# SMC3K22CA thru SMC3K78CA

Vishay General Semiconductor

## Surface Mount TRANSZORB® Transient Voltage Suppressors

SMC (DO-214AB)

### LINKS TO ADDITIONAL RESOURCES

3D Models

| PRIMARY CHARACTERISTICS | |
|---|---|
| $V_{BR}$ | 24.4 V to 95.8 V |
| $V_{WM}$ | 22 V to 78 V |
| $P_{PPM}$ | 3000 W |
| $T_J$ max. | 150 °C |
| Polarity | Bidirectional |
| Package | SMC (DO-214AB) |

### FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE Available

- Available in bidirectional polarity only
- 3000 W peak pulse power capability with a (10/1000 µs) waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Not recommended for PCB bottom side wave mounting
- AEC-Q101 qualified
- UL recognition for safety 497B with file number E136766
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

### 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:** SMC (DO-214AB)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** no marking on bidirectional types

| MAXIMUM RATINGS ($T_A$ = 25 °C unless otherwise noted) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **VALUE** | **UNIT** |
| Peak pulse power dissipation with a 10/1000 µs waveform | $P_{PPM}$ (1) | 3000 | W |
| Peak pulse current with a 10/1000 µs waveform | $I_{PPM}$ (1) | See next table | A |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

**Note**

(1) Non-repetitive current pulse and derated above $T_A$ = 25 °C

| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DEVICE TYPE | DEVICE MARKING CODE | BREAKDOWN VOLTAGE $V_{BR}$ (1) (V) AT $I_T$ | | TEST CURRENT $I_T$ (mA) | STAND-OFF VOLTAGE $V_{WM}$ (V) | MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ (µA) | MAX. PEAK PULSE SURGE CURRENT $I_{PPM}$ (2) (A) | MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V) |
| | | MIN. | MAX. | | | | | |
| SMC3K22CA | 3BEX | 24.4 | 26.9 | 1.0 | 22 | 2.0 | 84.5 | 35.5 |
| SMC3K24CA | 3BEZ | 26.7 | 29.5 | 1.0 | 24 | 2.0 | 77.1 | 38.9 |
| SMC3K26CA | 3BFE | 28.9 | 31.9 | 1.0 | 26 | 2.0 | 71.3 | 42.1 |
| SMC3K28CA | 3BFG | 31.1 | 34.4 | 1.0 | 28 | 2.0 | 66.1 | 45.4 |
| SMC3K30CA | 3BFK | 33.3 | 36.8 | 1.0 | 30 | 2.0 | 62.0 | 48.4 |
| SMC3K33CA | 3BFM | 36.7 | 40.6 | 1.0 | 33 | 2.0 | 56.3 | 53.3 |
| SMC3K36CA | 3BFP | 40.0 | 44.2 | 1.0 | 36 | 2.0 | 51.6 | 58.1 |
| SMC3K40CA | 3BFR | 44.4 | 49.1 | 1.0 | 40 | 2.0 | 46.5 | 64.5 |
| SMC3K43CA | 3BFT | 47.8 | 52.8 | 1.0 | 43 | 2.0 | 43.2 | 69.4 |
| SMC3K45CA | 3GFV | 50.0 | 55.3 | 1.0 | 45 | 2.0 | 41.3 | 72.7 |
| SMC3K48CA | 3GFX | 53.3 | 58.9 | 1.0 | 48 | 2.0 | 38.8 | 77.4 |
| SMC3K51CA | 3GFZ | 56.7 | 62.7 | 1.0 | 51 | 2.0 | 36.4 | 82.4 |
| SMC3K54CA | 3GGE | 60.0 | 66.3 | 1.0 | 54 | 2.0 | 34.4 | 87.1 |
| SMC3K58CA | 3GGG | 64.4 | 71.2 | 1.0 | 58 | 2.0 | 32.1 | 93.6 |
| SMC3K60CA | 3GGK | 66.7 | 73.7 | 1.0 | 60 | 2.0 | 31.0 | 96.8 |
| SMC3K64CA | 3GGM | 71.1 | 78.6 | 1.0 | 64 | 2.0 | 29.1 | 103 |
| SMC3K70CA | 3GGP | 77.8 | 86.0 | 1.0 | 70 | 2.0 | 26.5 | 113 |
| SMC3K75CA | 3GGR | 83.3 | 92.1 | 1.0 | 75 | 2.0 | 24.8 | 121 |
| SMC3K78CA | 3GGT | 86.7 | 95.8 | 1.0 | 78 | 2.0 | 23.8 | 126 |

**Notes**

(1) Pulse test: $t_p \leq 50$ 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

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SMC3K22CA-M3/57 | 0.257 | 57 | 850 | 7" diameter plastic tape and reel |
| SMC3K22CA-M3/9A | 0.257 | 9A | 3500 | 13" diameter plastic tape and reel |
| SMC3K22CAHM3/57 (1) | 0.257 | 57 | 850 | 7" diameter plastic tape and reel |
| SMC3K22CAHM3/9A (1) | 0.257 | 9A | 3500 | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES** ($T_A$ = 25 °C unless otherwise noted)

