





## 1500 W Surface Mount Transient Voltage Suppressor

<p><b>DO-214AB (SMC)</b></p> 	<p><b>Voltage</b> 6.8 V to 540 V (Uni) 6.8 V to 250 V (Bid)</p>	<p><b>Current</b> 1500 W / ms</p>	
			
	<p><b>FEATURE</b></p> <ul style="list-style-type: none"> <li>• Low profile package</li> <li>• Ideal for automated placement</li> <li>• 1500 peak pulse power capability with a 10/1000 <math>\mu</math>s waveform, repetitive rate (duty cycle): 0.01%</li> <li>• Excellent clamping capability</li> <li>• Very fast response time</li> <li>• Low incremental surge resistance</li> <li>• Solder dip 260 °C, 10s</li> <li>• Available in uni-directional and bi-directional</li> <li>• AEC-Q101 qualified</li> <li>• Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC</li> <li>• Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C</li> </ul>		<p><small>AUTOMOTIVE GRADE Available</small></p>   <p><b>RoHS COMPLIANT</b></p>
	<p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li>• <b>Case:</b> DO-214AB (SMC). Epoxy meets UL 94V-0 flammability rating.</li> <li>• <b>Polarity:</b> For unidirectional types color band denotes cathode end. No marking on bidirectional types.</li> <li>• <b>Terminals:</b> Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.</li> <li>• <b>HE3 suffix</b> for high reliability grade, meets JESD 201 class 2 whisker test.</li> </ul>		
<p><b>TYPICAL APPLICATIONS</b></p> <p>Used 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.</p>			

### Maximun Ratings and Electrical Characteristics at 25 °C

$P_{PPM}$	Peak Pulse Power Dissipation with 10/1000 $\mu$ s exponential pulse	1500 W
$I_{FSM}$	Peak Forward Surge Current 8.3 ms. (Note 1) (Jedec Method) (Note 2)	200 A
$V_F$	Max. Forward Voltage Drop at $I_F = 100$ A	3.5 V
$T_j$	Operating Temperature Range	$V_{BR} \leq 43$ V -65 to + 175 °C
		$V_{BR} > 43$ V -65 to + 150 °C
$T_{stg}$	Storage Temperature Range	-65 to + 175 °C
$R_{th(j-a)}$	Typical Thermal Resistance junction to ambient (Note 3) (Note 4)	140 °C/W
		75 °C/W
$R_{th(j-l)}$	Typical Thermal Resistance junction to lead	15 °C/W

