

3000W Surface Mount Transient Voltage Suppressors

Features

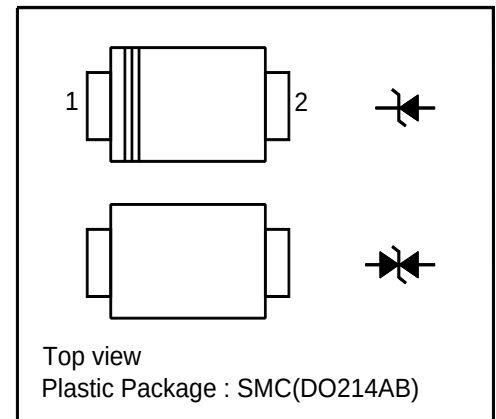
- AEC-Q101 Qualified
- 3000 W peak pulse power capability on 10 /1000 μ s
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- Moisture sensitivity: level 1 per J-STD-020
- Halogen and Antimony Free (HAF), RoHS compliant
- Plastic package has Underwriters Laboratory Flammability
- High temperature soldering guaranteed: 260 °C / 10s at terminals
- Low profile package with built-in strain relief for surface mounted Application



SMC(DO-214AB)

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



PRIMARY CHARACTERISTICS	
V_{BR}	6.4V to 247V
VWM	5V to 220V
PPPM (10 x 1000 μ s)	3000 W
T_J max.	150 °C
Polarity	Uni & Bidirectional
Package	SMC (DO-214AB)

Typical Applications

Use is 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, telecommunication and automotive.

Maximum Ratings and Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 50 Hz, resistive or inductive load. For capacitive load, derate by 20%.

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000 μ s Waveform ¹⁾²⁾	P_{PPM}	3000	W
Peak Pulse Current with a 10/1000 μ s Waveform ¹⁾	I_{PPM}	See Table	A
Steady state power dissipation at $T_A=50^\circ\text{C}$ (Fig.5)	$P_{M(AV)}$	6.5	W
Maximum Instantaneous Forward Voltage at 100A for Unidirectional	V_F	3.5	V
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Unidirectional only ³⁾	I_{FSM}	300	A
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	°C

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^\circ\text{C}$ per Fig.2.

2. Mounted on 8.0mm×8.0mm copper pads to each terminal.

3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Electrical Characteristics (T_a = 25°C unless otherwise specified)

