

Features

- High Speed Switching, $t_{rr} < 30\text{ns}$ @ $I_F = 8\text{A}$
- High Reverse Voltage and High Reliability
- RoHS component

Applications

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

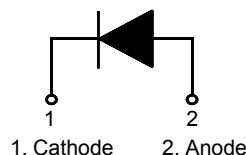
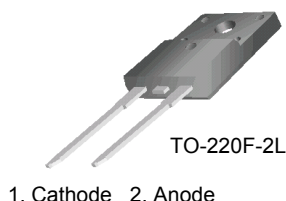


8A, 600V STEALTH™ II Rectifier

The FFPF08S60ST 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.

Pin Assignments



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

Symbol	Parameter	Value	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 @ $T_C = 95^\circ\text{C}$	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 +150	$^\circ\text{C}$

Thermal Characteristics

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

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F08S60ST	FFPF08S60STTU	TO-220F-2L	-	-	50

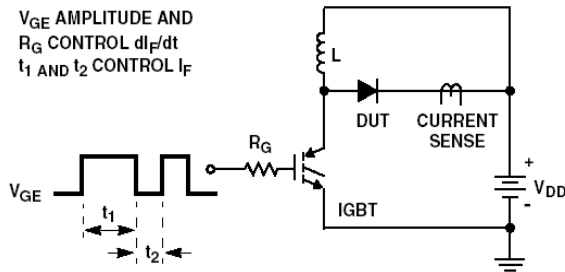
Electrical Characteristics T_C = 25 °C unless otherwise noted

Parameter	Conditions		Min.	Typ.	Max	Units
V _{FM} ¹	I _F = 8A	T _C = 25 °C	-	2.1	2.6	V
	I _F = 8A	T _C = 125 °C	-	1.6	-	V
I _{RM} ¹	V _R = 600V	T _C = 25 °C	-	-	100	μA
	V _R = 600V	T _C = 125 °C	-	-	500	μA
t _{rr}	I _F = 1A, di/dt = 100A/μs, V _R = 30V	T _C = 25 °C	-	-	25	ns
t _{rr}	I _F = 8A, di/dt = 200A/μs, V _R = 390V	T _C = 25 °C	-	19	30	ns
I _{rr}			-	2.2	-	A
S factor			-	0.6	-	
Q _{rr}			-	21	-	nC
t _{rr}	I _F = 8A, di/dt = 200A/μs, V _R = 390V	T _C = 125 °C	-	58	-	ns
I _{rr}			-	4.3	-	A
S factor			-	1.3	-	
Q _{rr}			-	125	-	nC
W _{AVL}	Avalanche Energy (L = 40mH)		20	-	-	mJ

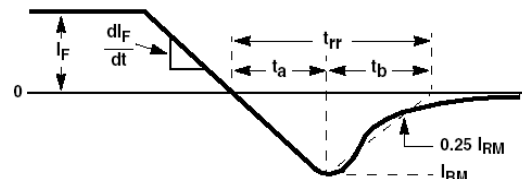
Notes:

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

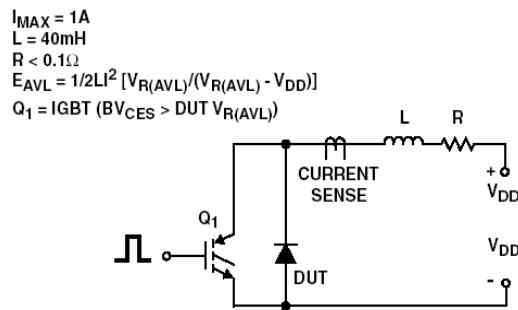
Test Circuit and Waveforms



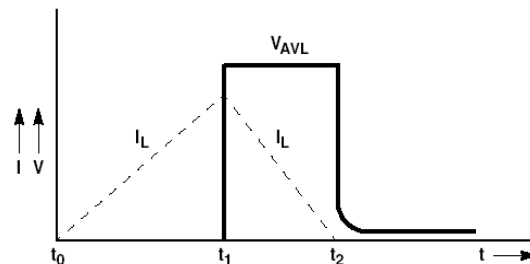
t_{rr} TEST CIRCUIT



t_{rr} WAVEFORMS AND DEFINITIONS



AVALANCHE ENERGY TEST CIRCUIT



AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Typical Performance Characteristics $T_c = 25^\circ\text{C}$ unless otherwise noted

