

## 3A, 20V - 200V Surface Mount Schottky Barrier Rectifier

### FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- Guard ring for over-voltage protection
- 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: 0.1 g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_{F(AV)}$    | 3              | A    |
| $V_{RRM}$      | 20 - 200       | V    |
| $I_{FSM}$      | 70             | A    |
| Package        | DO-214AA (SMB) |      |
| Configuration  | Single Die     |      |



**DO-214AA (SMB)**

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

| PARAMETER   | SYMBOL           | SK 32B       | SK 33B | SK 34B | SK 35B       | SK 36B | SK 39B | SK 310B | SK 315B | SK 320B | UNIT |
|---|------------------|--------------|--------|--------|--------------|--------|--------|---------|---------|---------|------|
| Marking code on the device  |                  | SK 32B       | SK 33B | SK 34B | SK 35B       | SK 36B | SK 39B | SK 310B | SK 315B | SK 320B |      |
| Repetitive peak reverse voltage   | $V_{RRM}$        | 20           | 30     | 40     | 50           | 60     | 90     | 100     | 150     | 200     | V    |
| Reverse voltage, total rms value  | $V_{R(RMS)}$     | 14           | 21     | 28     | 35           | 42     | 63     | 70      | 105     | 140     | V    |
| Maximum DC blocking voltage   | $V_{DC}$         | 20           | 30     | 40     | 50           | 60     | 90     | 100     | 150     | 200     | 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 | $I_{FSM}$        | 70           |        |        |              |        |        |         |         |         | A    |
| Critical rate of rise of off-state voltage  | dV/dt            | 10000        |        |        |              |        |        |         |         |         | V/μs |
| Junction temperature  | T <sub>J</sub>   | - 55 to +125 |        |        | - 55 to +150 |        |        |         |         |         | °C   |
| Storage temperature   | T <sub>STG</sub> | - 55 to +150 |        |        |              |        |        |         |         |         | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | LIMIT | UNIT          |
|--|-----------------|-------|---------------|
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 23    | $^{\circ}C/W$ |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 63    | $^{\circ}C/W$ |

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

| PARAMETER  | CONDITIONS                    | SYMBOL   | TYP                  | MAX   | UNIT   |                      |       |   |    |    |
|--|-------------------------------|--|----------------------|-------|--|----------------------|-------|---|----|----|
| Forward voltage per diode <sup>(1)</sup>               | $I_F = 3A, T_J = 25^{\circ}C$ | $V_F$  | -                    | 0.50  | V  |                      |       |   |    |    |
|  |                               |  |                      |       | V  |                      |       |   |    |    |
|  |                               |  |                      |       | V  |                      |       |   |    |    |
|  |                               |  | -                    | 0.75  | V  |                      |       |   |    |    |
|  |                               |  |                      |       | V  |                      |       |   |    |    |
|  |                               |  |                      |       | -  | 0.85                 | V     |   |    |    |
|  |                               |  |                      |       |  |                      | V     |   |    |    |
|  |                               |  |                      |       | -  | 0.95                 | V     |   |    |    |
|  |                               |  |                      |       |  |                      | V     |   |    |    |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $T_J = 25^{\circ}C$           | $I_R$  | -                    | 0.5   | mA   |                      |       |   |    |    |
|  |                               |  |                      |       | mA   |                      |       |   |    |    |
|  |                               |  |                      |       | mA   |                      |       |   |    |    |
|  |                               |  | -                    | 0.1   | mA   |                      |       |   |    |    |
|  |                               |  |                      |       | mA   |                      |       |   |    |    |
|  |                               |  |                      |       | -  | -                    | mA    |   |    |    |
|  |                               |  |                      |       |  |                      | mA    |   |    |    |
|  |                               |  |                      |       | Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $T_J = 100^{\circ}C$ | $I_R$ | - | 10 | mA |
|  |                               |  |                      |       |  |                      |       |   |    | mA |
| mA   |                               |  |                      |       |  |                      |       |   |    |    |
| -  | 5                             | mA   |                      |       |  |                      |       |   |    |    |
|  |                               | mA   |                      |       |  |                      |       |   |    |    |
|  |                               | -  | -                    | mA    |  |                      |       |   |    |    |
|  |                               |  |                      | mA    |  |                      |       |   |    |    |
|  |                               | Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $T_J = 125^{\circ}C$ | $I_R$ |  |                      |       | - | -  | mA |
|  |                               |  |                      |       |  |                      |       |   |    | mA |
| mA   |                               |  |                      |       |  |                      |       |   |    |    |
| -  | 2                             |  |                      |       | mA   |                      |       |   |    |    |
|  |                               |  |                      |       | mA   |                      |       |   |    |    |
|  |                               |  |                      |       | -  | -                    | mA    |   |    |    |
|  |                               |  |                      |       |  |                      | mA    |   |    |    |

