

## 1A, 400V ESD Capability Rectifier

### FEATURES

- High ESD capability
- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Converter

### MECHANICAL DATA

- Case: DO-214AC (SMA)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.060g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	1	A
$V_{RRM}$	400	V
$I_{FSM}$	40	A
$T_{JMAX}$	175	°C
Package	DO-214AC (SMA)	
Configuration	Single die	



**DO-214AC (SMA)**



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	TSD1G	UNIT
Marking code on the device		TSD1G	
Repetitive peak reverse voltage	$V_{RRM}$	400	V
Reverse voltage, total rms value	$V_{R(RMS)}$	280	V
Forward current	$I_F$	1	A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	40	A
Junction temperature	$T_J$	- 55 to +175	°C
Storage temperature	$T_{STG}$	- 55 to +175	°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	39	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	86	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	43	$^{\circ}\text{C/W}$

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm Cu pad test board)

<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 <sup>(1)</sup>	$I_F = 0.5\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	0.85	1.00	V
	$I_F = 1.0\text{A}, T_J = 25^{\circ}\text{C}$		0.89	1.25	V
	$I_F = 0.5\text{A}, T_J = 125^{\circ}\text{C}$		0.72	0.90	V
	$I_F = 1.0\text{A}, T_J = 125^{\circ}\text{C}$		0.77	1.10	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^{\circ}\text{C}$	$I_R$	-	1	$\mu\text{A}$
	$T_J = 125^{\circ}\text{C}$		-	50	$\mu\text{A}$
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	$C_J$	14	-	pF

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

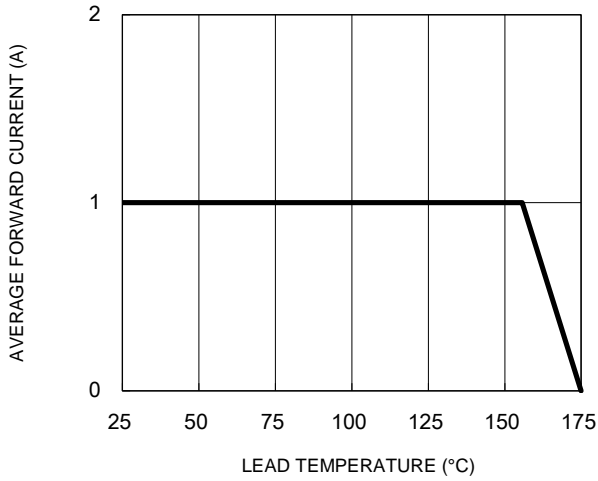
<b>IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS</b> ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)						
<b>STANDARD</b>	<b>TEST TYPE</b>	<b>TEST CONDITIONS</b>	<b>SYMBOL</b>	<b>CLASS</b>	<b>VALUE</b>	<b>TYP</b>
AEC-Q101-001	Human body model(contact mode)	$C=100\text{pF}, R=1.5\text{k}\Omega$	$V_c$	H3B	$\geq 8\text{kV}$	N/A
IEC 61000-4-2	Contact mode	$C=150\text{pF}, R=330\Omega$		4	$\geq 8\text{kV}$	20kV
	Air-discharge mode	$C=150\text{pF}, R=330\Omega$		4	$\geq 15\text{kV}$	25kV
ISO 10605	Contact mode	$C=330\text{pF}, R=330\Omega$		L4	$\geq 15\text{kV}$	20kV
	Air-discharge mode	$C=330\text{pF}, R=330\Omega$		L4	$\geq 25\text{kV}$	25kV

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSD1G	DO-214AC (SMA)	7,500 / Tape & Reel

