Rectifier – STEALTH™ II
8 A, 600 V

FFD08S60S-F085

The FFD08S60S−F085 is stealth 2 rectifier with soft recovery characteristics (t_{rr} < 30 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.

Features

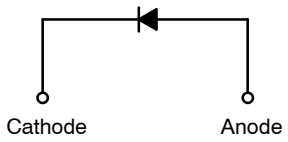
- High Speed Switching (Max. t_{rr} < 30 ns @ I_F = 8 A)
- High Reverse Voltage and High Reliability
- Avalanche Energy Rated
- AEC−Q101 Qualified and PPAP Capable
- Pb−Free and RoHS Compliant

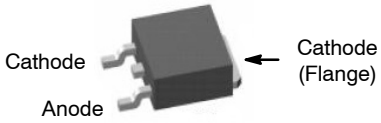
Applications

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

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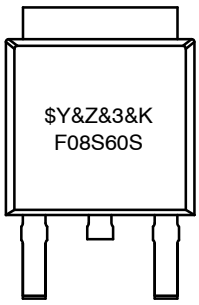
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DPAK3
CASE 369AS

MARKING DIAGRAM



$Y	= ON Semiconductor Logo
&Z	= Assembly Plant Code
&3	= Numeric Date Code
&K	= Lot Code
F08S60S	= Specific Device Code

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Ratings	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 = 115°C	8	A
I_{FSM}	Non−repetitive Peak Surge Current 60 Hz Single Half−Sine Wave	80	A
T_J, T_{STG}	Operating Junction and Storage Temperature	−65 to + 150	°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.

THERMAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.0	°C/W

ORDERING INFORMATION

Device	Package	Shipping
FFD08S60−F085	DPAK3 (Pb−Free)	2500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{FM} (Note 1)	I_F = 8 A, I_F = 8 A	T_C = 25°C T_C = 125°C	– –	2.1 1.6	2.6 –	V
I_{RM} (Note 1)	V_R = 600 V, V_R = 600 V	T_C = 25°C T_C = 125°C	– –	– –	100 500	μA
t_{rr}	I_F = 1 A, di/dt = 100 A/μs, V_R = 30 V	T_C = 25°C	–	–	25	ns
t_{rr}	I_F = 8 A, di/dt = 200 A/μs, V_R = 390 V	T_C = 25°C	–	19	30	ns
I_{rr}			–	2.2	–	A
S factor			–	0.6	–	
Q_{rr}			–	21	–	nC
t_{rr}	I_F = 8 A, di/dt = 200 A/μs, V_R = 390 V	T_C = 125°C	–	58	–	ns
I_{rr}			–	4.3	–	A
S factor			–	1.3	–	
Q_{rr}			–	125	–	nC
W_{AVL}	Avalanche Energy (L = 40 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

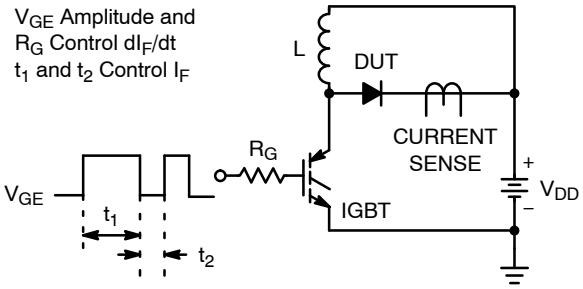


Figure 1. t_{rr} Test Circuit

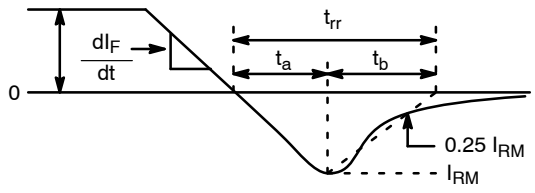


Figure 2. t_{rr} Waveform and Definitions

I_{MAX} = 1 A
L = 40 mH
R < 0.1 Ω
V_{DD} = 50 V
$E_{AVL} = 1/2LI^2 [V_{R(AVL)} / (V_{R(AVL)} - V_{DD})]$
Q_1 = IGBT (BV_{CES} > DUT $V_{R(AVL)}$)

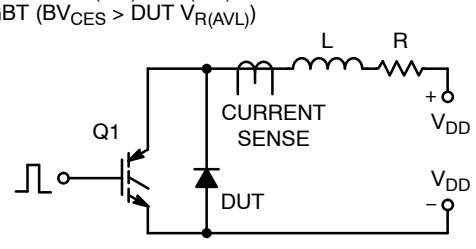


Figure 3. Avalanche Energy Test Circuit

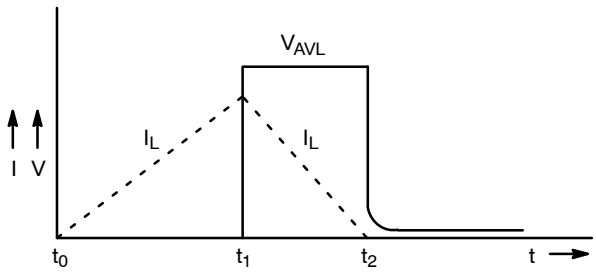


Figure 4. Avalanche Current and Voltage Waveforms

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TYPICAL CHARACTERISTICS

(T_C = 25°C unless otherwise noted)

