Surface Mount TRANSZORB® Transient Voltage Suppressors

SMC (DO-214AB)

Cathode ○—|◀|—○ Anode

FEATURES

- Unidirectional
- Peak pulse power:
  - 3000 W (10/1000 µs)
  - 30 kW (8/20 µs)
- 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
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

RoHS COMPLIANT

HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning on ICs, MOSFET, signal lines of sensor units for automotive

PRIMARY CHARACTERISTICS	
V_{BR}	11.1 V to 147 V
V_{WM}	10 V to 120 V
P_{PPM}	3000 W
T_J max.	175 °C
Polarity	Unidirectional
Package	SMC (DO-214AB)

MECHANICAL DATA

Case: SMC (DO-214AB)
Molding compound meets UL 94 V-0 flammability rating
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
HM3 suffix meets JESD 201 class 2 whisker test

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 µs waveform (fig.1)	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 +175	°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)	MAXIMUM CLAMPING VOLTAGE V_C (V) AT I_{PPM}		MAXIMUM CLAMPING VOLTAGE V_C (V) AT I_{PPM}	
							10/1000 µs		8/20 µs	
		MIN.	MAX.				(V)	(A)	(V)	(A)
SMC3K10AHM3	3BDX	11.1	12.3	1.0	10	10.0	17.0	176	24.1	1245
SMC3K12AHM3	3BEE	13.3	14.7	1.0	12	5.0	19.9	151	25.3	1186
SMC3K13AHM3	3GEG	14.4	15.9	1.0	13	2.0	21.5	140	27.2	1103
SMC3K14AHM3	3BEK	15.6	17.2	1.0	14	2.0	23.2	129	30.0	1000
SMC3K15AHM3	3BEM	16.7	18.5	1.0	15	2.0	24.4	123	32.5	923
SMC3K16AHM3	3GEP	17.8	19.7	1.0	16	2.0	26.0	115	34.4	872
SMC3K17AHM3	3GER	18.9	20.9	1.0	17	2.0	27.6	109	37.0	811
SMC3K18AHM3	3BET	20.0	22.1	1.0	18	2.0	29.2	103	39.3	763
SMC3K20AHM3	3EEV	22.2	24.5	1.0	20	2.0	32.4	92.6	42.8	701
SMC3K22AHM3	3BEX	24.4	26.9	1.0	22	1.0	35.5	84.5	48.2	622
SMC3K24AHM3	3BEZ	26.7	29.5	1.0	24	1.0	38.9	77.1	51.6	581
SMC3K26AHM3	3BFE	28.9	31.9	1.0	26	1.0	42.1	71.3	55.8	538
SMC3K28AHM3	3BFG	31.1	34.4	1.0	28	1.0	45.4	66.1	60.2	498
SMC3K30AHM3	3BFK	33.3	36.8	1.0	30	1.0	48.4	62.0	64.0	469
SMC3K33AHM3	3BFM	36.7	40.6	1.0	33	1.0	53.3	56.3	69.8	430
SMC3K36AHM3	3BFP	40.0	44.2	1.0	36	1.0	58.1	51.6	76.0	395
SMC3K40AHM3	3BFR	44.4	49.1	1.0	40	1.0	64.5	46.5	84.0	357
SMC3K43AHM3	3BFT	47.8	52.8	1.0	43	1.0	69.4	43.2	90.3	332
SMC3K45AHM3	3GFV	50.0	55.3	1.0	45	1.0	72.7	41.3	94.6	317
SMC3K48AHM3	3GFX	53.3	58.9	1.0	48	1.0	77.4	38.8	100	300
SMC3K51AHM3	3GFZ	56.7	62.7	1.0	51	1.0	82.4	36.4	107	280
SMC3K54AHM3	3GGE	60.0	66.3	1.0	54	1.0	87.1	34.4	113	265
SMC3K58AHM3	3GGG	64.4	71.2	1.0	58	1.0	93.6	32.1	121	248
SMC3K60AHM3	3GGK	66.7	73.7	1.0	60	1.0	96.8	31.0	125	240
SMC3K64AHM3	3GGM	71.1	78.6	1.0	64	1.0	103	29.1	134	224
SMC3K70AHM3	3GGP	77.8	86.0	1.0	70	1.0	113	26.5	146	205
SMC3K75AHM3	3GGR	83.3	92.1	1.0	75	1.0	121	24.8	157	191
SMC3K78AHM3	3GGT	86.7	95.8	1.0	78	1.0	126	23.8	163	184
SMC3K85AHM3	3GGV	94.4	104	1.0	85	1.0	137	21.9	177	169
SMC3K90AHM3	3GGX	100	111	1.0	90	1.0	146	20.5	189	159
SMC3K100AHM3	3GGZ	111	123	1.0	100	1.0	162	18.5	209	144
SMC3K110AHM3	3GHE	122	135	1.0	110	1.0	177	16.9	230	130
SMC3K120AHM3	3GHG	133	147	1.0	120	1.0	193	15.5	250	120

