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FFD08S60S_F085

October 2010

STEALTH™ II Rectifier

Features

- High Speed Switching (Max. $t_{rr} < 30\text{ns}$ @ $I_F = 8\text{A}$)
- High Reverse Voltage and High Reliability
- Avalanche Energy Rated
- Qualified to AEC Q101
- RoHS Compliant

Applications

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

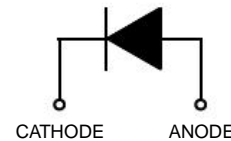
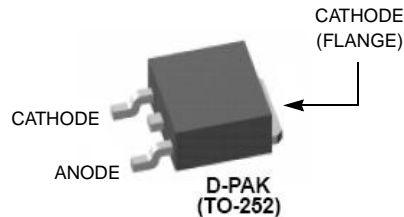
8A, 600V Stealth2 Rectifier

The FFD08S60S_F085 is stealth 2 rectifier with soft recovery characteristics ($t_{rr} < 30\text{ns}$). They has half the recovery time of hyperfast rectifier and are 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	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 @ $T_C = 115^\circ\text{C}$	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 $T_C = 25^\circ\text{C}$ unless otherwise noted

$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.0	$^\circ\text{C/W}$
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Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
F08S60S	FFD08S60S_F085	TO252	13"	12mm	2500

FFD08S60S_F085 Stealth 2 Rectifier

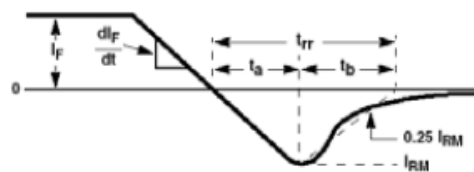
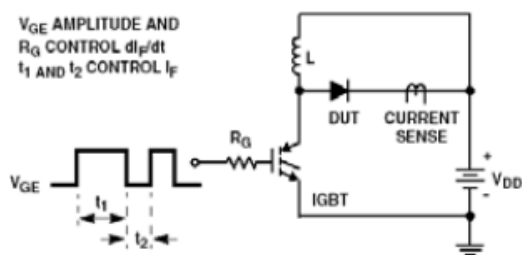
Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Parameter	Test Conditions		Min	Typ	Max	Units
V _{FM} ¹	I _F = 8A, I _F = 8A	T _C = 25°C T _C = 125°C	- -	2.1 1.6	2.6 -	V
I _{RM} ¹	V _R = 600V, V _R = 600V	T _C = 25°C T _C = 125°C	- -	- -	100 500	μA
t _{rr}	I _F = 1A, di/dt = 100A/s, V _R = 30V	T _C = 25°C	-	-	25	ns
t _{rr}	I _F = 8A, di/dt = 200A/s, 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/s, 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

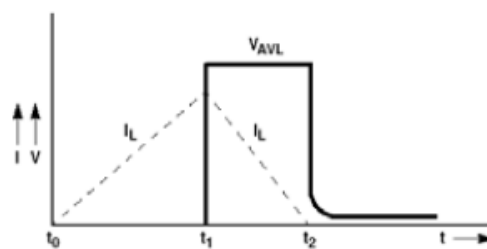
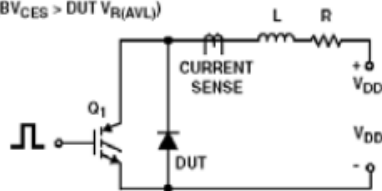
Notes:

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

Test Circuit and Waveforms



$I_{MAX} = 1\text{A}$
 $L = 40\text{mH}$
 $R < 0.1\Omega$
 $E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q_1 = \text{IGBT (}BV_{CES} > DUT V_{R(AVL)}\text{)}$