Uni-directional / Bi-directional Type	Marking		Stand-off Voltage VWM	Breakdown Voltage ¹⁾		Test Current I _T	Maximum Clamping Voltage	Maximum Peak Pulse Current I _{PPM}	Maximum Reverse Leakage I _R at V _R
	UNI	BI	(V)	Min. (V)	Max. (V)	(mA)	V _C (V) at I _{PPM}	(A)	(μA)
3.0SMCJ5.0A / CA	ARDE	ADDE	5.0	6.4	7	10	9.2	326.1	800
3.0SMCJ6.0A / CA	ARDG	ADDG	6.0	6.67	7.37	10	10.3	291.3	800
3.0SMCJ6.5A / CA	ARDK	ADDK	6.5	7.22	7.98	10	11.2	267.9	500
3.0SMCJ7.0A / CA	APDM	ADDM	7.0	7.78	8.6	10	12.0	250.0	200
3.0SMCJ7.5A / CA	APDP	ADDP	7.5	8.33	9.21	1	12.9	232.6	100
3.0SMCJ8.0A / CA	APDR	ADDR	8.0	8.89	9.83	1	13.6	220.6	50
3.0SMCJ8.5A / CA	APDT	ADDT	8.5	9.44	10.4	1	14.4	208.3	20
3.0SMCJ9.0A / CA	APDV	ADDV	9.0	10	11.1	1	15.4	194.8	10
3.0SMCJ10A / CA	APDX	ADDX	10.0	11.1	12.3	1	17.0	176.5	5
3.0SMCJ11A / CA	AHDZ	AIDZ	11	12.2	13.5	1	18.2	165.0	2
3.0SMCJ12A / CA	AHEE	AIEE	12	13.3	14.7	1	19.9	150.8	2
3.0SMCJ13A / CA	AHEG	AIEG	13	14.4	15.9	1	21.5	139.5	2
3.0SMCJ14A / CA	AHEK	AIEK	14	15.6	17.2	1	23.2	129.3	2
3.0SMCJ15A / CA	AHEM	AIEM	15	16.7	18.5	1	24.4	123.0	2
3.0SMCJ16A / CA	AHEP	AIEP	16	17.8	19.7	1	26.0	115.4	2
3.0SMCJ17A / CA	AHER	AIER	17	18.9	20.9	1	27.6	108.7	2
3.0SMCJ18A / CA	AHET	AJET	18	20	22.1	1	29.2	102.7	2
3.0SMCJ20A / CA	AHEV	AIEV	20	22.2	24.5	1	32.4	92.6	2
3.0SMCJ22A / CA	AHEX	AIEX	22	24.4	26.9	1	35.5	84.5	2
3.0SMCJ24A / CA	AHEZ	AIEZ	24	26.7	29.5	1	38.9	77.1	2
3.0SMCJ26A / CA	AHFE	AIFE	26	28.9	31.9	1	42.1	71.3	2
3.0SMCJ28A / CA	AHFG	AIHG	28	31.1	34.4	1	45.4	66.1	2
3.0SMCJ30A / CA	AHFK	AIFK	30	33.3	36.8	1	48.4	62.0	2
3.0SMCJ33A / CA	AHFM	AIFM	33	36.7	40.6	1	53.3	56.3	2
3.0SMCJ36A / CA	AHFP	AIFP	36	40	44.2	1	58.1	51.6	2
3.0SMCJ40A / CA	AHFR	AIFR	40	44.4	49.1	1	64.5	46.5	2
3.0SMCJ43A / CA	AHFT	AIFT	43	47.8	52.8	1	69.4	43.2	2
3.0SMCJ45A / CA	AHFV	AIFV	45	50	55.3	1	72.7	41.3	2
3.0SMCJ48A / CA	AHFX	AIFX	48	53.3	58.9	1	77.4	38.8	2

Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Uni-directional / Bi-directional Type	Marking		Stand-off Voltage VWM	Breakdown Voltage ¹⁾		Test Current IT	Maximum Clamping Voltage	Maximum Peak Pulse Current IPPM	Maximum Reverse Leakage IR at VR
	UNI	BI	(V)	Min. (V)	Max. (V)	(mA)	V _C (V) at I _{PPM}	(A)	(μA)
3.0SMCJ51A / CA	APFZ	ADFZ	51.0	56.7	62.7	1	82.4	36.4	2
3.0SMCJ54A / CA	APGE	ADGE	54.0	60	66.3	1	87.1	34.4	2
3.0SMCJ58A / CA	APGG	ADGG	58.0	64.4	71.2	1	93.6	32.1	2
3.0SMCJ60A / CA	APGK	ADGK	60.0	66.7	73.7	1	96.8	31.0	2
3.0SMCJ64A / CA	APGM	ADGM	64.0	71.1	78.6	1	103.0	29.1	2
3.0SMCJ70A / CA	APGP	ADGP	70.0	77.8	86	1	113.0	26.5	2
3.0SMCJ75A / CA	APGR	ADGR	75.0	83.3	92.1	1	121.0	24.8	2
3.0SMCJ78A / CA	APGT	ADGT	78.0	86.7	95.8	1	126.0	23.8	2
3.0SMCJ85A / CA	APGV	ADGV	85.0	94.4	104	1	137.0	21.9	2
3.0SMCJ90A / CA	APGX	ADGX	90.0	100	111	1	146.0	20.5	2
3.0SMCJ100A / CA	APGZ	ADGZ	100.0	111	123	1	162.0	18.5	2
3.0SMCJ110A / CA	APHE	ADHE	110.0	122	135	1	177.0	16.9	2
3.0SMCJ120A / CA	APHG	ADHG	120.0	133	147	1	193.0	15.5	2
3.0SMCJ130A / CA	APHK	ADHK	130.0	144	159	1	209.0	14.4	2
3.0SMCJ150A / CA	APHM	ADHM	150.0	167	185	1	243.0	12.3	2
3.0SMCJ160A / CA	APHP	ADHP	160.0	178	197	1	259.0	11.6	2
3.0SMCJ170A / CA	APHR	ADHR	170.0	189	209	1	275.0	10.9	2
3.0SMCJ180A / CA	AHHT	AIHT	180.0	201	222	1	292.0	10.3	2
3.0SMCJ190A / CA	AHHV	AIHV	190.0	211	233	1	308.0	9.7	2
3.0SMCJ200A / CA	AHHX	AIHX	200.0	224	247	1	324.0	9.3	2