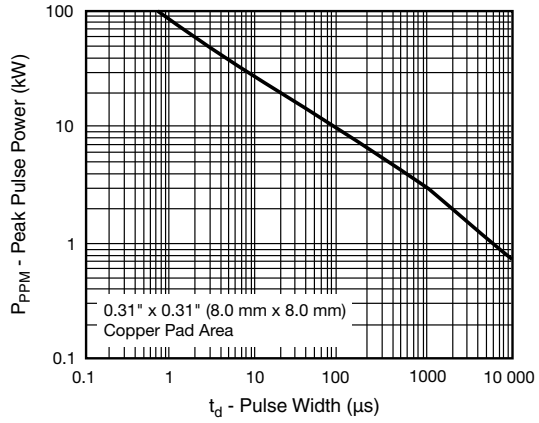



Fig. 1 - Peak Pulse Power Derating Curve

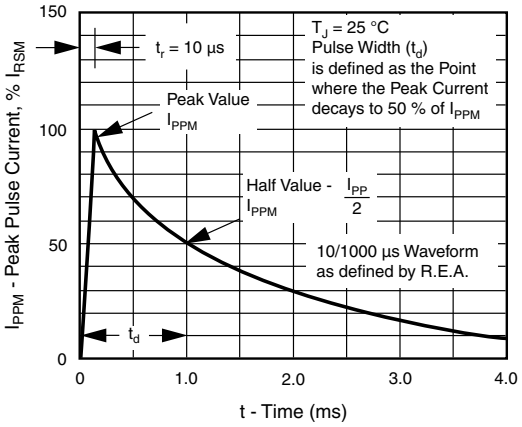



Fig. 3 - Pulse Waveform

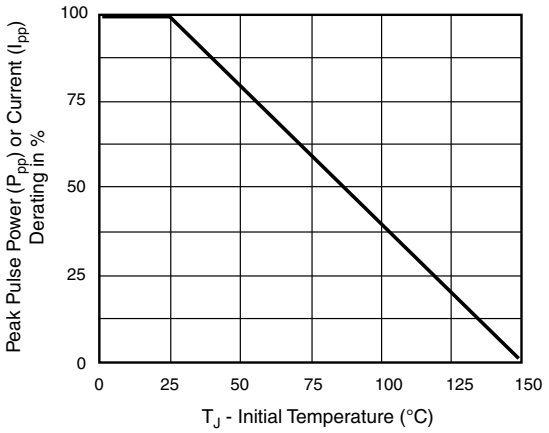



Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

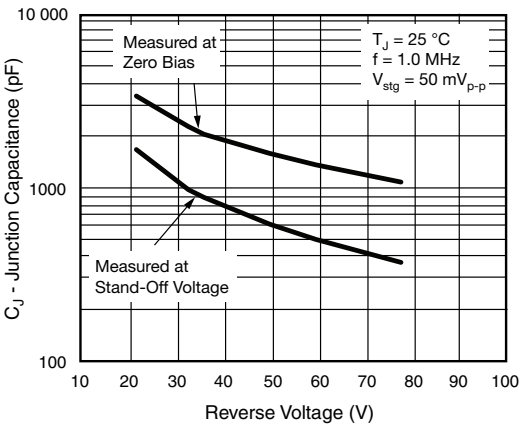
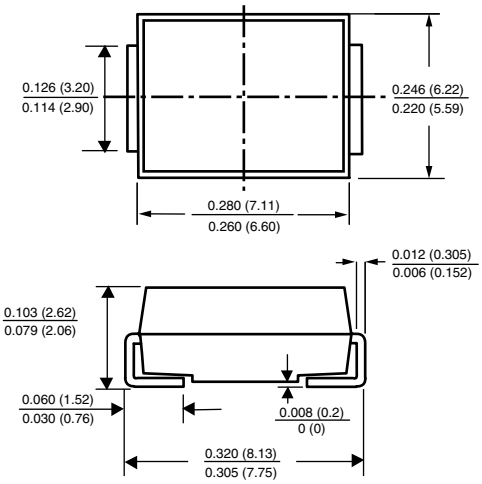


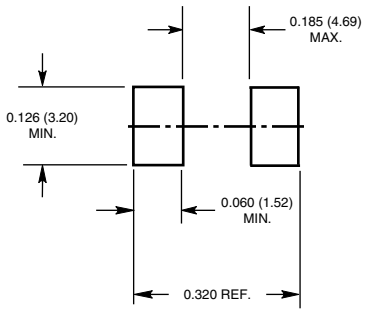

Fig. 4 - Typical Junction Capacitance

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

SMC (DO-214AB)




Mounting Pad Layout



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