



**THE DATASHEET OF  
SMC3K51CA-M3/9A**





## Surface Mount TRANSZORB<sup>®</sup> Transient Voltage Suppressors



SMC (DO-214AB)



### LINKS TO ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS	
V <sub>BR</sub>	24.4 V to 95.8 V
V <sub>WM</sub>	22 V to 78 V
P <sub>PPM</sub>	3000 W
T <sub>J</sub> 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](http://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 <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 μs waveform	P <sub>PPM</sub> <sup>(1)</sup>	3000	W
Peak pulse current with a 10/1000 μs waveform	I <sub>PPM</sub> <sup>(1)</sup>	See next table	A
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Note**

<sup>(1)</sup> Non-repetitive current pulse and derated above T<sub>A</sub> = 25 °C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)								
DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE V <sub>BR</sub> <sup>(1)</sup> (V) AT I <sub>T</sub>		TEST CURRENT I <sub>T</sub> (mA)	STAND-OFF VOLTAGE V <sub>WM</sub> (V)	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> I <sub>D</sub> (μA)	MAX. PEAK PULSE SURGE CURRENT I <sub>PPM</sub> <sup>(2)</sup> (A)	MAXIMUM CLAMPING VOLTAGE AT I <sub>PPM</sub> V <sub>C</sub> (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<sub>p</sub> ≤ 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 <sup>(1)</sup>	0.257	57	850	7" diameter plastic tape and reel
SMC3K22CAHM3/9A <sup>(1)</sup>	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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