For bidirectional type having VRWM of 10V and less, the IR limit is double.

Electrical Characteristics Curves

Figure 1. Peak Pulse Power Rating Curve

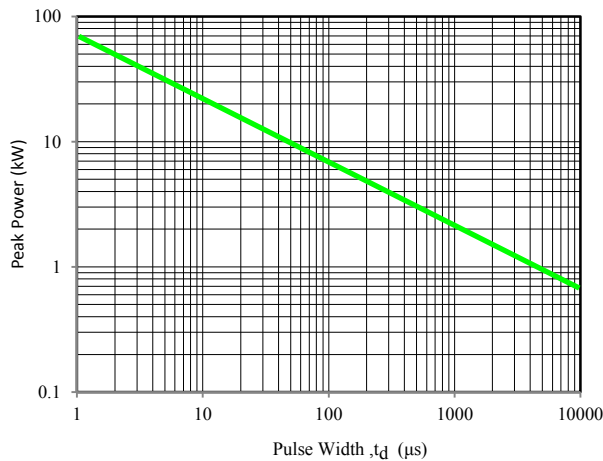


Figure 2. Pulse Derating Curve

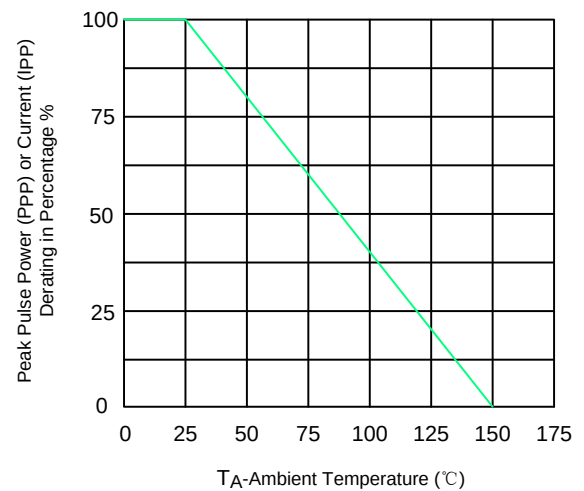


Figure 3. Pulse Waveform

