 2. Anode



1. Cathode 2. Anode

Absolute Maximum Ratings T_C = 25°C unless otherwise noted*

Symbol	Parameter	Ratings	Units
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 = 135°C	4	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	40	A
T_J, T_{STG}	Operating Junction and Storage Temperature	-65 to +150	°C

*Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	2.55	°C/W

Package Marking and Ordering Information

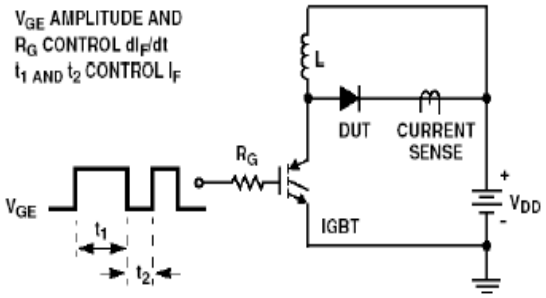
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F04H60S	FFP04H60STU	TO-220-2L	-	-	50

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

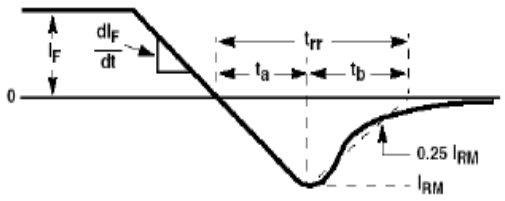
Symbol	Parameter		Min.	Typ.	Max.	Units
$V_{FM}1$	I_F = 4A I_F = 4A	$T_C = 25^oC$ $T_C = 125^oC$	- -	- -	2.1 1.7	V
$I_{RM}1$	V_R = 600V V_R = 600V	$T_C = 25^oC$ $T_C = 125^oC$	- -	- -	100 200	μA
t_{rr}	(I_F = 1A, di/dt = 100A/μs, V_R = 30V) (I_F = 4A, di/dt = 100A/μs, V_{CC} = 390V)	$T_C = 25^oC$	-	21 33	35 45	ns
I_{rr} Q_{rr}	(I_F = 4A, di/dt = 100A/μs, V_R = 390V)	$T_C = 25^oC$	- -	1.9 31	- -	A nC
W_{AVL}	Avalanche Energy (L = 40mH)		4	-	-	mJ

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

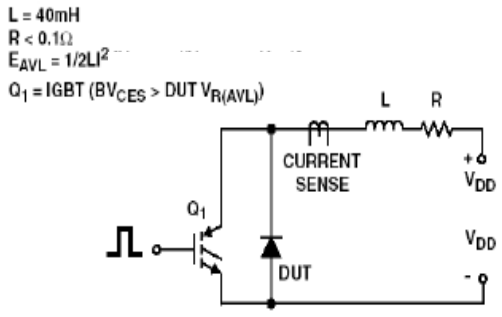
Test Circuit and Waveforms



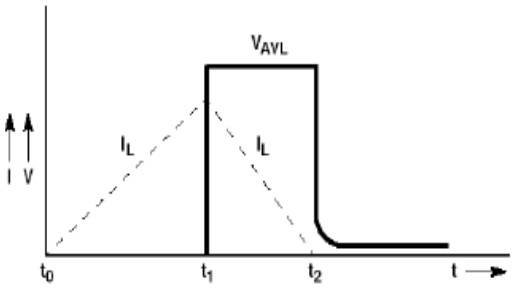
t_{rr} TEST CIRCUIT



t_{rr} WAVEFORMS AND DEFINITIONS



AVALANCHE ENERGY TEST CIRCUIT



AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Typical Performance Characteristics