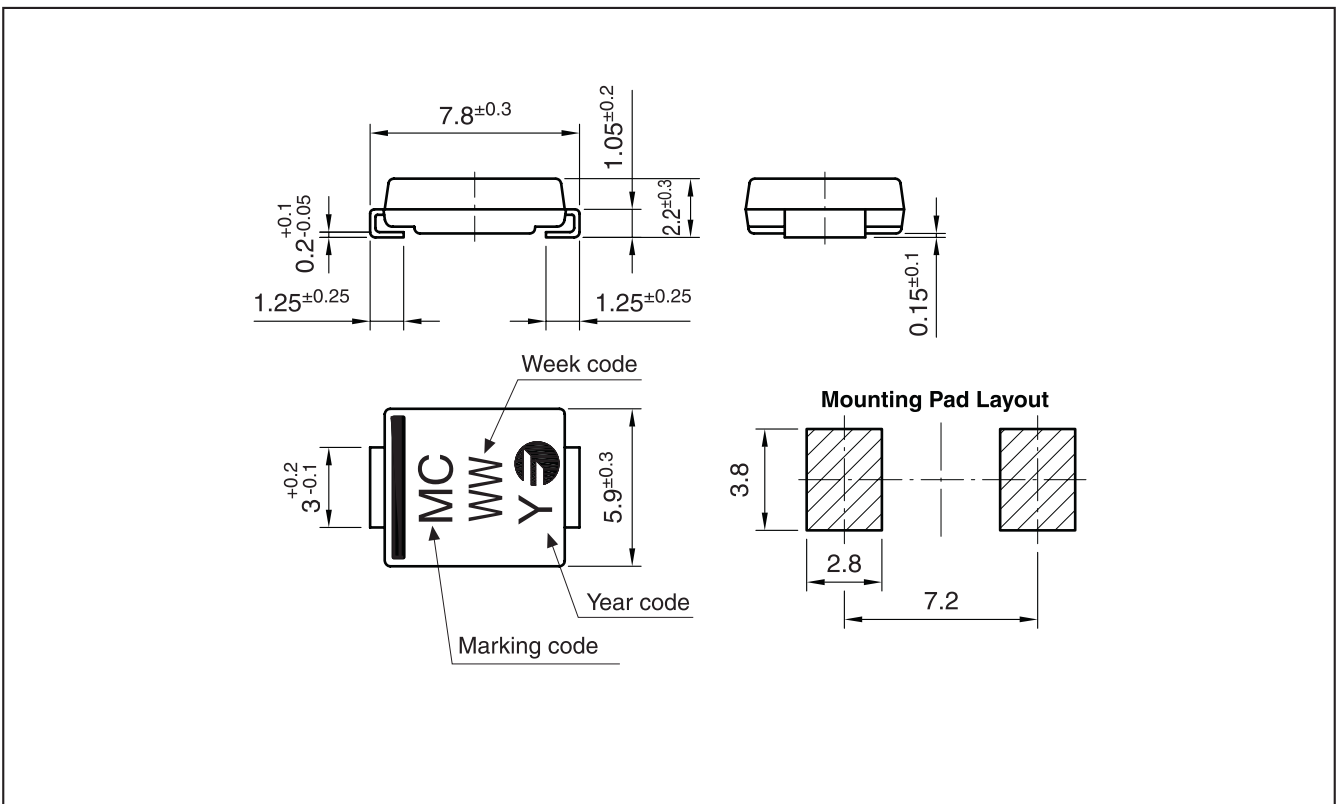
- Notes: 1. Only for Unidirectional  
2. Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal  
3. Device mounted on an FR4 PCB, standard footprint  
4. Device mounted on an Al2O3 PCB, standard footprint

**1500 W Surface Mount Transient Voltage Suppressor**

**Ordering information**

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
1.5SMC33A TRTB	TRTB	13" diameter tape and reel	3,500	0.201
1.5SMC33A TRTS	TRTS	7" diameter tape and reel	850	0.201
1.5SMC33A HE3 TRTB	TRTB	13" diameter tape and reel	3,500	0.201
1.5SMC33A HE3 TRTS	TRTS	7" diameter tape and reel	850	0.201
1.5SMC33CA TRTB	TRTB	13" diameter tape and reel	3,500	0.201
1.5SMC33CA TRTS	TRTS	7" diameter tape and reel	850	0.201
1.5SMC33CA HE3 TRTB	TRTB	13" diameter tape and reel	3,500	0.201
1.5SMC33CA HE3 TRTS	TRTS	7" diameter tape and reel	850	0.201

