

1500W Surface Mount Transient Voltage Suppressors

Features

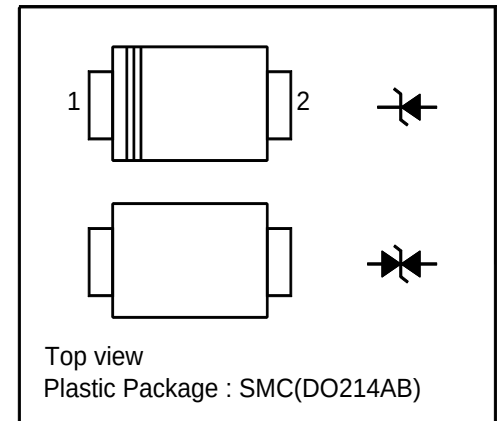
- AEC-Q101 Qualified
- 1500 W peak pulse power capability on 10 /1000 μ s
- For surface mounted applications to optimize board space
- Low incremental surge impedance
- Excellent clamping capability
- Photo Glass and LPCVD process
- Fast response time: typically less than 1ps from 0V to BV min.
- Typical IR less than 1 μ A above 11V.
- High Temperature soldering guaranteed: 260 $^{\circ}$ C/40 seconds at terminals
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020.
- Meet Halogen free and RoHS compliant.



SMC(DO-214AB)

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



PRIMARY CHARACTERISTICS

VBR	6.4V to 247V
VWM	5V to 200V
PPPM (10 x 1000 μ s)	1500 W
TJ max.	150 $^{\circ}$ 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

Parameters at 25 $^{\circ}$ C ambient temperature unless otherwise Noted.

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000 μ s Waveform ¹⁾²⁾ (Fig.1)	P _{PPM}	1500	W
Peak Pulse Current with a 10/1000 μ s Waveform ¹⁾ (Fig.3)	I _{PPM}	See Table	A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave superimposed on rated load, (JEDEC Method) ³⁾ (Fig.6)	I _{FSM}	200	A
Steady state power dissipation at T _A =50 $^{\circ}$ C (Fig.5)	P _{M(AV)}	6.5	W
Maximum Instantaneous Forward Voltage at 100A for Unidirectional	V _F	3.5/5.0	V
Operating Junction and Storage Temperature Range	T _j , T _{stg}	- 55 to + 150	$^{\circ}$ C

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

2.Mounted on 8.0mm $\times$ 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.4

