

## 3A, 400V ESD Capability Rectifier

### FEATURES

- High ESD capability
- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

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

### MECHANICAL DATA

- Case: DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.21 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	3	A
$V_{RRM}$	400	V
$I_{FSM}$	100	A
$V_F$ at $I_F=3A$	1	V
$T_{JMAX}$	175	°C
Package	DO-214AB (SMC)	
Configuration	Single dice	



**DO-214AB (SMC)**

SOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	TSD3G	UNIT
Marking code on the device		TSD3G	
Repetitive peak reverse voltage	$V_{RRM}$	400	V
Reverse voltage, total rms value	$V_{R(RMS)}$	280	V
Forward current	$I_{F(AV)}$	3	A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	100	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>LIMIT</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	21	$^{\circ}C/W$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	59	$^{\circ}C/W$
Junction-to-case thermal resistance	$R_{\theta JC}$	22	$^{\circ}C/W$

**Thermal Performance Note:** Units mounted on recommended PCB (16mm x 16mm Cu pad test board)

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}C$ 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>	$I_F = 1.5A, T_J = 25^{\circ}C$	$V_F$	0.85	0.95	V
	$I_F = 3A, T_J = 25^{\circ}C$		0.89	1.00	V
	$I_F = 1.5A, T_J = 125^{\circ}C$		0.72	0.9	V
	$I_F = 3A, T_J = 125^{\circ}C$		0.76	1.00	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	$T_J = 25^{\circ}C$	$I_R$	-	1	$\mu A$
	$T_J = 125^{\circ}C$		-	50	$\mu A$
Junction capacitance	1 MHz, $V_R = 4.0V$	$C_J$	45	-	pF

**Notes:**

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

<b>IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS</b> ( $T_A = 25^{\circ}C$ unless otherwise noted)						
<b>Standard</b>	<b>Test Type</b>	<b>Test Conditions</b>	<b>SYMBOL</b>	<b>CLASS</b>	<b>Value</b>	<b>Typical</b>
AEC-Q101-001	Human body model(contact mode)	$C=100pF, R=1.5k\Omega$	$V_C$	H3B	$\geq 8kV$	N/A
IEC 61000-4-2	Contact mode	$C=150pF, R=330\Omega$		4	$\geq 8kV$	25kV
	Air-discharge mode	$C=150pF, R=330\Omega$		4	$\geq 15kV$	30kV
ISO 10605	Contact mode	$C=330pF, R=330\Omega$		L4	$\geq 15kV$	25kV
	Air-discharge mode	$C=330pF, R=330\Omega$		L4	$\geq 25kV$	30kV

**ORDERING INFORMATION**

<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSD3G (Note 1)	H	R7	G	SMC	850 / 7" Plastic reel
		R6		SMC	3,000 / 13" Paper reel
		M6		SMC	3,000 / 13" Plastic reel

**Note:**

1. Whole series with green compound (halogen-free)

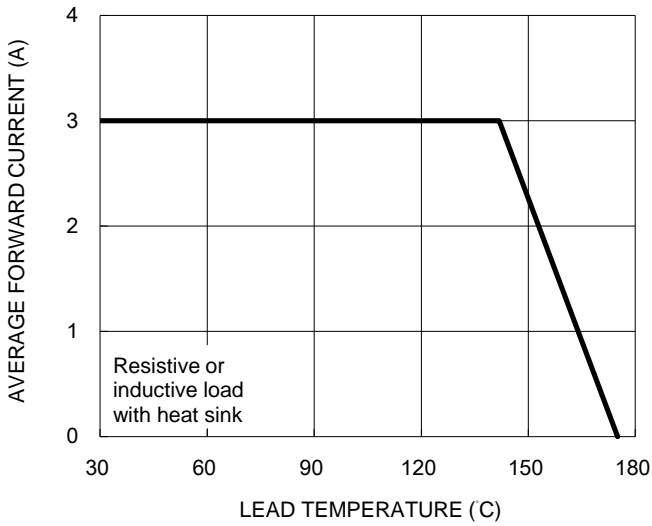
**EXAMPLE**

<b>EXAMPLE P/N</b>	<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>DESCRIPTION</b>
TSD3G R7G	TSD3G	H	R7	G	AEC-Q101 qualified Green compound

