Stealth II Rectifier
30 A, 600 V

FFH30S60S

Description

The FFH30S60S is stealth2 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.

Features

- High Speed Switching, $t_{rr} < 35$ ns @ $I_F = 30$ A
- High Reverse Voltage and High Reliability
- This Device is Pb−Free and is RoHS Compliant

Applications

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

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

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	600	V
Working Peak Reverse Voltage	V_{RWM}	600	V
DC Blocking Voltage	V_R	600	V
Average Rectified Forward Current @ T_C = 102°C	$I_{F(AV)}$	30	A
Non−Repetitive Peak Surge Current 60 Hz Single Half−Sine Wave	I_{FSM}	300	A
Operating and Storage Temperature Range	T_J, T_{STG}	−65 to +175	°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

Parameter	Symbol	Value	Unit
Maximum Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.1	°C/W

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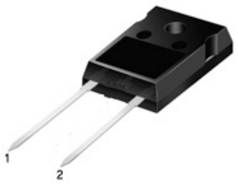
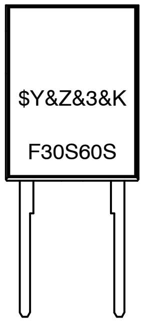
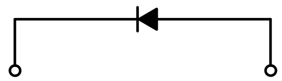


TO−247
2 LEAD
CASE 340CL

MARKING DIAGRAM



$Y = ON Semiconductor Logo
&Z = Assembly Plant Code
&3 = Numeric Date Code
&K = Lot Code
F30S60S = Specific Device Code



ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

PACKAGE MARKING AND ORDERING INFORMATION

Device	Device Marking	Package	Reel Size	Tape Width	Quantity
FFH30S60STU	F30S60S	TO−247−2L	N/A	N/A	50 Units

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{FM} (Note 1)	I_F = 30 A I_F = 30 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	–	25.2	30	ns
t_{rr} I_{rr} S factor Q_{rr}	I_F = 30 A, di/dt = 200 A/μs, V_R = 390 V	T_C = 25°C	– – – –	26 2.4 0.9 43	– – – –	ns A nC
t_{rr} I_{rr} S factor Q_{rr}	I_F = 30 A, di/dt = 200 A/μs, V_R = 390 V	T_C = 125°C	– – – –	75.1 6.3 0.9 238	– – – –	ns A nC
W_{AVL}	Avalanche Energy (L = 40 mH)		7.2	–	–	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