4.VF<3.5V for VBR < 200V and VF<5.0V for VBR > 201V

Electrical Characteristics (T_a = 25°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 I _{PPM}	Maximum Reverse Leakage IR at VR
	UNI	BI	(V)	Min. (V)	Max. (V)	(mA)	V _C (V) at I _{PPM}	(A)	(μA)
SMCJ5.0A / CA	AGDE	ABDE	5.0	6.4	7	10	9.2	163.0	800
SMCJ6.0A / CA	AGDG	ABDG	6.0	6.67	7.37	10	10.3	145.7	800
SMCJ6.5A / CA	AGDK	ABDK	6.5	7.22	7.98	10	11.2	134.0	500
SMCJ7.0A / CA	AGDM	ABDM	7.0	7.78	8.6	10	12.0	125.0	200
SMCJ7.5A / CA	AGDP	ABDP	7.5	8.33	9.21	1	12.9	116.3	100
SMCJ8.0A / CA	AGDR	ABDR	8.0	8.89	9.83	1	13.6	110.3	50
SMCJ8.5A / CA	AGDT	ABDT	8.5	9.44	10.4	1	14.4	104.2	20
SMCJ9.0A / CA	AGDV	ABDV	9.0	10	11.1	1	15.4	97.4	10
SMCJ10A / CA	AGDX	ABDX	10	11.1	12.3	1	17.0	88.3	5
SMCJ11A / CA	AGDZ	ABDZ	11	12.2	13.5	1	18.2	82.4	1
SMCJ12A / CA	AGEE	ABEE	12	13.3	14.7	1	19.9	75.4	1
SMCJ13A / CA	AGEG	ABEG	13	14.4	15.9	1	21.5	69.8	1
SMCJ14A / CA	AGEK	ABEK	14	15.6	17.2	1	23.2	64.7	1
SMCJ15A / CA	AGEM	ABEM	15	16.7	18.5	1	24.4	61.5	1
SMCJ16A / CA	AGEP	ABEP	16	17.8	19.7	1	26.0	57.7	1
SMCJ17A / CA	AGER	ABER	17	18.9	20.9	1	27.6	54.3	1
SMCJ18A / CA	AGET	ABET	18	20.0	22.1	1	29.2	51.4	1
SMCJ20A / CA	AGEV	ABEV	20	22.2	24.5	1	32.4	46.3	1
SMCJ22A / CA	AGEX	ABEX	22	24.4	26.9	1	35.5	42.3	1
SMCJ24A / CA	AGEZ	ABEZ	24	26.7	29.5	1	38.9	38.6	1
SMCJ26A / CA	AGFE	ABFE	26	28.9	31.9	1	42.1	35.6	1
SMCJ28A / CA	AGFG	ABFG	28	31.1	34.4	1	45.4	33.0	1
SMCJ30A / CA	AGFK	ABFK	30	33.3	36.8	1	48.4	31.0	1
SMCJ33A / CA	AGFM	ABFM	33	36.7	40.6	1	53.3	28.1	1
SMCJ36A / CA	AGFP	ABFP	36	40.0	44.2	1	58.1	25.8	1
SMCJ40A / CA	AGFR	ABFR	40	44.4	49.1	1	64.5	23.3	1
SMCJ43A / CA	AGFT	ABFT	43	47.8	52.8	1	69.4	21.6	1
SMCJ45A / CA	AGFV	ABFV	45	50.0	55.3	1	72.7	20.6	1
SMCJ48A / CA	AGFX	ABFX	48	53.3	58.9	1	77.4	19.4	1
SMCJ51A / CA	AGFZ	ABFZ	51	56.7	62.7	1	82.4	18.2	1
SMCJ54A / CA	AGGE	ABGE	54	60.0	66.3	1	87.1	17.2	1
SMCJ58A / CA	AGGG	ABGG	58	64.4	71.2	1	93.0	16.0	1
SMCJ60A / CA	AGGK	ABGK	60	66.7	73.7	1	96.0	15.5	1
SMCJ64A / CA	AGGM	ABGM	64	71.1	78.6	1	103.0	14.6	1
SMCJ70A / CA	AGGP	ABGP	70	77.8	86.0	1	113.0	13.3	1
SMCJ75A / CA	AGGR	ABGR	75	83.3	92.1	1	121.0	12.4	1
SMCJ78A / CA	AGGT	ABGT	78	86.7	95.8	1	126.0	11.9	1
SMCJ85A / CA	AGGV	ABGV	85	94.4	104	1	137.0	10.9	1

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 IPPM	(A)	(μA)
SMCJ90A / CA	AGGX	ABGX	90	100	111	1	146.0	10.3	1
SMCJ100A / CA	AGGZ	ABGZ	100	111	123	1	162.0	9.3	1
SMCJ110A / CA	AGHE	ABHE	110	122	135	1	177.0	8.5	1
SMCJ120A / CA	AGHG	ABHG	120	133	147	1	193.0	7.8	1
SMCJ130A / CA	AGHK	ABHK	130	144	159	1	209.0	7.2	1
SMCJ150A / CA	AGHM	ABHM	150	167	185	1	243.0	6.2	1
SMCJ160A / CA	AGHP	ABHP	160	178	197	1	259.0	5.8	1
SMCJ170A / CA	AGHR	ABHR	170	189	209	1	275.0	5.5	1
SMCJ180A / CA	AGHT	ABHT	180	201	222	1	292.0	5.1	1
SMCJ190A / CA	AGHU	ABHU	190	211	233	1	308.0	4.8	1
SMCJ200A / CA	AGHV	ABHV	200	224	247	1	324.0	4.6	1

¹⁾ For bidirectional type having VRWM of 10V and less, the IR limit is double.

