

Surface Mount Automotive Transient Voltage Suppressors

High Temperature Stability & High Reliability Conditions

Patented*




* Patent #'s
4,980,315
5,166,769
5,278,094

DO-214AB (SMC)

| MAJOR RATINGS AND CHARACTERISTICS | |
|-----------------------------------|--------------|
| V_{WM} | 10 V to 43 V |
| P_{PPM} | 3000 W |
| P_D | 6.0 W |
| I_{FSM} | 200 A |
| T_j max. | 185 °C |

FEATURES

- Patented PAR® construction 
- Available in Unidirectional polarity only
- 3000 W peak pulse power capability with a 10/1000 μ s waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Typical I_D less than 1.0 μ A above 13 V rating
- Meets MSL level 1, per J-STD-020C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.

MECHANICAL DATA

Case: DO-214AB (SMC)

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

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | |
|--|----------------|----------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Peak pulse power dissipation with a 10/1000 μ s waveform ⁽¹⁾ (Fig. 3) | P_{PPM} | Minimum 3000 | W |
| Peak power pulse current with a 10/1000 μ s waveform ⁽¹⁾ (Fig. 1) | I_{PPM} | see next table | A |
| Peak forward surge current 8.3 ms single half sine-wave ⁽²⁾ | I_{FSM} | 200 | A |
| Power dissipation on infinite heatsink at $T_L = 75$ °C (Fig. 6) | P_D | 6.0 | W |
| Maximum instantaneous forward voltage at 100 A ⁽²⁾ | V_F | 3.5 | V |
| Operating junction and storage temperature range | T_J, T_{STG} | - 65 to + 185 | °C |

Note:

(1) Non-repetitive current pulse, per Fig. 3 and derated above $T_A = 25$ °C per Fig. 2

