



DO-214AA (SMB)

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power loss
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converter and inverter for both consumer and automotive.

### MECHANICAL DATA

**Case:** DO-214AA (SMB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

**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

| PRIMARY CHARACTERISTICS |                     |
|-------------------------|---------------------|
| $I_{F(AV)}$             | 2.0 A               |
| $V_{RRM}$               | 100 V, 150 V, 200 V |
| $t_{rr}$                | 25 ns               |
| $V_F$                   | 0.93 V              |
| $T_J \text{ max.}$      | 175 °C              |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                     |                |               |       |       |      |
|------------------------------------------------------------------------------------|----------------|---------------|-------|-------|------|
| PARAMETER                                                                          | SYMBOL         | ESH2B         | ESH2C | ESH2D | UNIT |
| Device marking code                                                                |                | EHB           | EHC   | EHD   |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 100           | 150   | 200   | V    |
| Maximum RMS voltage                                                                | $V_{RMS}$      | 70            | 105   | 140   | V    |
| Maximum DC blocking voltage                                                        | $V_{DC}$       | 100           | 150   | 200   | V    |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 2.0           |       |       | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 60            |       |       | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 55 to + 175 |       |       | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                                                                                      |                         |                               |       |      |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------|-------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                                                      |                         | SYMBOL                        | VALUE | UNIT |
| Maximum instantaneous forward voltage                                      | I <sub>F</sub> = 2 A                                                                                 |                         | V <sub>F</sub> <sup>(1)</sup> | 0.93  | V    |
| Maximum DC reverse current at rated DC blocking voltage                    |                                                                                                      | T <sub>A</sub> = 25 °C  | I <sub>R</sub>                | 2.0   | μA   |
|                                                                            |                                                                                                      | T <sub>A</sub> = 125 °C |                               | 50    |      |
| Maximum reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1 A, I <sub>rr</sub> = 0.25 A                               |                         | t <sub>rr</sub>               | 25    | ns   |
| Typical reverse recovery time                                              | I <sub>F</sub> = 2 A, V <sub>R</sub> = 30 V, di/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub> | T <sub>J</sub> = 25 °C  | t <sub>rr</sub>               | 35    | ns   |
|                                                                            |                                                                                                      | T <sub>J</sub> = 100 °C |                               | 55    |      |
| Typical stored charge                                                      | I <sub>F</sub> = 2 A, V <sub>R</sub> = 30 V, di/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub> | T <sub>J</sub> = 25 °C  | Q <sub>rr</sub>               | 20    | nC   |
|                                                                            |                                                                                                      | T <sub>J</sub> = 100 °C |                               | 35    |      |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                                                         |                         | C <sub>J</sub>                | 30    | pF   |

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |       |       |       |      |
|-------------------------------------------------------------------------|---------------------------------|-------|-------|-------|------|
| PARAMETER                                                               | SYMBOL                          | ESH2B | ESH2C | ESH2D | UNIT |
| Typical thermal resistance                                              | R <sub>θJA</sub> <sup>(1)</sup> | 65    |       |       | °C/W |
|                                                                         | R <sub>θJL</sub> <sup>(1)</sup> | 20    |       |       |      |

**Note**

(1) Units mounted on P.C.B. with 8.0 mm x 8.0 mm land areas

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| ESH2D-E3/52T                   | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| ESH2D-E3/5BT                   | 0.096           | 5BT                    | 3200          | 13" diameter plastic tape and reel |
| ESH2DHE3/52T <sup>(1)</sup>    | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| ESH2DHE3/5BT <sup>(1)</sup>    | 0.096           | 5BT                    | 3200          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

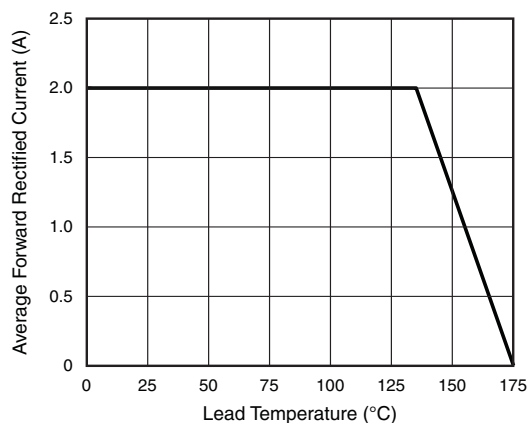
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

