

# Surface-Mount Ultrafast Plastic Rectifier


**SMC (DO-214AB)**

Cathode  Anode

## LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 3.0 A          |
| $V_{RRM}$               | 200 V          |
| $I_{FSM}$               | 125 A          |
| $t_{rr}$                | 25 ns          |
| $V_F$                   | 0.71 V         |
| $T_J$ max.              | 175 °C         |
| Package                 | SMC (DO-214AB) |
| 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
- 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:** SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
Base P/NHE3\_X - RoHS-compliant and 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                                         | MURS320     | 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)                             | $T_L = 140\text{ °C}$<br>$T_L = 130\text{ °C}$ | $I_{F(AV)}$ | A    |
|                                                                                    |                                                | 3.0<br>4.0  |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$                                      | 125         | 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      | MURS320 | UNIT          |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|---------|---------------|
| Maximum instantaneous forward voltage                              | $I_F = 3.0\text{ A}$                                                                                    | $V_F^{(1)}$ | 0.875   | V             |
|                                                                    | $I_F = 4.0\text{ A}$                                                                                    |             | 0.890   |               |
|                                                                    | $I_F = 3.0\text{ A}$                                                                                    |             | 0.710   |               |
| Maximum instantaneous reverse current at rated DC blocking voltage | $T_J = 25\text{ }^{\circ}\text{C}$                                                                      | $I_R^{(1)}$ | 5.0     | $\mu\text{A}$ |
|                                                                    | $T_J = 150\text{ }^{\circ}\text{C}$                                                                     |             | 150     |               |
| 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 $1.0\text{ V}$                  | $t_{fr}$    | 25      | ns            |

**Note**

<sup>(1)</sup> 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          | MURS320 | UNIT                        |
|---------------------------------------------|-----------------|---------|-----------------------------|
| Typical thermal resistance junction to lead | $R_{\theta JL}$ | 11      | $^{\circ}\text{C}/\text{W}$ |

**ORDERING INFORMATION** (Example)

| PREFERRED P/N                 | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|-------------------------------|-----------------|------------------------|---------------|------------------------------------|
| MURS320-E3/57T                | 0.211           | 57T                    | 850           | 7" diameter plastic tape and reel  |
| MURS320-E3/9AT                | 0.211           | 9AT                    | 3500          | 13" diameter plastic tape and reel |
| MURS320HE3_A/H <sup>(1)</sup> | 0.211           | H                      | 850           | 7" diameter plastic tape and reel  |
| MURS320HE3_A/I <sup>(1)</sup> | 0.211           | I                      | 3500          | 13" diameter plastic tape and reel |

**Note**

<sup>(1)</sup> AEC-Q101 qualified

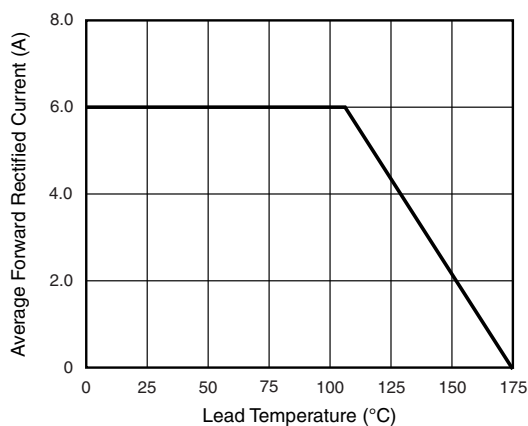
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