**Package Outline Dimensions: (mm) DO-214AB (SMC)**



## 1500 W Surface Mount Transient Voltage Suppressor

Type		Maximum Reverse Leakage Current		(1) Breakdown Voltage				Max. Clamping Voltage	
		$I_{RM}$ at $V_{RM}$		$V_{BR}$ at $I_R$			$V_{CL}$ at $I_{pp}$		
Unidirectional	Marking Code	( $\mu$ A)	(V)	Min.	Nom.	Max.	(mA)	(V)	(A)
1.5SMC6V8	UAA	1000	5.50	6.12	6.8	7.48	10	10.8	139
1.5SMC6V8A	UAB	1000	5.80	6.45	6.8	7.14	10	10.5	143
1.5SMC7V5	UAC	500	6.05	6.75	7.5	8.25	10	11.7	128
1.5SMC7V5A	UAD	500	6.40	7.13	7.5	7.88	10	11.3	132
1.5SMC8V2	UAE	200	6.63	7.38	8.2	9.02	10	12.5	120
1.5SMC8V2A	UAF	200	7.02	7.79	8.2	8.61	10	12.1	124
1.5SMC9V1	UAG	50	7.37	8.19	9.1	10.0	1	13.8	109
1.5SMC9V1A	UAH	50	7.78	8.65	9.1	9.55	1	13.4	112
1.5SMC10	UAK	10	8.10	9.00	10	11.0	1	15.0	100
1.5SMC10A	UAL	10	8.55	9.50	10	10.5	1	14.5	103
1.5SMC11	UAM	5	8.92	9.90	11	12.1	1	16.2	93
1.5SMC11A	UAN	5	9.40	10.5	11	11.6	1	15.6	96
1.5SMC12	UAP	5	9.72	10.8	12	13.2	1	17.3	87
1.5SMC12A	UAR	5	10.2	11.4	12	12.6	1	16.7	90
1.5SMC13	UAS	5	10.5	11.7	13	14.3	1	19.0	79
1.5SMC13A	UAT	5	11.1	12.4	13	13.7	1	18.2	82
1.5SMC15	UAU	5	12.1	13.5	15	16.5	1	22.0	68
1.5SMC15A	UAV	5	12.8	14.3	15	15.8	1	21.2	71
1.5SMC16	UAW	5	12.9	14.4	16	17.6	1	23.5	64
1.5SMC16A	UAX	5	13.6	15.2	16	16.8	1	22.5	67
1.5SMC18	UAY	5	14.5	16.2	18	19.8	1	26.5	56.5
1.5SMC18A	UAZ	5	15.3	17.1	18	18.9	1	25.5	59.5
1.5SMC20	UBA	5	16.2	18.0	20	22.0	1	29.1	51.5
1.5SMC20A	UBB	5	17.1	19.0	20	21.0	1	27.7	54
1.5SMC22	UBC	5	17.8	19.8	22	24.2	1	31.9	47
1.5SMC22A	UBD	5	18.8	20.9	22	23.1	1	30.6	49
1.5SMC24	UBE	5	19.4	21.6	24	26.4	1	34.7	43
1.5SMC24A	UBF	5	20.5	22.8	24	25.2	1	33.2	45
1.5SMC27	UBG	5	21.8	24.3	27	29.7	1	39.1	38.5
1.5SMC27A	UBH	5	23.1	25.7	27	28.4	1	37.5	40
1.5SMC30	UBK	5	24.3	27.0	30	33.0	1	43.5	34.5
1.5SMC30A	UBL	5	25.6	28.5	30	31.5	1	41.4	36
1.5SMC33	UBM	5	26.8	29.7	33	36.3	1	47.7	31.5
1.5SMC33A	UBN	5	28.2	31.4	33	34.7	1	45.7	33
1.5SMC36	UBP	5	29.1	32.4	36	39.6	1	52.0	29
1.5SMC36A	UBR	5	30.8	34.2	36	37.8	1	49.9	30
1.5SMC39	UBS	5	31.6	35.1	39	42.9	1	56.4	26.5
1.5SMC39A	UBT	5	33.3	37.1	39	41.0	1	53.9	28
1.5SMC43	UBU	5	34.8	38.7	43	47.3	1	61.9	24
1.5SMC43A	UBV	5	36.8	40.9	43	45.2	1	59.3	25.3
1.5SMC47	UBW	5	38.1	42.3	47	51.7	1	67.8	22.2
1.5SMC47A	UBX	5	40.2	44.7	47	49.4	1	64.8	23.2
1.5SMC51	UBY	5	41.3	45.9	51	56.1	1	73.5	20.4
1.5SMC51A	UBZ	5	43.6	48.5	51	53.6	1	70.1	21.4