Figure 1. Typical Forward Voltage Drop

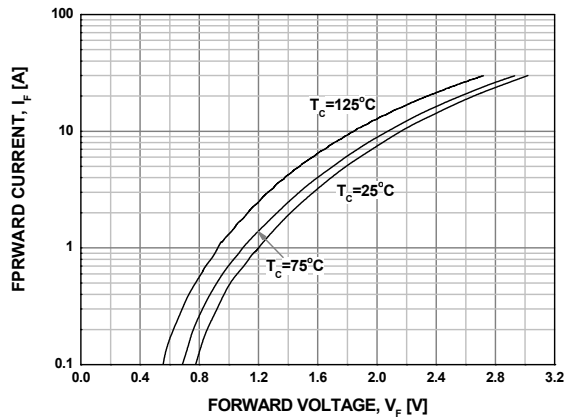


Figure 2. Typical Reverse Current

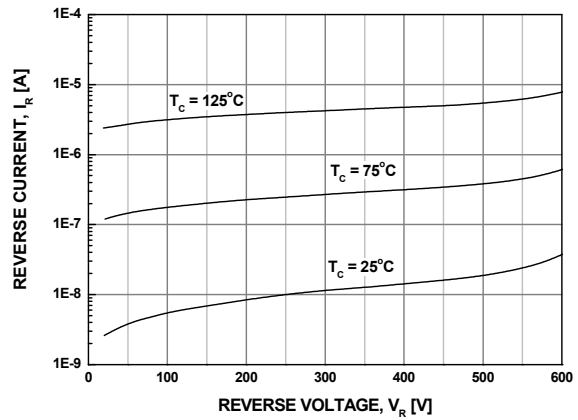


Figure 3. Typical Junction Capacitance

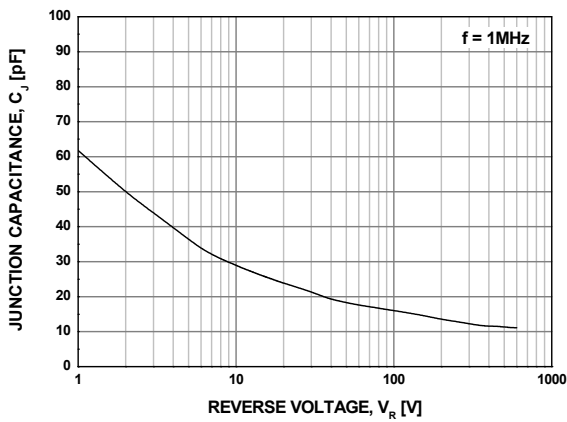


Figure 4. Typical Reverse Recovery Time

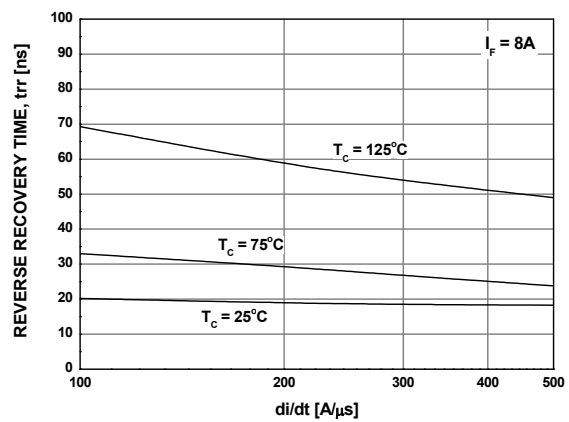


Figure 5. Typical Reverse Recovery Current

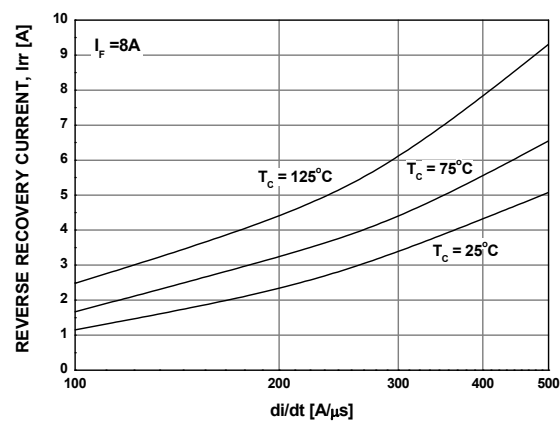
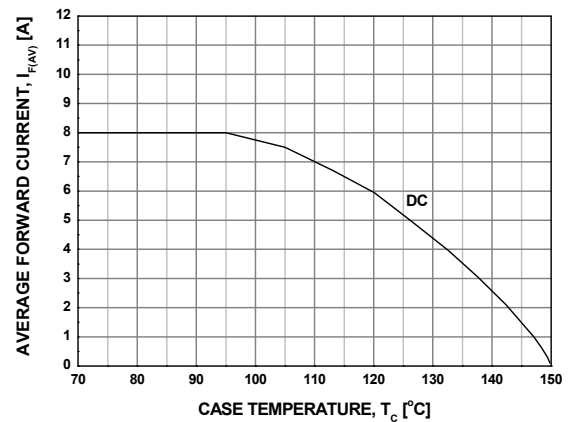


