

## 3A, 50V - 1000V Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High current capability
- 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    |
| $V_{RRM}$      | 50 - 1000      | V    |
| $I_{FSM}$      | 100            | A    |
| $T_{JMAX}$     | 150            | °C   |
| Package        | DO-214AB (SMC) |      |
| Configuration  | Single die     |      |



**DO-214AB (SMC)**

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |              |              |     |     |     |     |     |      |      |
|---|--------------|--------------|-----|-----|-----|-----|-----|------|------|
| PARAMETER   | SYMBOL       | S3A          | S3B | S3D | S3G | S3J | S3K | S3M  | UNIT |
| Marking code on the device  |              | S3A          | S3B | S3D | S3G | S3J | S3K | S3M  |      |
| Repetitive peak reverse voltage   | $V_{RRM}$    | 50           | 100 | 200 | 400 | 600 | 800 | 1000 | V    |
| Reverse voltage, total rms value  | $V_{R(RMS)}$ | 35           | 70  | 140 | 280 | 420 | 560 | 700  | V    |
| Maximum DC blocking voltage   | $V_{DC}$     | 50           | 100 | 200 | 400 | 600 | 800 | 1000 | 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 +150 |     |     |     |     |     |      | °C   |
| Storage temperature   | $T_{STG}$    | - 55 to +150 |     |     |     |     |     |      | °C   |

| <b>THERMAL PERFORMANCE</b>                       |                 |              |             |
|--|-----------------|--------------|-------------|
| <b>PARAMETER</b>                                 | <b>SYMBOL</b>   | <b>LIMIT</b> | <b>UNIT</b> |
| Junction-to-lead thermal resistance per diode    | $R_{\theta JL}$ | 13           | °C/W        |
| Junction-to-ambient thermal resistance per diode | $R_{\theta JA}$ | 47           | °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>  | $I_F = 3\text{A}, T_J = 25^\circ\text{C}$                         | $V_F$         | -           | 1.15        | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup>                              | $T_J = 25^\circ\text{C}$  | $I_R$         | -           | 10          | $\mu\text{A}$ |
|   | $T_J = 125^\circ\text{C}$   |               | -           | 250         | $\mu\text{A}$ |
| Junction capacitance  | 1 MHz, $V_R = 4.0\text{V}$  | $C_J$         | 60          | -           | pF            |
| Reverse recovery time   | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{RR} = 0.25\text{A}$ | $t_{rr}$      | 1500        | -           | ns            |

**Notes:**

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

| <b>ORDERING INFORMATION</b> |                        |                     |                            |                |                          |
|-----------------------------|------------------------|---------------------|----------------------------|----------------|--------------------------|
| <b>PART NO.</b>             | <b>PART NO. SUFFIX</b> | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>PACKAGE</b> | <b>PACKING</b>           |
| S3x<br>(Note 1)             | H                      | R7                  | G                          | SMC            | 850 / 7" Plastic reel    |
|                             |                        | R6                  |                            | SMC            | 3,000 / 13" Paper reel   |
|                             |                        | M6                  |                            | SMC            | 3,000 / 13" Plastic reel |
|                             |                        | V7                  |                            | Matrix SMC     | 850 / 7" Plastic reel    |
|                             |                        | V6                  |                            | Matrix SMC     | 3,000 / 13" Plastic reel |

**Note :**

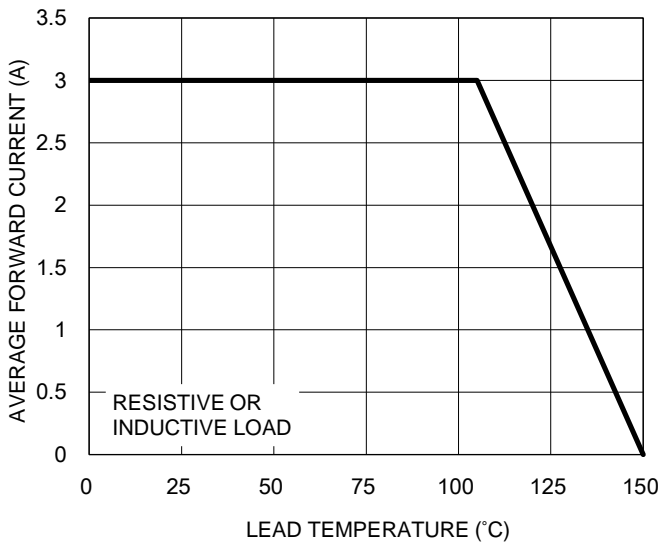
1. "x" defines voltage from 50V (S3A) to 1000V (S3M)