Notes

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

(2) All terms and symbols are consistent with ANSI/IEEE C62.35

IMMUNITY TO STATIC ELECTRICAL DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °C unless otherwise noted)

STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	VALUE
IEC 61000-4-2	Human body model (contact mode)	C = 150 pF, R = 330 Ω	ESD	30 kV
	Human body model (air discharge mode)			30 kV

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**TYP.**	**UNIT**
Thermal resistance	R_{thJA} (1)	90	°C/W
	R_{thJM} (2)	4.0	°C/W

Notes

(1) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz. standard footprint

(2) Thermal resistance junction-to-mount to follow JEDEC® 51-14 using Transient Dual Interface Test Method (TDIM)

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SMC3K10CHM3/H (1)	0.257	H	850	7" diameter plastic tape and reel
SMC3K10CHM3/I (1)	0.257	I	3500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

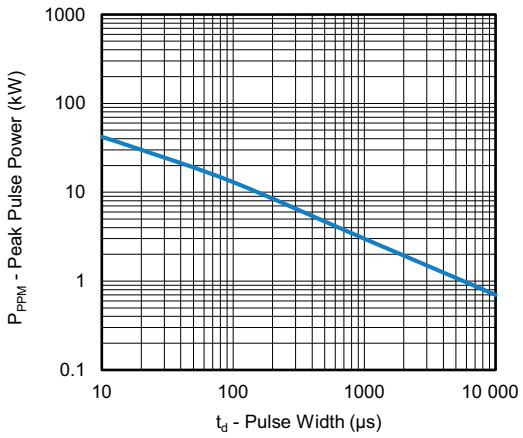


Fig. 1 - Peak Pulse Power Derating Curve

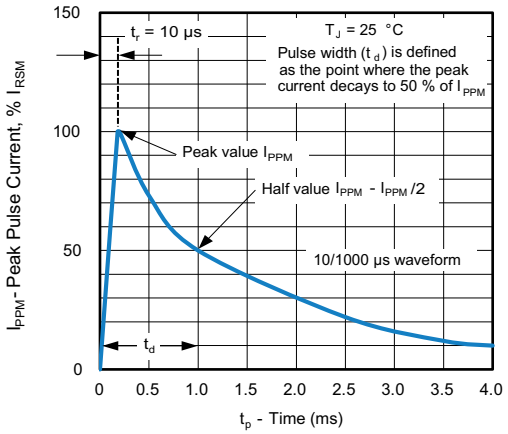


Fig. 3 - 10/1000 µs Pulse Waveform

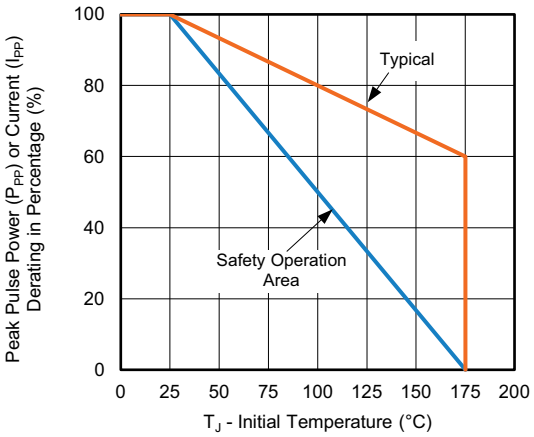


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

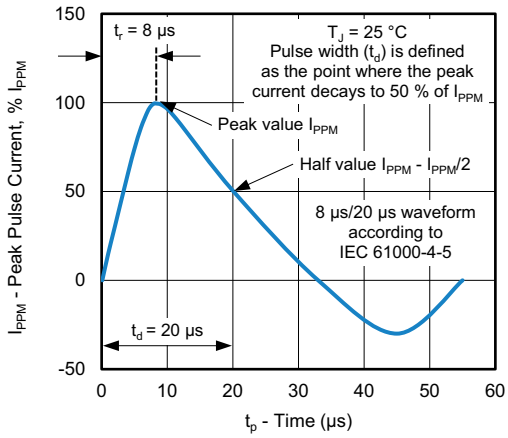


Fig. 4 - 8/20 µs Pulse Waveform

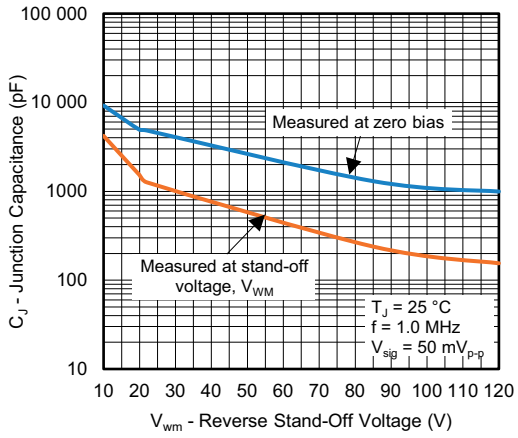


Fig. 5 - Typical Junction Capacitance

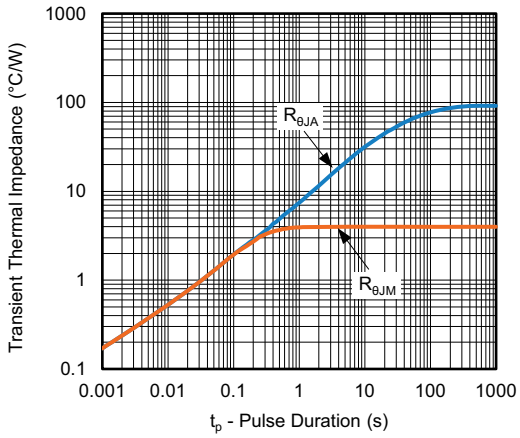


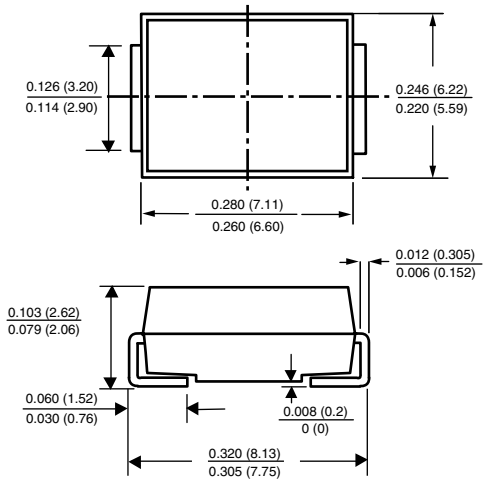
Fig. 6 - Typical Transient Thermal Impedance

Note

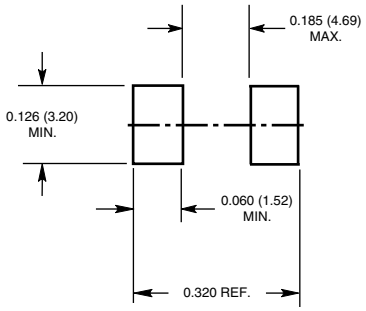
(1) Fig. 1- Power calculation is based on I_{PPM} times defined maximum clamping voltage by pulse width

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB)



Mounting Pad Layout



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