(1) Tested with pulses.  
Pulse test:  $t_p \leq 50$  ms;  $\delta < 2\%$

## 1500 W Surface Mount Transient Voltage Suppressor

Type		Maximum Reverse Leakage Current		(1)	Breakdown Voltage			Max. Clamping Voltage	
		$I_{RM}$ at $V_{RM}$	$V_{RM}$		$V_{BR}$ at $I_R$	$I_R$	$V_{CL}$ at $I_{pp}$	$I_{pp}$	
Unidirectional	Marking Code	( $\mu$ A)	(V)	Min.	Nom.	Max.	(mA)	(V)	(A)
1.5SMC56	UCA	5	45.4	50.4	56	61.6	1	80.5	18.6
1.5SMC56A	UCB	5	47.8	53.2	56	58.8	1	77.0	19.5
1.5SMC62	UCC	5	50.2	55.8	62	68.2	1	89.0	16.9
1.5SMC62A	UCD	5	53.0	58.9	62	65.1	1	85.0	17.7
1.5SMC68	UCE	5	55.1	61.2	68	74.8	1	98.0	15.3
1.5SMC68A	UCF	5	58.1	64.6	68	71.4	1	92.0	16.3
1.5SMC75	UCG	5	60.7	67.5	75	82.5	1	108	13.9
1.5SMC75A	UCH	5	64.1	71.3	75	78.8	1	103	14.6
1.5SMC82	UCK	5	66.4	73.8	82	90.2	1	118	12.7
1.5SMC82A	UCL	5	70.1	77.9	82	86.1	1	113	13.3
1.5SMC91	UCM	5	73.7	81.9	91	100	1	131	11.4
1.5SMC91A	UCN	5	77.8	86.5	91	95.5	1	125	12
1.5SMC100	UCP	5	81.0	90.0	100	110	1	144	10.4
1.5SMC100A	UCR	5	85.5	95.0	100	105	1	137	11
1.5SMC110	UCS	5	89.2	99.0	110	121	1	158	9.5
1.5SMC110A	UCT	5	94.0	105	110	116	1	152	9.9
1.5SMC120	UCU	5	97.2	108	120	132	1	173	8.7
1.5SMC120A	UCV	5	102	114	120	126	1	165	9.1
1.5SMC130	UCW	5	105	117	130	143	1	187	8
1.5SMC130A	UCX	5	111	124	130	137	1	179	8.4
1.5SMC150	UCY	5	121	135	150	165	1	215	7
1.5SMC150A	UCZ	5	128	143	150	158	1	207	7.2
1.5SMC160	UDA	5	130	144	160	176	1	230	6.5
1.5SMC160A	UDB	5	136	152	160	168	1	219	6.8
1.5SMC170	UDC	5	138	153	170	187	1	244	6.2
1.5SMC170A	UDD	5	145	162	170	179	1	234	6.4
1.5SMC180	UDE	5	146	162	180	198	1	258	5.8
1.5SMC180A	UDF	5	154	171	180	189	1	246	6.1
1.5SMC200	UDG	5	162	180	200	220	1	287	5.2
1.5SMC200A	UDH	5	171	190	200	210	1	274	5.5
1.5SMC220	UDK	5	175	198	220	242	1	344	4.3
1.5SMC220A	UDL	5	185	209	220	231	1	328	4.6
1.5SMC250A	UDI	5	214	237	250	262	1	344	4.4
1.5SMC300A	UDJ	5	256	285	300	315	1	414	3.6
1.5SMC350A	UDQ	5	300	333	350	368	1	482	3.1
1.5SMC400A	UDU	5	342	380	400	420	1	548	2.7
1.5SMC440A	UDV	5	376	418	440	482	1	602	2.5
1.5SMC480A	UDM	5	408	456	480	504	1	658	2.28
1.5SMC510A	UDN	5	434	485	510	535	1	698	2.15
1.5SMC540A	UDP	5	459	513	540	567	1	740	2.02

