

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

### FEATURES

- 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-214AA (SMB)
- 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: 0.09 g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_{F(AV)}$    | 3              | A    |
| $V_{RRM}$      | 50 - 1000      | V    |
| $I_{FSM}$      | 80             | A    |
| $T_{J\ MAX}$   | 150            | °C   |
| Package        | DO-214AA (SMB) |      |
| Configuration  | Single Die     |      |



**DO-214AA (SMB)**

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |              |              |      |      |      |      |      |      |      |
|-----------------------------------------------------------------------------------------------|--------------|--------------|------|------|------|------|------|------|------|
| PARAMETER                                                                                     | SYMBOL       | S3AB         | S3BB | S3DB | S3GB | S3JB | S3KB | S3MB | UNIT |
| Marking code on the device                                                                    |              | S3AB         | S3BB | S3DB | S3GB | S3JB | S3KB | S3MB |      |
| 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 | $I_{FSM}$    | 80           |      |      |      |      |      |      | A    |
| Junction temperature                                                                          | $T_J$        | - 55 to +150 |      |      |      |      |      |      | °C   |
| Storage temperature                                                                           | $T_{STG}$    | - 55 to +150 |      |      |      |      |      |      | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                           | SYMBOL          | LIMIT | UNIT |
|-------------------------------------|-----------------|-------|------|
| Junction-to-lead thermal resistance | $R_{\Theta JL}$ | 10    | °C/W |

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

| PARAMETER                                              | CONDITIONS                                                        | SYMBOL   | TYP  | MAX  | UNIT          |
|--------------------------------------------------------|-------------------------------------------------------------------|----------|------|------|---------------|
| 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, $V_R = 4.0\text{V}$                                        | $C_J$    | 40   | -    | 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  $PW = 30\text{ ms}$

**ORDERING INFORMATION**

| PART NO.         | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX(*) | PACKAGE | PACKING                  |
|------------------|-----------------|--------------|------------------------|---------|--------------------------|
| S3xB<br>(Note 1) | H               | R5           | G                      | SMB     | 850 / 7" Plastic reel    |
|                  |                 | R4           |                        | SMB     | 3,000 / 13" Paper reel   |
|                  |                 | M4           |                        | SMB     | 3,000 / 13" Plastic reel |

**Note:**

1. "x" defines voltage from 50V (S3AB) to 1000V (S3MB)

\*: Optional available

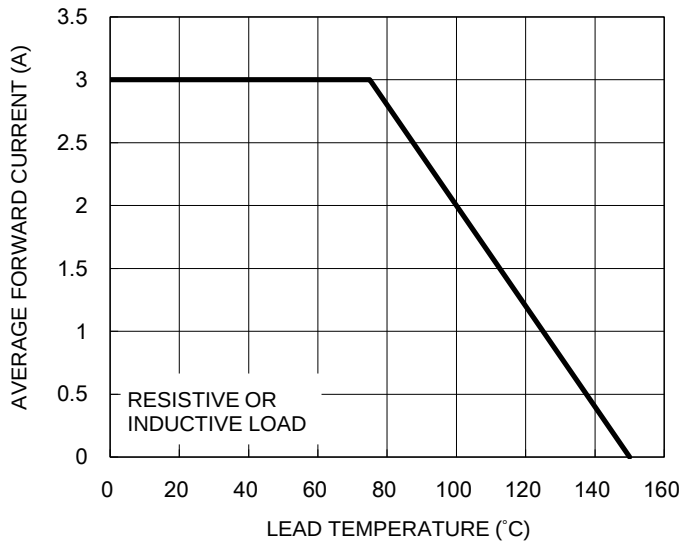
**EXAMPLE P/N**

| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION                          |
|-------------|----------|-----------------|--------------|---------------------|--------------------------------------|
| S3ABHR5G    | S3AB     | H               | R5           | G                   | AEC-Q101 qualified<br>Green compound |