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

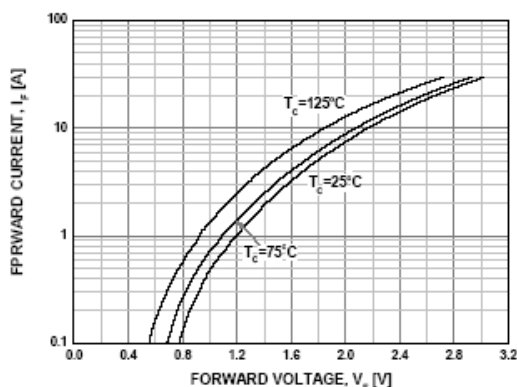


Figure 1. Typical Forward Voltage Drop

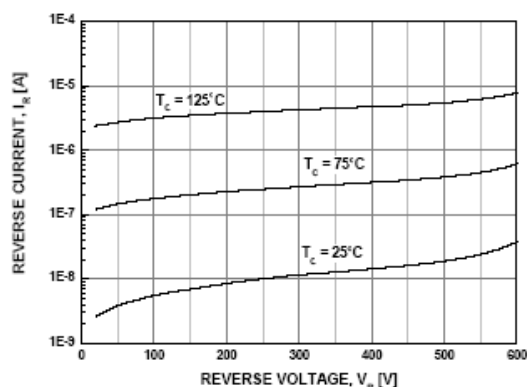


Figure 2. Typical Reverse Current

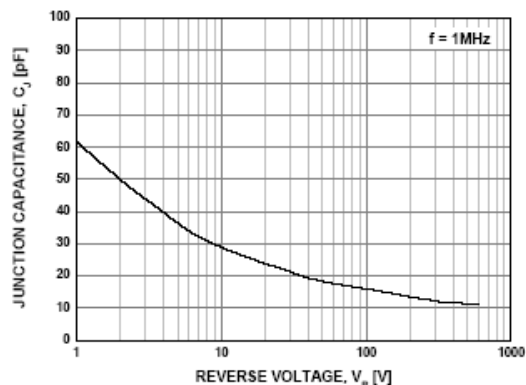


Figure 3. Typical Junction Capacitance

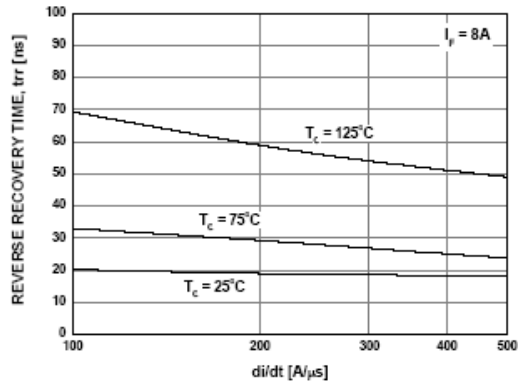


Figure 4. Typical Reverse Recovery Time

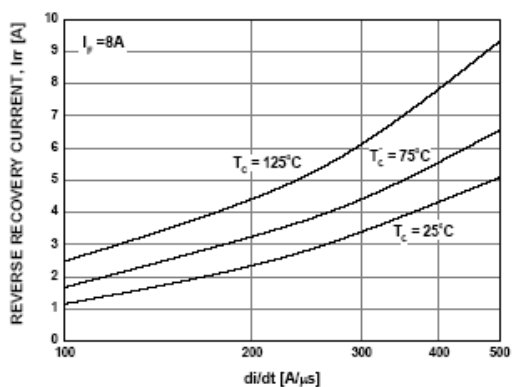


Figure 5. Typical Reverse Recovery Current

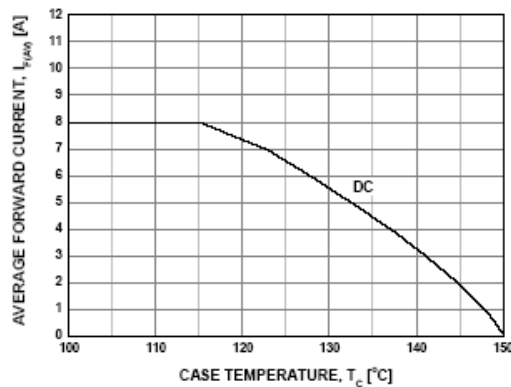
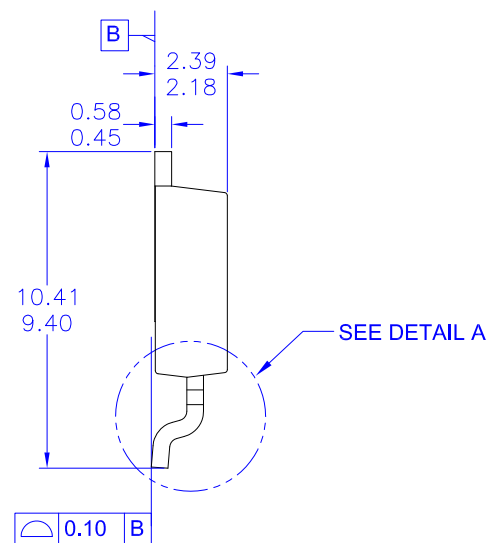
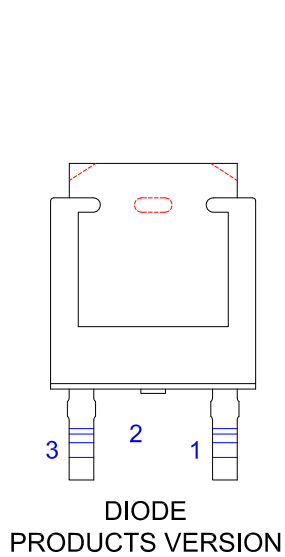
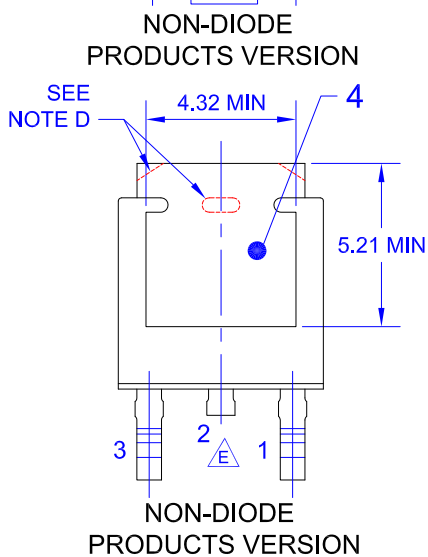
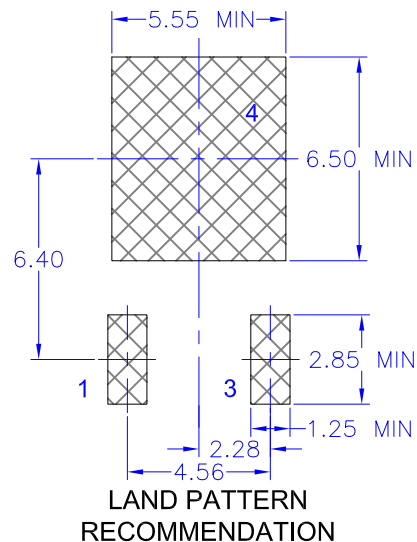
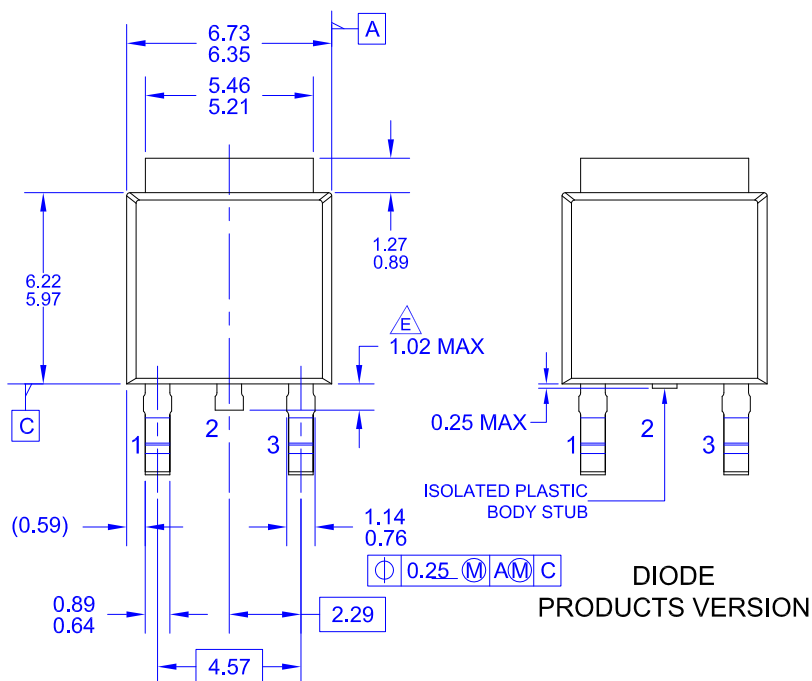