(1) Tested with pulses.  
Pulse test:  $t_p \leq 50$  ms;  $\delta < 2\%$

## 1500 W Surface Mount Transient Voltage Suppressor

Type		Maximum Reverse Leakage Current $I_{RM}$ at $V_{RM}$		(1) Breakdown Voltage $V_{BR}$ at $I_R$				Max. Clamping Voltage $V_{CL}$ at $I_{pp}$ max. 1ms. Expo.	
Bidirectional	Marking Code	( $\mu A$ )	(V)	Min.	Nom.	Max.	(mA)	(V)	(A)
1.5SMC6V8C	BGA	1000	5.50	6.12	6.8	7.48	10	10.8	139
1.5SMC6V8CA	BGB	1000	5.80	6.45	6.8	7.14	10	10.5	143
1.5SMC7V5C	BGC	500	6.05	6.75	7.5	8.25	10	11.7	128
1.5SMC7V5CA	BGD	500	6.40	7.13	7.5	7.88	10	11.3	132
1.5SMC8V2C	BGE	200	6.63	7.38	8.2	9.02	10	12.5	120
1.5SMC8V2CA	BGF	200	7.02	7.79	8.2	8.61	10	12.1	124
1.5SMC9V1C	BGG	50	7.37	8.19	9.1	10.00	1	13.8	109
1.5SMC9V1CA	BGH	50	7.78	8.65	9.1	9.55	1	13.4	112
1.5SMC10C	BGK	10	8.10	9.00	10	11.0	1	15.0	100
1.5SMC10CA	BGL	10	8.55	9.50	10	10.5	1	14.5	103
1.5SMC11C	BGM	5	8.92	9.90	11	12.1	1	16.2	93
1.5SMC11CA	BGN	5	9.40	10.5	11	11.6	1	15.6	96
1.5SMC12C	BGP	5	9.72	10.8	12	13.2	1	17.3	87
1.5SMC12CA	BGR	5	10.2	11.4	12	12.6	1	16.7	90
1.5SMC13C	BGS	5	10.5	11.7	13	14.3	1	19.0	79
1.5SMC13CA	BGT	5	11.1	12.4	13	13.7	1	18.2	82
1.5SMC15C	BGU	5	12.1	13.5	15	16.5	1	22.0	68
1.5SMC15CA	BGV	5	12.8	14.3	15	15.8	1	21.2	71
1.5SMC16C	BGW	5	12.9	14.4	16	17.6	1	23.5	64
1.5SMC16CA	BGX	5	13.6	15.2	16	16.8	1	22.5	67
1.5SMC18C	BGY	5	14.5	16.2	18	19.8	1	26.5	56.5
1.5SMC18CA	BGZ	5	15.3	17.1	18	18.9	1	25.5	59.5
1.5SMC20C	BHA	5	16.2	18.0	20	22.0	1	29.1	51.5
1.5SMC20CA	BHB	5	17.1	19.0	20	21.0	1	27.7	54
1.5SMC22C	BHC	5	17.8	19.8	22	24.2	1	31.9	47
1.5SMC22CA	BHD	5	18.8	20.9	22	23.1	1	30.6	49
1.5SMC24C	BHE	5	19.4	21.6	24	26.4	1	34.7	43
1.5SMC24CA	BHF	5	20.5	22.8	24	25.2	1	33.2	45
1.5SMC27C	BHG	5	21.8	24.3	27	29.7	1	39.1	38.5
1.5SMC27CA	BHH	5	23.1	25.7	27	28.4	1	37.5	40
1.5SMC30C	BHK	5	24.3	27.0	30	33.0	1	43.5	34.5
1.5SMC30CA	BHL	5	25.6	28.5	30	31.5	1	41.4	36
1.5SMC33C	BHM	5	26.8	29.7	33	36.3	1	47.7	31.5
1.5SMC33CA	BHN	5	28.2	31.4	33	34.7	1	45.7	33
1.5SMC36C	BHP	5	29.1	32.4	36	39.6	1	52.0	29
1.5SMC36CA	BHR	5	30.8	34.2	36	37.8	1	49.9	30
1.5SMC39C	BHS	5	31.6	35.1	39	42.9	1	56.4	26.5
1.5SMC39CA	BHT	5	33.3	37.1	39	41.0	1	53.9	28
1.5SMC43C	BHU	5	34.8	38.7	43	47.3	1	61.9	24
1.5SMC43CA	BHV	5	36.8	40.9	43	45.2	1	59.3	25.3
1.5SMC47C	BHW	5	38.1	42.3	47	51.7	1	67.8	22.2
1.5SMC47CA	BHX	5	40.2	44.7	47	49.4	1	64.8	23.2
1.5SMC51C	BHY	5	41.3	45.9	51	56.1	1	73.5	20.4
1.5SMC51CA	BHZ	5	43.6	48.5	51	53.6	1	70.1	21.4

