

## Surface Mount Ultrafast Plastic Rectifier


**DO-214AA (SMB)**

### FEATURES

- Glass passivated 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
- 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:** 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 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

### PRIMARY CHARACTERISTICS

|                 |                |
|-----------------|----------------|
| $I_{F(AV)}$     | 1.0 A          |
| $V_{RRM}$       | 400 V, 600 V   |
| $I_{FSM}$       | 35 A           |
| $t_{rr}$        | 50 ns          |
| $V_F$           | 1.05 V         |
| $T_J$ max.      | 175 °C         |
| Package         | DO-214AA (SMB) |
| Diode variation | Single die     |

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER  | SYMBOL         | MURS140               | MURS160 | UNIT |
|--|----------------|-----------------------|---------|------|
| Device marking code  |                | MG                    | MJ      |      |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 400                   | 600     | V    |
| Working peak reverse voltage   | $V_{RWM}$      | 400                   | 600     |      |
| Maximum DC blocking voltage  | $V_{DC}$       | 400                   | 600     |      |
| Maximum average forward rectified current at (Fig. 1)                              | $I_{F(AV)}$    | $T_L = 150\text{ °C}$ |         | A    |
|  |                | $T_L = 125\text{ °C}$ |         |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 35                    |         |      |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 65 to + 175         |         | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |             |  |                                   |         |               |
|--|-------------|--|-----------------------------------|---------|---------------|
| PARAMETER  | SYMBOL      | TEST CONDITIONS  | MURS140                           | MURS160 | UNIT          |
| Maximum instantaneous forward voltage  | $V_F^{(1)}$ | $I_F = 1.0\text{ A}$   | $T_J = 25\text{ }^\circ\text{C}$  | 1.25    | V             |
|  |             |  | $T_J = 150\text{ }^\circ\text{C}$ | 1.05    |               |
| Maximum instantaneous reverse current at DC blocking voltage                                 | $I_R^{(2)}$ | Rated $V_R$  | $T_J = 25\text{ }^\circ\text{C}$  | 5.0     | $\mu\text{A}$ |
|  |             |  | $T_J = 150\text{ }^\circ\text{C}$ | 150     |               |
| Maximum reverse recovery time  | $t_{rr}$    | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$                               | 50                                |         | ns            |
|  |             | $I_F = 1.0\text{ A}, dI/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 10\% I_{RM}$ | 75                                |         |               |
| Maximum forward recovery time  | $t_{fr}$    | $I_F = 1.0\text{ A}, dI/dt = 100\text{ A}/\mu\text{s},$<br>recovery to 1.0 V                   | 50                                |         |               |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |         |         |                           |
|---|-----------------|---------|---------|---------------------------|
| PARAMETER   | SYMBOL          | MURS140 | MURS160 | UNIT                      |
| Typical thermal resistance, junction to lead  | $R_{\theta JL}$ | 13      |         | $^\circ\text{C}/\text{W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| MURS160-E3/52T                        | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| MURS160-E3/5BT                        | 0.096           | 5BT                    | 3200          | 13" diameter plastic tape and reel |
| MURS160HE3/52T <sup>(1)</sup>         | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| MURS160HE3/5BT <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)

