

## 30A, 50V - 600V Super Fast Rectifier

### FEATURES

- AEC-Q101 qualified available
- Dual rectifier construction, positive center-tap
- Glass passivated chip junctions
- Superfast recovery time, high voltage
- Low forward voltage, high current capability
- Low thermal resistance
- Low power loss, high efficiency
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	30	A
$V_{RRM}$	50 - 600	V
$I_{FSM}$	300	A
$T_{JMAX}$	150	°C
Package	TO-247AD (TO-3P)	
Configuration	Dual dies	

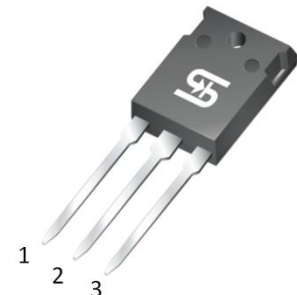
### APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Lighting application
- Snubber
- Freewheeling application

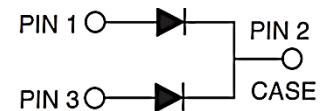


### MECHANICAL DATA

- Case: TO-247AD (TO-3P)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 301 class 2 whisker test
- Mounting torque: 1.13 N·m maximum
- Polarity: As marked
- Weight: 5.60g (approximately)



TO-247AD (TO-3P)



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	SF 3001 PT	SF 3002 PT	SF 3003 PT	SF 3004 PT	SF 3005 PT	SF 3006 PT	SF 3008 PT	UNIT
Marking code on the device		SF 3001 PT	SF 3002 PT	SF 3003 PT	SF 3004 PT	SF 3005 PT	SF 3006 PT	SF 3008 PT	
Repetitive peak reverse voltage	$V_{RRM}$	50	100	150	200	300	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	105	140	210	280	420	V
Forward current	$I_F$	30							A
Surge peak forward current 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	300							A
Junction temperature	$T_J$	-55 to +150							°C
Storage temperature	$T_{STG}$	-55 to +150							°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-case thermal resistance	$R_{\theta JC}$	1	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage per diode <sup>(1)</sup>	SF3001PT	$I_F = 15\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.95	V
	SF3002PT			-	1.30	V
	SF3003PT			-	1.70	V
	SF3004PT			-	1.70	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	SF3005PT	$T_J = 25^\circ\text{C}$	$I_R$	-	10	$\mu\text{A}$
	SF3006PT	$T_J = 125^\circ\text{C}$		-	500	$\mu\text{A}$
Junction capacitance per diode	SF3008PT	$1\text{MHz}, V_R = 4.0\text{V}$	$C_J$	175	-	pF
Reverse recovery time		$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	$t_{rr}$	-	35	ns

**Notes:**

1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)(2)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
SF30xPT	TO-247AD (TO-3P)	30 / Tube
SF30xPTH	TO-247AD (TO-3P)	30 / Tube

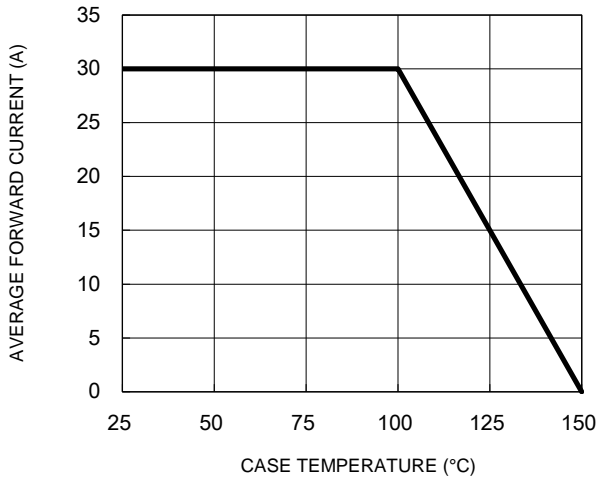
**Notes:**

1. "x" defines voltage from 50V(SF3001PT) to 600V(SF3008PT)
2. "H" means AEC-Q101 qualified