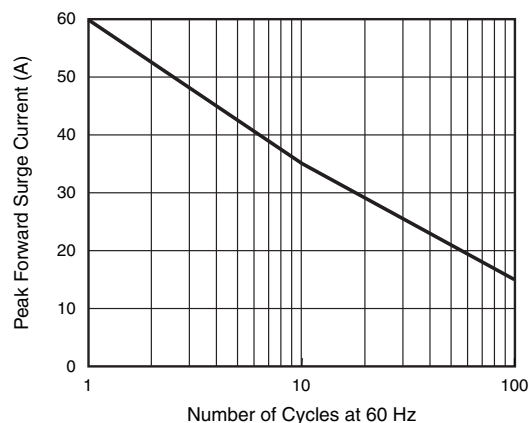


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

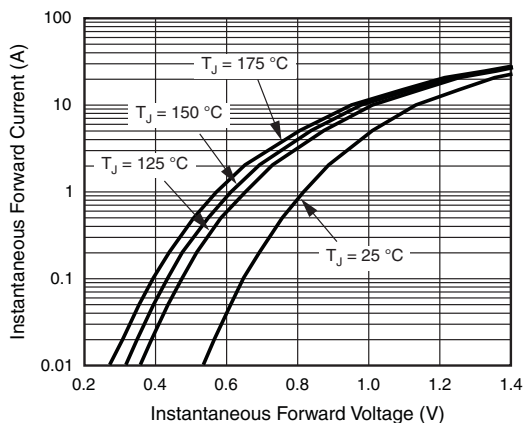


Fig. 3 - Typical Instantaneous Forward Characteristics

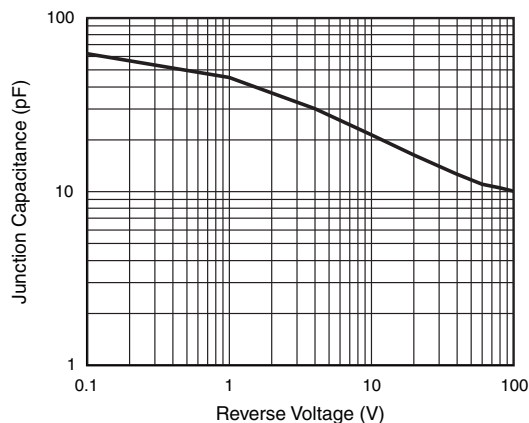


Fig. 5 - Typical Junction Capacitance

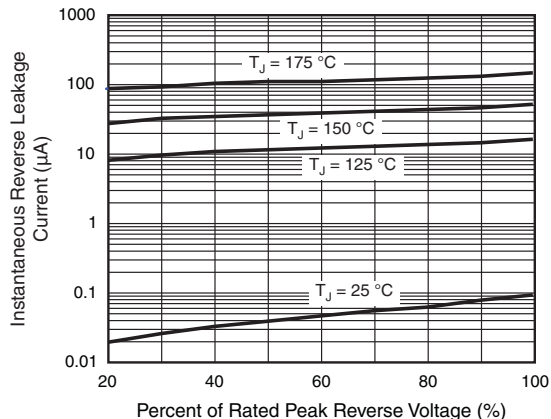


Fig. 4 - Typical Reverse Leakage Characteristics

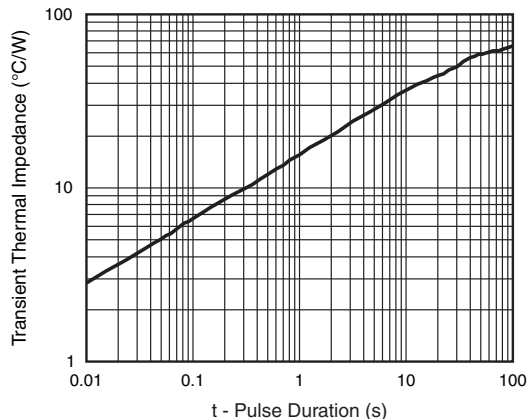
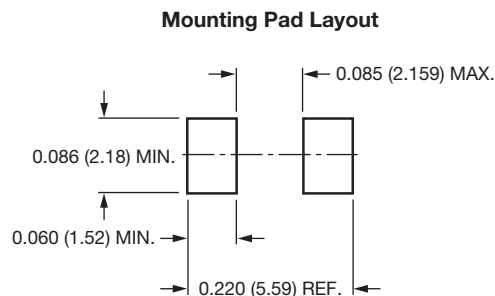
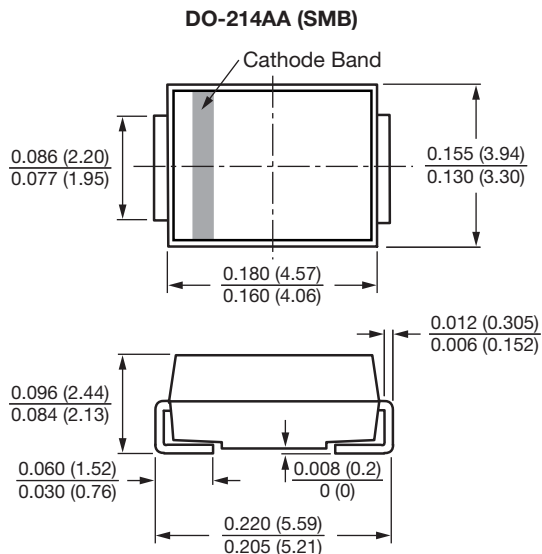


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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