**Notes:**

1. Pulse test with  $PW=0.3$  ms
2. Pulse test with  $PW=30$  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>           |
| SK3xxB<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 20V (SK32B) to 200V (SK320B)

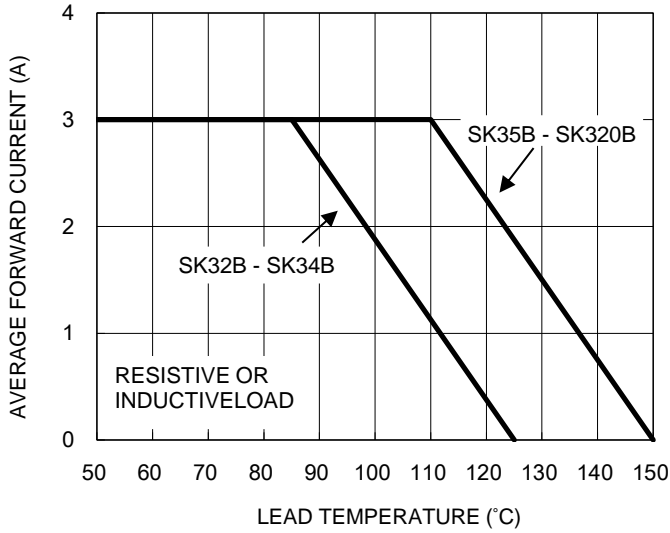
\*: Optional available

| <b>EXAMPLE P/N</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>                   |
| SK36BHR5G          | SK36B           | H                      | R5                  | G                          | AEC-Q101 qualified<br>Green compound |

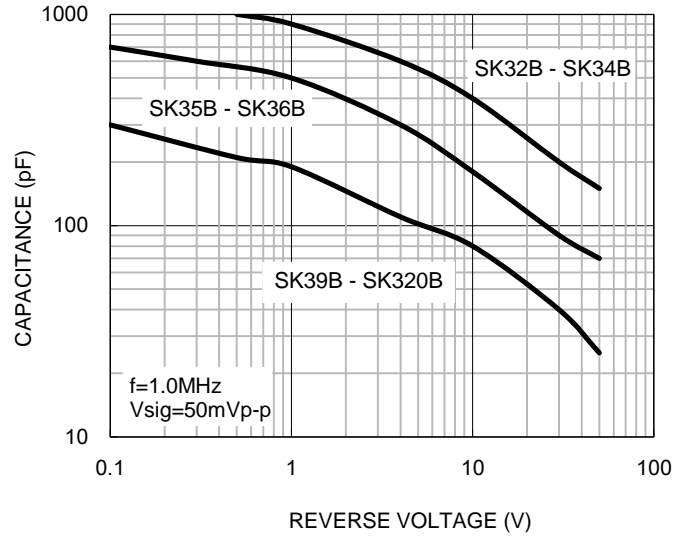
**CHARACTERISTICS CURVES**

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

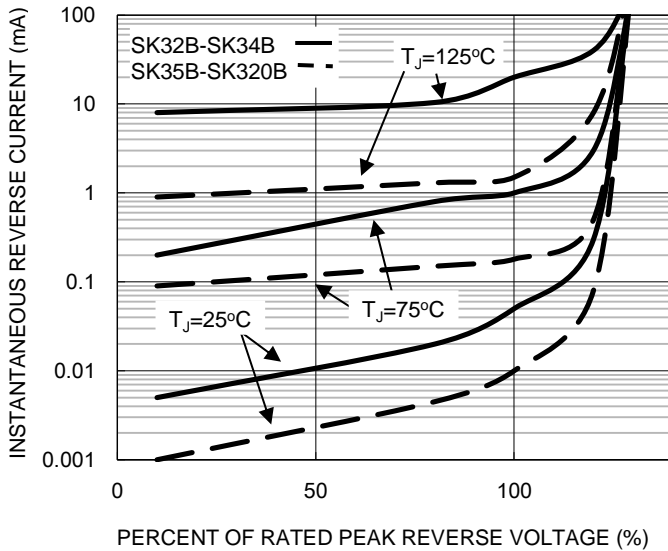
**Fig.1 Forward Current Derating Curve**