Figure 1. Typical Forward Voltage Drop vs. Forward Current

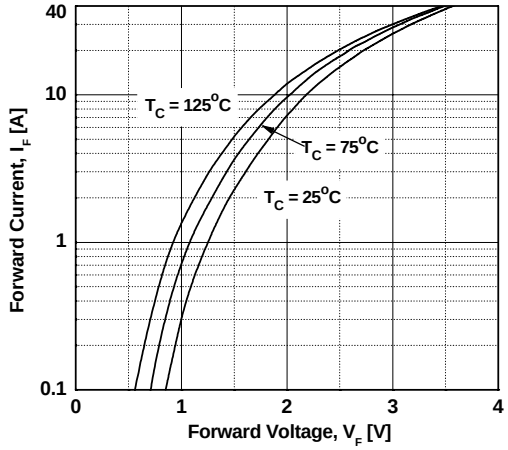


Figure 2. Typical Reverse Current vs. Reverse Voltage

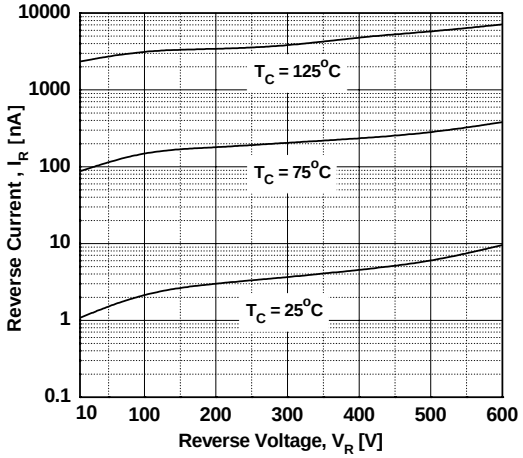


Figure 3.Typical Junction Capacitance

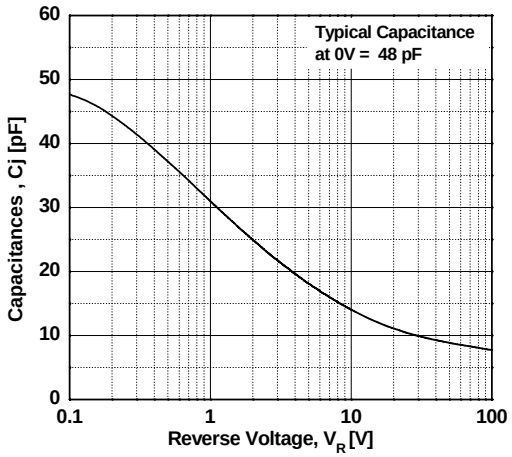


Figure 4. Typical Reverse Recovery Time vs. di/dt

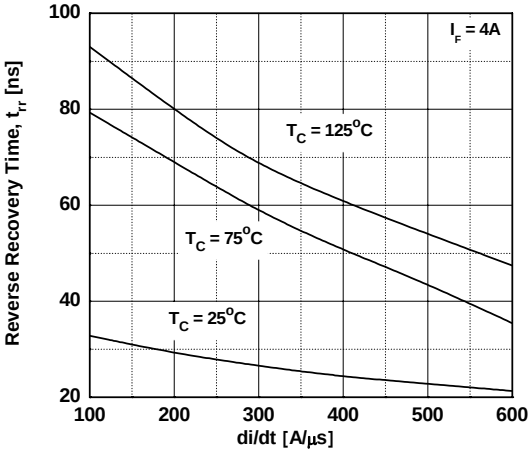


Figure 5. Typical Reverse Recovery Current vs. di/dt

