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## 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 |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 2.0 A          |
| $V_{RRM}$               | 300 V, 400 V   |
| $I_{FSM}$               | 50 A           |
| $t_{rr}$                | 35 ns          |
| $V_F$ at $I_F$          | 1.1 V          |
| $T_J$ max.              | 150 °C         |
| Package                 | DO-214AA (SMB) |
| Diode variations        | Single die     |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                |             |      |      |
|--|----------------|-------------|------|------|
| PARAMETER  | SYMBOL         | ES2F        | ES2G | UNIT |
| Device marking code  |                | EF          | EG   |      |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 300         | 400  | V    |
| Working peak reverse voltage   | $V_{RWM}$      | 225         | 300  | V    |
| Maximum RMS voltage  | $V_{RMS}$      | 210         | 280  | V    |
| Maximum average forward rectified current at $T_L = 110$ °C                        | $I_{F(AV)}$    | 2.0         |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 50          |      | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -55 to +150 |      | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |  |             |      |      |               |
|--|--|-------------|------|------|---------------|
| PARAMETER  | TEST CONDITIONS  | SYMBOL      | ES2F | ES2G | UNIT          |
| Maximum instantaneous forward voltage  | 2.0 A  | $V_F^{(1)}$ | 1.1  |      | V             |
| Maximum reverse current at $V_{RRM}$   | $T_A = 25\text{ }^\circ\text{C}$   | $I_R$       | 10   |      | $\mu\text{A}$ |
|  | $T_A = 100\text{ }^\circ\text{C}$  |             | 200  |      |               |
| Maximum reverse recovery time  | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$                                  | $t_{rr}$    | 35   |      | ns            |
| Maximum reverse recovery time  | $I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ ,<br>$V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$ | $t_{rr}$    | 50   |      | ns            |
| Maximum reverse recovery current   | $I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ ,<br>$V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$ | $I_{RM}$    | 3.0  |      | A             |
| Maximum stored charge  | $I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ ,<br>$V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$ | $Q_{rr}$    | 50   |      | nC            |
| Typical junction capacitance   | 4.0 V, 1 MHz   | $C_J$       | 15   |      | pF            |

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |      |      |                           |
|---|-----------------------|------|------|---------------------------|
| PARAMETER   | SYMBOL                | ES2F | ES2G | UNIT                      |
| Maximum thermal resistance  | $R_{\theta JA}^{(1)}$ | 75   |      | $^\circ\text{C}/\text{W}$ |
|   | $R_{\theta JL}^{(1)}$ | 25   |      |                           |

**Note**

(1) Units mounted on PCB 5.0 mm x 5.0 mm (0.013 mm thick) land areas

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| ES2G-E3/52T                           | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| ES2G-E3/5BT                           | 0.096           | 5BT                    | 3200          | 13" diameter plastic tape and reel |
| ES2GHE3/52T <sup>(1)</sup>            | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| ES2GHE3/5BT <sup>(1)</sup>            | 0.096           | 5BT                    | 3200          | 13" diameter plastic tape and reel |
| ES2GHE3_A/H <sup>(1)</sup>            | 0.096           | H                      | 750           | 7" diameter plastic tape and reel  |
| ES2GHE3_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)