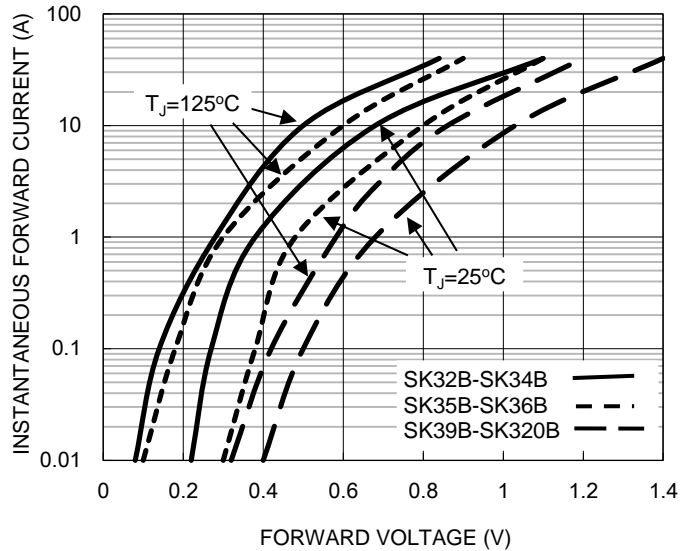
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

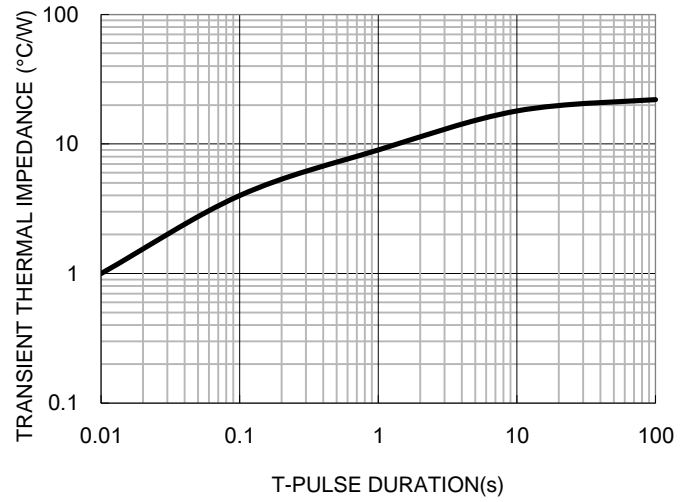
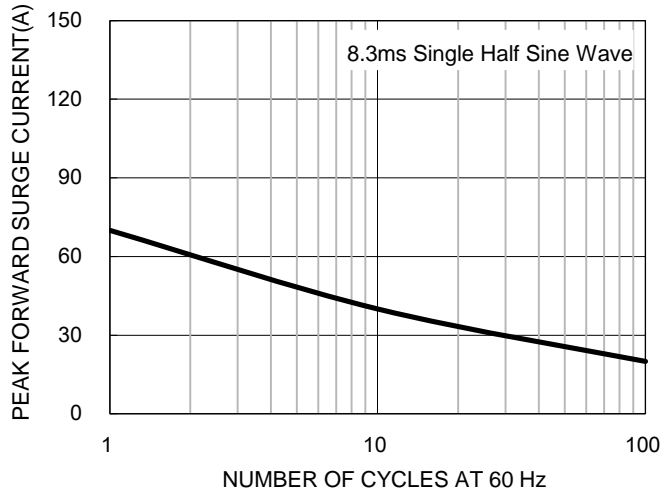


**CHARACTERISTICS CURVES**

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

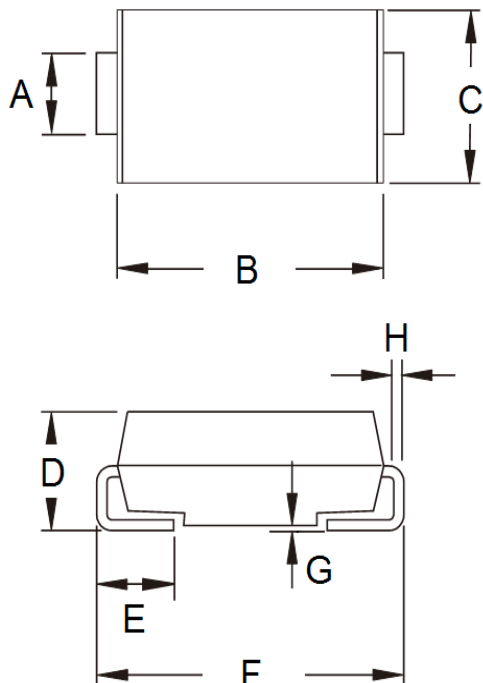
**Fig.5 Maximum Non-repetitive Forward Surge Current**

**Fig.6 Typical Transient Thermal Characteristics**



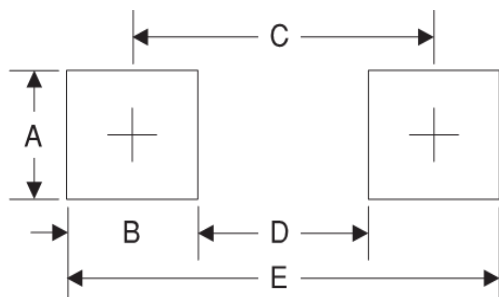
**PACKAGE OUTLINE DIMENSIONS**

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

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