

Surface-Mount Ultrafast Plastic Rectifier


SMC (DO-214AB)

 Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|-------------------------|----------------|
| $I_{F(AV)}$ | 3.0 A |
| V_{RRM} | 300 V, 400 V |
| I_{FSM} | 100 A |
| t_{rr} | 35 ns |
| V_F at I_F | 1.1 V |
| T_J max. | 150 °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 available
 - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE

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 - haloge-free, RoHS-compliant, and commercial grade
 Base P/NHE3_X - RoHS-compliant, AEC-Q101 qualified
 Base P/NHM3_X - halogen-free, 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, M3, HE3, and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | |
|--|----------------|-------------|------|------|
| PARAMETER | SYMBOL | ES3F | ES3G | 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 $T_L = 110\text{ °C}$ | $I_{F(AV)}$ | 3.0 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 100 | | 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 noted) | | | | | |
|--|---|-------------|-----------------------------------|------|---------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | ES3F | ES3G | UNIT |
| Maximum instantaneous forward voltage | 3.0 A | $V_F^{(1)}$ | 1.1 | | V |
| Maximum DC reverse current at working peak reverse voltage | | I_R | $T_A = 25\text{ }^\circ\text{C}$ | 10 | μA |
| | | | $T_A = 100\text{ }^\circ\text{C}$ | 350 | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | t_{rr} | 35 | | ns |
| Maximum reverse recovery time | $I_F = 1.0\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$ | t_{rr} | 50 | | ns |
| Maximum reverse recovery current | $I_F = 1.0\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$ | I_{RM} | 3.0 | | A |
| Maximum stored charge | $I_F = 1.0\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$ | Q_{rr} | 50 | | nC |
| Typical junction capacitance | 4.0 V, 1 MHz | C_J | 30 | | pF |

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

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | |
|---|-----------------------|------|------|---------------------------|
| PARAMETER | SYMBOL | ES3F | ES3G | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 50 | | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JL}^{(1)}$ | 15 | | |

Note

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

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ES3G-E3/57T | 0.211 | 57T | 850 | 7" diameter plastic tape and reel |
| ES3G-E3/9AT | 0.211 | 9AT | 3500 | 13" diameter plastic tape and reel |
| ES3GHE3_A/H ⁽¹⁾ | 0.211 | H | 850 | 7" diameter plastic tape and reel |
| ES3GHE3_A/I ⁽¹⁾ | 0.211 | I | 3500 | 13" diameter plastic tape and reel |
| ES3G-M3/57T | 0.211 | 57T | 850 | 7" diameter plastic tape and reel |
| ES3G-M3/9AT | 0.211 | 9AT | 3500 | 13" diameter plastic tape and reel |
| ES3GHM3_A/H ⁽¹⁾ | 0.211 | H | 850 | 7" diameter plastic tape and reel |
| ES3GHM3_A/I ⁽¹⁾ | 0.211 | I | 3500 | 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)