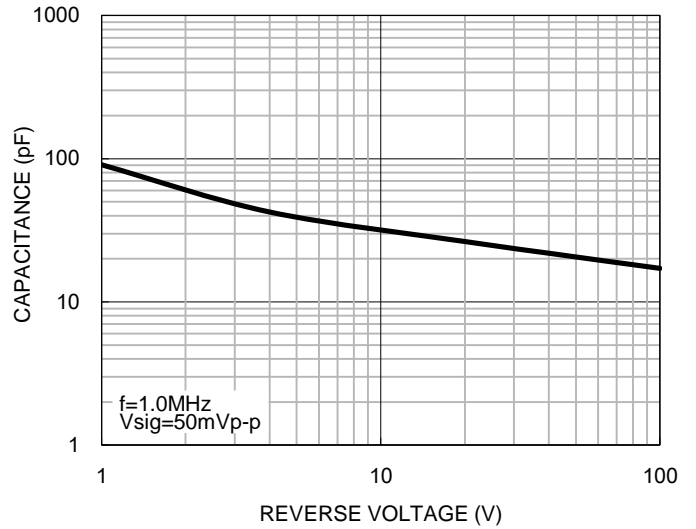
**CHARACTERISTICS CURVES**

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

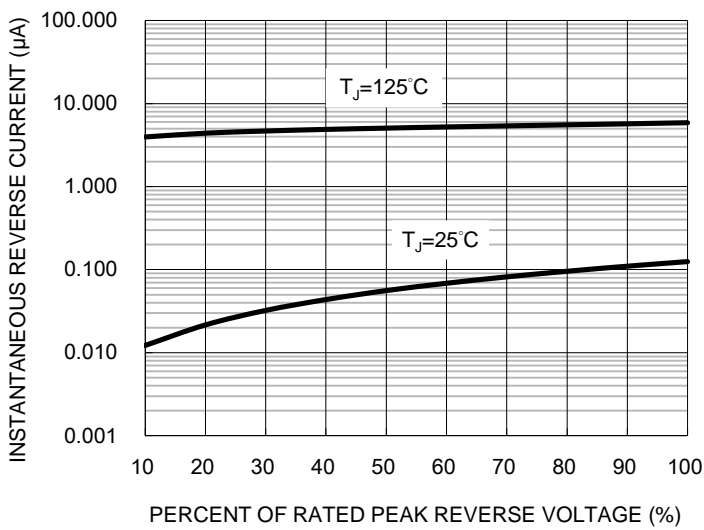
**Fig.1 Forward Current Derating Curve**



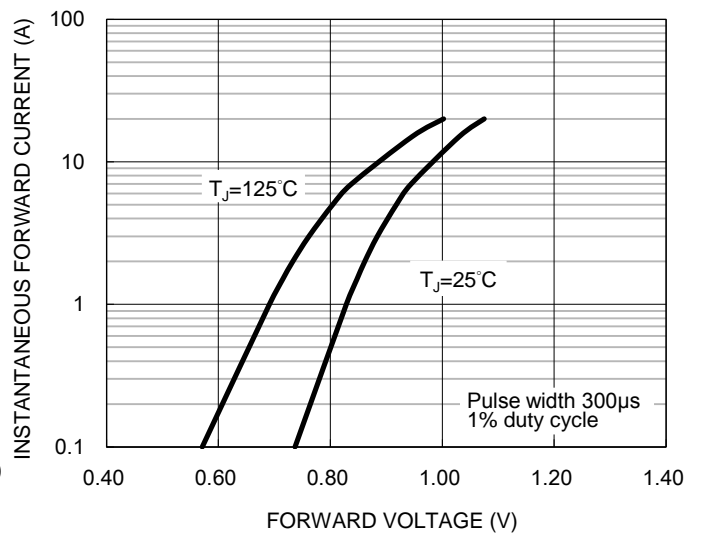
**Fig.2 Typical Junction Capacitance**



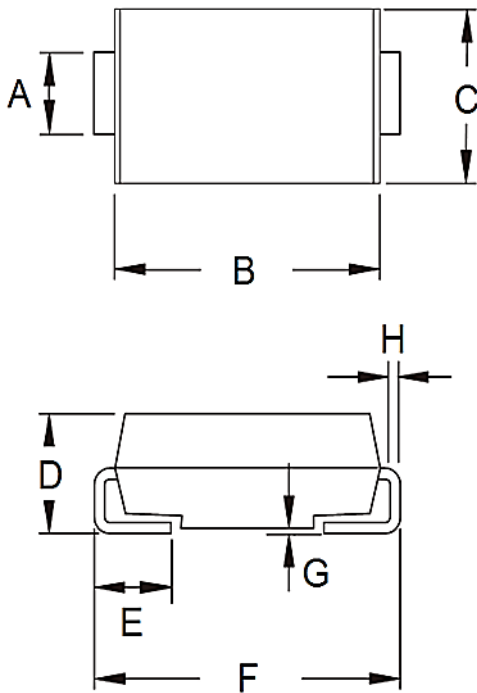
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

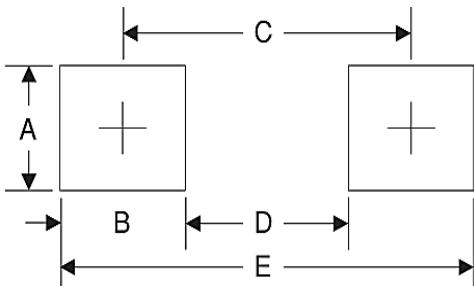


**PACKAGE OUTLINE DIMENSIONS**



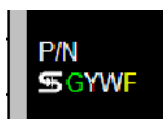
DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.90	3.20	0.114	0.126
B	6.60	7.11	0.260	0.280
C	5.59	6.22	0.220	0.245
D	2.00	2.62	0.079	0.103
E	1.00	1.60	0.039	0.063
F	7.75	8.13	0.305	0.320
G	0.10	0.20	0.004	0.008
H	0.15	0.31	0.006	0.012

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	3.30	0.130
B	2.50	0.098
C	6.80	0.268
D	4.40	0.173
E	9.40	0.370

**MARKING DIAGRAM**



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

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