

Surface-Mount Ultrafast Plastic Rectifier


SMB (DO-214AA)

 Cathode  Anode 

LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|-------------------------|----------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 200 V |
| I_{FSM} | 40 A |
| t_{rr} | 25 ns |
| V_F | 0.71 V |
| T_J max. | 175 °C |
| Package | SMB (DO-214AA) |
| Circuit configuration | Single |

FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- 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

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

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 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | |
|--|----------------|-----------------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Device marking code | | MD | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | V |
| Working peak reverse voltage | V_{RWM} | 200 | V |
| Maximum DC blocking voltage | V_{DC} | 200 | V |
| Maximum average forward rectified current at (fig. 1) | | $T_L = 155\text{ °C}$ | 1.0 |
| | | $T_L = 145\text{ °C}$ | 2.0 |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 40 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 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 | $I_F = 1.0\text{ A}$ | $V_F^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | 0.875 | V |
| | | | $T_J = 150\text{ }^\circ\text{C}$ | 0.71 | |
| Maximum instantaneous reverse current at rated DC blocking voltage | | $I_R^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | 2.0 | μA |
| | | | $T_J = 150\text{ }^\circ\text{C}$ | 50 | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | t_{rr} | 25 | ns | |
| Maximum reverse recovery time | $I_F = 1.0\text{ A}$, $di/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 10\% I_{RM}$ | t_{rr} | 35 | ns | |
| Maximum forward recovery time | $I_F = 1.0\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, recovery to 1.0 V | t_{fr} | 25 | ns | |

Note(1) Pulse test: $t_p = 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$ **THERMAL CHARACTERISTICS** ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|-----------------|-------|---------------------------|
| Typical thermal resistance, junction to lead | $R_{\theta JL}$ | 13 | $^\circ\text{C}/\text{W}$ |

ORDERING INFORMATION (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-------------------------------|-----------------|------------------------|---------------|------------------------------------|
| MURS120-E3/52T | 0.096 | 52T | 750 | 7" diameter plastic tape and reel |
| MURS120-E3/5BT | 0.096 | 5BT | 3200 | 13" diameter plastic tape and reel |
| MURS120HE3_A/H ⁽¹⁾ | 0.096 | H | 750 | 7" diameter plastic tape and reel |
| MURS120HE3_A/I ⁽¹⁾ | 0.096 | I | 3200 | 13" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified

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

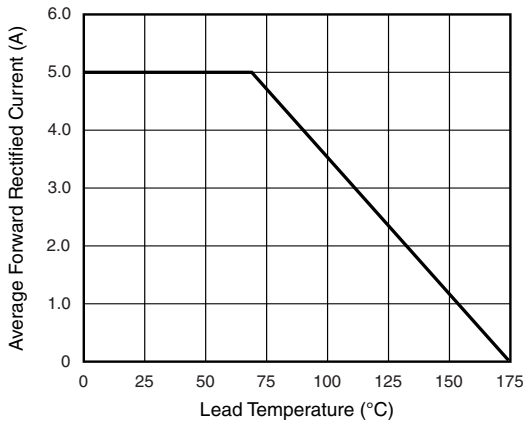


Fig. 1 - Forward Current Derating Curve

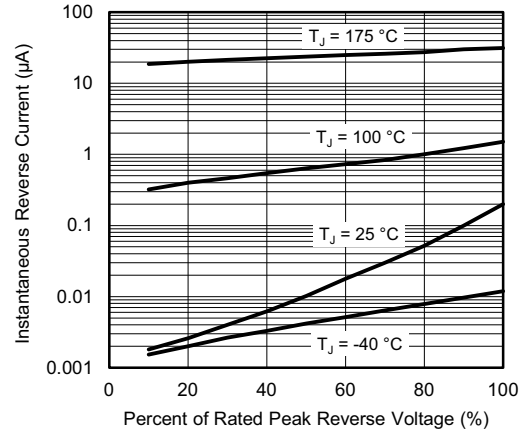


Fig. 4 - Typical Reverse Leakage Characteristics

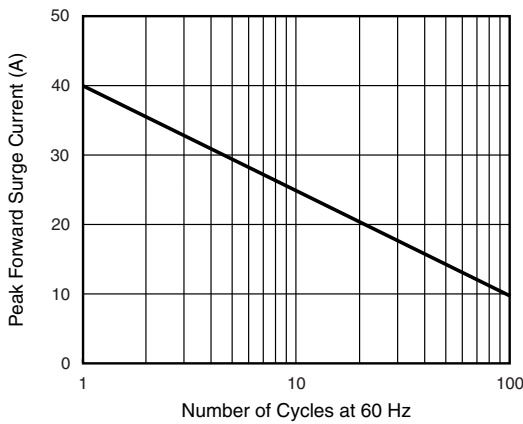


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

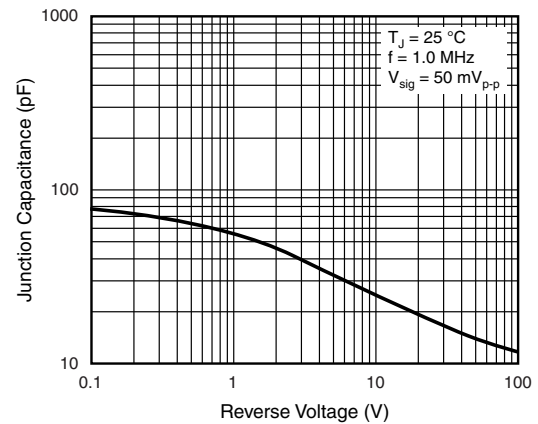


Fig. 5 - Typical Junction Capacitance

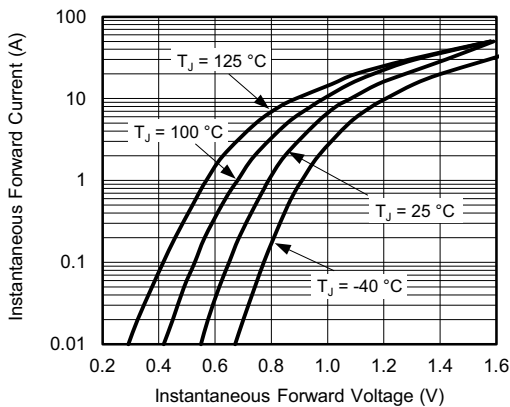
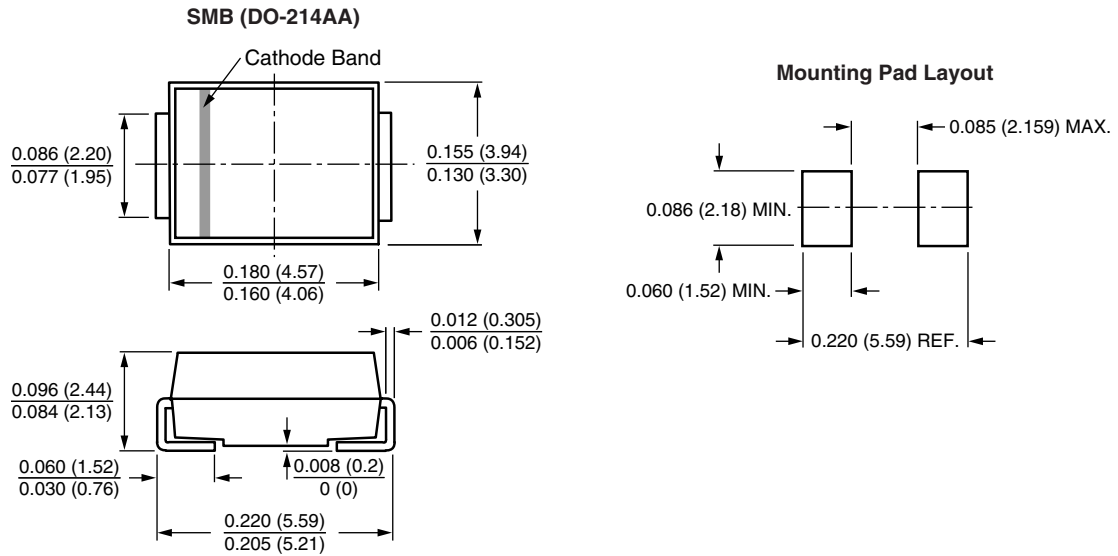


Fig. 3 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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