Electrical Characteristics Curves

Figure 1. Peak Pulse Power Rating Curve

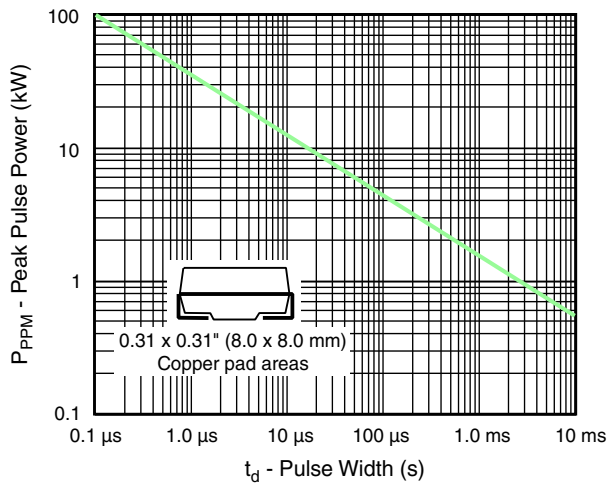


Figure 2. Pulse Derating Curve

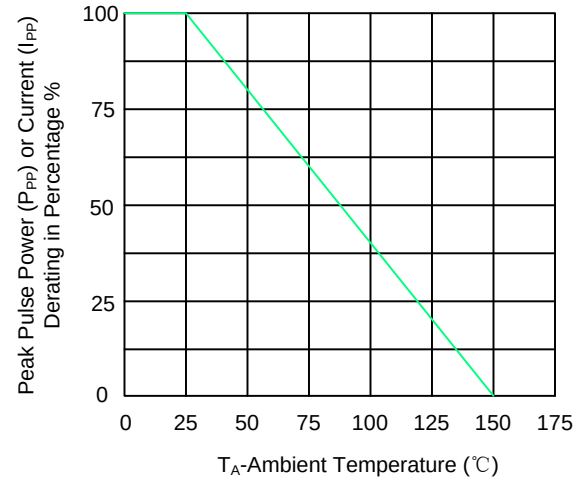


Figure 3. Pulse Waveform

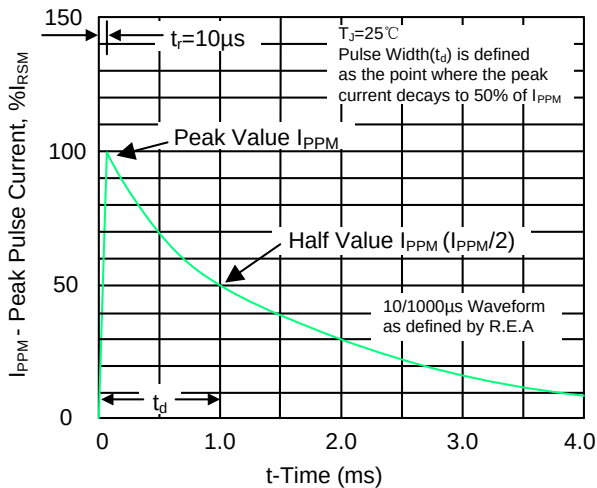


Figure 4. Typical Junction Capacitance

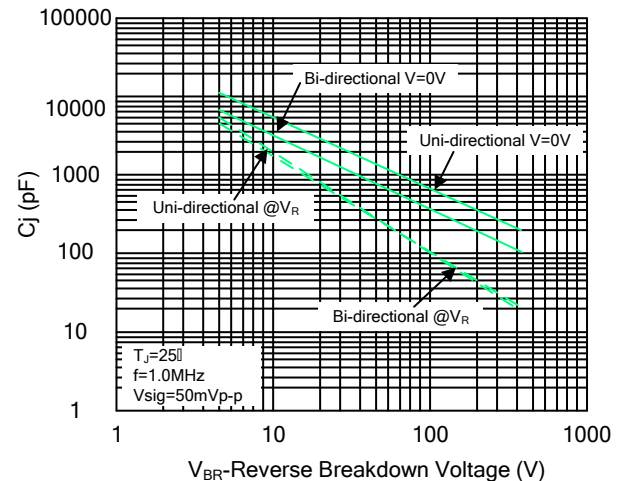


Figure 5. Steady State Power Dissipation

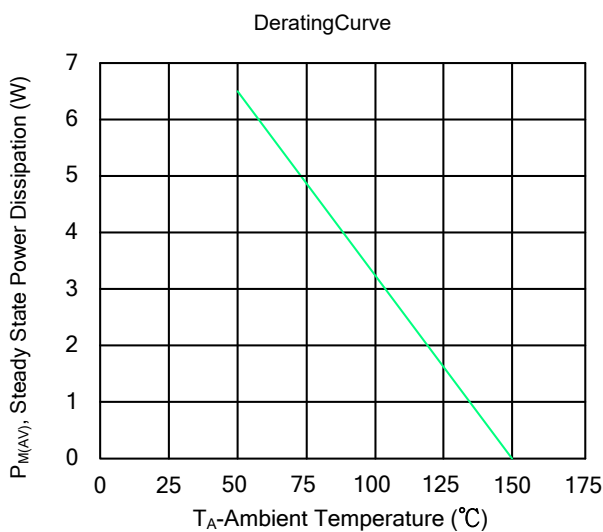
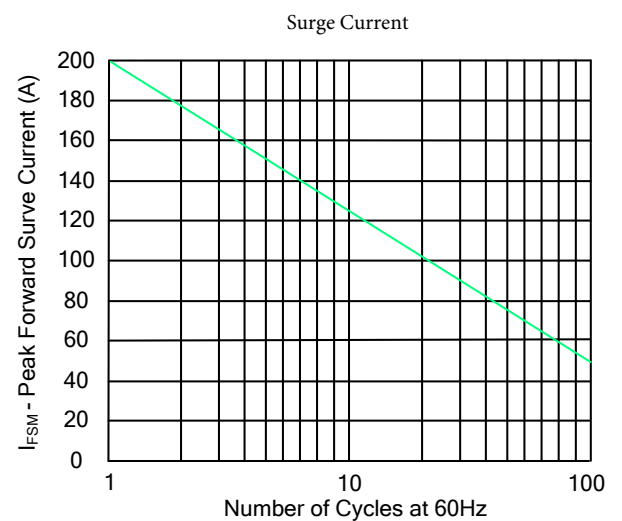
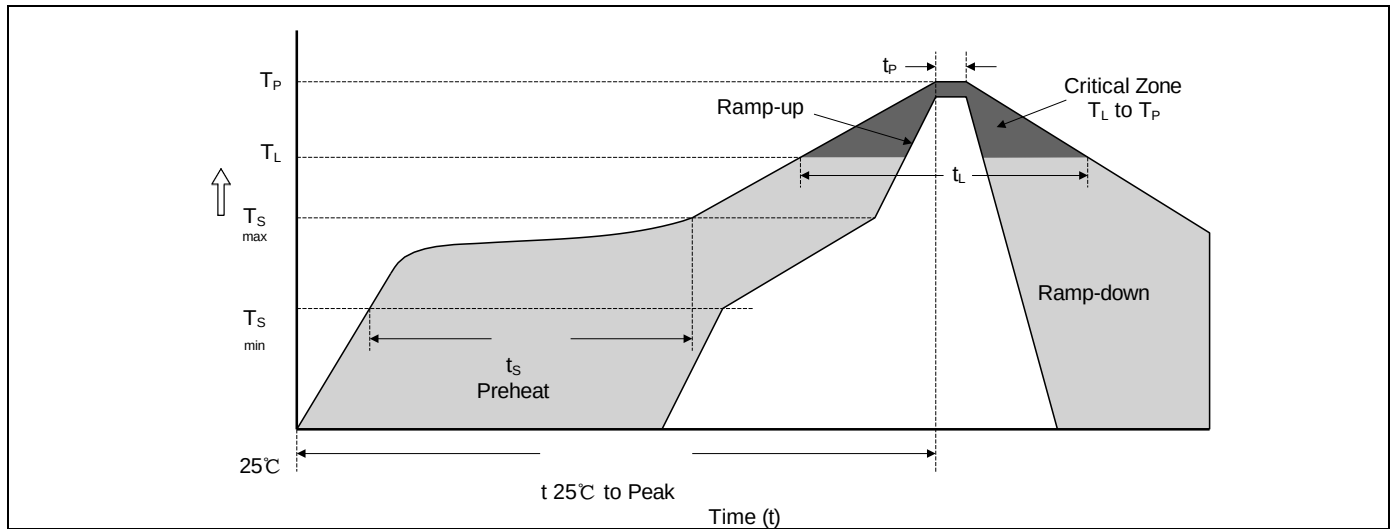


Figure 6. Maximum Non-Repetitive Forward



Reflow Soldering Parameters



Reflow Condition		Lead-free Assembly
Pre heat	-Temperature Min (TS min)	150°C
	-Temperature Max (TS max)	200°C
	-Time (min to max) (tS)	60-180 seconds
Average ramp-up rate (TL to TP)		3°C /second max.
TS max 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

Items	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	0.152	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

" AGDE " = 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