



April 2008

STEALTH™ II Rectifier

FFP08S60SN

Features

- High Speed Switching, $t_{rr} < 25\text{ns}$ @ $I_F = 8\text{A}$
- High Reverse Voltage and High Reliability
- RoHS compliant

Applications

- General Purpose
- Switching Mode Power Supply
- Boost Diode in continuous mode power factor corrections
- Power switching circuits

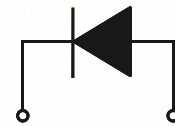
8A, 600V STEALTH™ II Rectifier

The FFP08S60SN is STEALTH™ II rectifier with soft recovery characteristics. It is silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as freewheeling of boost diode in 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.



1. Cathode 2. Anode



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Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ 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 @ $T_C = 89^\circ\text{C}$	8	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	60	A
T_J, T_{STG}	Operating and Storage Temperature Range	-65 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.6	$^\circ\text{C/W}$

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F08S60SN	FFP08S60SNTU	TO220-2L	-	-	50

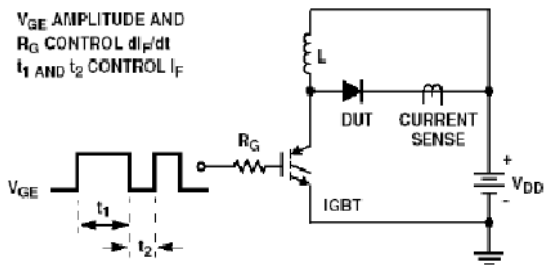
Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{FM1}	$I_F = 8\text{A}$	-	2.7	3.4	V
	$I_F = 8\text{A}$	-	2.1	-	
I_{RM1}	$V_R = 600\text{V}$	-	-	100	μA
	$V_R = 600\text{V}$	-	-	500	
t_{rr}	$I_F = 1\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$, $V_R = 30\text{V}$	-	13	-	ns
t_{rr}	$I_F = 8\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$, $V_R = 390\text{V}$	-	15	25	ns
I_{rr}		-	2.5	-	A
S factor		-	0.4	-	-
Q_{rr}		-	19	-	nC
t_{rr}	$I_F = 8\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$, $V_R = 390\text{V}$	-	32	-	ns
I_{rr}		-	3.8	-	A
S factor		-	0.7	-	-
Q_{rr}		-	62	-	nC
W_{AVL}	Avalanche Energy ($L = 40\text{mH}$)	10	-	-	mJ

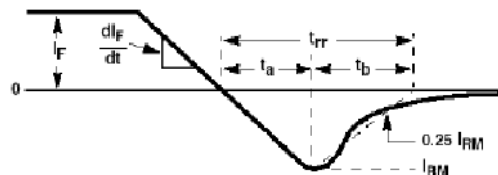
Notes:

