

1A, 400V ESD Capability Rectifier

FEATURES

- AEC-Q101 qualified
- 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

- DC to DC converter
- Automotive application
- Car lighting
- Snubber

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	TSD1GH	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

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

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

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$	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 ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	1	μA
	$T_J = 125^\circ\text{C}$		-	50	μA
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

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE	TYP
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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
TSD1GH	DO-214AC (SMA)	7,500 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

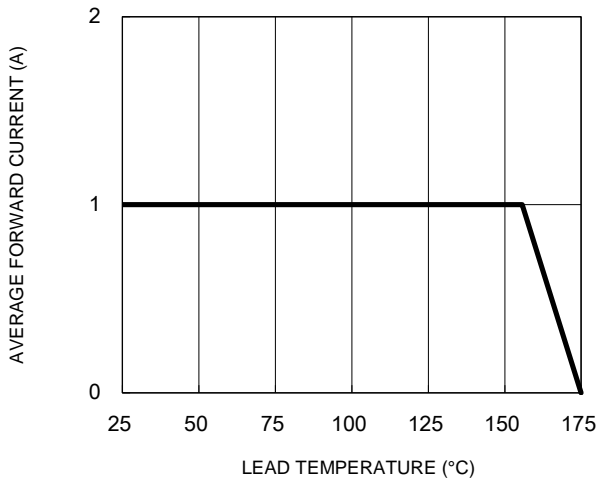


Fig.2 Typical Junction Capacitance

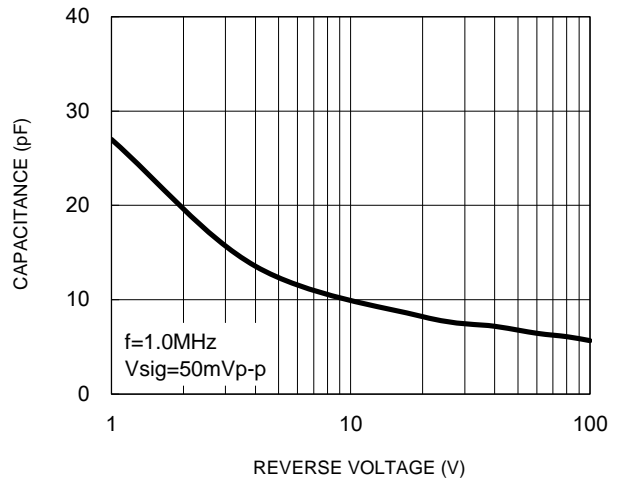


Fig.3 Typical Reverse Characteristics

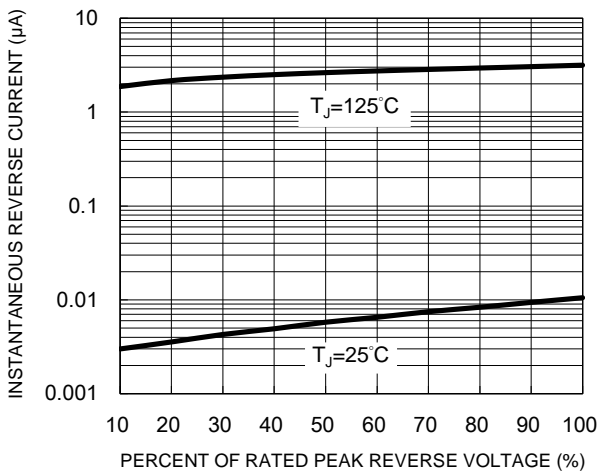
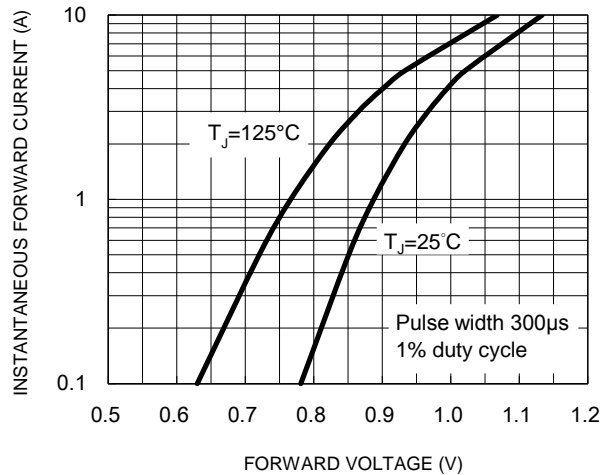
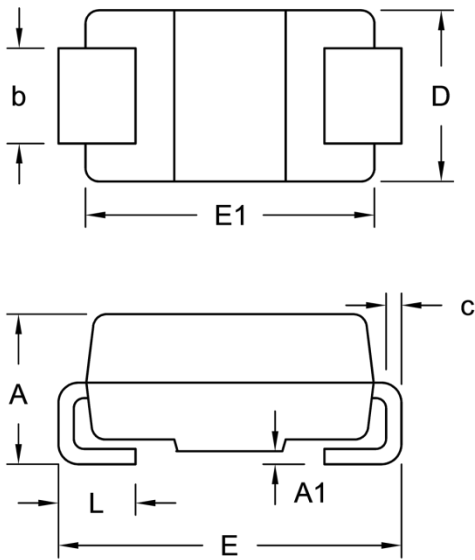


Fig.4 Typical Forward Characteristics



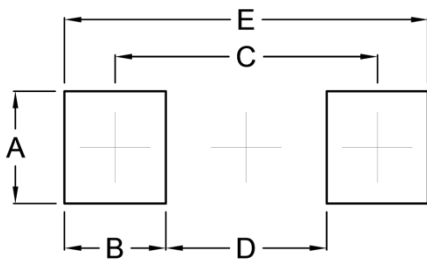
PACKAGE OUTLINE DIMENSIONS

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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