(2) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

3KASMC10 thru 3KASMC43A

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

| DEVICE TYPE | DEVICE MARKING CODE | BREAKDOWN VOLTAGE V _(BR) ⁽¹⁾ AT I _T (V) | | TEST CURRENT I _T (mA) | STAND-OFF VOLTAGE V _{WM} (V) | MAXIMUM REVERSE LEAKAGE AT V _{WM} I _R (μA) | T _J = 150 °C MAXIMUM REVERSE LEAKAGE AT V _{WM} I _D (μA) | MAXIMUM PEAK PULSE SURGE CURRENT I _{PPM} ⁽²⁾ (A) | MAXIMUM CLAMPING VOLTAGE AT I _{PPM} V _C (V) |
|-------------|---------------------|--|------|----------------------------------|---------------------------------------|--|--|--|---|
| | | MIN | MAX | | | | | | |
| 3KASMC10 | 3AW | 11.1 | 13.6 | 1.0 | 10 | 5.0 | 50 | 160 | 18.8 |
| 3KASMC10A | 3AX | 11.1 | 12.3 | 1.0 | 10 | 5.0 | 50 | 177 | 17.0 |
| 3KASMC11 | 3AY | 12.2 | 14.9 | 1.0 | 11 | 5.0 | 50 | 149 | 20.1 |
| 3KASMC11A | 3AZ | 12.2 | 13.5 | 1.0 | 11 | 5.0 | 50 | 165 | 18.2 |
| 3KASMC12 | 3BD | 13.3 | 16.3 | 1.0 | 12 | 2.0 | 20 | 136 | 22.0 |
| 3KASMC12A | 3BE | 13.3 | 14.7 | 1.0 | 12 | 2.0 | 20 | 151 | 19.9 |
| 3KASMC13 | 3BF | 14.4 | 17.6 | 1.0 | 13 | 2.0 | 20 | 126 | 23.8 |
| 3KASMC13A | 3BG | 14.4 | 15.9 | 1.0 | 13 | 2.0 | 20 | 140 | 21.5 |
| 3KASMC14 | 3BH | 15.6 | 19.1 | 1.0 | 14 | 1.0 | 10 | 116 | 25.8 |
| 3KASMC14A | 3BK | 15.6 | 17.2 | 1.0 | 14 | 1.0 | 10 | 129 | 23.2 |
| 3KASMC15 | 3BL | 16.7 | 20.4 | 1.0 | 15 | 1.0 | 10 | 112 | 26.9 |
| 3KASMC15A | 3BM | 16.7 | 18.5 | 1.0 | 15 | 1.0 | 10 | 123 | 24.4 |
| 3KASMC16 | 3BN | 17.8 | 21.8 | 1.0 | 16 | 1.0 | 10 | 104 | 28.8 |
| 3KASMC16A | 3BP | 17.8 | 19.7 | 1.0 | 16 | 1.0 | 10 | 115 | 26.0 |
| 3KASMC17 | 3BQ | 18.9 | 23.1 | 1.0 | 17 | 1.0 | 10 | 98.4 | 30.5 |
| 3KASMC17A | 3BR | 18.9 | 20.9 | 1.0 | 17 | 1.0 | 10 | 109 | 27.6 |
| 3KASMC18 | 3BS | 20.0 | 24.4 | 1.0 | 18 | 1.0 | 10 | 93.2 | 32.2 |
| 3KASMC18A | 3BT | 20.0 | 22.1 | 1.0 | 18 | 1.0 | 10 | 103 | 29.2 |
| 3KASMC20 | 3BU | 22.2 | 27.1 | 1.0 | 20 | 1.0 | 10 | 83.8 | 35.8 |
| 3KASMC20A | 3BV | 22.2 | 24.5 | 1.0 | 20 | 1.0 | 10 | 92.6 | 32.4 |
| 3KASMC22 | 3BW | 24.4 | 29.8 | 1.0 | 22 | 1.0 | 10 | 76.1 | 39.4 |
| 3KASMC22A | 3BX | 24.4 | 26.9 | 1.0 | 22 | 1.0 | 10 | 84.5 | 35.5 |
| 3KASMC24 | 3BY | 26.7 | 32.6 | 1.0 | 24 | 1.0 | 10 | 69.8 | 43.0 |
| 3KASMC24A | 3BZ | 26.7 | 29.5 | 1.0 | 24 | 1.0 | 10 | 77.1 | 38.9 |
| 3KASMC26 | 3CD | 28.9 | 35.3 | 1.0 | 26 | 1.0 | 10 | 64.4 | 46.6 |
| 3KASMC26A | 3CE | 28.9 | 31.9 | 1.0 | 26 | 1.0 | 10 | 71.3 | 42.1 |
| 3KASMC28 | 3CF | 31.1 | 38.0 | 1.0 | 28 | 1.0 | 10 | 60.0 | 50.0 |
| 3KASMC28A | 3CG | 31.1 | 34.4 | 1.0 | 28 | 1.0 | 10 | 66.1 | 45.4 |
| 3KASMC30 | 3CH | 33.3 | 40.7 | 1.0 | 30 | 1.0 | 15 | 56.1 | 53.5 |
| 3KASMC30A | 3CK | 33.3 | 36.8 | 1.0 | 30 | 1.0 | 15 | 62.0 | 48.4 |
| 3KASMC33 | 3CL | 36.7 | 44.9 | 1.0 | 33 | 1.0 | 15 | 50.8 | 59.0 |
| 3KASMC33A | 3CM | 36.7 | 40.6 | 1.0 | 33 | 1.0 | 15 | 56.3 | 53.3 |
| 3KASMC36 | 3CN | 40.0 | 48.9 | 1.0 | 36 | 1.0 | 20 | 46.7 | 64.3 |
| 3KASMC36A | 3CP | 40.0 | 44.2 | 1.0 | 36 | 1.0 | 20 | 51.6 | 58.1 |
| 3KASMC40 | 3CQ | 44.4 | 54.3 | 1.0 | 40 | 1.0 | 20 | 42.0 | 71.4 |
| 3KASMC40A | 3CR | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 20 | 46.5 | 64.5 |
| 3KASMC43 | 3CS | 47.8 | 58.4 | 1.0 | 43 | 1.0 | 20 | 39.1 | 76.7 |
| 3KASMC43A | 3CT | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 20 | 43.2 | 69.4 |