Figure 6. Forward Current Deration Curve



Technical drawing of a 16-pin D-subminiature connector. The drawing includes three views: a front view (top left), a side view (top right), and a rear view (bottom left). The front view shows a rectangular housing with four mounting holes (diameter 3.28 mm) and a central pin. Dimensions include a total width of 10.36 mm (9.96 mm to the center), a pin diameter of 3.28 mm (3.08 mm to the center), and a pin length of 16.00 mm (15.60 mm to the center). The side view shows a total height of 16.07 mm (15.67 mm to the center) and a pin diameter of 2.96 mm (2.56 mm to the center). The rear view shows a total width of 2.54 mm (2.14 mm to the center) and a pin diameter of 2.54 mm (2.14 mm to the center). A table of dimensions is provided: 0.90, 0.70, 0.50 (M), and A. A note indicates that the dimensions are in millimeters and are exclusive of burr, mold flash, and tie bar protrusion.

0.90	0.70	0.50 (M)	A
------	------	----------	---

NOTES:

- A. EXCEPT WHERE NOTED CONFORMS EIAJ SC91A.
- B. DOES NOT COMPLY EIAJ STD. VALUE
- C. ALL DIMENSIONS ARE IN MILLIMETER
- D. DIMENSIONS ARE EXCLUSIVE OF BURR, MOLD FLASH AND TIE BAR PROTRUSION

NOTES:

- A. EXCEPT WHERE NOTED CONFORMS TO EIAJ SC91A.
☒ B. DOES NOT COMPLY EIAJ STD. VALUE.
 C. ALL DIMENSIONS ARE IN MILLIMETERS.
 D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
 E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
 F. DRAWING FILE NAME: TO220C02REV2

Dimensions in Millimeters



TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

2Cool™
AccuPower™
AX-CAP™*
BitSiC®
Build it Now™
CorePLUS™
CorePOWER™
CROSSVOLT™
CTL™
Current Transfer Logic™
DEUXPEED®
Dual Cool™
EcoSPARK®
EfficientMax™
ESBC™

Fairchild®
Fairchild Semiconductor®
FACT Quiet Series™
FACT®
FAST®
FastvCore™
FETBench™
FlashWriter®*
FPS™

F-PFS™
FRFET®
Global Power ResourceSM
Green Bridge™
Green FPS™
Green FPS™ e-Series™
Gmax™
GTO™
IntelliMAX™
ISOPANAR™
Marking Small Speakers Sound Louder and Better™
MegaBuck™
MICROCOUPLER™
MicroFET™
MicroPak™
MicroPak2™
MillerDrive™
MotionMax™
Motion-SPM™
mWSaver™
OptoHIT™
OPTOLOGIC®
OPTOPLANAR®

PowerTrench®
PowerXS™
Programmable Active Droop™
QFET®
QS™
Quiet Series™
RapidConfigure™

Saving our world, 1mW/W/kW at a time™
SignalWise™
SmartMax™
SMART START™
Solutions for Your Success™
SPM®
STEALTH™
SuperFET®
SuperSOT™-3
SuperSOT™-6
SuperSOT™-8
SupreMOS®
SyncFET™
Sync-Lock™
 SYSTEM GENERAL®*

The Power Franchise®
the power®
franchise™
TinyBoost™
TinyBuck™
TinyCalc™
TinyLogic®
TINYOPTO™
TinyPower™
TinyPWM™
TinyWire™
TranSiC®
TriFault Detect™
TRUECURRENT®*

UHC®
Ultra FRFET™
UniFET™
VCX™
VisualMax™
VoltagePlus™
XS™

*Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used here in:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, www.Fairchildsemi.com, under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed application, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address and warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	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	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.