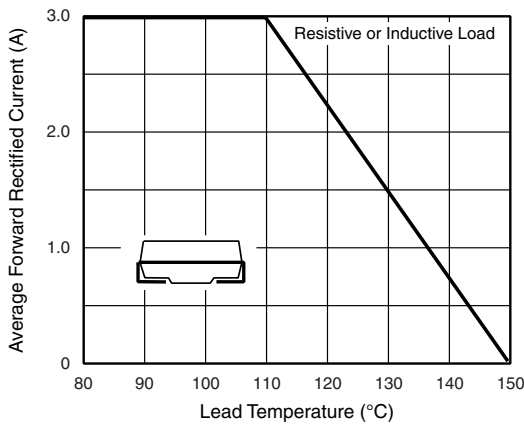


Fig. 1 - Maximum Forward Current Derating Curve

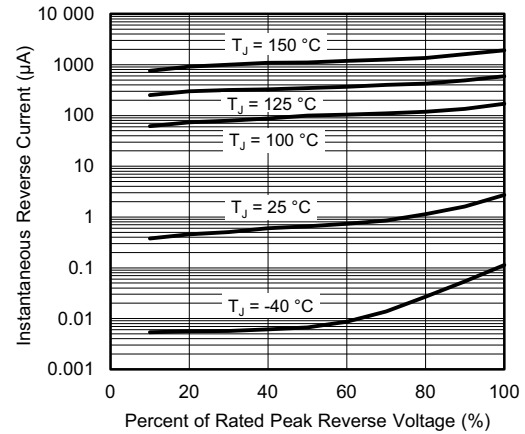


Fig. 4 - Typical Reverse Leakage Characteristics

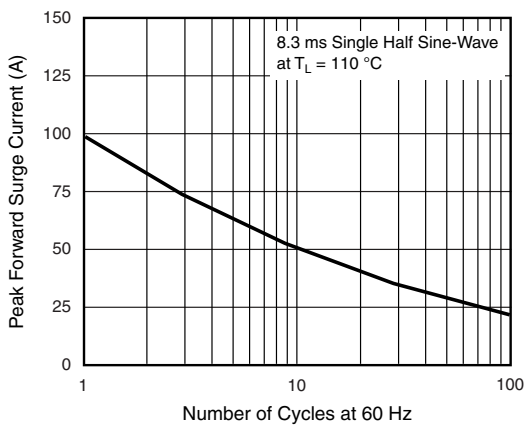


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

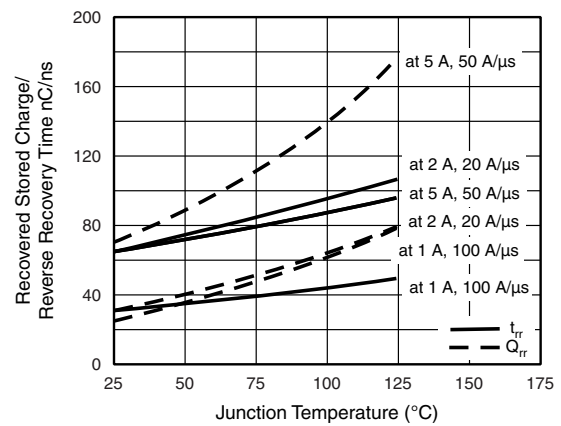


Fig. 5 - Reverse Switching Characteristics

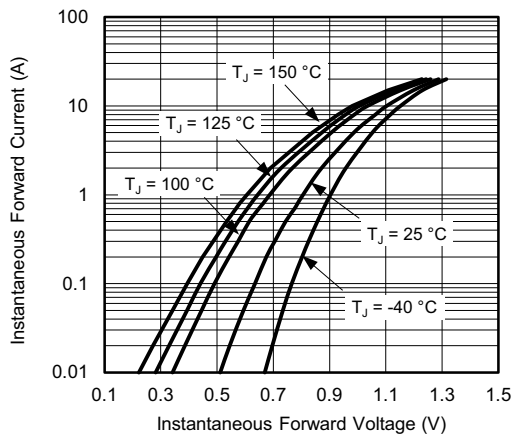


Fig. 3 - Typical Instantaneous Forward Characteristics

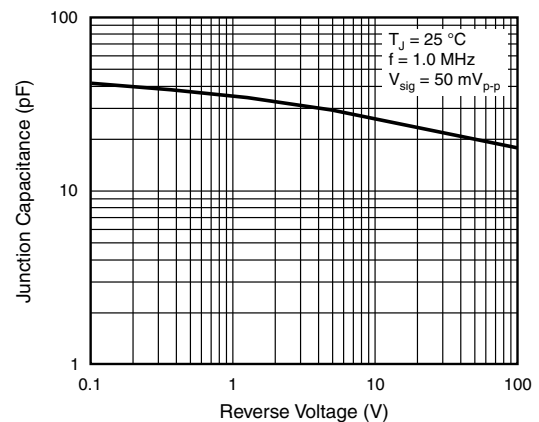


Fig. 6 - Typical Junction Capacitance

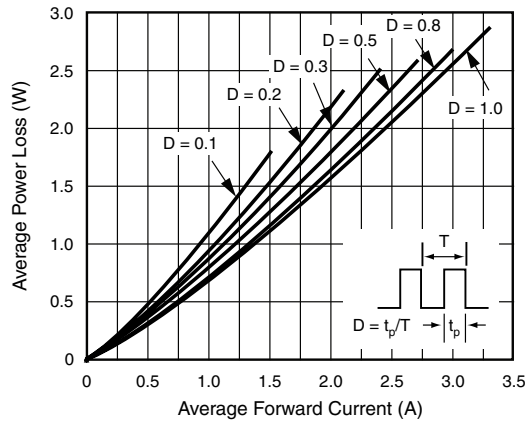
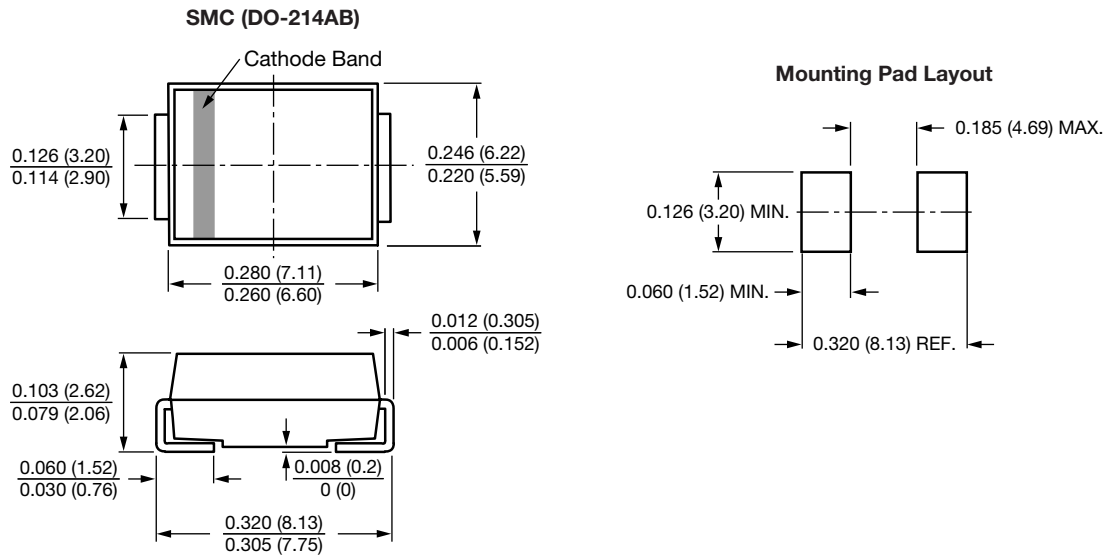


Fig. 7 - Forward Power Loss Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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