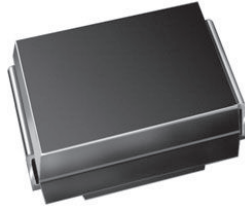


Surface-Mount Ultrafast Plastic Rectifier


SMB (DO-214AA)

 Cathode  Anode

FEATURES

- Glass passivated pellet 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 available
- Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

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: SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
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

| PRIMARY CHARACTERISTICS | |
|-------------------------|---------------------|
| $I_{F(AV)}$ | 2.0 A |
| V_{RRM} | 100 V, 150 V, 200 V |
| t_r | 25 ns |
| V_F at $I_F = 2$ A | 0.93 V |
| T_J max. | 175 °C |
| Package | SMB (DO-214AA) |
| Circuit configuration | Single |

| MAXIMUM RATINGS ($T_A = 25$ °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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|---|--|-----------------------------------|-------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | VALUE | UNIT |
| Maximum instantaneous forward voltage | $I_F = 2\text{ A}$ | | $V_F^{(1)}$ | 0.93 | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^\circ\text{C}$ | | I_R | 2.0 | μA |
| | $T_A = 125\text{ }^\circ\text{C}$ | | | 50 | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$ | | t_{rr} | 25 | ns |
| Typical reverse recovery time | $I_F = 2\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$ | | $T_J = 25\text{ }^\circ\text{C}$ | 35 | ns |
| | | | $T_J = 100\text{ }^\circ\text{C}$ | 55 | |
| Typical stored charge | $I_F = 2\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$ | | $T_J = 25\text{ }^\circ\text{C}$ | 20 | nC |
| | | | $T_J = 100\text{ }^\circ\text{C}$ | 35 | |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 30 | pF |

Note(1) Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|-----------------------|-------|-------|-------|---------------------------|
| PARAMETER | SYMBOL | ESH2B | ESH2C | ESH2D | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 65 | | | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JL}^{(1)}$ | 20 | | | |

Note

(1) Units mounted on PCB 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_A/H ⁽¹⁾ | 0.096 | H | 750 | 7" diameter plastic tape and reel |
| ESH2DHE3_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)

