

5A, 20V - 150V Schottky Barrier Surface Mount Rectifier

FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- Guard ring for over-voltage protection
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

| KEY PARAMETERS | | |
|----------------|----------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 5 | A |
| V_{RRM} | 20 - 150 | V |
| I_{FSM} | 120 | A |
| T_{JMAX} | 150 | °C |
| Package | DO-214AA (SMB) | |
| Configuration | Single die | |

APPLICATIONS

- Low voltage, high freq. inverter
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting



DO-214AA (SMB)

MECHANICAL DATA

- Case: DO-214AA (SMB)
- 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: 0.100g (approximately)



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

| PARAMETER | SYMBOL | SK 52B | SK 53B | SK 54B | SK 55B | SK 56B | SK 59B | SK 510B | SK 515B | UNIT |
|--|--------------|--------------|--------|--------|--------|--------|--------|---------|---------|------------------|
| | | H | H | H | H | H | H | H | H | |
| Marking code on the device | | SK 52B | SK 53B | SK 54B | SK 55B | SK 56B | SK 59B | SK 510B | SK 515B | |
| Repetitive peak reverse voltage | V_{RRM} | 20 | 30 | 40 | 50 | 60 | 90 | 100 | 150 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 14 | 21 | 28 | 35 | 42 | 63 | 70 | 105 | V |
| Forward current | I_F | 5 | | | | | | | | A |
| Surge peak forward current, 8.3ms single half sine-wave superimposed on rated load | I_{FSM} | 120 | | | | | | | | A |
| Critical rate of rise of off-state voltage | dV/dt | 10,000 | | | | | | | | V/ μs |
| Junction temperature | T_J | - 55 to +150 | | | | | | | | °C |
| Storage temperature | T_{STG} | - 55 to +150 | | | | | | | | °C |

THERMAL PERFORMANCE

| PARAMETER | SYMBOL | TYP | UNIT |
|--|-----------------|-----|------|
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 19 | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 60 | °C/W |

ELECTRICAL SPECIFICATIONS (TA = 25°C unless otherwise noted)

| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT | | | | | | |
|--|------------------------------|--------|--|--------------------|-------|--|---------------------|-------|---|----|----|
| Forward voltage ⁽¹⁾ | $I_F = 5A, T_J = 25^\circ C$ | V_F | - | 0.55 | V | | | | | | |
| | | | - | 0.75 | V | | | | | | |
| | | | - | 0.85 | V | | | | | | |
| | | | - | 0.95 | V | | | | | | |
| | | | Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ C$ | I_R | - | 0.5 | mA | | | |
| | | | | | | - | 0.1 | mA | | | |
| | | | | | | Reverse current @ rated V_R ⁽²⁾ | $T_J = 100^\circ C$ | I_R | - | 20 | mA |
| - | 10 | mA | | | | | | | | | |
| - | - | mA | | | | | | | | | |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 125^\circ C$ | I_R | | | | | | | - | - | mA |
| | | | | | | | | | - | - | mA |
| | | | - | 2 | mA | | | | | | |

Notes:

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

| ORDERING INFORMATION | | |
|------------------------------------|----------------|---------------------|
| ORDERING CODE⁽¹⁾ | PACKAGE | PACKING |
| SK5xBH | DO-214AA (SMB) | 3,000 / Tape & Reel |

Notes:

1. "x" defines voltage from 20V(SK52BH) to 150V(SK515BH)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