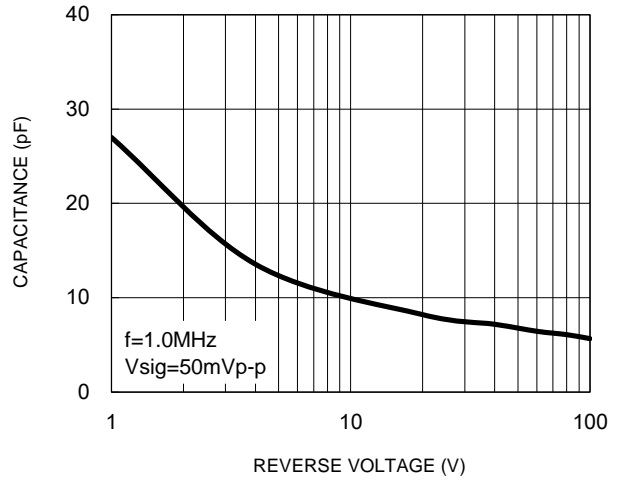
**CHARACTERISTICS CURVES**

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

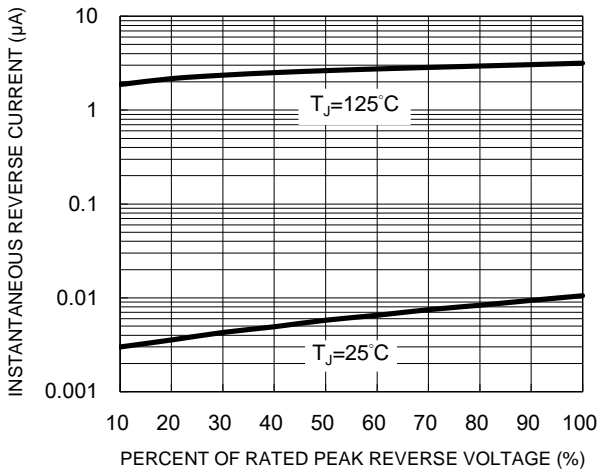
**Fig.1 Forward Current Derating Curve**



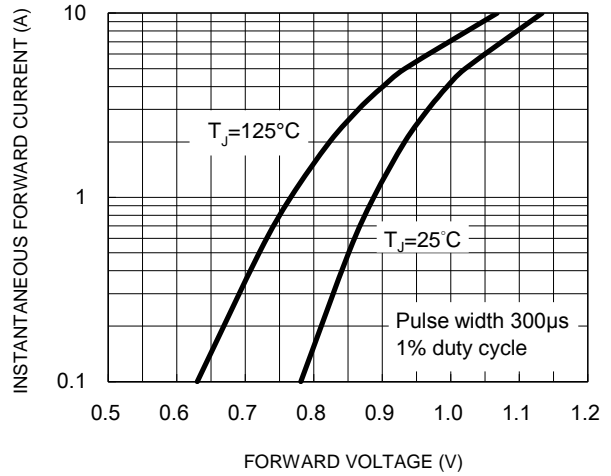
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**

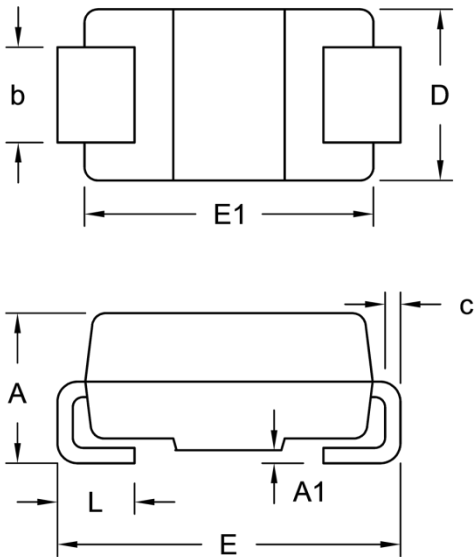


**Fig.4 Typical Forward Characteristics**



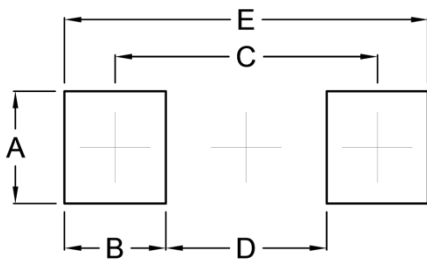
**PACKAGE OUTLINE DIMENSIONS**

DO-214AC (SMA)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.99	2.50	0.078	0.098
A1	0.10	0.20	0.004	0.008
b	1.27	1.58	0.050	0.062
c	0.15	0.31	0.006	0.012
D	2.29	2.83	0.090	0.111
E	4.95	5.33	0.195	0.210
E1	4.06	4.60	0.160	0.181
L	0.90	1.41	0.035	0.056

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.68	0.066
B	1.52	0.060
C	3.93	0.155
D	2.41	0.095
E	5.45	0.215

**MARKING DIAGRAM**



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

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