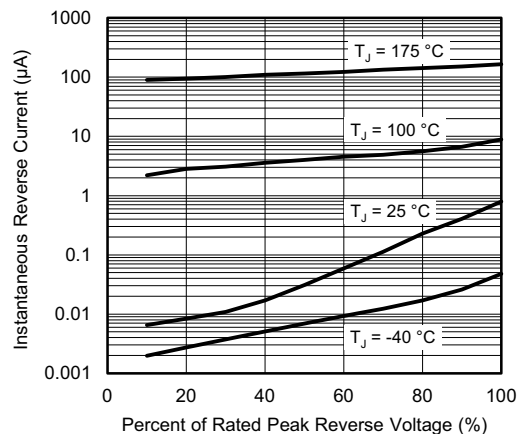


Fig. 4 - Typical Reverse Leakage Characteristics

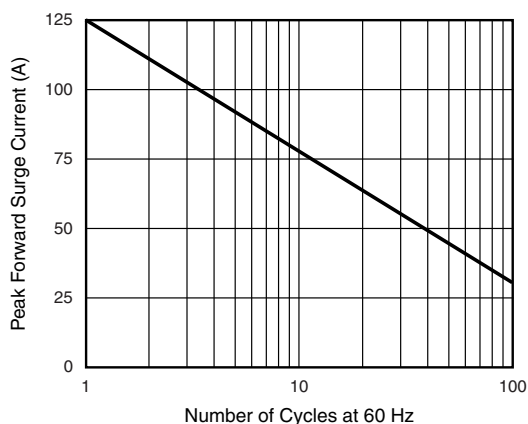


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

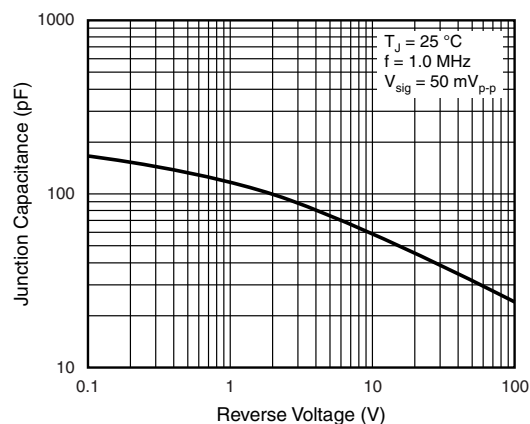


Fig. 5 - Typical Junction Capacitance

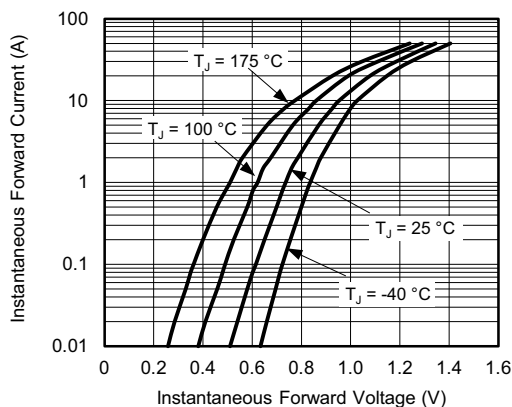
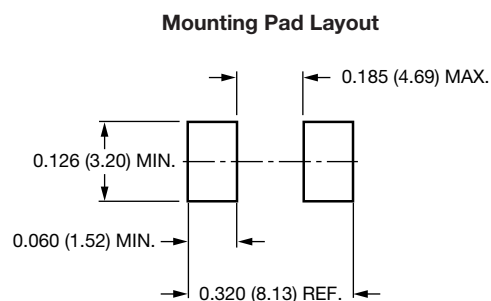
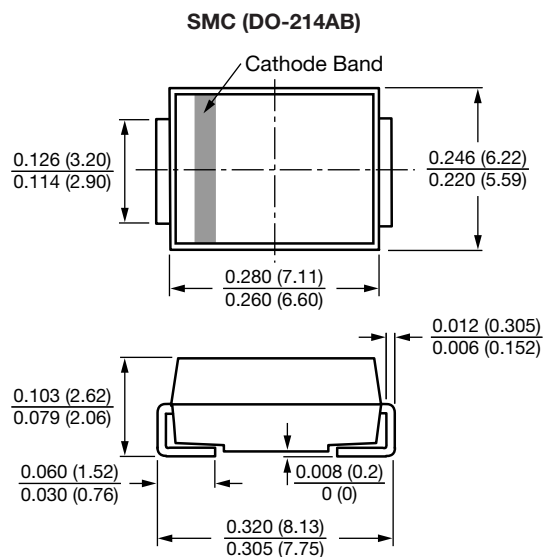


Fig. 3 - Typical Forward Voltage



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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