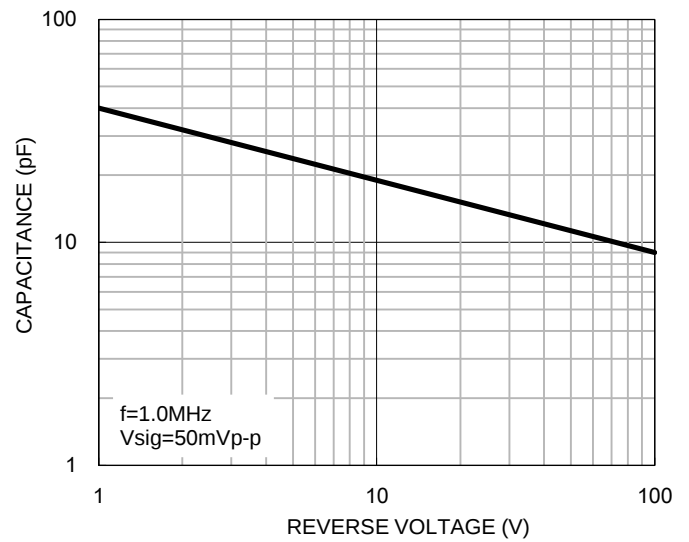
## CHARACTERISTICS CURVES

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

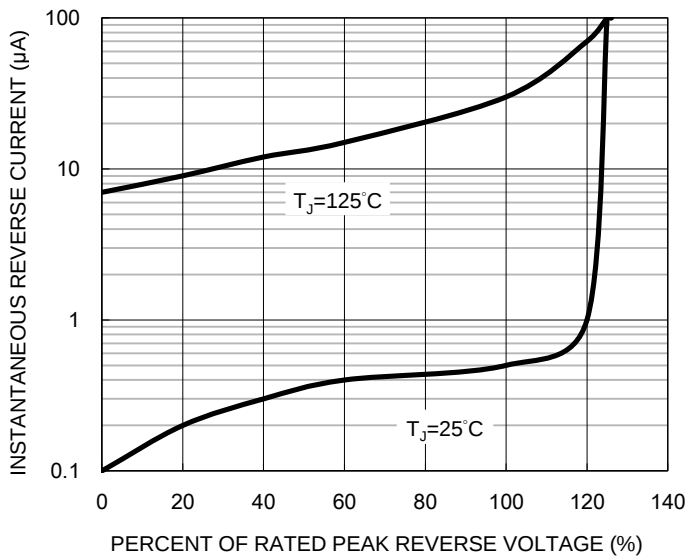
**Fig.1 Forward Current Derating Curve**



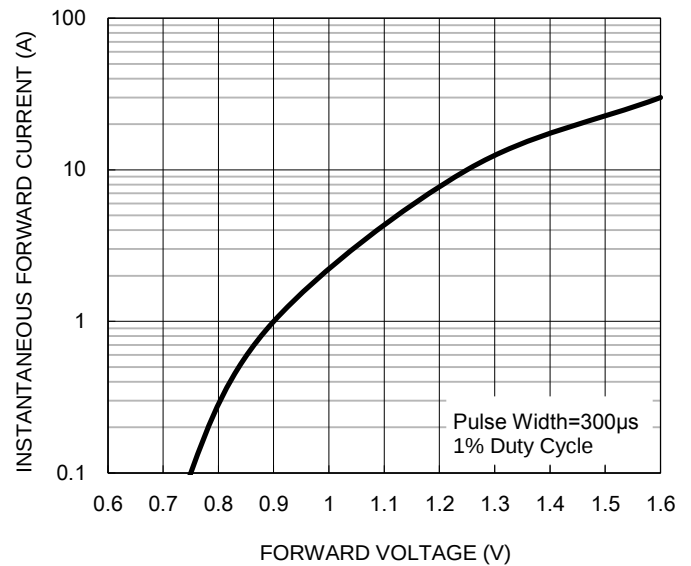
**Fig.2 Typical Junction Capacitance**



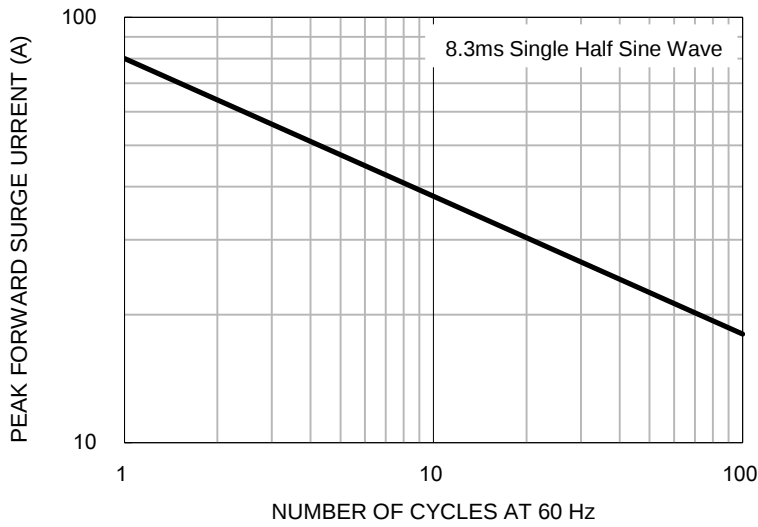
**Fig.3 Typical Reverse Characteristics**



