

## Surface Mount Ultrafast Plastic Rectifier


**DO-214AA (SMB)**

### 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:** 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

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

| 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         |
| $T_J \text{ max.}$      | 175 °C         |
| Package                 | DO-214AA (SMB) |
| Diode variation         | Single die     |

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                    |                                                                               |             |         |      |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------|---------|------|
| PARAMETER                                                                          | SYMBOL                                                                        | MURS140     | MURS160 | UNIT |
| Device marking code                                                                |                                                                               | MG          | MJ      |      |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>                                                              | 400         | 600     | V    |
| Working peak reverse voltage                                                       | V <sub>RWM</sub>                                                              | 400         | 600     |      |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>                                                               | 400         | 600     |      |
| Maximum average forward rectified current at (Fig. 1)                              | $\frac{T_L = 150\text{ }^{\circ}\text{C}}{T_L = 125\text{ }^{\circ}\text{C}}$ | 1.0         |         | A    |
|                                                                                    |                                                                               | 2.0         |         |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>                                                              | 35          |         |      |
| Operating junction and storage temperature range                                   | T <sub>J</sub> , T <sub>STG</sub>                                             | -65 to +175 |         | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                               |                                                                                                        |                         |         |         |      |
|----------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------|---------|---------|------|
| PARAMETER                                                                  | SYMBOL                        | TEST CONDITIONS                                                                                        |                         | MURS140 | MURS160 | UNIT |
| Maximum instantaneous forward voltage                                      | V <sub>F</sub> <sup>(1)</sup> | I <sub>F</sub> = 1.0 A                                                                                 | T <sub>J</sub> = 25 °C  | 1.25    |         | V    |
|                                                                            |                               |                                                                                                        | T <sub>J</sub> = 150 °C | 1.05    |         |      |
| Maximum instantaneous reverse current at DC blocking voltage               | I <sub>R</sub> <sup>(2)</sup> | Rated V <sub>R</sub>                                                                                   | T <sub>J</sub> = 25 °C  | 5.0     |         | μA   |
|                                                                            |                               |                                                                                                        | T <sub>J</sub> = 150 °C | 150     |         |      |
| Maximum reverse recovery time                                              | t <sub>rr</sub>               | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A                               |                         | 50      |         | ns   |
|                                                                            |                               | I <sub>F</sub> = 1.0 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 10 % I <sub>RM</sub> |                         | 75      |         |      |
| Maximum forward recovery time                                              | t <sub>fr</sub>               | I <sub>F</sub> = 1.0 A, dI/dt = 100 A/μs, 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 |
| MURS160HE3_A/H <sup>(1)</sup>         | 0.096           | H                      | 750           | 7" diameter plastic tape and reel  |
| MURS160HE3_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)

