



**THE DATASHEET OF
SMC3K78CA-M3/57**





Surface Mount TRANSZORB® Transient Voltage Suppressors



SMC (DO-214AB)



LINKS TO ADDITIONAL RESOURCES



| 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

- 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



RoHS
COMPLIANT
HALOGEN
FREE
Available

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



SMC3K22CA thru SMC3K78CA

Vishay General Semiconductor

| 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 ≤ 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 ($T_A = 25\text{ }^\circ\text{C}$ 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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