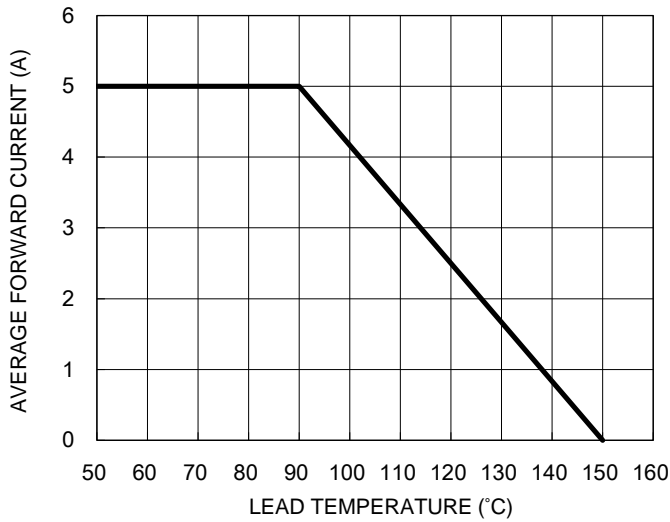


Fig.2 Typical Junction Capacitance

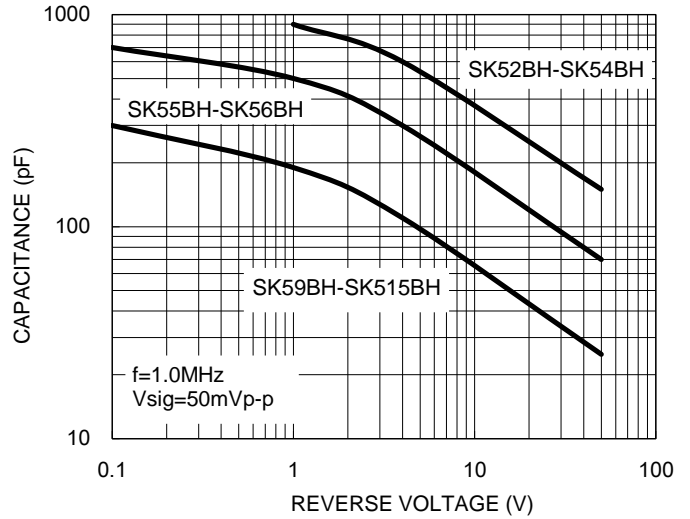


Fig.3 Typical Reverse Characteristics

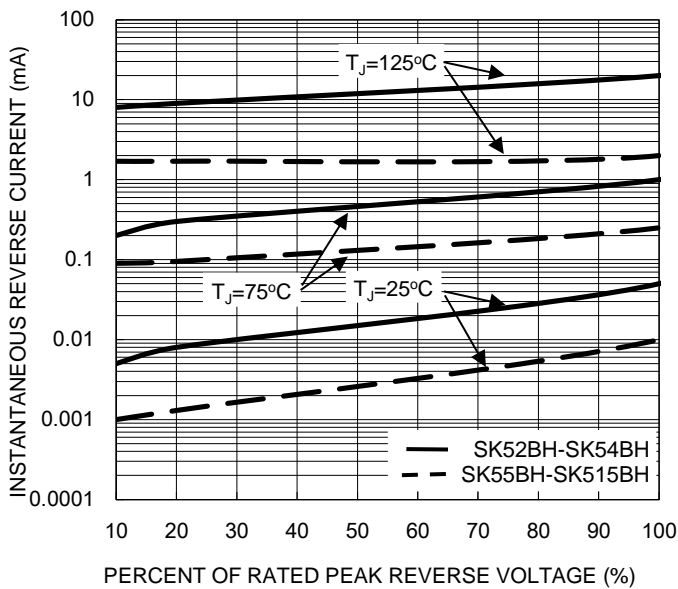
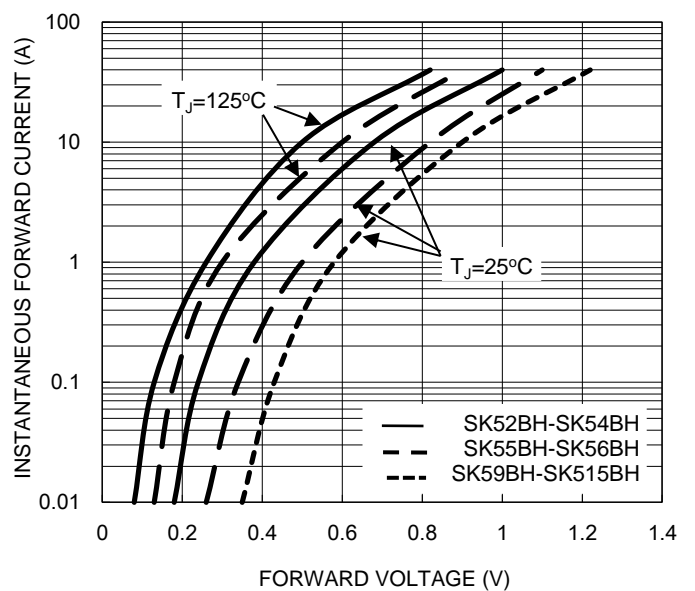


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Maximum Non-repetitive Forward Surge Current