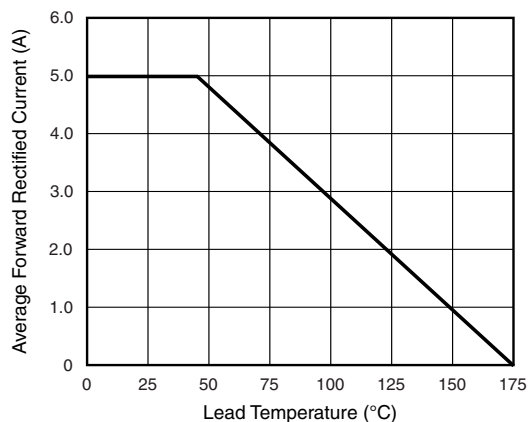


Fig. 1 - Forward Current Derating Curve

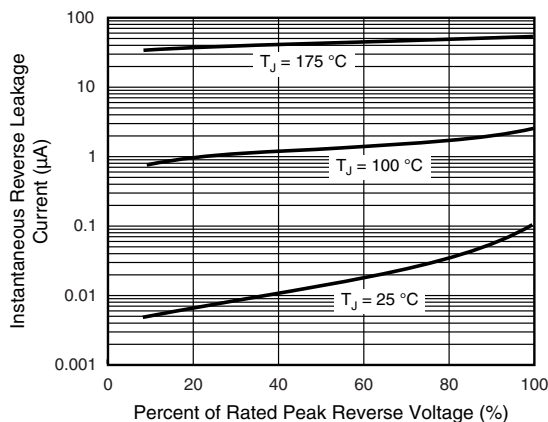


Fig. 4 - Typical Reverse Leakage Characteristics

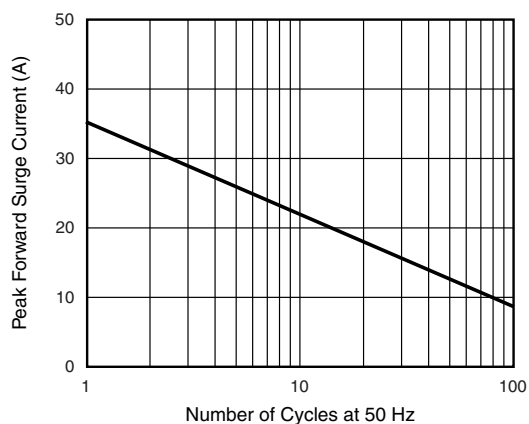


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

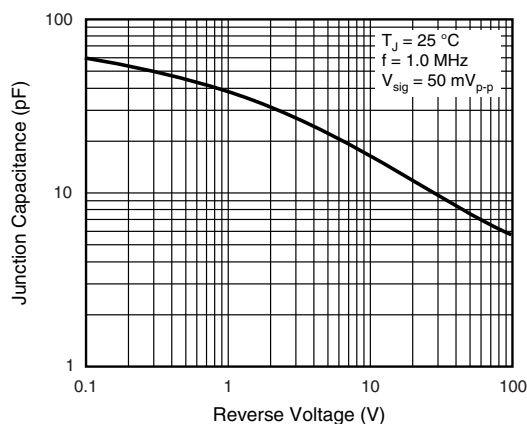


Fig. 5 - Typical Junction Capacitance

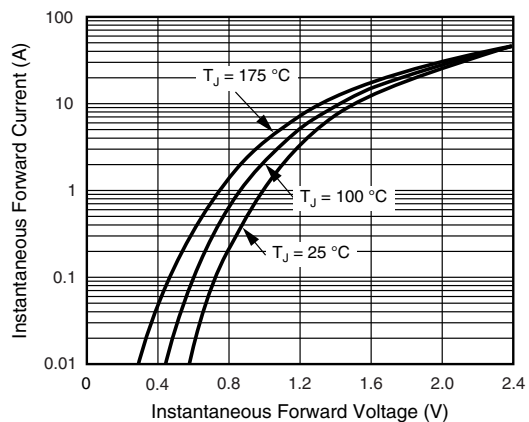
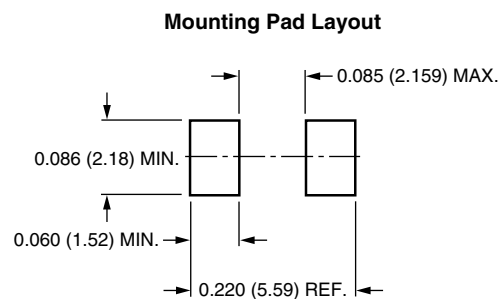
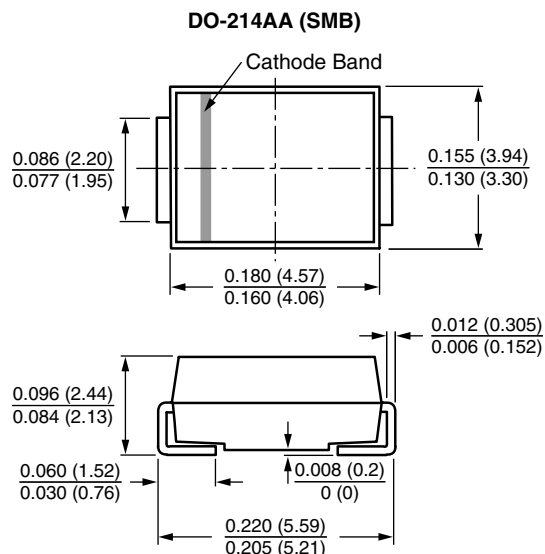


Fig. 3 - Typical Instantaneous Forward Characteristics



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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