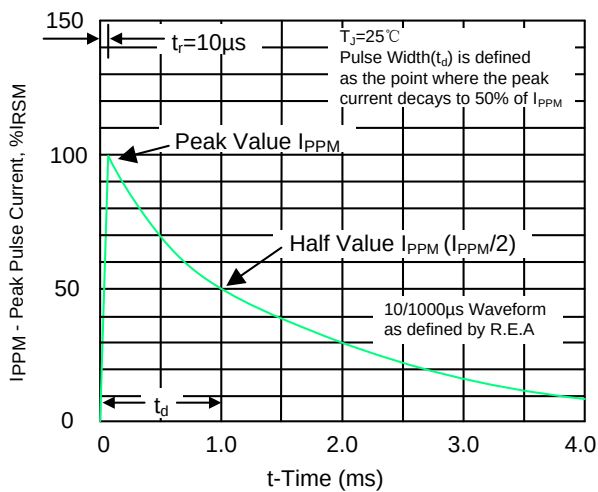


Figure 4. Typical Junction Capacitance

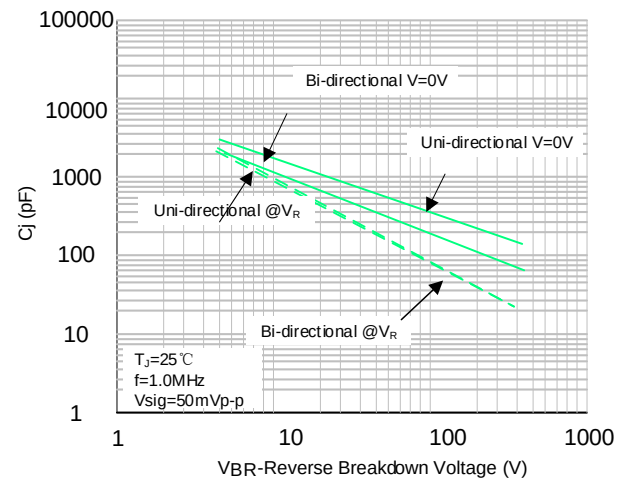


Figure 5. Steady State Power Dissipation

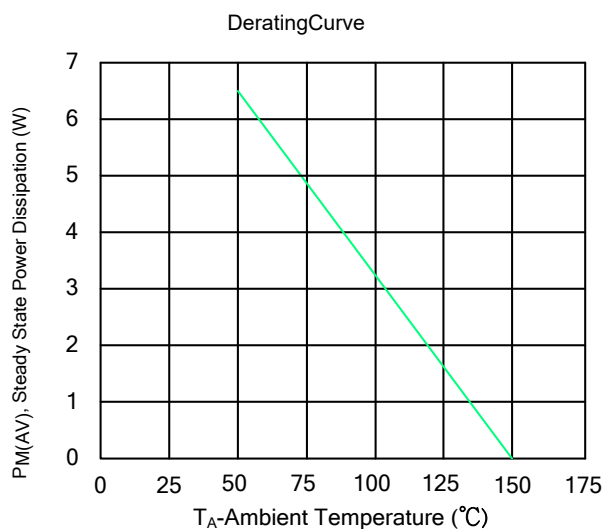
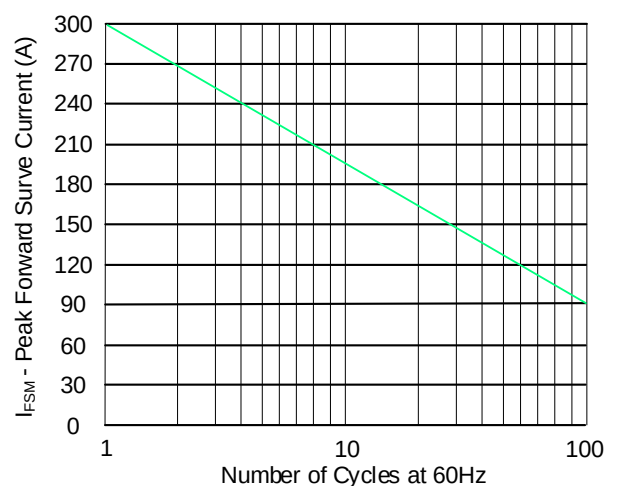
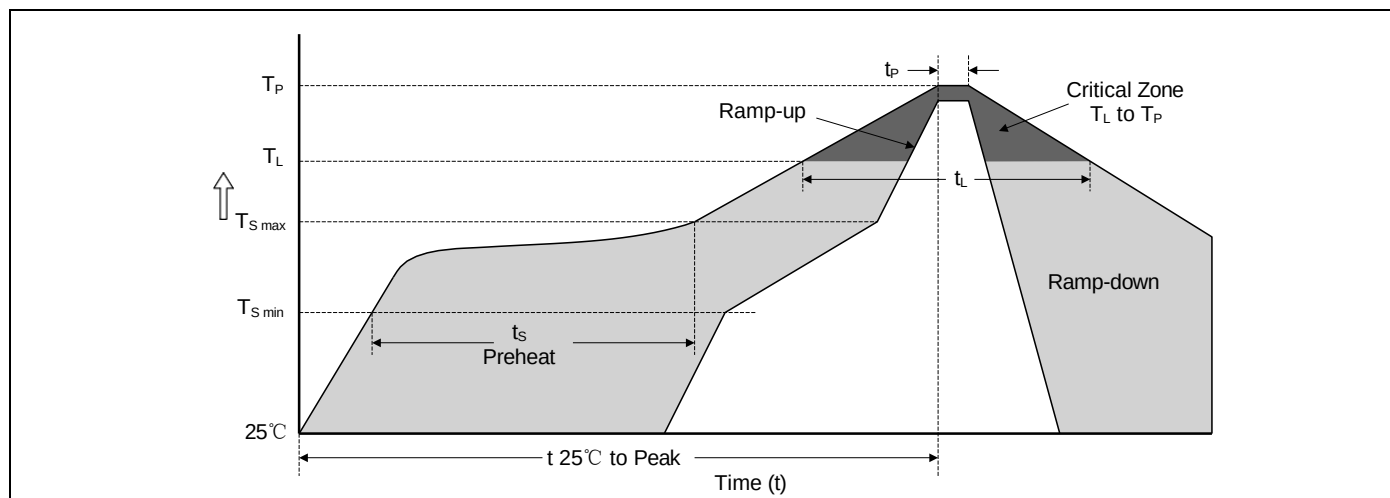