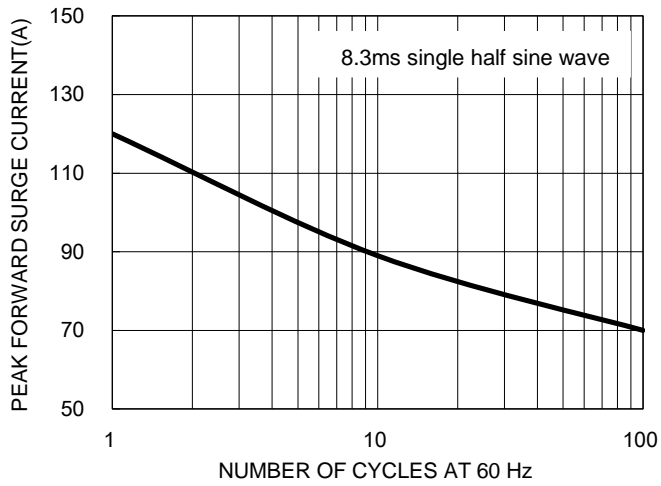
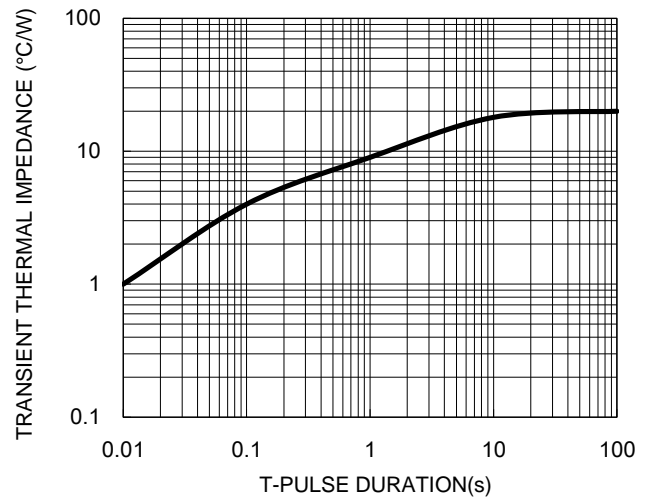
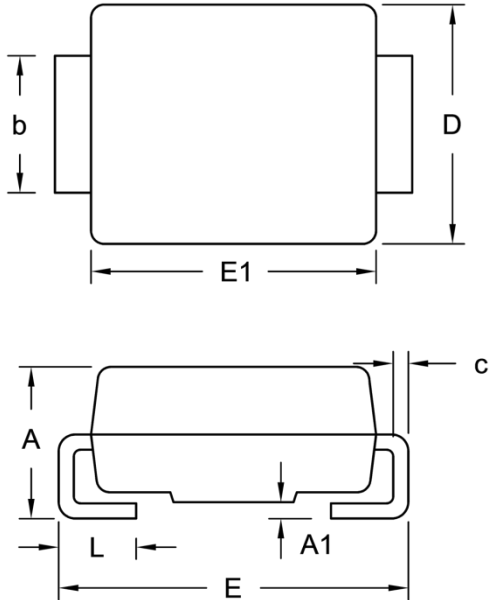


Fig.6 Typical Transient Thermal Characteristics



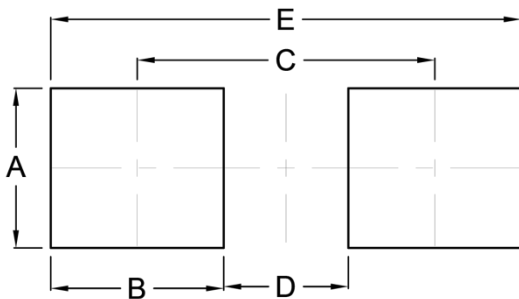
PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.95 | 2.65 | 0.077 | 0.104 |
| A1 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 1.95 | 2.20 | 0.077 | 0.087 |
| c | 0.15 | 0.31 | 0.006 | 0.012 |
| D | 3.30 | 3.95 | 0.130 | 0.156 |
| E | 5.10 | 5.60 | 0.201 | 0.220 |
| E1 | 4.05 | 4.60 | 0.159 | 0.181 |
| L | 0.75 | 1.60 | 0.030 | 0.063 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 2.30 | 0.091 |
| B | 2.50 | 0.098 |
| C | 4.30 | 0.169 |
| D | 1.80 | 0.071 |
| E | 6.80 | 0.268 |

MARKING DIAGRAM



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

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