1: Pulse: Test Pulse width = $300\mu\text{s}$, Duty Cycle = 2%

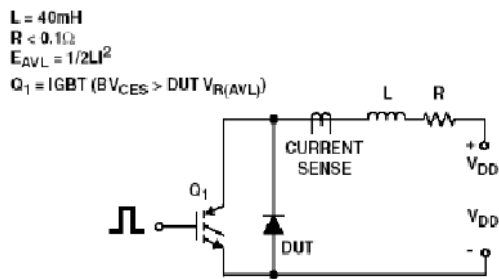
Test Circuit and Waveforms



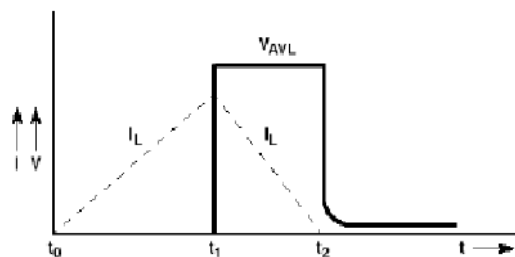
t_{rr} TEST CIRCUIT



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

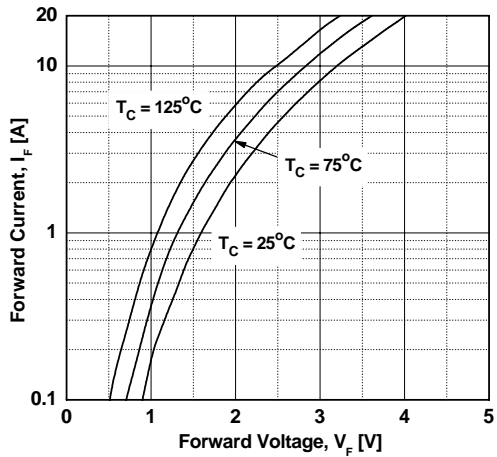


Figure 3. Typical Junction Capacitance

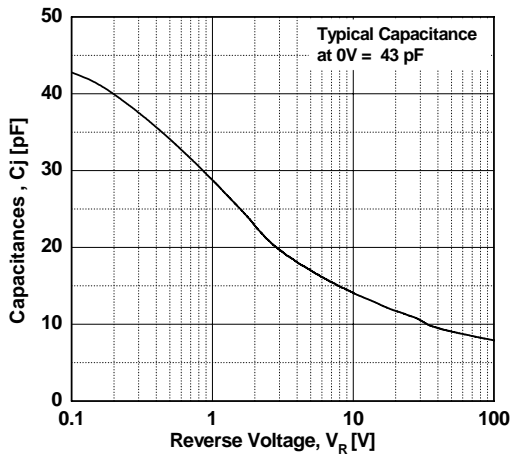


Figure 5. Typical Reverse Recovery Current vs. di/dt

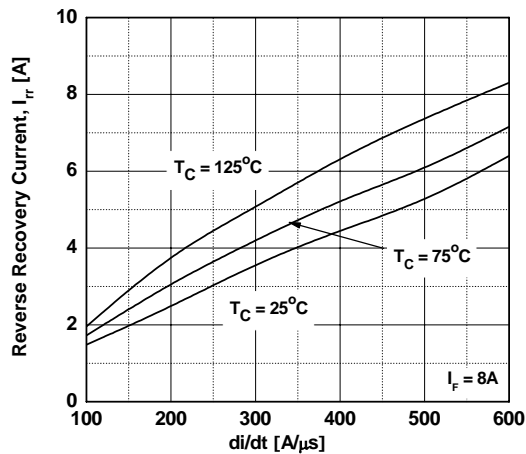


Figure 2. Typical Reverse Current vs. Reverse Voltage

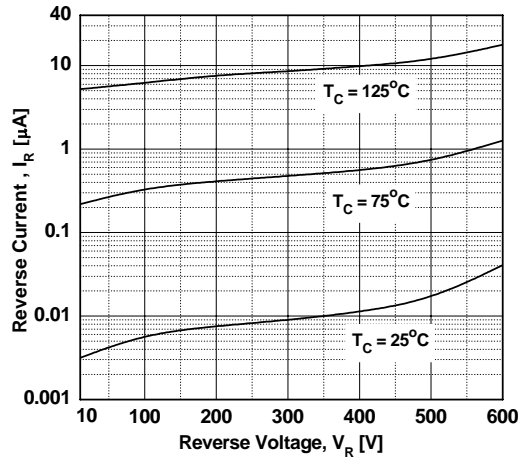


Figure 4. Typical Reverse Recovery Time vs. di/dt

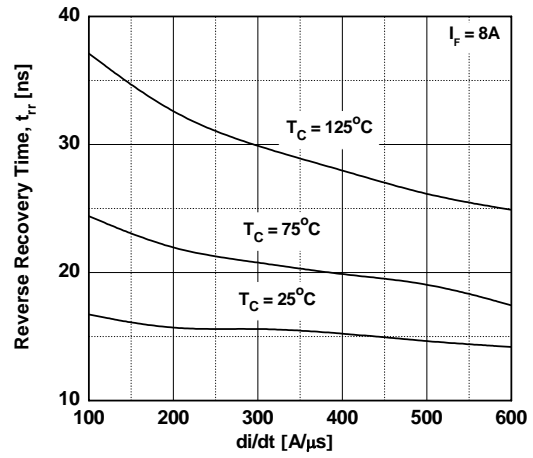
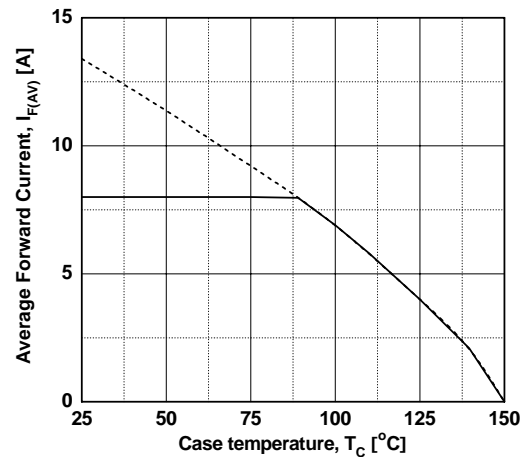
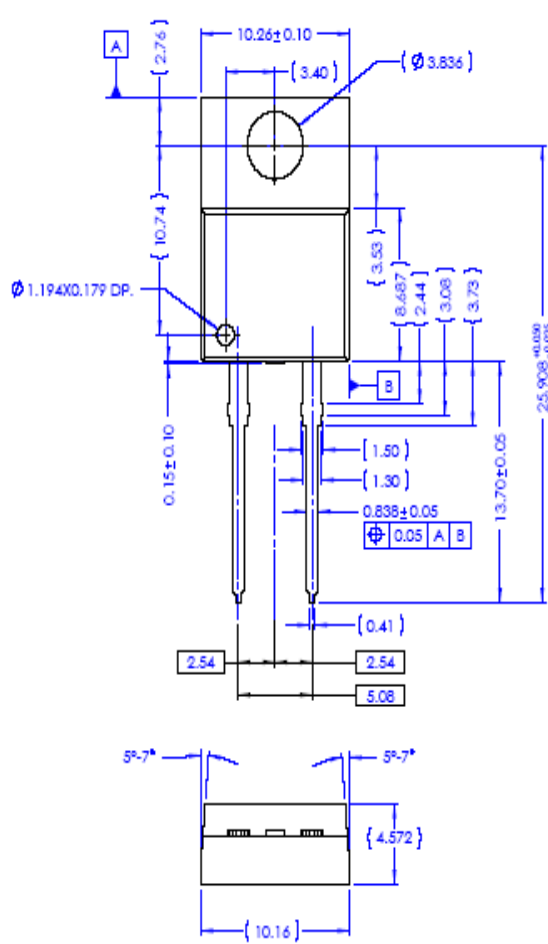


Figure 6. Forward Current Derating Curve



Mechanical Dimensions

TO220 2L



NOTE:





1. STANDARD LEAD FINISH: 200 MICRO INCHES / 5.08 MICRONS MIN. 85Sn15Pb / MATTE Sn (LEAD FREE) ON LEADFRAME MATERIAL.
2. MAXIMUM VERTICAL BURR ON LEAD TIPS NOT TO EXCEED 0.05MM FACING UP. VERTICAL LEAD TIP BURR DOWN SHOULD BE ZERO.
3. NO PACKAGE CHIPS, CRACKS OR SURFACE INDENTION ALLOWED AFTER FORMING.
4. MOLDED BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. MOLD FLASH SHALL NOT EXCEED 0.025MM PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF THE PLASTIC BODY.
6. FOR LEADFRAME SPECIFICATIONS, REFER TO FSZD-1-0006 STAMPED LEADFRAME, TO220 2L JEDEC SINGLE STRAND

Dimensions in Millimeters



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Datasheet Identification	Product Status	Definition
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Preliminary	First Production	This datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
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Rev. I33