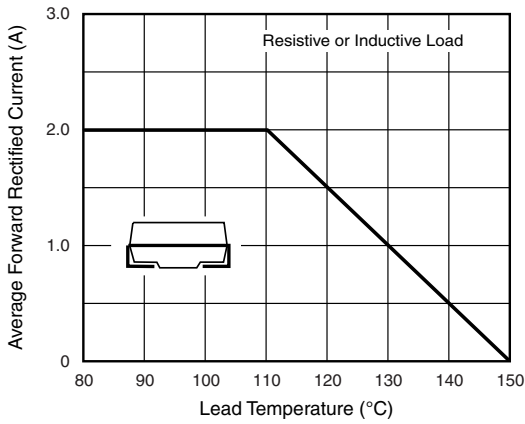


Fig. 1 - Maximum Forward Current Derating Curve

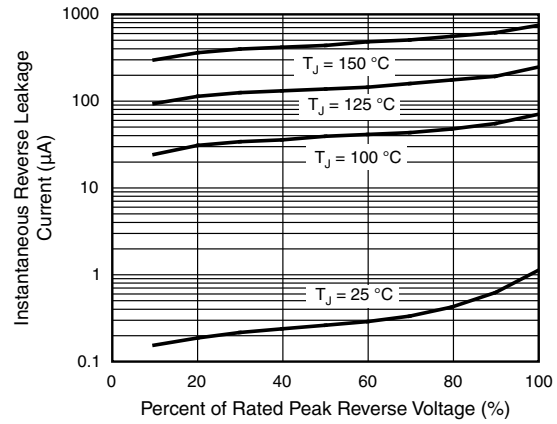


Fig. 4 - Typical Reverse Leakage Characteristics

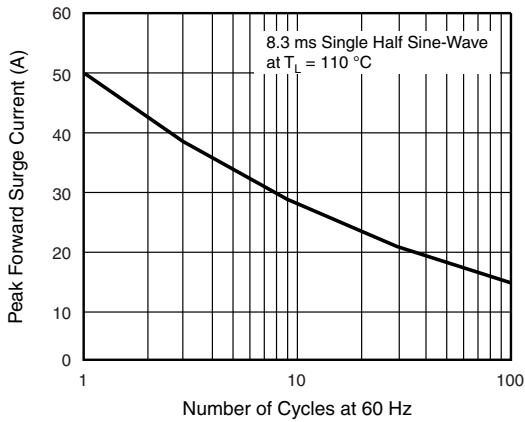


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

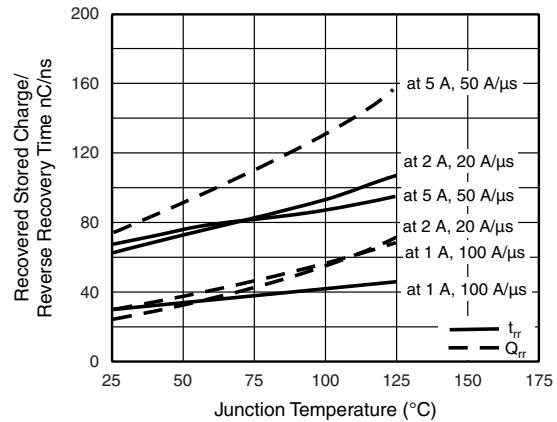


Fig. 5 - Reverse Switching Characteristics

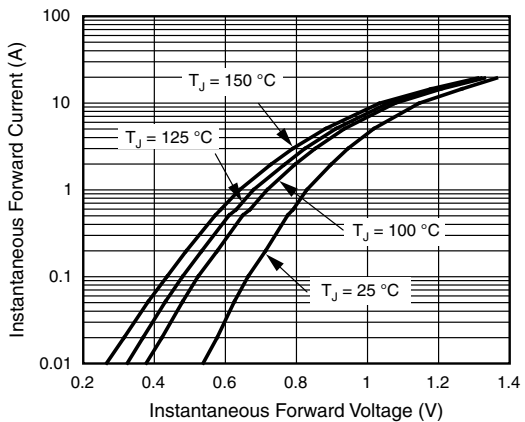


Fig. 3 - Typical Instantaneous Forward Characteristics

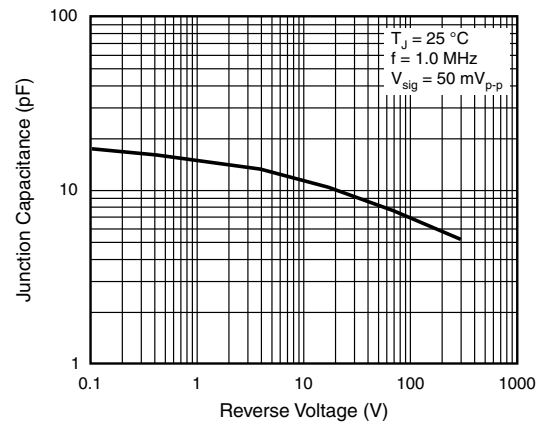
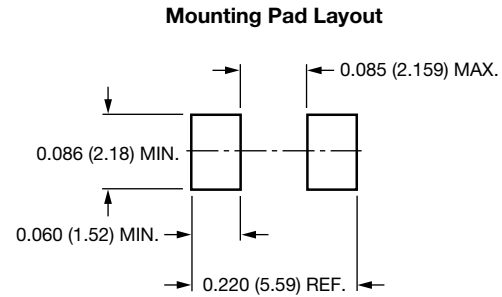
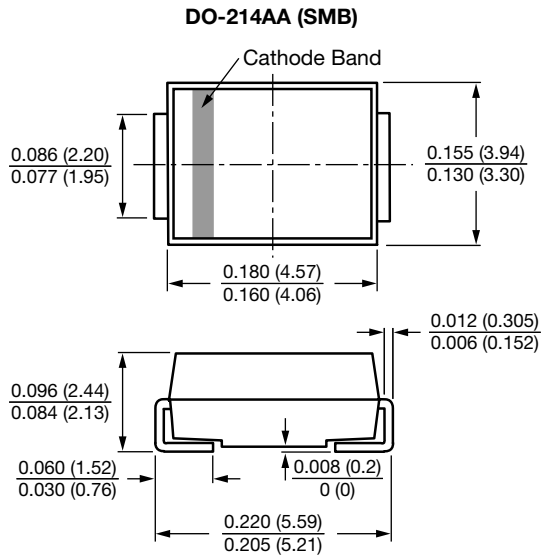


Fig. 6 - Typical Junction Capacitance



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





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