Note:

- (1) Pulse test: t_p ≤ 50 ms
- (2) Surge current waveform per Fig. 3 and derated per Fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35



| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|--|-----------------|-------|--------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Thermal resistance junction to ambient air ⁽¹⁾ | $R_{\theta JA}$ | 77.5 | $^\circ\text{C/W}$ |
| Thermal resistance Junction to leads | $R_{\theta JL}$ | 18.3 | |

Note:

(1) Mounted on minimum recommended pad layout

| ORDERING INFORMATION | | | | |
|----------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| 3KASMC10A-E3/57T | 0.211 | 57T | 850 | 7" Diameter Plastic Tape & Reel |
| 3KASMC10A-E3/9AT | 0.211 | 9AT | 3500 | 13" Diameter Plastic Tape & Reel |

RATINGS AND CHARACTERISTICS CURVES

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

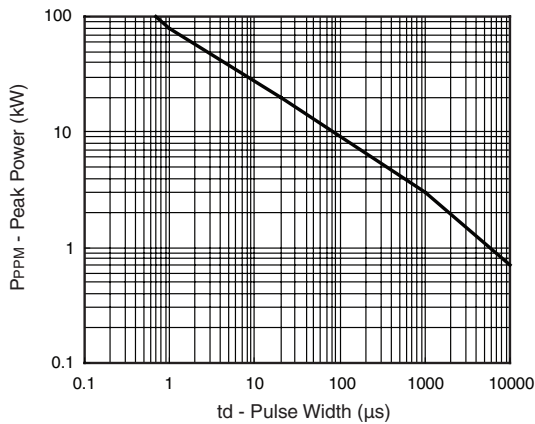


Figure 1. Peak Pulse Power Rating Curve

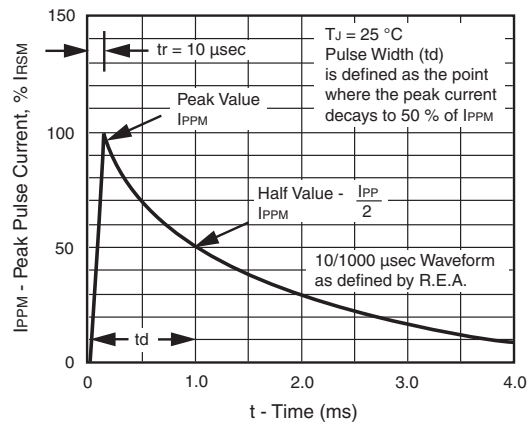


Figure 3. Pulse Waveform

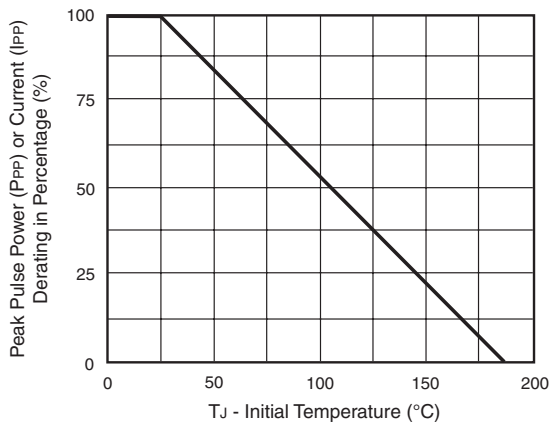


Figure 2. Pulse Power or Current versus Initial Junction Temperature

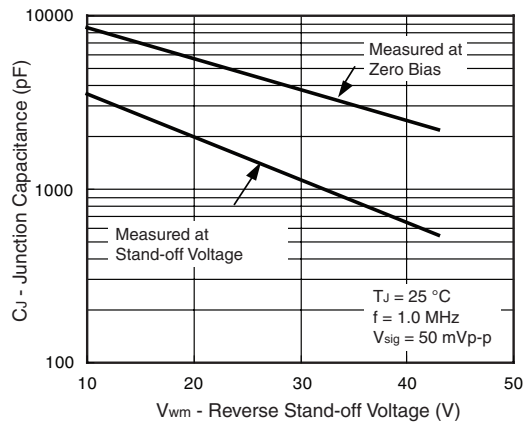


Figure 4. Typical Junction Capacitance

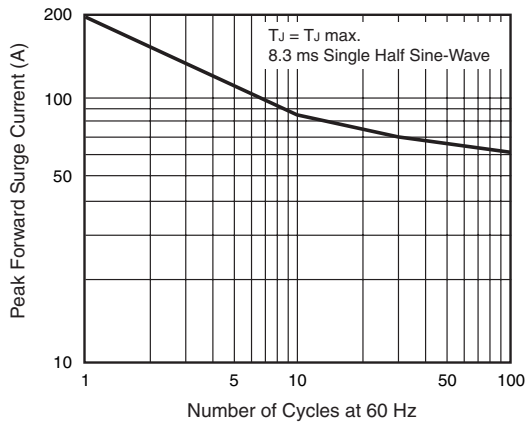


Figure 5. Maximum Non-Repetitive/Peak Forward Surge Current

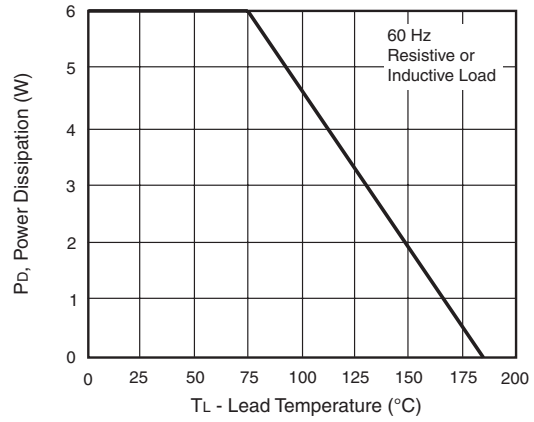
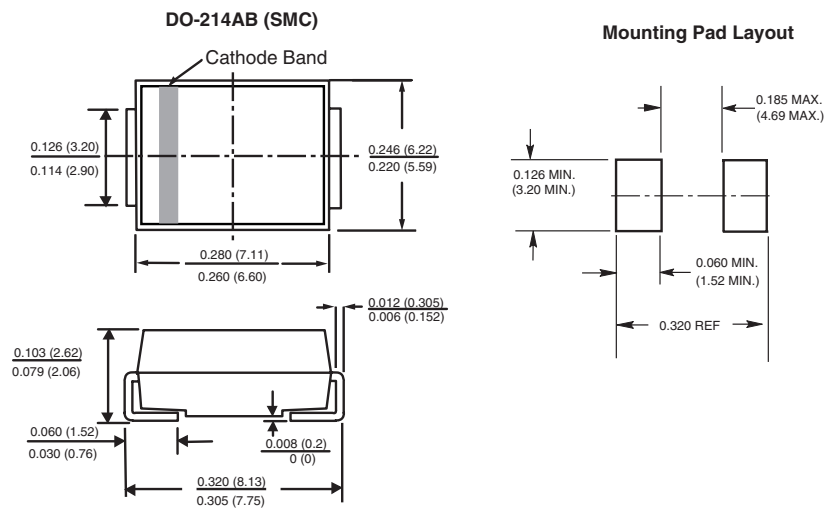


Figure 6. Power Derating Curve

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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