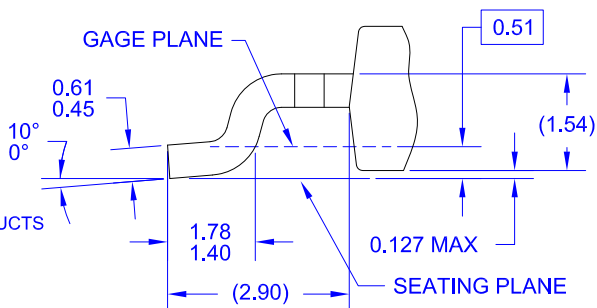


Figure 6. Forward Current Deration Curve



NOTES: UNLESS OTHERWISE SPECIFIED

- A) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE C, VARIATION AA.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
- D) SUPPLIER DEPENDENT MOLD LOCKING HOLES OR CHAMFERED CORNERS OR EDGE PROTRUSION.
- E) TRIMMED METAL CENTER LEAD IS PRESENT ON FOR NON-DIODE PRODUCTS
- F) DIMENSIONS ARE EXCLUSIVE OF BURS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- G) LAND PATTERN RECOMMENDATION IS BASED ON IPC7351A STD TO228P991X239-3N.
- H) DRAWING NUMBER AND REVISION: MKT-TO252A03REV11



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