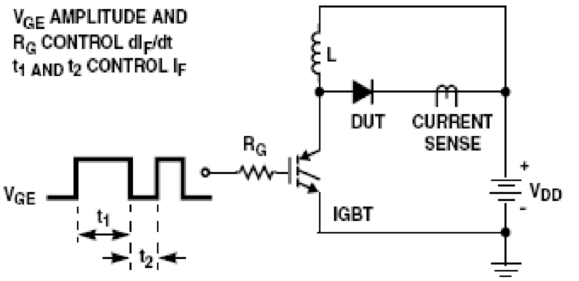


Figure 1. t_{rr} Test Circuit

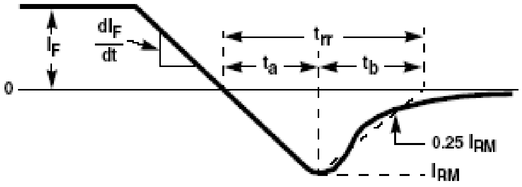


Figure 2. t_{rr} Waveforms and Definitions

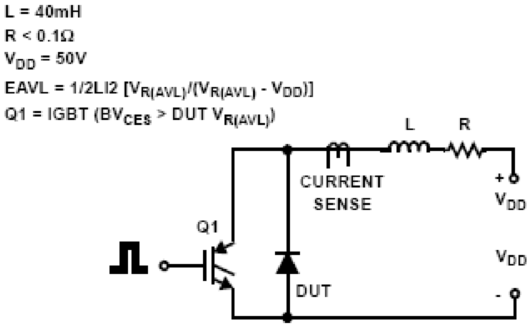


Figure 3. Avalanche Energy Test Circuit

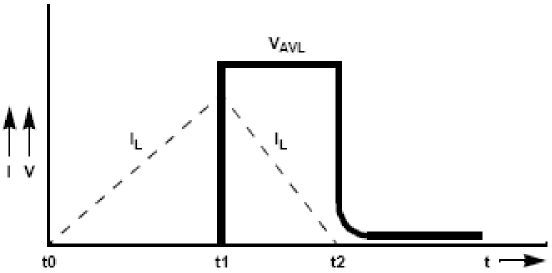


Figure 4. Avalanche Current and Voltage Definitions

TYPICAL PERFORMANCE CHARACTERISTICS

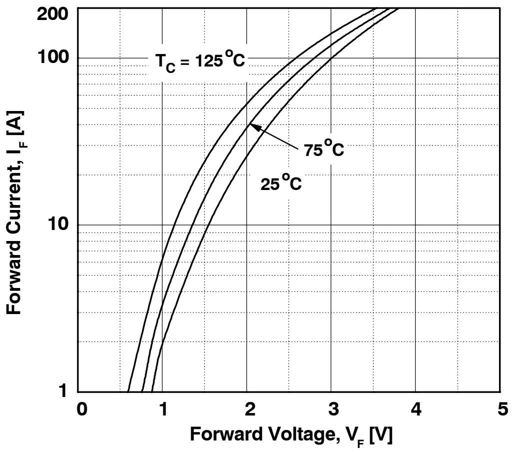


Figure 5. Typical Forward Voltage Drop vs. Forward Current

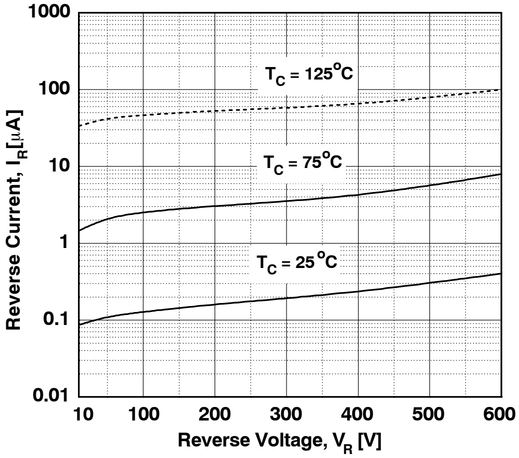


Figure 6. Typical Reverse Current vs. Reverse Voltage

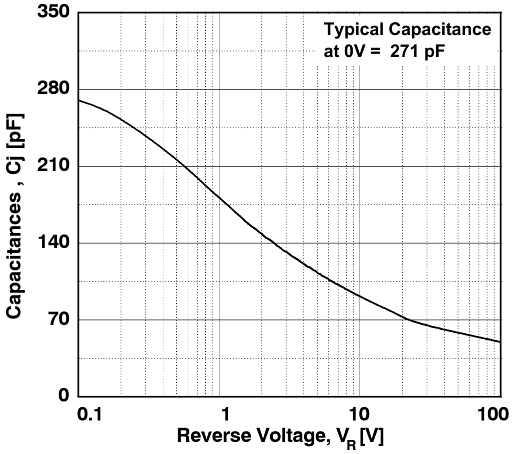


Figure 7. Typical Junction Capacitance

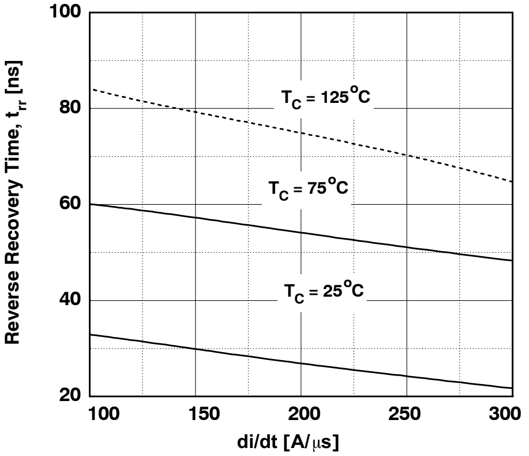


Figure 8. Typical Reverse Recovery Time vs. di/dt

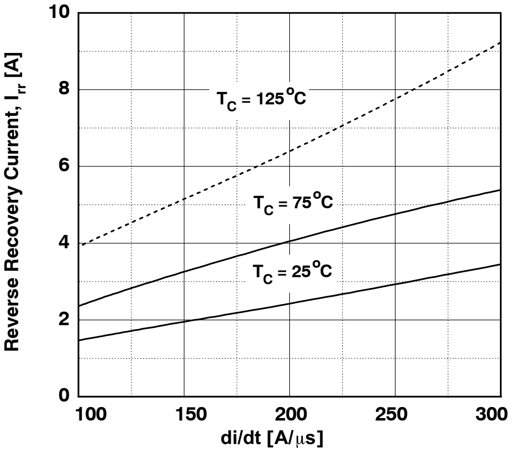


Figure 9. Typical Reverse Recovery Current vs. di/dt

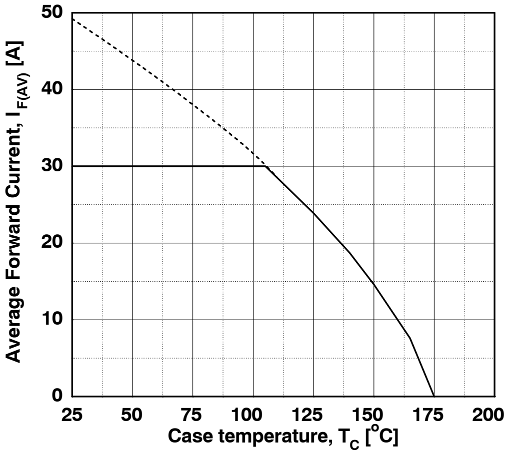


Figure 10. Forward Current Derating Curve

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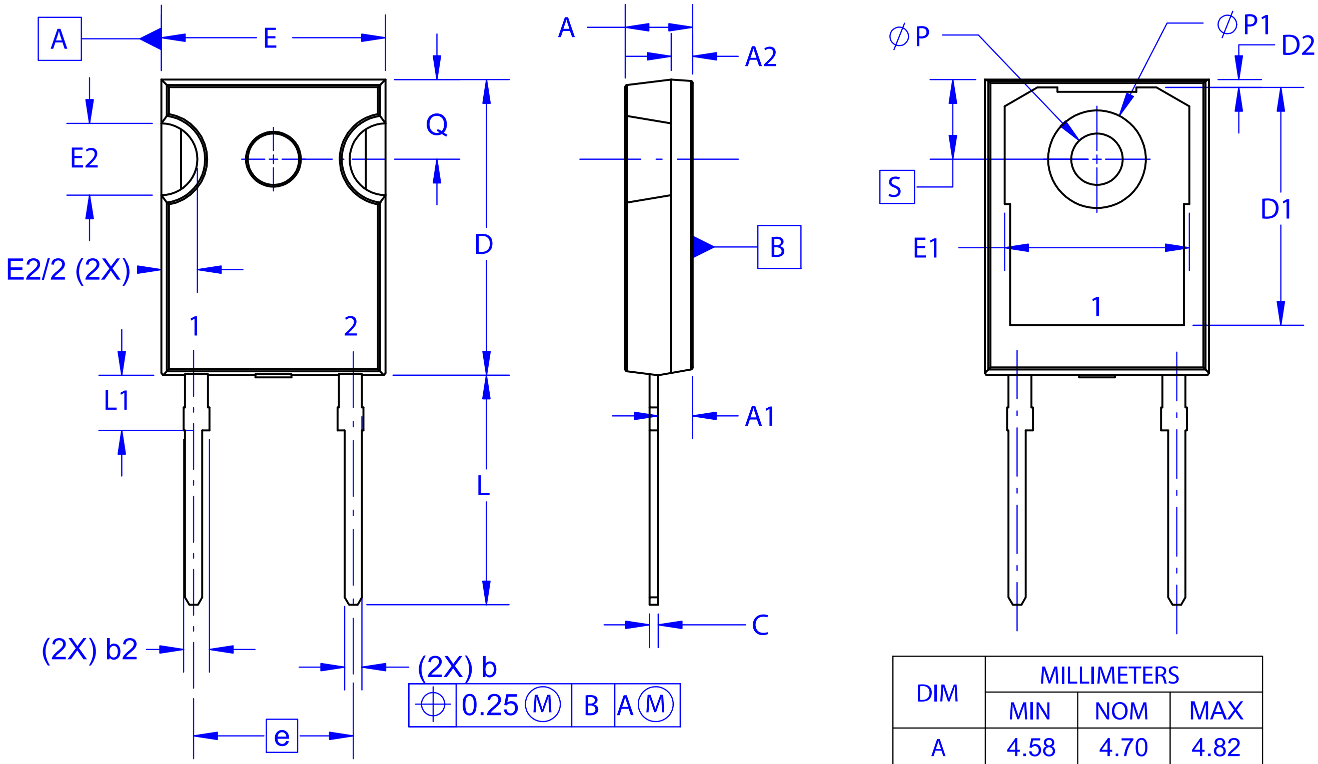
