

8 A, 600 V, STEALTH II Diode

FFPF08S60ST

Description

The FFPF08S60S is STEALTH™ II diode with soft recovery characteristics. It is silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as freewheeling or 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.

Features

- Stealth Recovery $t_{rr} = 30$ ns (@ $I_F = 8$ A)
 - ♦ Max Forward Voltage, $V_F = 3.4$ V (@ $T_C = 25^\circ\text{C}$)
- 600 V Reverse Voltage and High Reliability
- This Device is Pb-Free and are RoHS Compliant

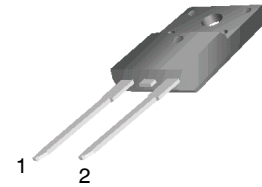
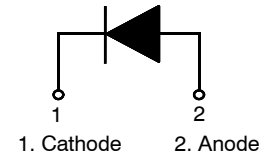
Applications

- General Purpose
- SMPS
- Boost Diode in Continuous Mode Power Factor Corrections
- Power Switching Circuits

ABSOLUTE MAXIMUM RATINGS $T_C = 25^\circ\text{C}$ unless otherwise noted

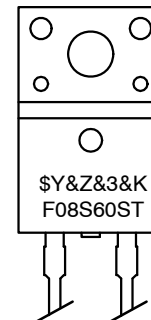
Symbol	Parameter	Value	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_{RWM}	Working Peak Reverse Voltage	600	V
V_R	DC Blocking Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ $T_C = 95^\circ\text{C}$	8	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	80	A
T_J, T_{STG}	Operating Junction and Storage Temperature	- 65 to +175	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



TO-220F-2L
CASE 221AS

MARKING DIAGRAM



- \$Y = onsemi Logo
- &Z&3 = Date Code (Year & Week)
- &K = Lot
- F08S60ST = Specific Device Code

ORDERING INFORMATION

Device	Package	Shipping
FFPF08S60STTU	TO-220F-2L	50 / Tube

FFPF08S60ST

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction-to-Case	3.4	$^{\circ}\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max	Unit
V_{F1}	$I_F = 8 \text{ A}$ $I_F = 8 \text{ A}$ $T_C = 25 \text{ }^{\circ}\text{C}$ $T_C = 125 \text{ }^{\circ}\text{C}$	-	2.1 1.6	2.6 -	V V
I_{R1}	$V_R = 600 \text{ V}$ $V_R = 600 \text{ V}$ $T_C = 25 \text{ }^{\circ}\text{C}$ $T_C = 125 \text{ }^{\circ}\text{C}$	-	-	100 500	μA μA
t_{rr}	$I_F = 1 \text{ A}$, $di_F/dt = 100 \text{ A}/\mu\text{s}$, $V_R = 30 \text{ V}$ $T_C = 25 \text{ }^{\circ}\text{C}$	-	-	25	ns
T_{rr} I_{rr} S factor Q_{rr}	$I_F = 8 \text{ A}$, $di_F/dt = 200 \text{ A}/\mu\text{s}$, $V_R = 390 \text{ V}$ $T_C = 25 \text{ }^{\circ}\text{C}$	-	19 2.2 0.6 21	30 - - -	ns A - nC
t_{rr} I_{rr} S factor	$I_F = 8 \text{ A}$, $di_F/dt = 200 \text{ A}/\mu\text{s}$, $V_R = 390 \text{ V}$ $T_C = 125 \text{ }^{\circ}\text{C}$	-	58 4.3 1.3 125	- - - -	ns A - nC
W_{AVL}	Avalanche Energy ($L = 40 \text{ mH}$)	20	-	-	mJ