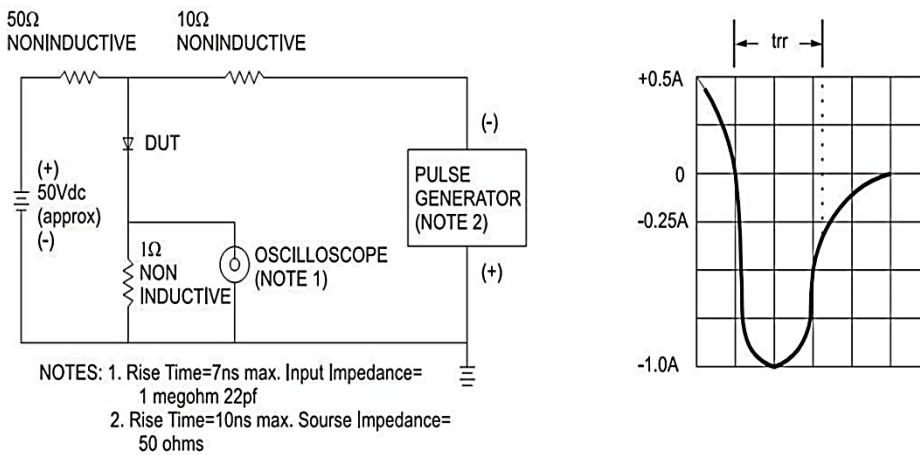
**Fig.4 Typical Forward Characteristics**



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

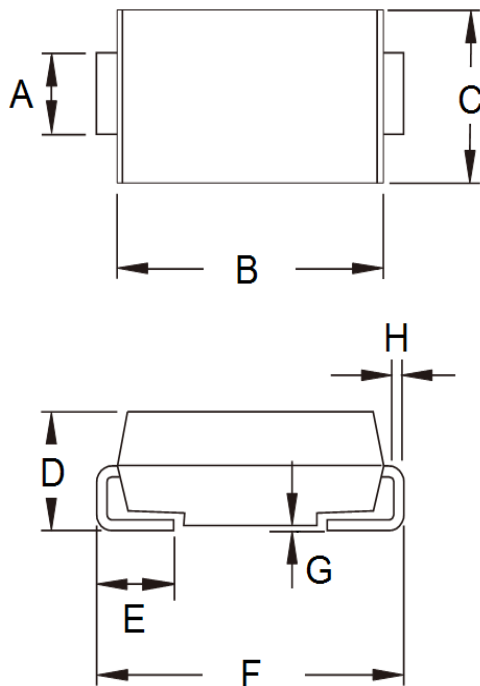


**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



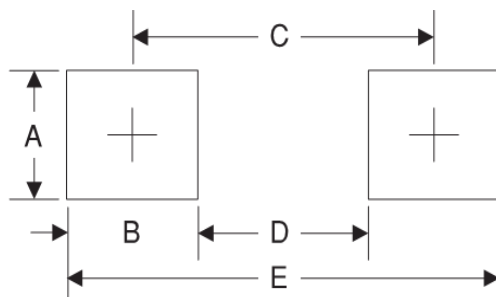
## PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 1.95      | 2.20 | 0.077       | 0.087 |
| B    | 4.05      | 4.60 | 0.159       | 0.181 |
| C    | 3.30      | 3.95 | 0.130       | 0.156 |
| D    | 1.95      | 2.65 | 0.077       | 0.104 |
| E    | 0.75      | 1.60 | 0.030       | 0.063 |
| F    | 5.10      | 5.60 | 0.201       | 0.220 |
| G    | 0.05      | 0.20 | 0.002       | 0.008 |
| H    | 0.15      | 0.31 | 0.006       | 0.012 |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 2.3       | 0.091       |
| B      | 2.5       | 0.098       |
| C      | 4.3       | 0.169       |
| D      | 1.8       | 0.071       |
| E      | 6.8       | 0.268       |

## MARKING DIAGRAM



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

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Taiwan Semiconductor:

[S3AB](#) [S3BB](#) [S3DB](#) [S3GB](#) [S3JB](#) [S3KB](#) [S3MB](#) [S3AB R4](#) [S3BB R4](#) [S3DB R4](#) [S3GB R4](#) [S3JB R4](#) [S3KB R4](#)  
[S3MB R4](#) [S3DB R5](#) [S3DB R5G](#) [S3BB R5](#) [S3BBHR4](#) [S3ABHR5G](#) [S3DBHR4](#) [S3GB R5G](#) [S3JBHR4G](#) [S3GBHR4](#)  
[S3KBHR4](#) [S3BBHR5G](#) [S3MB R5G](#) [S3MBHR4G](#) [S3JBHR5G](#) [S3GBHR5](#) [S3GBHR4G](#) [S3ABHR4](#) [S3BBHR4G](#)  
[S3MBHR5](#) [S3BBHR5](#) [S3GB R4G](#) [S3JB R5G](#) [S3AB R5G](#) [S3GBHR5G](#) [S3DB R4G](#) [S3GB R5](#) [S3AB R4G](#)  
[S3DBHR5](#) [S3KBHR5G](#) [S3KB R4G](#) [S3BB R5G](#) [S3JBHR4](#) [S3JBHR5](#) [S3AB R5](#) [S3KB R5](#) [S3KBHR4G](#) [S3KBHR5](#)  
[S3DBHR4G](#) [S3DBHR5G](#) [S3ABHR5](#) [S3BB R4G](#) [S3KB R5G](#) [S3JB R4G](#) [S3ABHR4G](#) [S3MB R4G](#) [S3MBHR5G](#)  
[S3MBHR4](#) [S3JB R5](#) [S3MB R5](#)