

# Surface-Mount Ultrafast Plastic Rectifier


**SMC (DO-214AB)**

Cathode  Anode

## LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS                 |                |
|-----------------------------------------|----------------|
| $I_{F(AV)}$                             | 4.0 A          |
| $V_{RRM}$                               | 600 V          |
| $I_{FSM}$                               | 110 A          |
| $t_{rr}$                                | 50 ns          |
| $V_F$ at $I_F = 4.0$ A ( $T_A = 25$ °C) | 1.28 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
**HALOGEN**  
**FREE**  
Available

## 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/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                   |             |      |
|------------------------------------------------------------------------------------|-------------------|-------------|------|
| PARAMETER                                                                          | SYMBOL            | MURS460     | UNIT |
| Device marking code                                                                |                   | 4MJ         |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$         | 600         | V    |
| Working peak reverse voltage                                                       | $V_{RWM}$         | 600         | V    |
| Maximum DC blocking voltage                                                        | $V_{DC}$          | 600         | V    |
| Maximum average forward rectified current                                          | $I_{F(AV)}^{(1)}$ | 2.4         | A    |
|                                                                                    | $I_{F(AV)}^{(2)}$ | 4.0         |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$         | 110         | A    |
| Peak forward surge current 1 ms single half sine-wave superimposed on rated load   | $I_{FSM}$         | 220         | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$    | -55 to +175 | °C   |

## Notes

<sup>(1)</sup> Free air, mounted on recommended copper pad area

<sup>(2)</sup> Mounted on 25 mm x 25 mm pad area



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                                                                                        |                         |                               |         |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------|---------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                                                        |                         | SYMBOL                        | MURS460 | UNIT |
| Maximum instantaneous forward voltage                                      | I <sub>F</sub> = 3.0 A                                                                                 | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 1.25    | V    |
|                                                                            | I <sub>F</sub> = 4.0 A                                                                                 |                         |                               | 1.28    |      |
|                                                                            | I <sub>F</sub> = 3.0 A                                                                                 | T <sub>A</sub> = 150 °C |                               | 1.05    |      |
| Maximum instantaneous reverse current at rated DC blocking voltage         | V <sub>R</sub> = 600 V                                                                                 | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 10      | μA   |
|                                                                            |                                                                                                        | T <sub>A</sub> = 150 °C |                               | 250     |      |
| Maximum reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A                               |                         | t <sub>rr</sub>               | 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      |      |

**Notes**(1) Pulse test:  $t_p = 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ (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                      | MURS460 | UNIT                        |
| Typical thermal resistance                                                                  | $R_{\theta JA}^{(1)(2)}$    | 85      | $^{\circ}\text{C}/\text{W}$ |
|                                                                                             | $R_{\theta JM}^{(1)(2)(3)}$ | 12      |                             |

**Notes**(1) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ (2) Free air, mounted on recommended copper pad area; thermal resistance  $R_{\theta JA}$  – junction to ambient and  $R_{\theta JM}$  – junction to mount

(3) Mounted on 25 mm x 25 mm pad area

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| MURS460-E3/H                          | 0.211           | H                      | 850           | 7" diameter plastic tape and reel  |
| MURS460-E3/I                          | 0.211           | I                      | 3500          | 13" diameter plastic tape and reel |
| MURS460-M3/H                          | 0.211           | H                      | 850           | 7" diameter plastic tape and reel  |
| MURS460-M3/I                          | 0.211           | I                      | 3500          | 13" diameter plastic tape and reel |

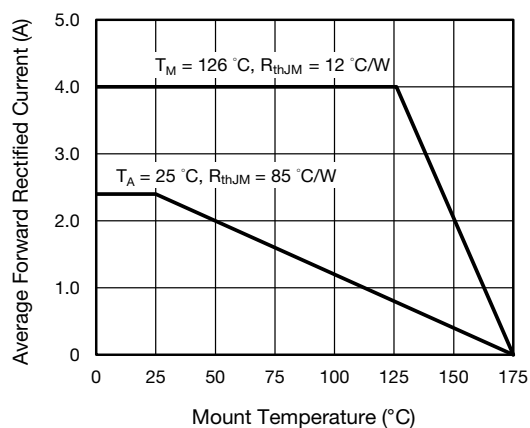
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