CASE 340CL
ISSUE A

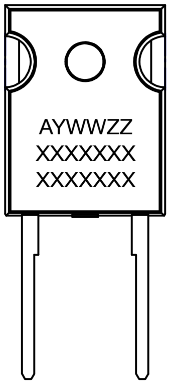
DATE 03 DEC 2019



NOTES: UNLESS OTHERWISE SPECIFIED.

A. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
B. ALL DIMENSIONS ARE IN MILLIMETERS.
C. DRAWING CONFORMS TO ASME Y14.5 - 2009.
D. DIMENSION A1 TO BE MEASURED IN THE REGION DEFINED BY L1.
E. LEAD FINISH IS UNCONTROLLED IN THE REGION DEFINED BY L1.

GENERIC MARKING DIAGRAM*



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

*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.

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	4.58	4.70	4.82
A1	2.29	2.40	2.66
A2	1.30	1.50	1.70
b	1.17	1.26	1.35
b2	1.53	1.65	1.77
c	0.51	0.61	0.71
D	20.32	20.57	20.82
D1	16.37	16.57	16.77
D2	0.51	0.93	1.35
E	15.37	15.62	15.87
E1	12.81	~	~
E2	4.96	5.08	5.20
e	~	11.12	~
L	15.75	16.00	16.25
L1	3.69	3.81	3.93
∅P	3.51	3.58	3.65
∅P1	6.61	6.73	6.85
Q	5.34	5.46	5.58
S	5.34	5.46	5.58

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