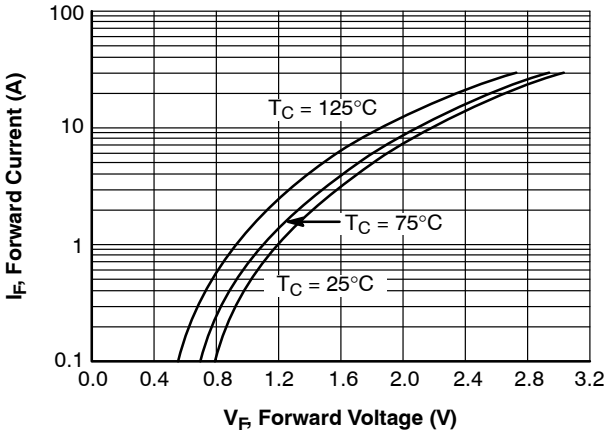


Figure 5. Typical Forward Voltage Drop

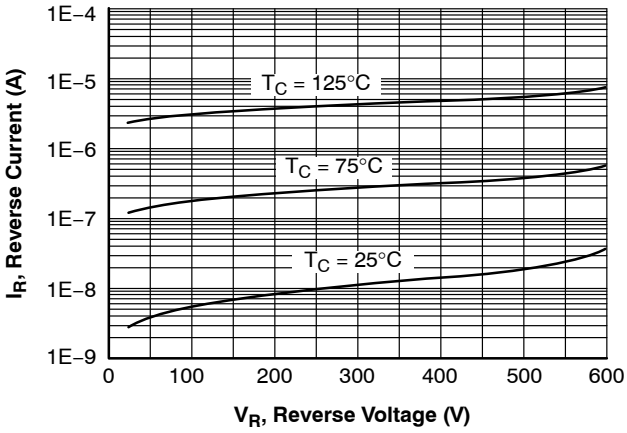


Figure 6. Typical Reverse Current

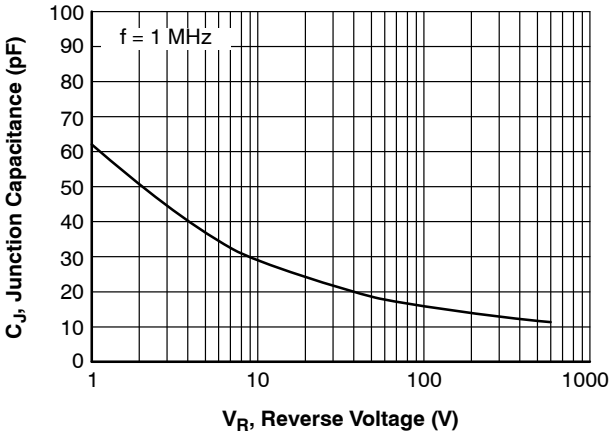


Figure 7. Typical Junction Capacitance

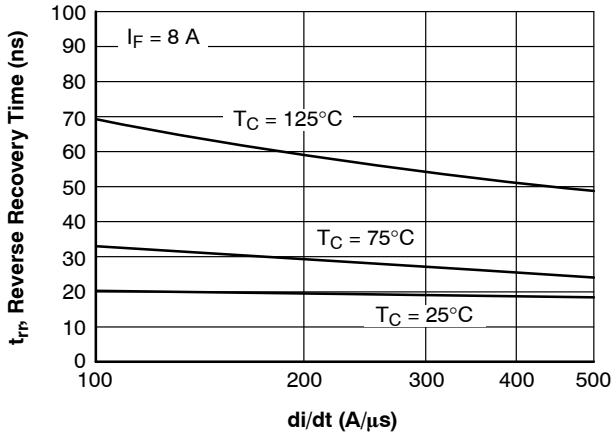


Figure 8. Typical Reverse Recovery Time

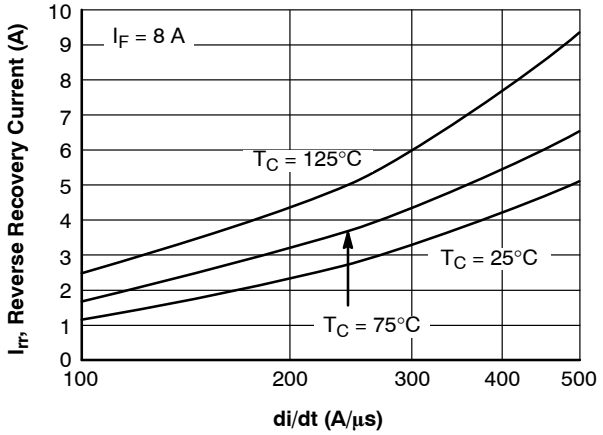


Figure 9. Typical Reverse Recovery Current

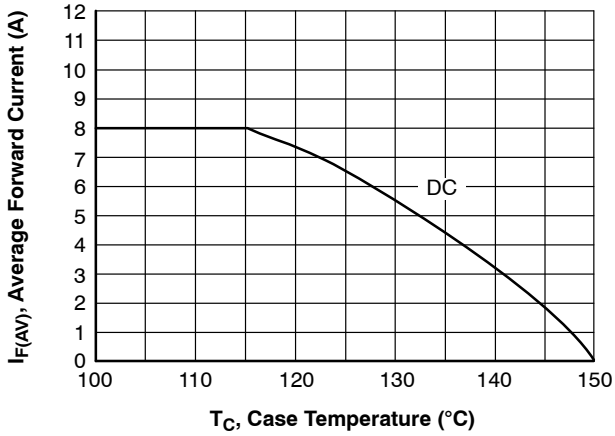
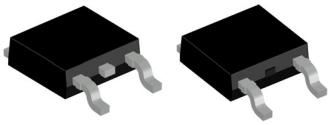


Figure 10. Forward Current Deration Curve

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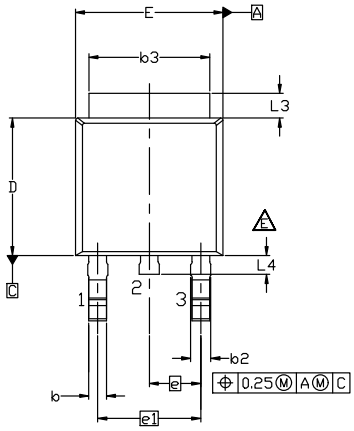
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MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

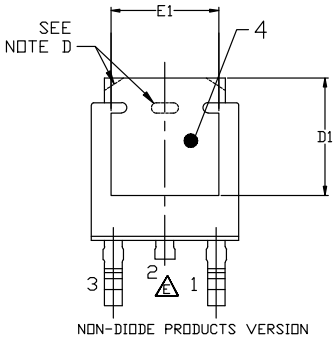


DPAK3 6.10x6.54x2.29, 4.57P
CASE 369AS
ISSUE B

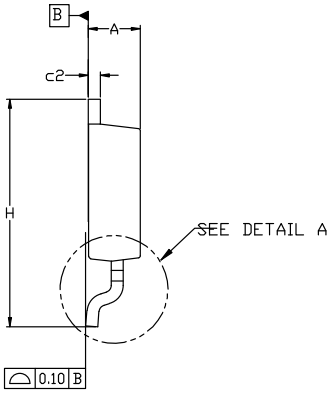
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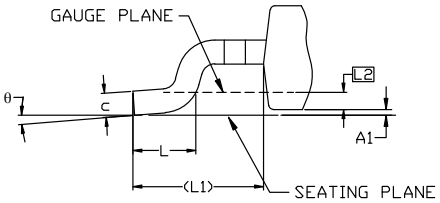
NON-DIODE PRODUCTS VERSION



NON-DIODE PRODUCTS VERSION

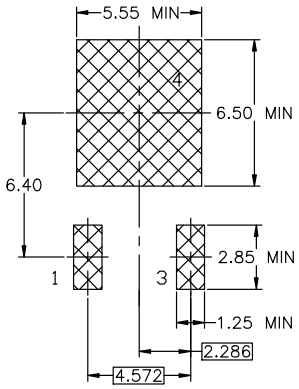


NOTES: UNLESS OTHERWISE SPECIFIED
A) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE F, VARIATION AA.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2018.
D) SUPPLIER DEPENDENT MOLD LOCKING HOLES OR CHAMFERED CORNERS OR EDGE PROTRUSION.
E) FOR DIODE PRODUCTS, L4 IS 0.25 MM MAX PLASTIC BODY STUB WITHOUT CENTER LEAD.
F) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
G) LAND PATTERN RECOMMENDATION IS BASED ON IPC7351A STD TO228P991X239-3N.



DETAIL A
(ROTATED -90°)
SCALE: 12X

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	2.18	2.29	2.39
A1	0.00	–	0.127
b	0.64	0.77	0.89
b2	0.76	0.95	1.14
b3	5.21	5.34	5.46
c	0.45	0.53	0.61
c2	0.45	0.52	0.58
D	5.97	6.10	6.22
D1	5.21	---	---
E	6.35	6.54	6.73
E1	4.32	---	---
e	2.286 BSC		
e1	4.572 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	1.08	1.27
L4	---	---	1.02
θ	0°	---	10°



LAND PATTERN RECOMMENDATION

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

GENERIC MARKING DIAGRAM*



*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

XXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
ZZ = Assembly Lot Code

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