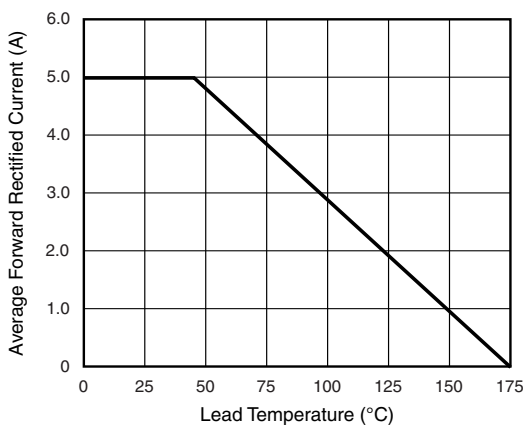


Fig. 1 - Forward Current Derating Curve

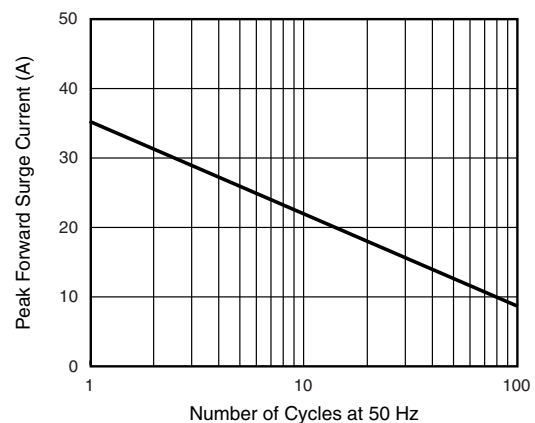


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

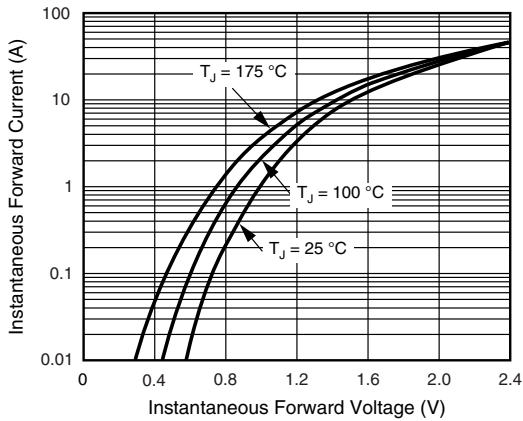


Fig. 3 - Typical Instantaneous Forward Characteristics

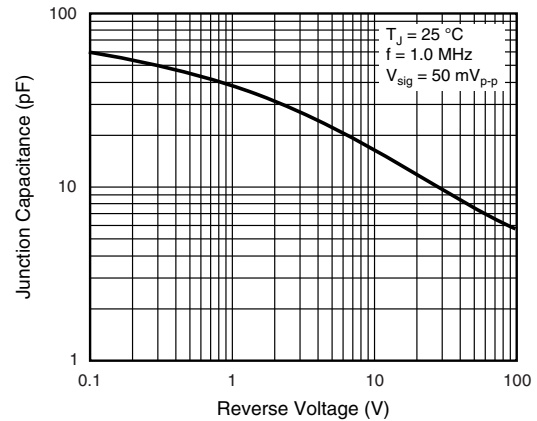


Fig. 5 - Typical Junction Capacitance

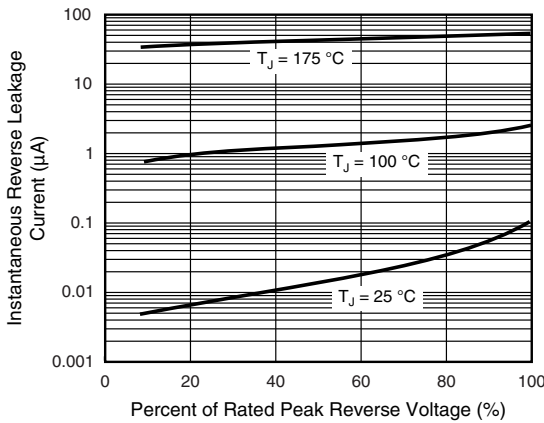
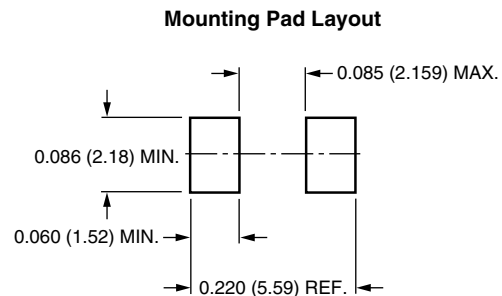
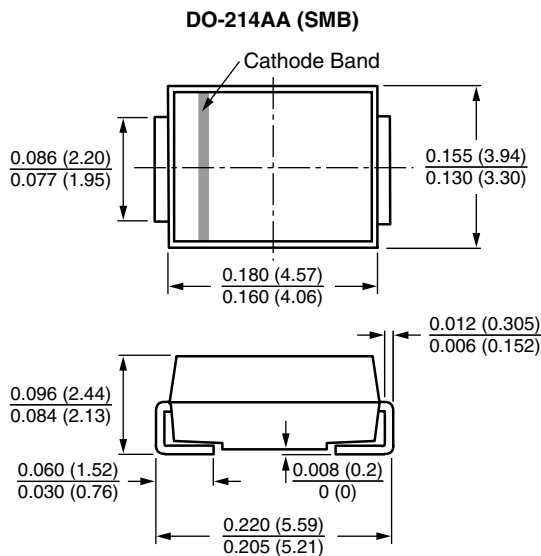


Fig. 4 - Typical Reverse Leakage Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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