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

Test Circuit and Waveforms

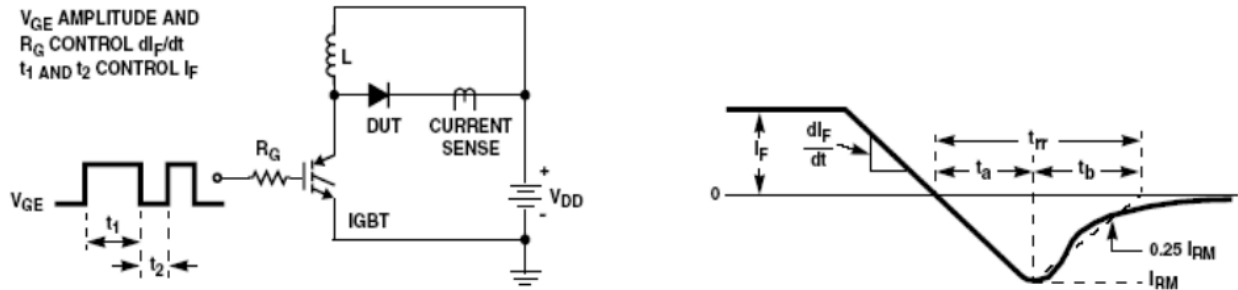


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

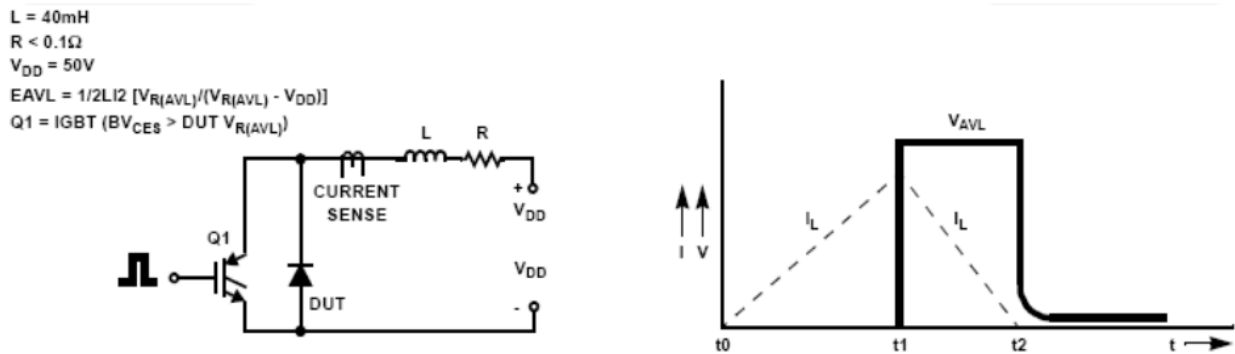


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

FFPF08S60ST

TYPICAL PERFORMANCE CHARACTERISTICS

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

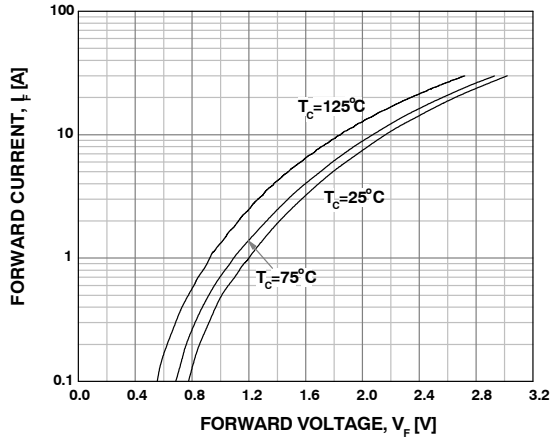


Figure 3. Typical Forward Voltage Drop