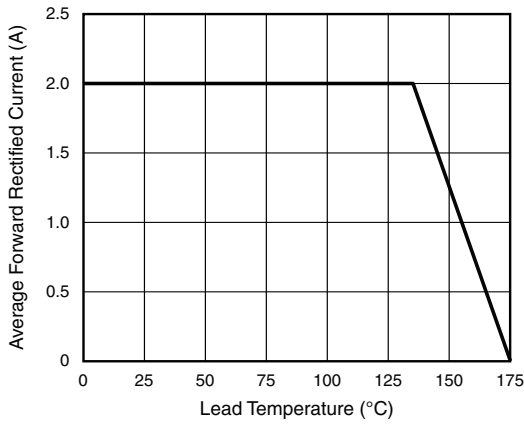


Fig. 1 - Maximum Forward Current Derating Curve

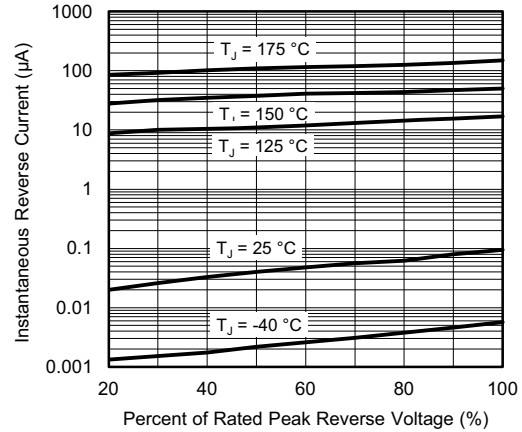


Fig. 4 - Typical Reverse Leakage Characteristics

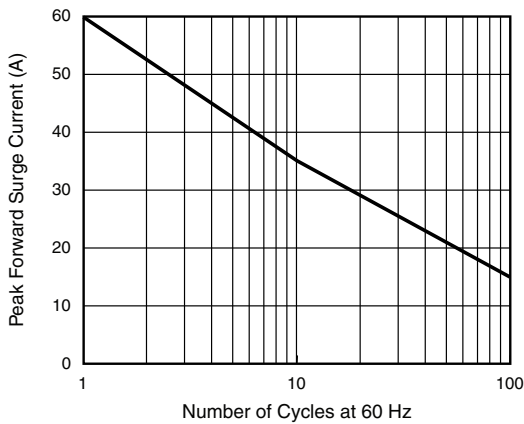


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

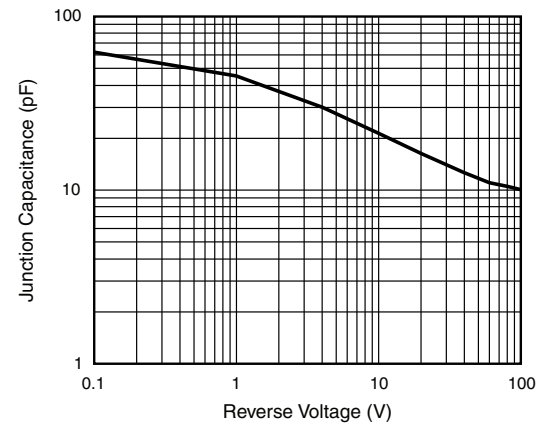


Fig. 5 - Typical Junction Capacitance

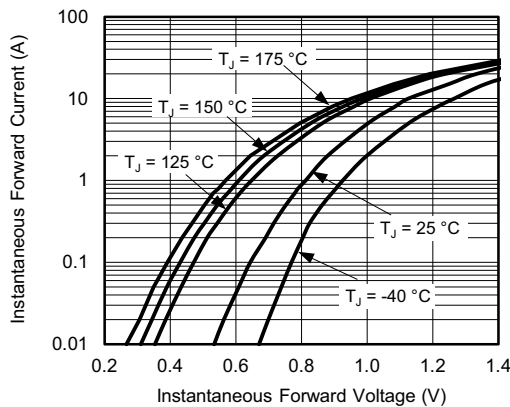


Fig. 3 - Typical Instantaneous Forward Characteristics

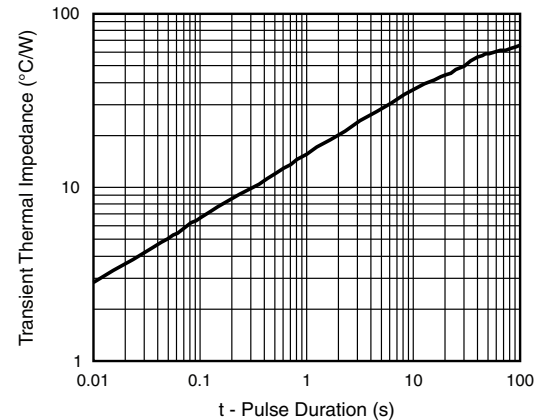
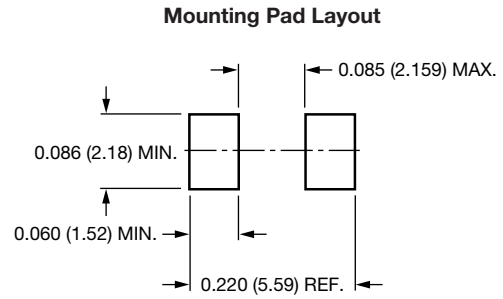
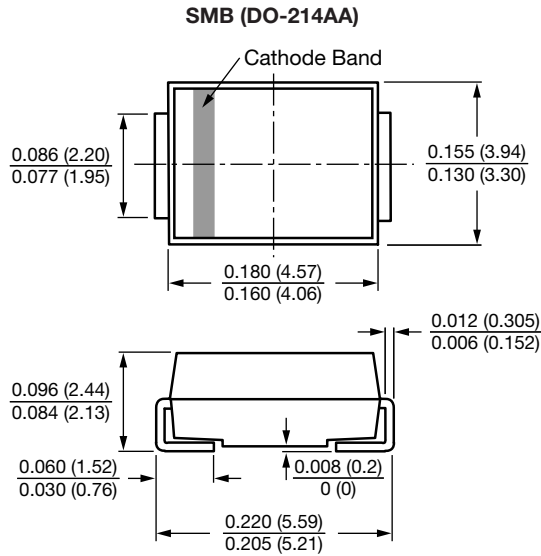


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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