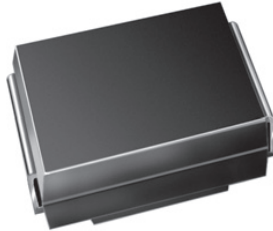


Surface Mount TRANSZORB® Transient Voltage Suppressors



DO-214AA (SMBJ)

| PRIMARY CHARACTERISTICS | |
|----------------------------------|---------------------------------|
| V_{WM} | 5.80 V to 188 V |
| V_{BR} uni-directional | 6.8 V to 220 V |
| V_{BR} bi-directional | 6.8 V to 220 V |
| P_{PPM} | 600 W |
| P_D | 5.0 W |
| I_{FSM} (uni-directional only) | 100 A |
| T_J max. | 150 °C |
| Polarity | Uni-directional, bi-directional |
| Package | DO-214AA (SMBJ) |

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional devices use CA suffix (e.g. SM6T12CA).
Electrical characteristics apply in both directions.

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 600 W peak pulse power capability with a 10/1000 μ s waveform
- Excellent clamping capability
- Low inductance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

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-214AA (SMBJ)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant and commercial grade
Base P/NHE3 - RoHS-compliant and AEC-Q101 qualified

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: For uni-directional types the band denotes cathode end, no marking on bi-directional types

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | |
|--|----------------|----------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾⁽²⁾ (fig. 1) | P_{PPM} | 600 | W |
| Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾ (fig. 3) | I_{PPM} | See next table | A |
| Power dissipation on infinite heatsink at $T_A = 50$ °C | P_D | 5.0 | W |
| Peak forward surge current 10 ms single half sine-wave uni-directional only ⁽²⁾ | I_{FSM} | 100 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +150 | °C |

Notes

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

⁽²⁾ Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | | | | |
|--|---------------------|-----|--|------|----------------------------------|---------------------------------------|---|--|------|--|------|--|
| TYPE ⁽¹⁾ | DEVICE MARKING CODE | | BREAKDOWN VOLTAGE V _{BR} AT I _T ⁽²⁾ (V) | | TEST CURRENT I _T (mA) | STAND-OFF VOLTAGE V _{WM} (V) | LEAKAGE CURRENT I _{RM} AT V _{RM} (μA) | CLAMPING VOLTAGE V _C AT I _{PPM} 10/1000 μs | | CLAMPING VOLTAGE V _C AT I _{PP} 8/20 μs | | α _T MAX. 10 ⁻⁴ /°C |
| | UNI | BI | MIN. | MAX. | | | | (V) | (A) | (V) | (A) | |
| SM6T6V8A | KE7 | KE7 | 6.45 | 7.14 | 10 | 5.80 | 1000 | 10.5 | 57.0 | 13.4 | 298 | 5.7 |
| SM6T7V5A | KK7 | AK7 | 7.13 | 7.88 | 10 | 6.40 | 500 | 11.3 | 53.0 | 14.5 | 276 | 6.1 |
| SM6T10A | KT7 | AT7 | 9.50 | 10.5 | 1.0 | 8.55 | 10.0 | 14.5 | 41.0 | 18.6 | 215 | 7.3 |
| SM6T12A | KX7 | AX7 | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 16.7 | 36.0 | 21.7 | 184 | 7.8 |
| SM6T15A | LG7 | LG7 | 14.3 | 15.8 | 1.0 | 12.8 | 1.0 | 21.2 | 28.0 | 27.2 | 147 | 8.4 |
| SM6T18A | LM7 | BM7 | 17.1 | 18.9 | 1.0 | 15.3 | 1.0 | 25.2 | 24.0 | 32.5 | 123 | 8.8 |
| SM6T22A | LT7 | BT7 | 20.9 | 23.1 | 1.0 | 18.8 | 1.0 | 30.6 | 20.0 | 39.3 | 102 | 9.2 |
| SM6T24A | LV7 | LV7 | 22.8 | 25.2 | 1.0 | 20.5 | 1.0 | 33.2 | 18.0 | 42.8 | 93 | 9.4 |
| SM6T27A | LX7 | BX7 | 25.7 | 28.4 | 1.0 | 23.1 | 1.0 | 37.5 | 16.0 | 48.3 | 83 | 9.6 |
| SM6T30A | ME7 | CE7 | 28.5 | 31.5 | 1.0 | 25.6 | 1.0 | 41.5 | 14.5 | 53.5 | 75 | 9.7 |
| SM6T33A | MG7 | MG7 | 31.4 | 34.7 | 1.0 | 28.2 | 1.0 | 45.7 | 13.1 | 59 | 68 | 9.8 |
| SM6T36A | MK7 | CK7 | 34.2 | 37.8 | 1.0 | 30.8 | 1.0 | 49.9 | 12.0 | 64.3 | 62 | 9.9 |
| SM6T39A | MM7 | CM7 | 37.1 | 41.0 | 1.0 | 33.3 | 1.0 | 53.9 | 11.1 | 69.7 | 57 | 10.0 |
| SM6T68A | NG7 | NG7 | 64.6 | 71.4 | 1.0 | 58.1 | 1.0 | 92.0 | 6.50 | 121 | 33 | 10.4 |
| SM6T100A | NV7 | NV7 | 95.0 | 105 | 1.0 | 85.5 | 1.0 | 137 | 4.40 | 178 | 22.5 | 10.6 |
| SM6T150A | PK7 | PK7 | 143 | 158 | 1.0 | 128 | 1.0 | 207 | 2.90 | 265 | 15 | 10.8 |
| SM6T200A | PR7 | PR7 | 190 | 210 | 1.0 | 171 | 1.0 | 274 | 2.20 | 353 | 11.3 | 10.8 |
| SM6T220A | PR8 | PR8 | 209 | 231 | 1.0 | 188 | 1.0 | 328 | 2.00 | 388 | 10.3 | 10.8 |