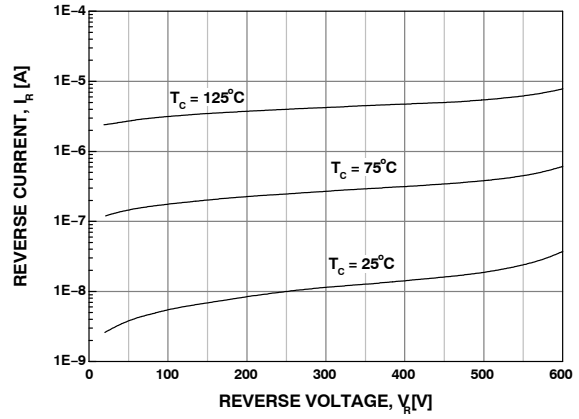


Figure 4. Typical Reverse Current

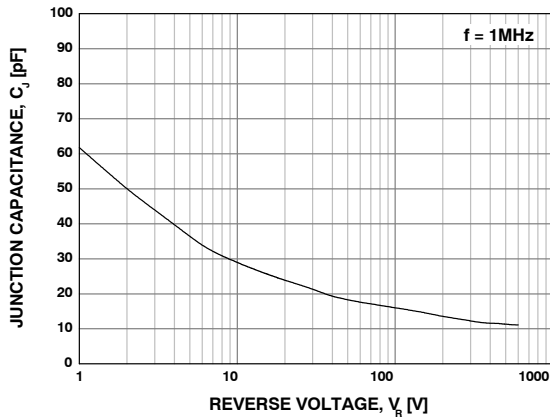


Figure 5. Typical Junction Capacitance

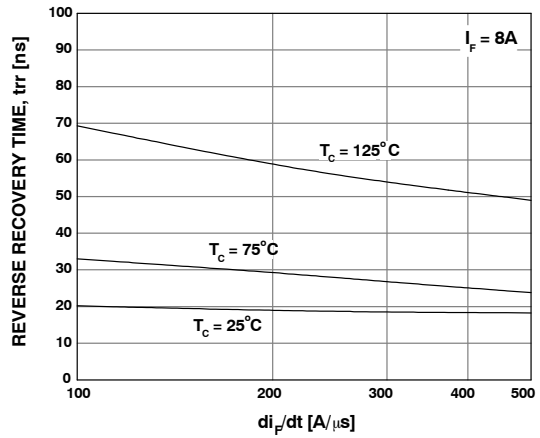


Figure 6. Typical Reverse Recovery Time

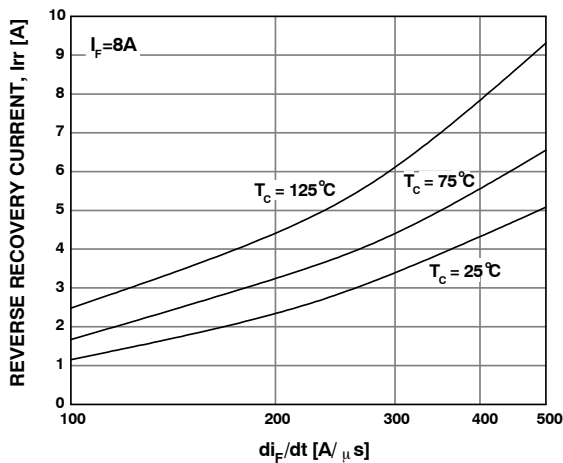


Figure 7. Typical Reverse Recovery Current

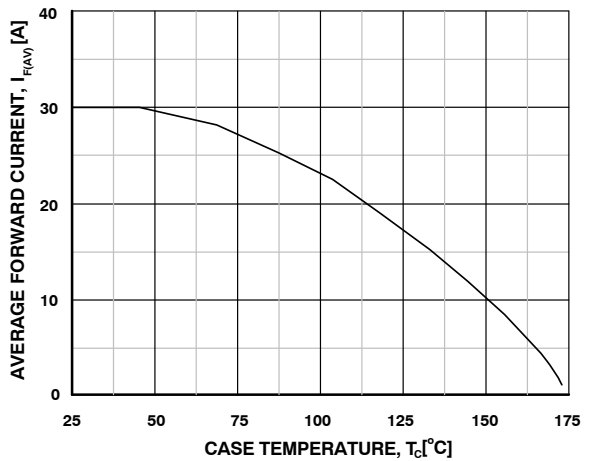


Figure 8. Forward Current Deration Curve

STEALTH is a trademark of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries.

