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May 2015

FFP15S60S15 A, 600 V, STEALTH™ II Diode

Features

- Stealth Recovery T_{rr} = 35 ns (@ I_F = 15 A)
- Max Forward Voltage, $V_F = 2.6 \text{ V } (@ T_C = 25^{\circ}\text{C})$
- · 600 V Reverse Voltage and High Reliability
- · Improved dv/dt Capability
- · RoHS compliant

Applications

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

Description

The FFP15S60S is a 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 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.



1. Cathode

2. Anode



1. Cathode 2. Anode

Absolute Maximum Ratings T_C = 25°C unless otherwise noted

Symbol	Parameter	FFP15S60S	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 = 123°C	15	Α
I _{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	150	А
T _J , T _{STG}	Operating and Storage Temperature Range	-65 to +175	°C

Thermal Characteristics

Symbol	Parameter	FFP15S60S	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	1.3	°C/W

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFP15S60STU	F15S60S	TO-220-2L	Tube	N/A	N/A	50

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

Symbol	Parameter	Min.	Тур.	Max.	Unit	
V _F 1	I _F = 15 A I _F = 15 A	$T_{\rm C} = 25^{\rm o}{\rm C}$ $T_{\rm C} = 125^{\rm o}{\rm C}$		2.1 1.6	2.6	V
I _R 1	V _R = 600 V V _R = 600 V	$T_{C} = 25^{\circ}C$ $T_{C} = 125^{\circ}C$			100 500	μА
t _{rr}	$I_F = 1A$, di/dt = 100 A/ μ s, $V_R = 30 V$	$T_{\rm C} = 25^{\rm o}{\rm C}$	-	21	30	ns
t _{rr} I _{rr} S factor Q _{rr}	I_F = 15 A, di/dt = 200 A/ μ s, V_R = 390 V	T _C = 25°C	- - -	23 2.5 0.7 29	35 - - -	ns A nC
t _{rr} I _{rr} S factor Q _{rr}	$I_F = 15 \text{ A}$, di/dt = 200 A/ μ s, $V_R = 390 \text{ V}$	T _C = 125°C	- - -	55 4.3 1.1 118		ns A nC
W _{AVL}	Avalanche Energy (L = 40 mH)		20	-	-	mJ

L = 40mH

Test Circuit and Waveforms

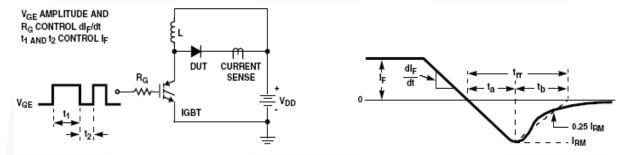


Figure 1. Diode Reverse Recovery Test Circuit & Waveform

 $R < 0.1\Omega$ V_{DD} = 50V $\mathsf{EAVL} = 1/2\mathsf{L}12 \; [\mathsf{V}_{\mathsf{R}(\mathsf{AVL})}/(\mathsf{V}_{\mathsf{R}(\mathsf{AVL})} - \mathsf{V}_{\mathsf{DD}})]$ Q1 = IGBT (BV_{CES} > DUT V_{R(AVL)}) CURRENT SENSE V_{DD}

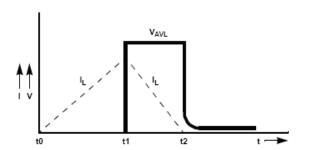


Figure 2. Unclamped Inductive Switching Test Circuit & Waveform

Notes: 1: Pulse: Test Pulse width = $300\mu s$, Duty Cycle = 2%

Typical Performance Characteristics

Figure 3. Typical Forward Voltage Drop vs. Forward Current

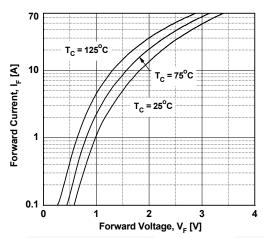


Figure 5. Typical Junction Capacitance

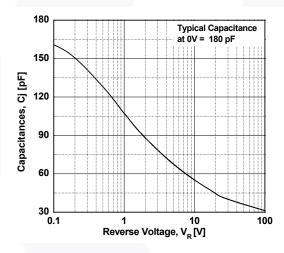


Figure 7. Typical Reverse Recovery Current vs. di/dt

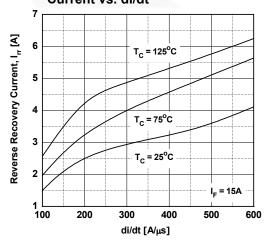


Figure 4. Typical Reverse Current vs. Reverse Voltage

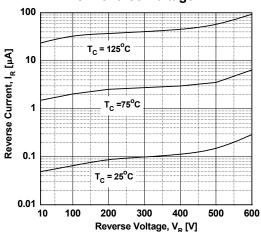


Figure 6. Typical Reverse Recovery Time vs. di/dt

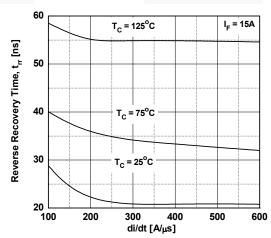
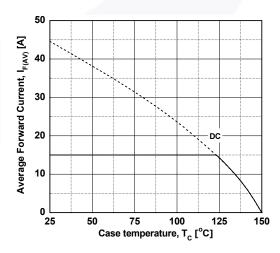
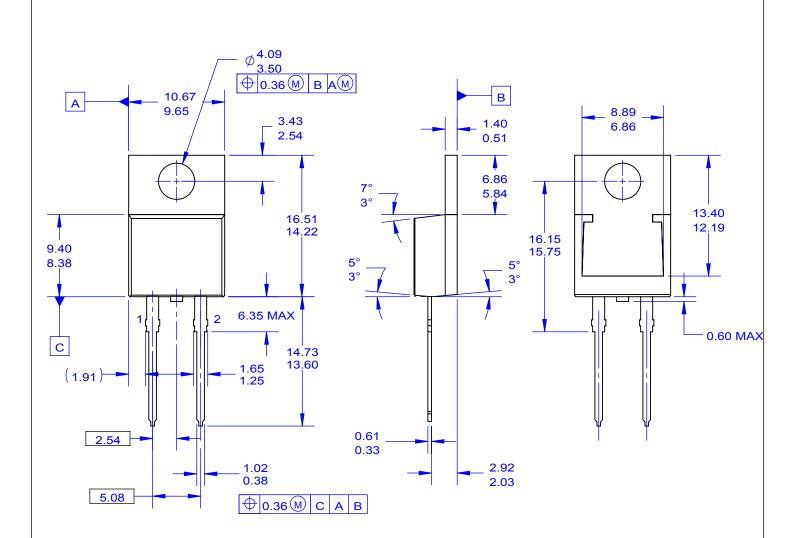
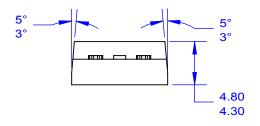


Figure 8. Forward Current Derating Curve









NOTES:

- A. PACKAGE REFERENCE: JEDEC TO220,ISSUE K, VARIATION AC,DATED APRIL 2002.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
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