| <b>EXAMPLE</b>     |                 |                        |                     |                            |                                      |
|--------------------|-----------------|------------------------|---------------------|----------------------------|--------------------------------------|
| <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>                   |
| S3AHR7G            | S3A             | H                      | R7                  | G                          | AEC-Q101 qualified<br>Green compound |

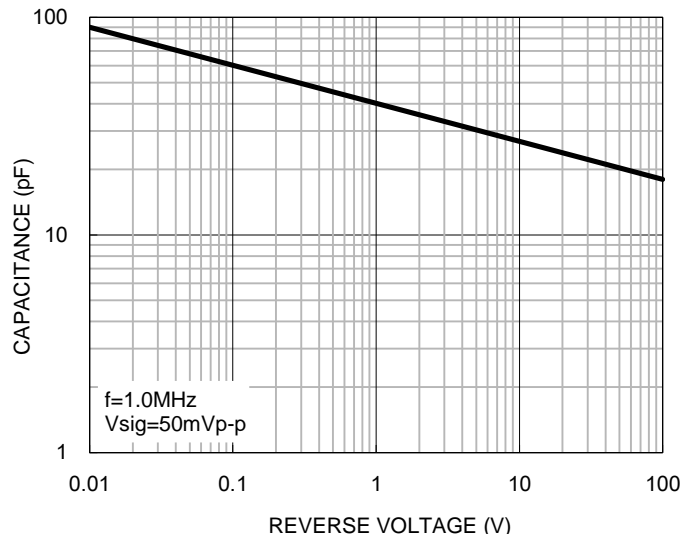
**CHARACTERISTICS CURVES**

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

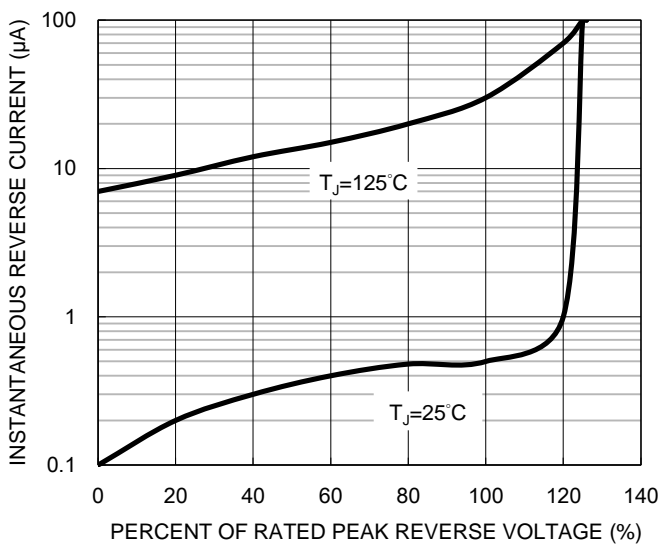
**Fig.1 Forward Current Derating Curve**