Figure 6. Maximum Non-Repetitive Forward Surge Current



ReflowSoldering Parameters



Reflow Condition		Lead-free Assembly
Pre heat	-Temperature Min (TSmin)	150°C
	-Temperature Max (TSmax)	200°C
	-Time (min to max) (ts)	60-180 seconds
Average ramp-up rate (TL to TP)		3°C/second max.
TSmax to TL -Ramp-up Rate		3°C/second max.
Reflow	-Temperature (TL) (Liquidus)	217°C
	-Time (min to max) (ts)	60-150 seconds
Peak Temperature (TP)		260(+0/-5)°C
Time within 5°C of actual Peak Temperature (tP)		20-40 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to Peak Temperature		8 minutes max.
Do not exceed		280°C

Reliability

	Standards
Terminal strength	MIL-STD-750 Method 2036
Mechanical shock	JESD22-B104
Vibration	JESD22-B103
High Temp. Storage	JESD22-A103
High Temp Reverse Bias	JESD22-A108
Temperature Cycling	JESD22-A104
High Temp High humidityReverse Bias	JESD22-A101
Resistance to solder heat	JESD22-B106

Package Outline Dimensions in inches (millimeters)

SMC(DO-214AB)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.90	3.20	0.114	0.126
B	6.60	7.11	0.260	0.280
C	5.59	6.22	0.220	0.245
D	2.06	2.62	0.079	0.103
E	0.76	1.52	0.030	0.060
F	-	0.203	-	0.008
G	7.75	8.130	0.305	0.320
H	0.15 2	0.305	0.006	0.012
I	3.30	-	0.129	-
J	2.40	-	0.094	-
K	-	4.20	-	0.165

Packing Information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SMC	16	8±0.1	0.315±0.004	330	13	3000

Marking information

" ARDE " = Part No.

" YWW " = Date Code Marking

" Y " = Last digit of year (ex: 2 = 2022)

" WW " = Week Code (ex: 24 = the 24th week of the year)

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Cathode band for Uni-directional products only