

Surface Mount Ultrafast Plastic Rectifier

Major Ratings and Characteristics

| | |
|--------------------|---------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 50 V to 200 V |
| I_{FSM} | 30 A |
| t_{rr} | 15 ns |
| V_F | 0.92 V |
| $T_j \text{ max.}$ | 150 °C |



DO-214AC (SMA)

Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020C
- Solder Dip 260 °C, 40 seconds



Mechanical Data

Case: DO-214AC (SMA)

Epoxy meets UL-94V-0 Flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Color band denotes cathode end

Typical Applications

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and Telecommunication

Maximum Ratings

$T_A = 25\text{ °C}$ unless otherwise specified

| Parameter | Symbol | ES1A | ES1B | ES1C | ES1D | Unit |
|--|----------------|---------------|------|------|------|------|
| Device marking code | | EA | EB | EC | ED | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | V |
| Maximum average forward rectified current (Fig. 1) | $I_{F(AV)}$ | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 30 | | | | A |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 150 | | | | °C |

Electrical Characteristics

$T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified

| Parameter | Test condition | Symbol | Value | Unit |
|---|--|----------|----------------|---------------|
| Maximum instantaneous forward voltage | at $I_F = 0.6\text{A}^{(1)}$ at $I_F = 1.0\text{ A}$ | V_F | 0.865 0.920 | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$ | I_R | 5.0 100 | μA |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | t_{rr} | 15 | ns |
| Maximum reverse recovery time | $I_F = 0.6\text{ A}$, $V_R = 30\text{ V}$, $di/dt = 50\text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$ $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$ | t_{rr} | 25 35 | ns |
| Maximum stored charge | $I_F = 0.6\text{ A}$, $V_R = 30\text{ V}$, $di/dt = 50\text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$ $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$ | Q_{rr} | 10 25 | nC |
| Typical junction capacitance | at 4.0 V, 1 MHz | C_J | 10 | pF |

Notes:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

Thermal Characteristics

$T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | ES1A | ES1B | ES1C | ES1D | Unit |
|---|-----------------|------|------|------|------|---------------------------|
| Typical thermal resistance ⁽¹⁾ | $R_{\theta JA}$ | 85 | | | | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JL}$ | 35 | | | | |

Notes:

(1) Units mounted on P.C.B. 5.0 x 5.0 mm (0.013 mm thick) land areas

Ratings and Characteristics Curves

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

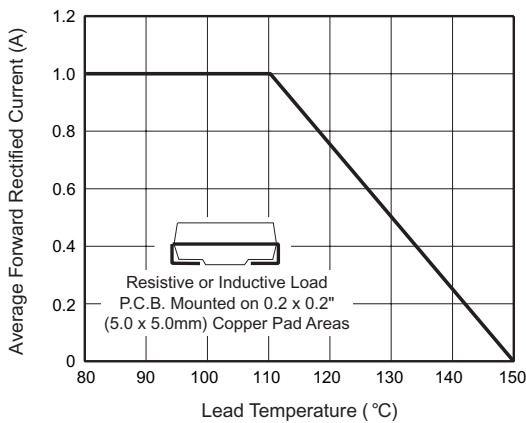


Figure 1. Maximum Forward Current Derating Curve

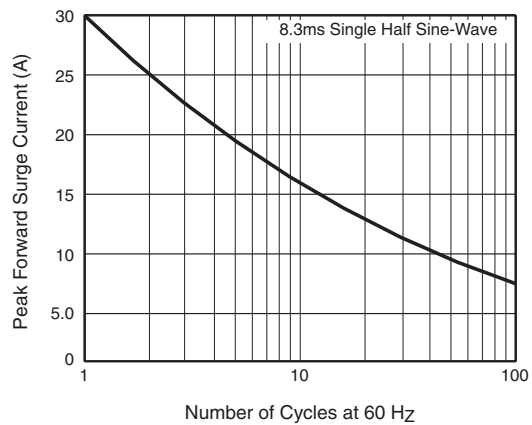


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

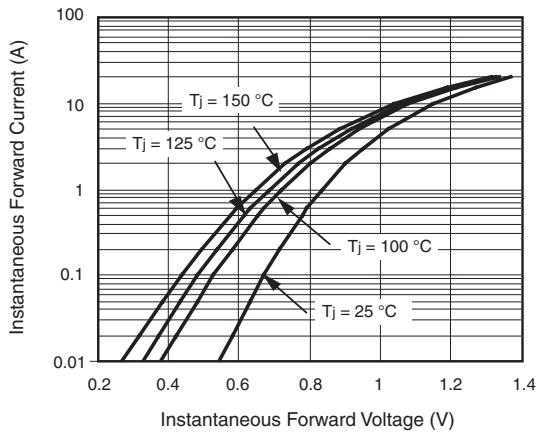


Figure 3. Typical Instantaneous Forward Characteristics

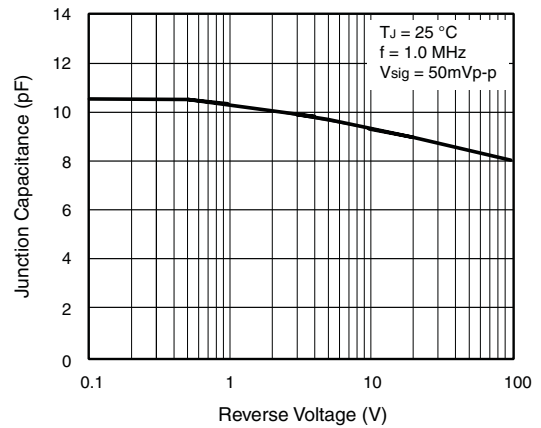


Figure 5. Typical Junction Capacitance

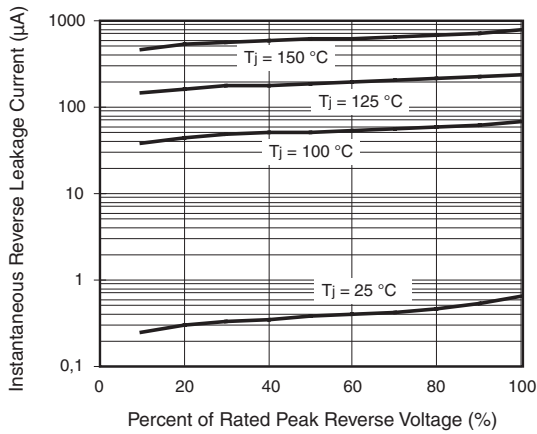


Figure 4. Typical Reverse Leakage Characteristics

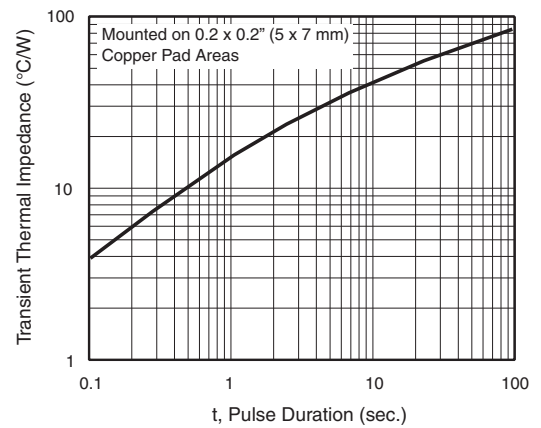
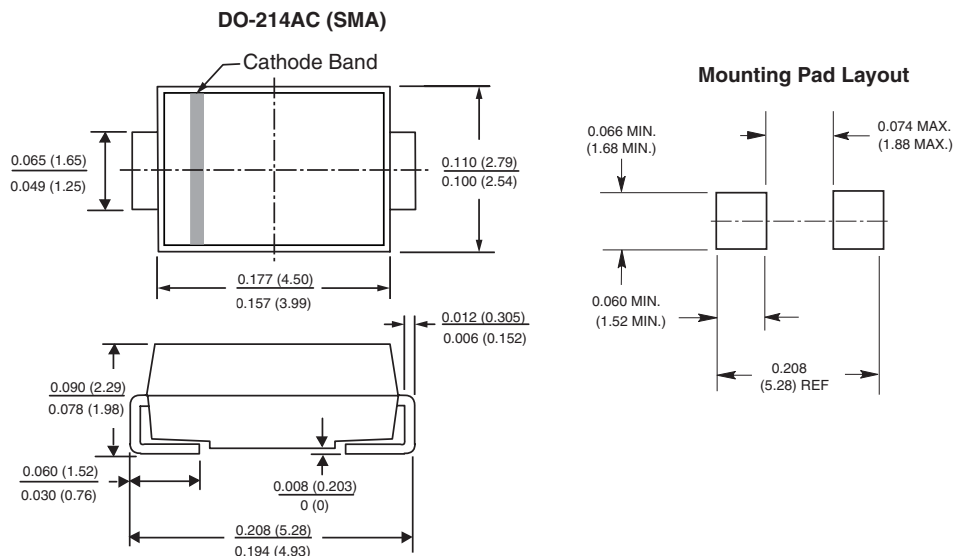


Figure 6. Typical Thermal Impedance

Package outline dimensions in inches (millimeters)





Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.