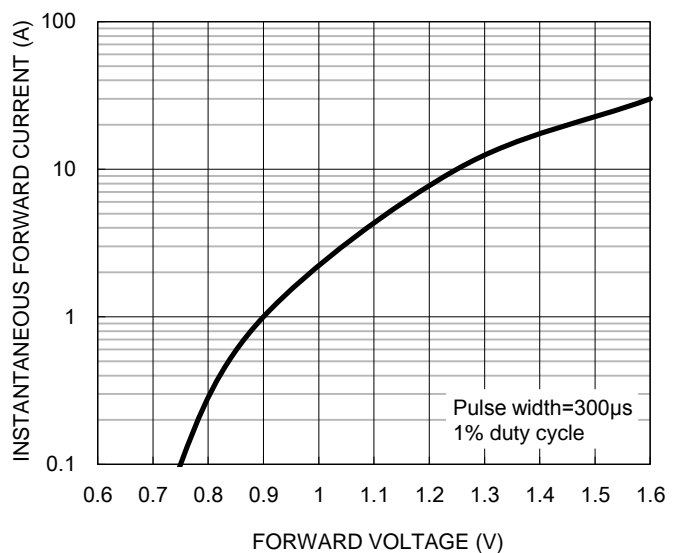
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



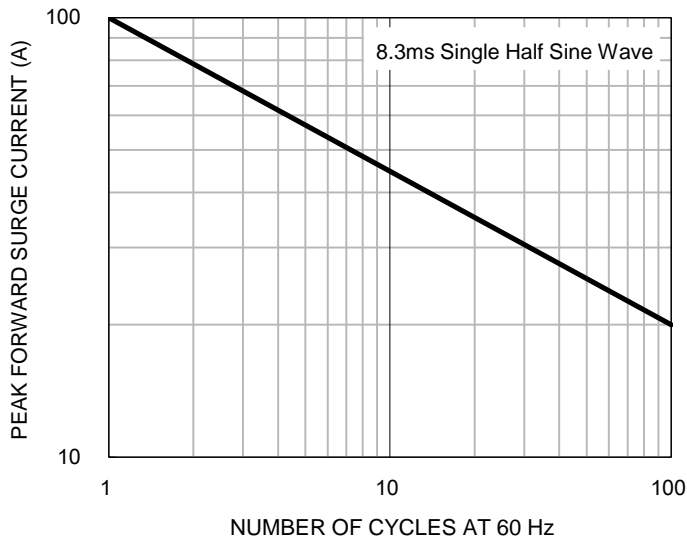
**Fig.4 Typical Forward Characteristics**



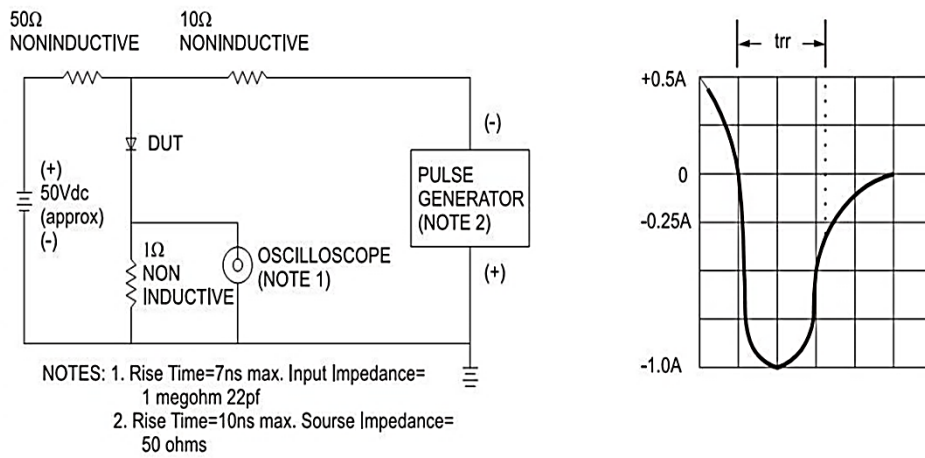
**CHARACTERISTICS CURVES**

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

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



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



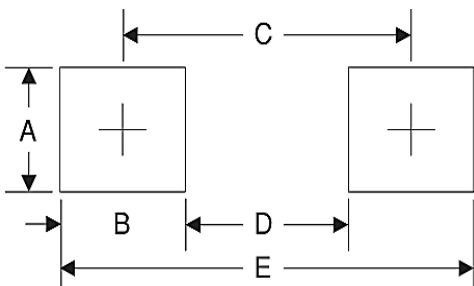
**PACKAGE OUTLINE DIMENSIONS**

DO-214AB (SMC)



| 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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