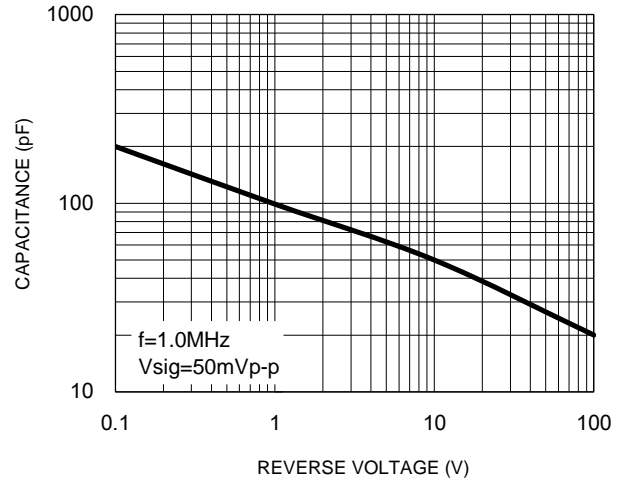
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

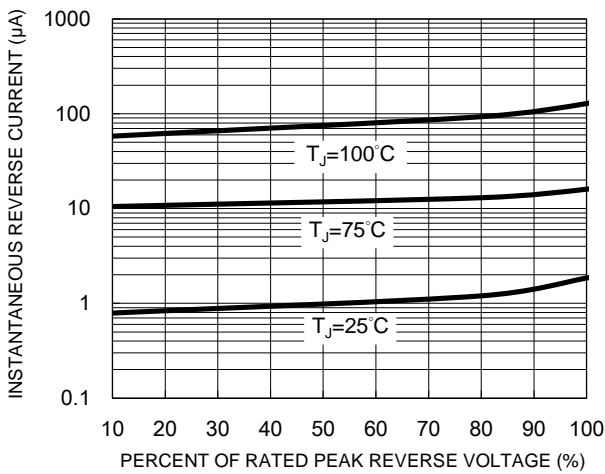
**Fig.1 Forward Current Derating Curve**