MECHANICAL CASE OUTLINE

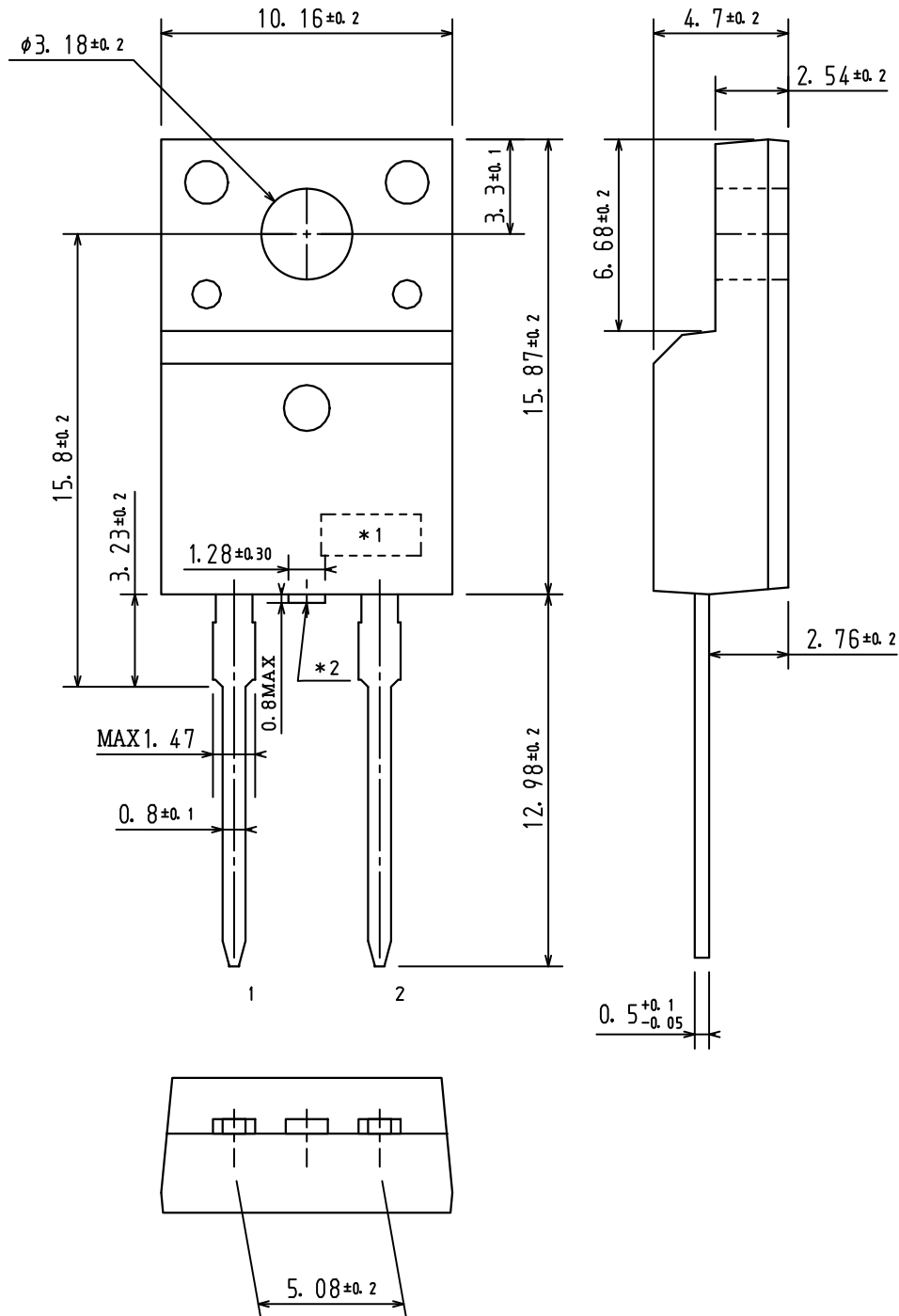
PACKAGE DIMENSIONS

ON Semiconductor®



TO-220 Fullpack, 2-Lead / TO-220F-2FS
 CASE 221AS
 ISSUE O

DATE 29 FEB 2012



DOCUMENT NUMBER:	98AON67438E	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	TO-220 FULLPACK, 2-LEAD / TO-220F-2FS	PAGE 1 OF 1

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales