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## Surface Mount Glass Passivated Rectifier



DO-214AA (SMB)

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

### PRIMARY CHARACTERISTICS

| | |
|---|---|
| $I_{F(AV)}$ | 1.5 A |
| $V_{RRM}$ | 50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$ | 50 A |
| $I_R$ | 1.0 µA |
| $V_F$ | 1.15 V |
| $T_J$ max. | 150 °C |
| Package | DO-214AA (SMB) |
| Diode variations | Single die |

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive and telecommunication.

### MECHANICAL DATA

**Case:** DO-214AA (SMB)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified
Base P/NHE3_X - RoHS-compliant, AEC-Q101 qualified ("_X" denotes revision code e.g. A, B,...)

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

### MAXIMUM RATINGS ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | S2A | S2B | S2D | S2G | S2J | S2K | S2M | UNIT |
|---|---|---|---|---|---|---|---|---|---|
| Device marking code | | SA | SB | SD | SG | SJ | SK | SM | |
| Max. repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Max. RMS voltage | $V_{RMS}$ | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Max. DC blocking voltage | $V_{DC}$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Max. average forward rectified current at $T_L$= 100 °C | $I_{F(AV)}$ | 1.5 | | | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 50 | | | | | | | A |
| Operating and storage temperature range | $T_J$, $T_{STG}$ | -55 to +150 | | | | | | | °C |

### ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | SYMBOL | S2A | S2B | S2D | S2G | S2J | S2K | S2M | UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. instantaneous forward voltage | 1.5 A | | $V_F$ | 1.15 | | | | | | | V |
| Max. DC reverse current at rated DC blocking voltage | | $T_A$ = 25 °C | $I_R$ | 1.0 | | | | | | | µA |
| | | $T_A$ = 125 °C | | 125 | | | | | | | |
| Typical reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{rr}$ = 0.25 A | | $t_{rr}$ | 2.0 | | | | | | | µs |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 16 | | | | | | | pF |



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| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | SYMBOL | S2A | S2B | S2D | S2G | S2J | S2K | S2M | UNIT |
| Typical thermal resistance (1) | $R_{\theta JA}$ | 53 | | | | | | | °C/W |
| | $R_{\theta JL}$ | 16 | | | | | | | |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad areas

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| S2J-E3/52T | 0.096 | 52T | 750 | 7" diameter plastic tape and reel |
| S2J-E3/5BT | 0.096 | 5BT | 3200 | 13" diameter plastic tape and reel |
| S2JHE3/52T (1) | 0.096 | 52T | 750 | 7" diameter plastic tape and reel |
| S2JHE3/5BT (1) | 0.096 | 5BT | 3200 | 13" diameter plastic tape and reel |
| S2JHE3_A/H (1) | 0.096 | H | 750 | 7" diameter plastic tape and reel |
| S2JHE3_A/I (1) | 0.096 | I | 3200 | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25 °C unless otherwise noted)

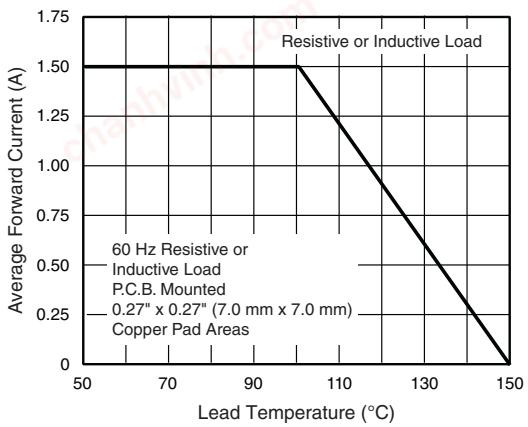



Fig. 1 - Forward Current Derating Curve

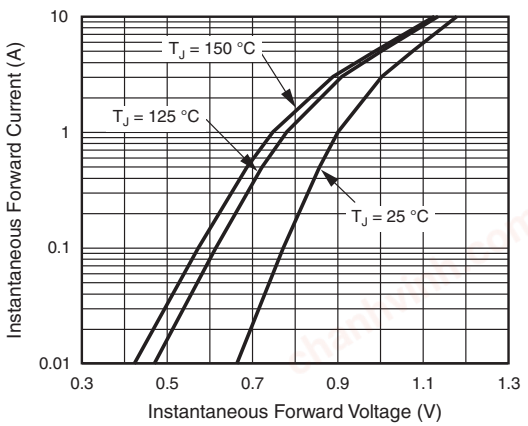



Fig. 3 - Typical Instantaneous Forward Characteristics

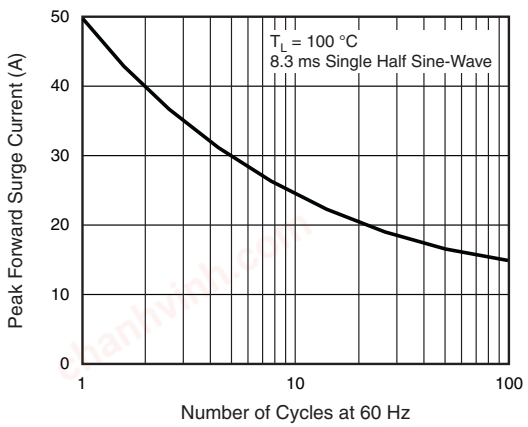



Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

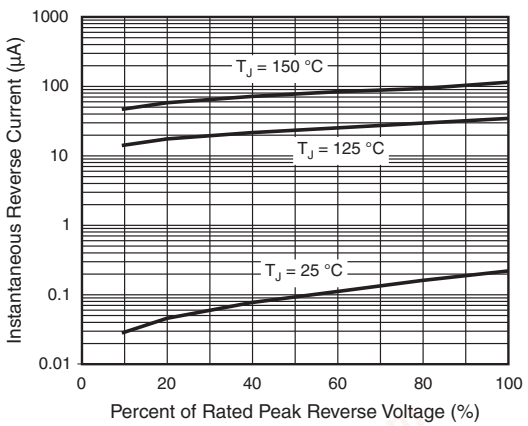



Fig. 4 - Typical Reverse Characteristics


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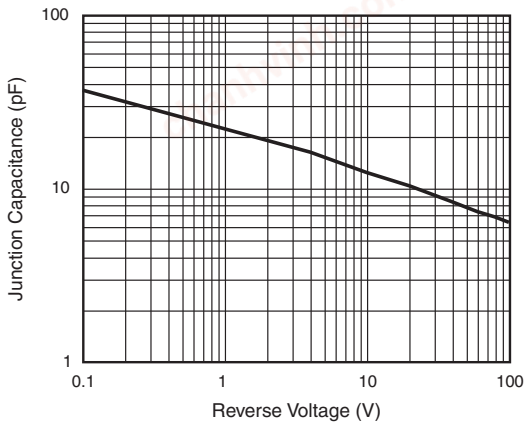



Fig. 5 - Typical Junction Capacitance

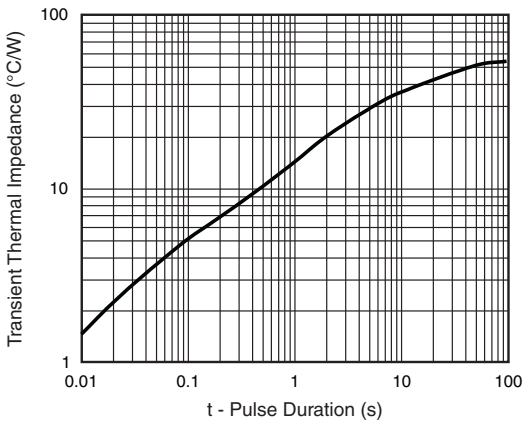
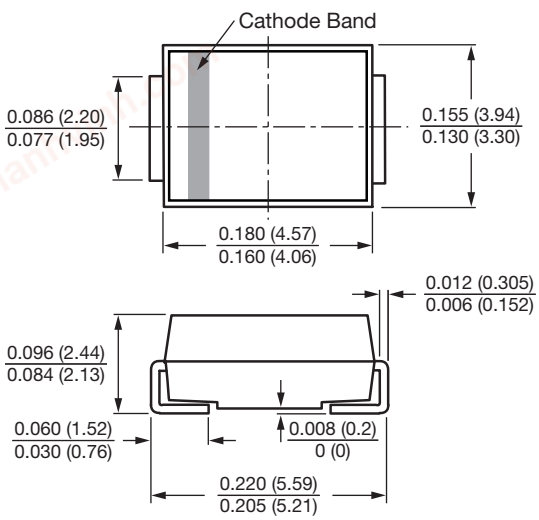


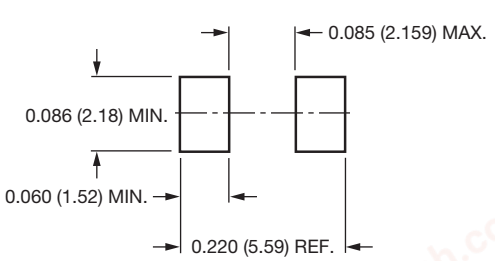

Fig. 6 - Typical Transient Thermal Impedance

## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-214AA (SMB)**




**Mounting Pad Layout**





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