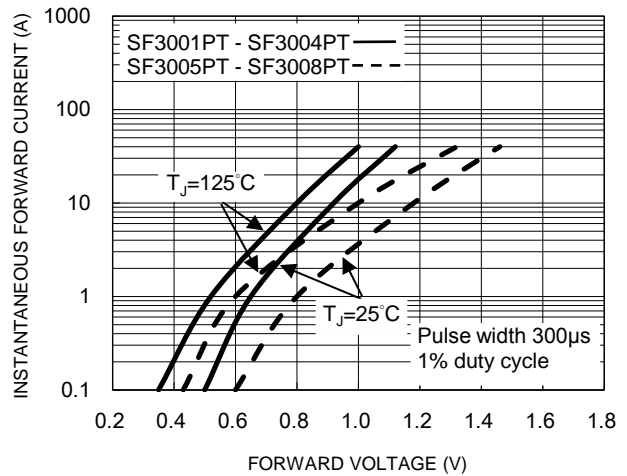
**Fig.2 Typical Junction Capacitance**



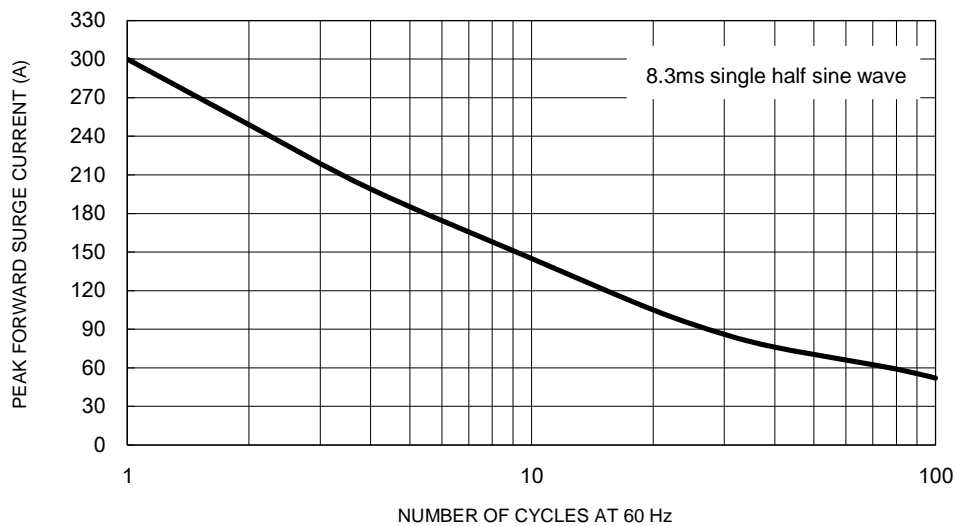
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



**Fig.5 Maximum Non-Repetitive Forward Surge Current**



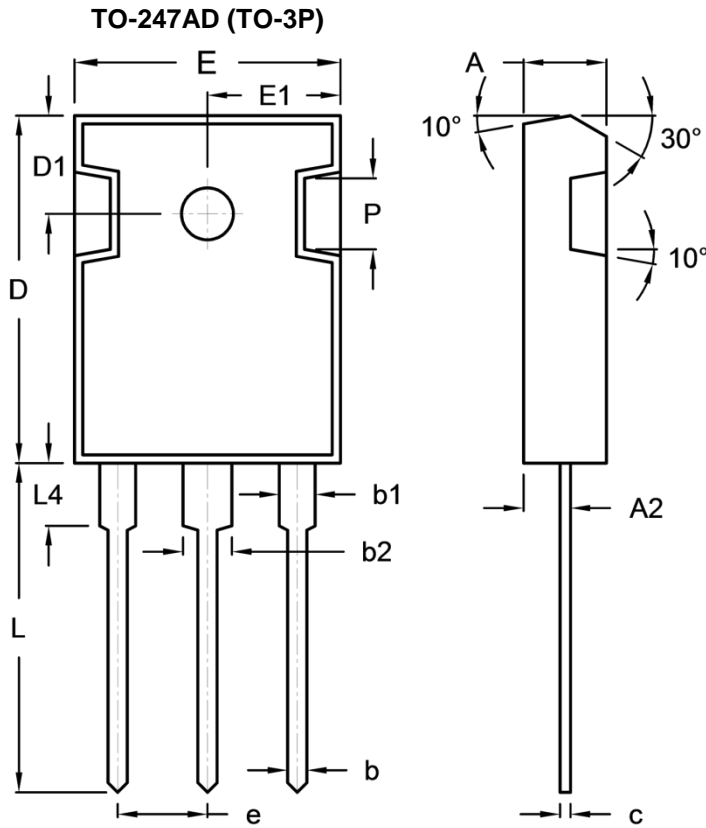
**CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram**

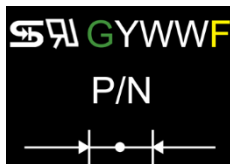


**PACKAGE OUTLINE DIMENSIONS**



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	4.90	5.16	0.193	0.203
A2	2.70	3.00	0.106	0.118
b	1.12	1.22	0.044	0.048
b1	1.93	2.18	0.076	0.086
b2	2.97	3.22	0.117	0.127
c	0.51	0.76	0.020	0.030
D	20.80	21.30	0.819	0.839
D1	5.70	6.20	0.224	0.244
E	15.90	16.40	0.626	0.646
E1	7.90	8.20	0.311	0.323
e	5.20	5.70	0.205	0.224
H	2.90	3.40	0.114	0.134
L	19.70	20.20	0.776	0.795
L4	3.50	4.10	0.138	0.161
P	-	4.30	-	0.169

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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