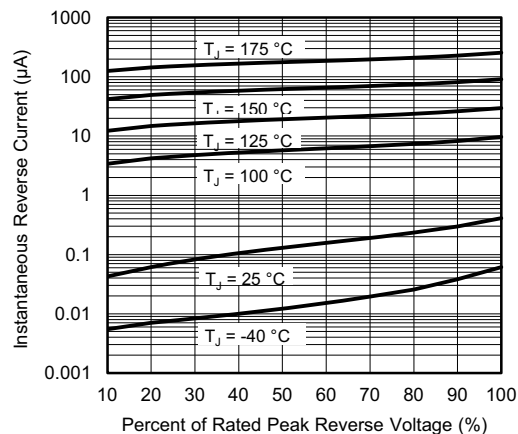


Fig. 4 - Typical Reverse Characteristics

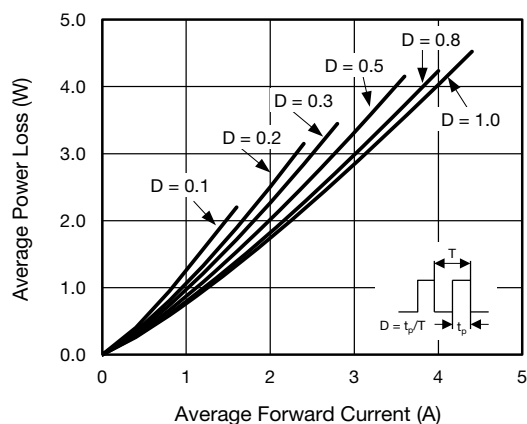


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

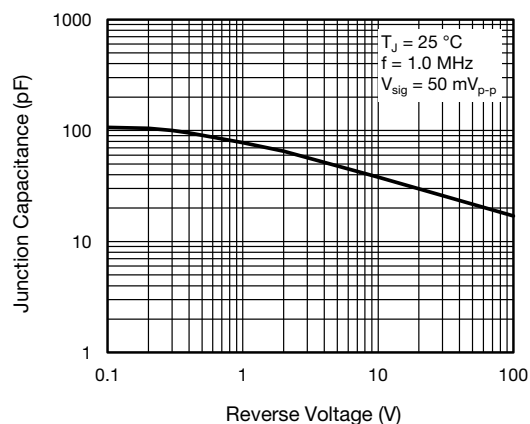


Fig. 5 - Typical Junction Capacitance

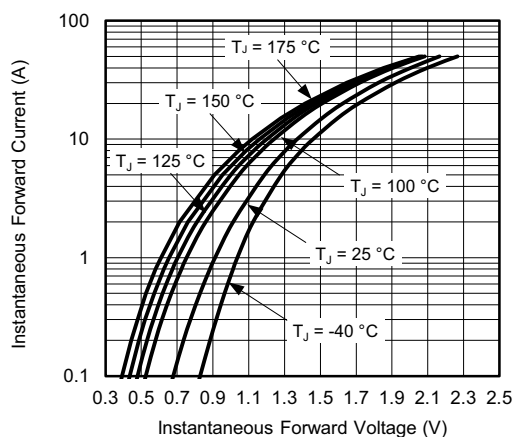


Fig. 3 - Typical Instantaneous Forward Characteristics

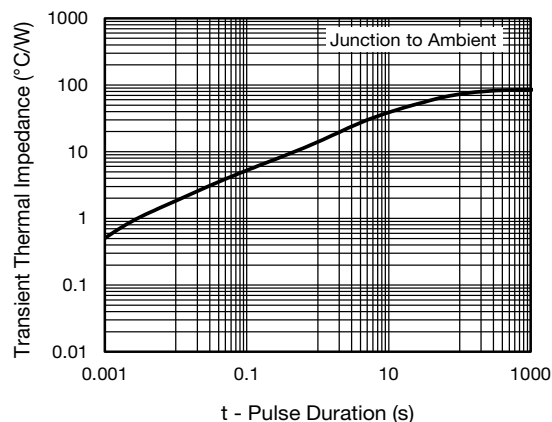


Fig. 6 - Transient Thermal Impedance

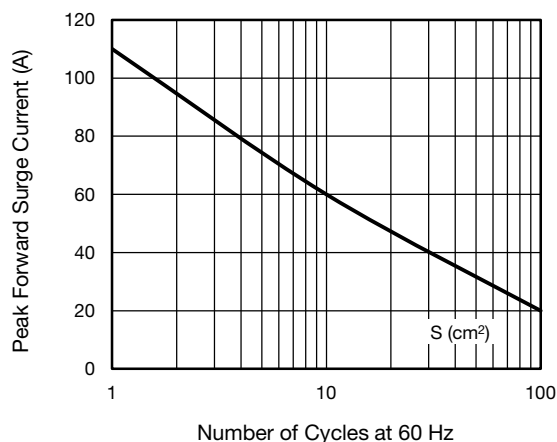
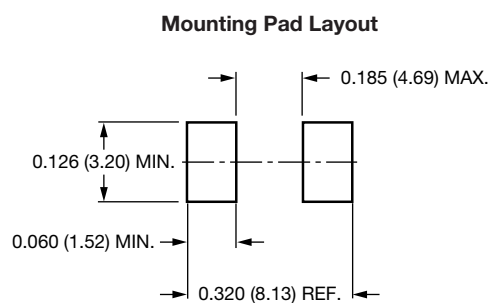
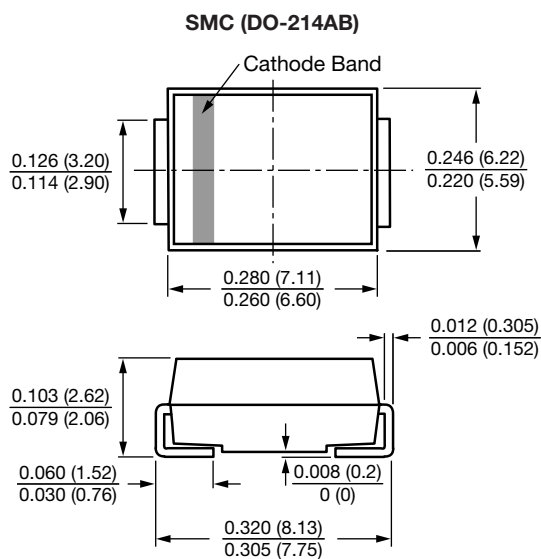


Fig. 7 - Peak Forward Surge Current

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




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