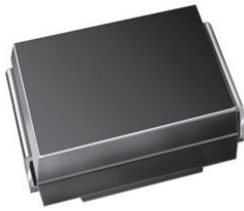


## Surface-Mount Ultrafast Plastic Rectifier


**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](http://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)                              | $I_{F(AV)}$    | $T_L = 155\text{ °C}$ | 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   | $\mu\text{A}$ |
|  |  |             | $T_J = 150\text{ }^\circ\text{C}$ | 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                                      | $I_F = 1.0\text{ A}, di/dt = 100\text{ A}/\mu\text{s},$<br>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 <sup>(1)</sup> | 0.096           | H                      | 750           | 7" diameter plastic tape and reel  |
| MURS120HE3_A/I <sup>(1)</sup> | 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)

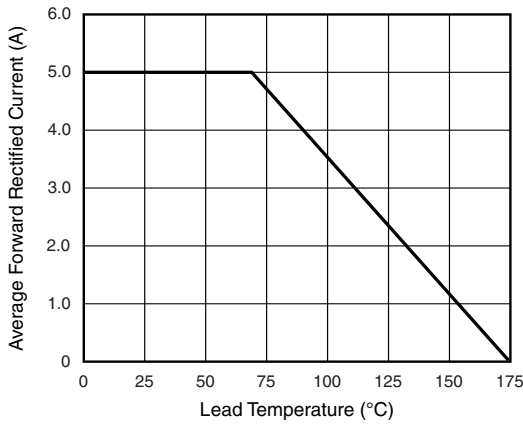


Fig. 1 - Forward Current Derating Curve

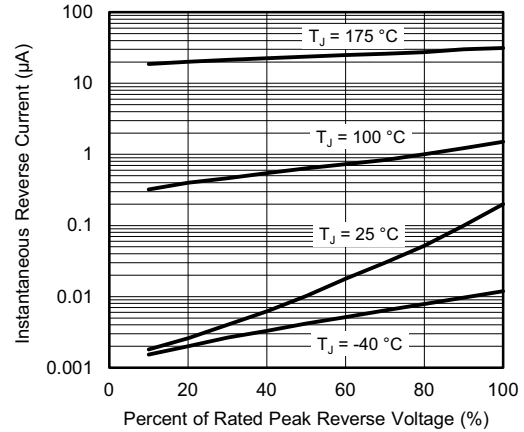


Fig. 4 - Typical Reverse Leakage Characteristics

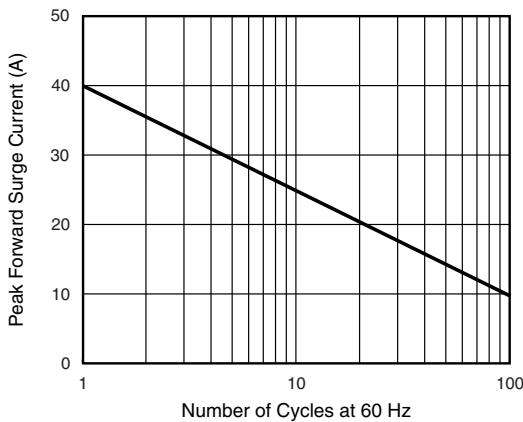


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

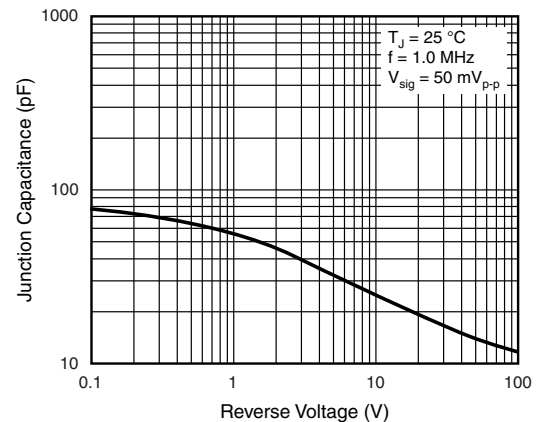


Fig. 5 - Typical Junction Capacitance

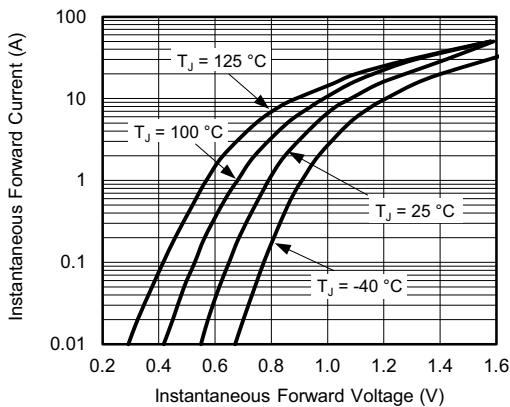
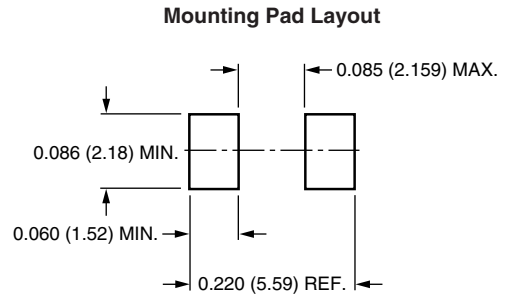
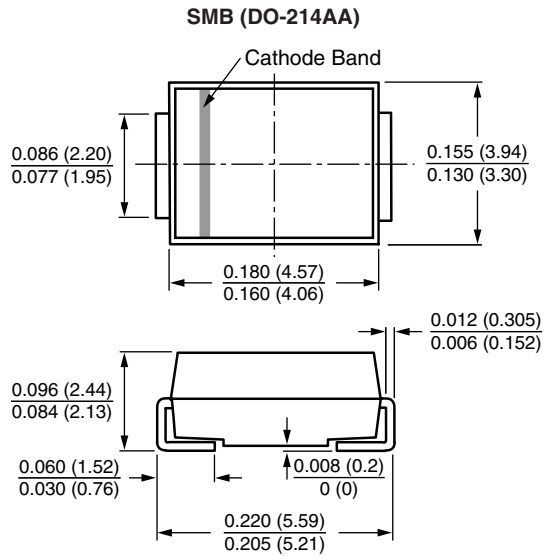


Fig. 3 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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