Notes

- (1) For bi-directional devices add suffix "CA"
- (2) V_{BR} measured after I_T applied for 300 μs square wave pulse
- (3) For bi-polar devices with V_R = 10 V or under, the I_T limit is doubled

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | |
|---|------------------|-------|-------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Typical thermal resistance, junction to ambient air ⁽¹⁾ | R _{θJA} | 100 | °C/ W |
| Typical thermal resistance, junction to lead | R _{θJL} | 20 | |

Note

- (1) Mounted on minimum recommended pad layout

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SM6T10A-E3/52 | 0.096 | 52 | 750 | 7" diameter plastic tape and reel |
| SM6T10A-E3/5B | 0.096 | 5B | 3200 | 13" diameter plastic tape and reel |
| SM6T10AHE3/52 ⁽¹⁾ | 0.096 | 52 | 750 | 7" diameter plastic tape and reel |
| SM6T10AHE3/5B ⁽¹⁾ | 0.096 | 5B | 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)

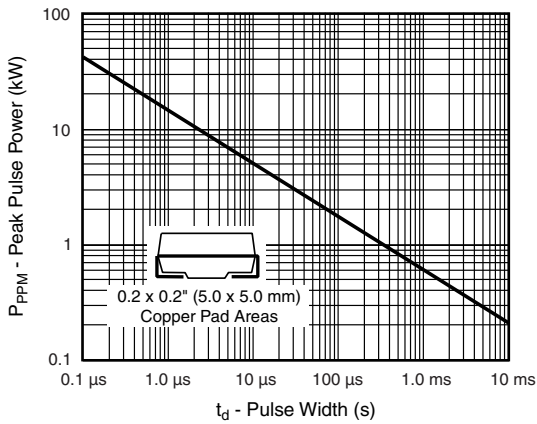


Fig. 1 - Peak Pulse Power Rating Curve

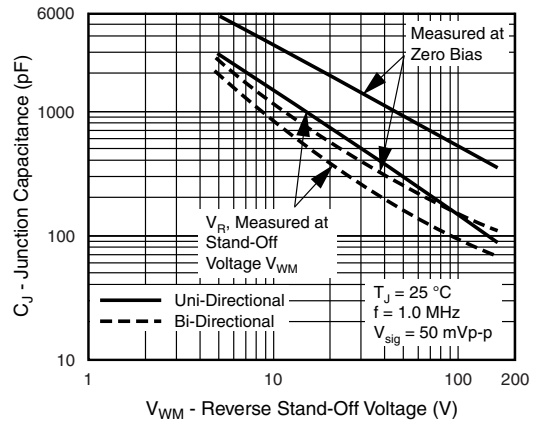


Fig. 4 - Typical Junction Capacitance

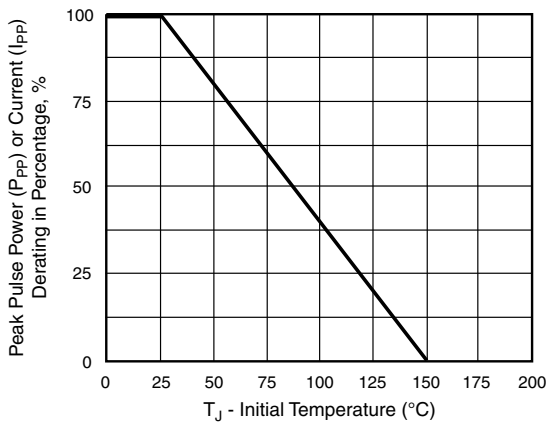


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

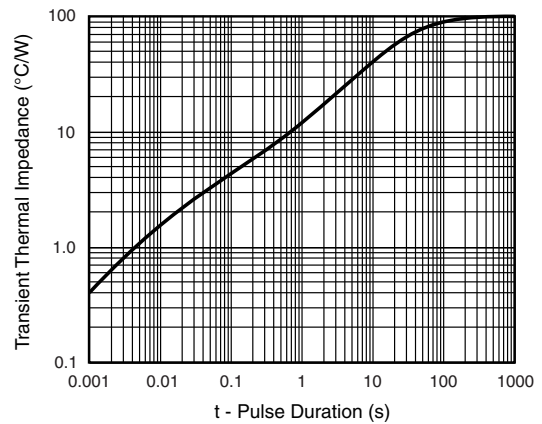


Fig. 5 - Typical Transient Thermal Impedance

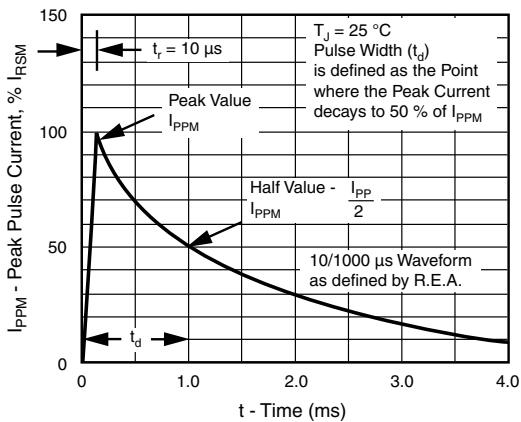


Fig. 3 - Pulse Waveform

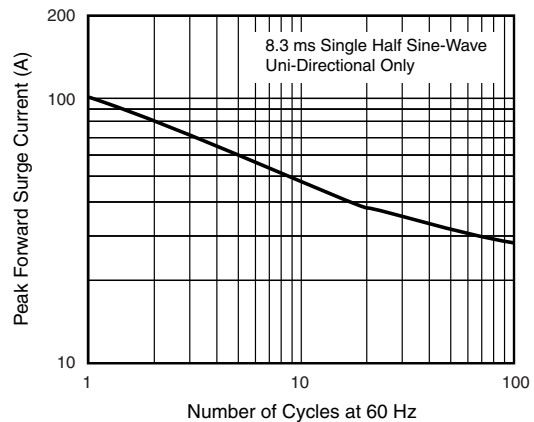
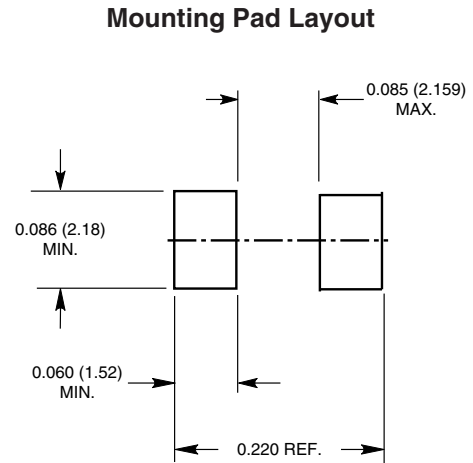
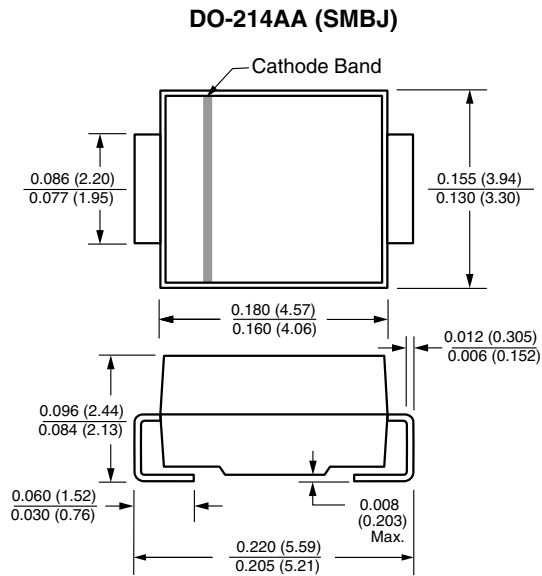


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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