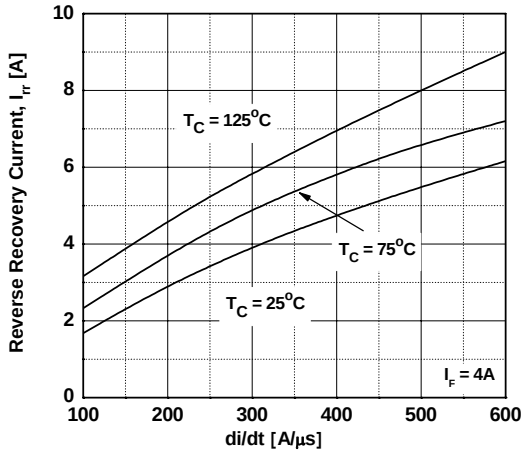
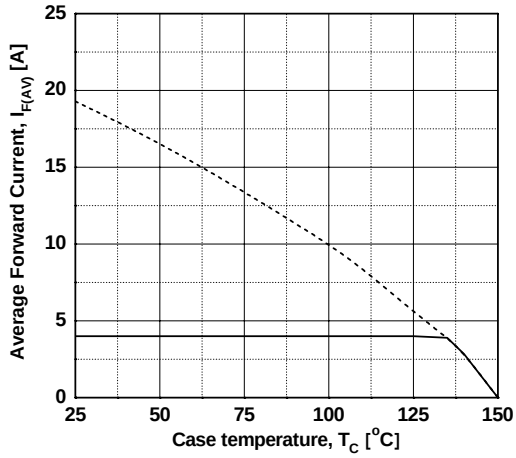
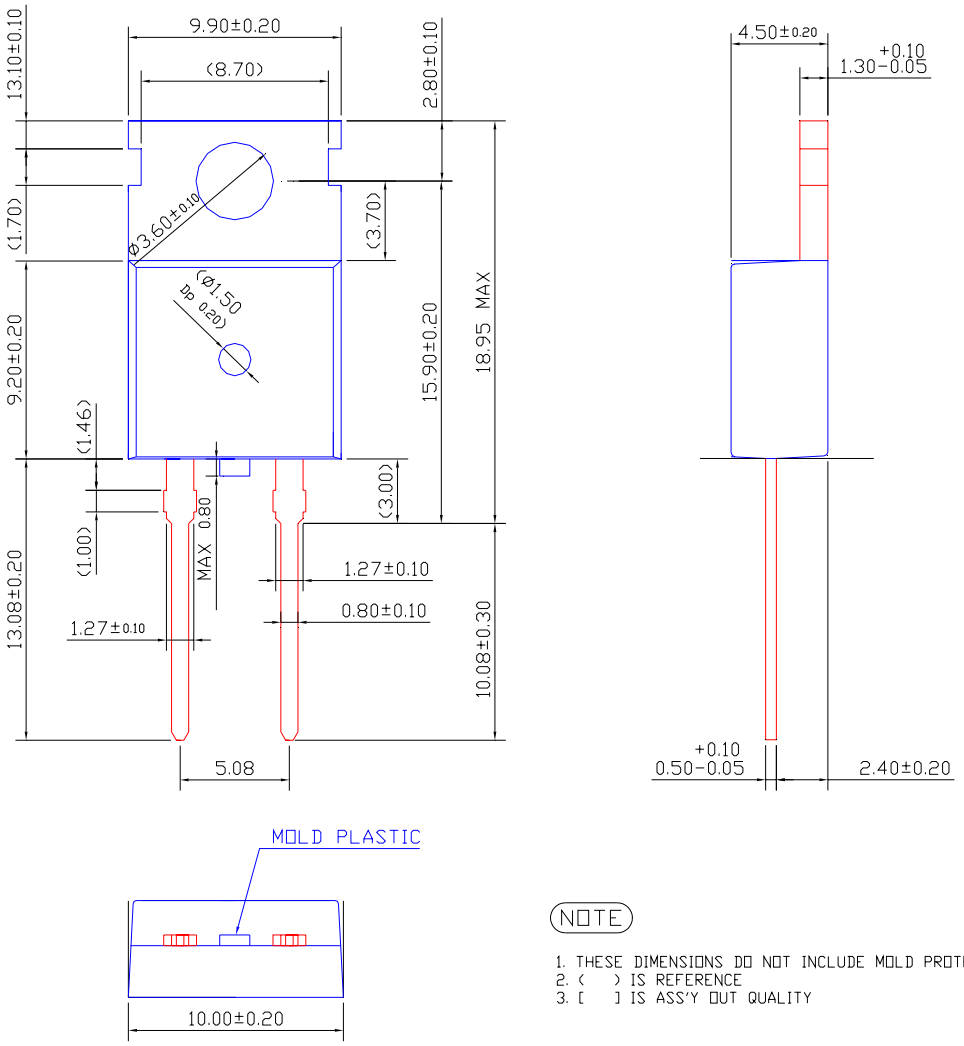


Figure 6. Forward Current Derating Curve



Mechanical Dimensions

TO-220-2L



NOTE

1. THESE DIMENSIONS DO NOT INCLUDE MOLD PROTRUSION.
2. ( ) IS REFERENCE
3. [ ] IS ASS'Y OUT QUALITY

Dimensions in Millimeters

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