(1) Tested with pulses.  
Pulse test:  $t_p \leq 50$  ms;  $\delta < 2\%$

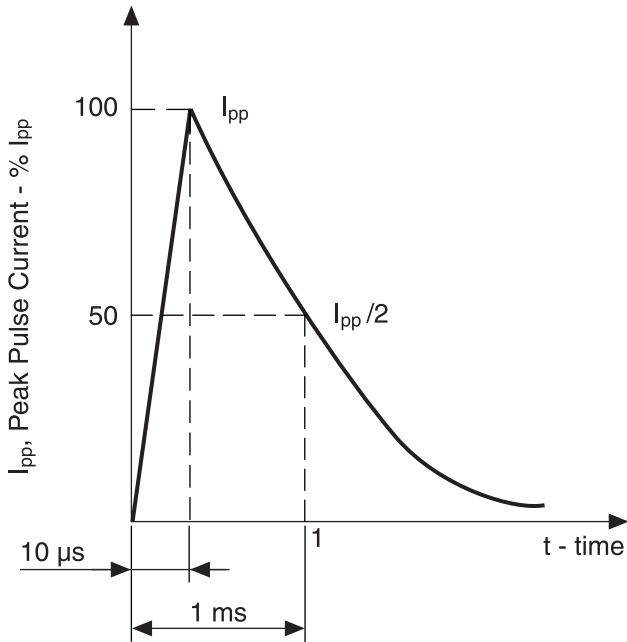
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Type		Maximum Reverse Leakage Current $I_{RM}$ at $V_{RM}$		(1) Breakdown Voltage $V_{BR}$ at $I_R$ (V)			Max. Clamping Voltage $V_{CL}$ at $I_{PP}$ max. 1ms. Expo.		
Bidirectional	Marking Code	( $\mu$ A)	(V)	Min.	Nom.	Max.	(mA)	(V)	(A)
1.5SMC56C	BKA	5	45.4	50.4	56	61.6	1	80.5	18.6
1.5SMC56CA	BKB	5	47.8	53.2	56	58.8	1	77.0	19.5
1.5SMC62C	BKC	5	50.2	55.8	62	68.2	1	89.0	16.9
1.5SMC62CA	BKD	5	53.0	58.9	62	65.1	1	85.0	17.7
1.5SMC68C	BKE	5	55.1	61.2	68	74.8	1	98.0	15.3
1.5SMC68CA	BKF	5	58.1	64.6	68	71.4	1	92.0	16.3
1.5SMC75C	BKG	5	60.7	67.5	75	82.5	1	108	13.9
1.5SMC75CA	BKH	5	64.1	71.3	75	78.8	1	103	14.6
1.5SMC82C	BKK	5	66.4	73.8	82	90.2	1	118	12.7
1.5SMC82CA	BKL	5	70.1	77.9	82	86.1	1	113	13.3
1.5SMC91C	BKM	5	73.7	81.9	91	100	1	131	11.4
1.5SMC91CA	BKN	5	77.8	86.5	91	95.5	1	125	12
1.5SMC100C	BKP	5	81.0	90.0	100	110	1	144	10.4
1.5SMC100CA	BKR	5	85.5	95.0	100	105	1	137	11
1.5SMC110C	BKS	5	89.2	99.0	110	121	1	158	9.5
1.5SMC110CA	BKT	5	94.0	105	110	116	1	152	9.9
1.5SMC120C	BKU	5	97.2	108	120	132	1	173	8.7
1.5SMC120CA	BKV	5	102	114	120	126	1	165	9.1
1.5SMC130C	BKW	5	105	117	130	143	1	187	8
1.5SMC130CA	BKX	5	111	124	130	137	1	179	8.4
1.5SMC150C	BKY	5	121	135	150	165	1	215	7
1.5SMC150CA	BKZ	5	128	143	150	158	1	207	7.2
1.5SMC160C	BLA	5	130	144	160	176	1	230	6.5
1.5SMC160CA	BLB	5	136	152	160	168	1	219	6.8
1.5SMC170C	BLC	5	138	153	170	187	1	244	6.2
1.5SMC170CA	BLD	5	145	162	170	179	1	234	6.4
1.5SMC180C	BLE	5	146	162	180	198	1	258	5.8
1.5SMC180CA	BLF	5	154	171	180	189	1	246	6.1
1.5SMC200C	BLG	5	162	180	200	220	1	287	5.2
1.5SMC200CA	BLH	5	171	190	200	210	1	274	5.5
1.5SMC220C	BLK	5	175	198	220	242	1	344	4.3
1.5SMC220CA	BLL	5	185	209	220	231	1	328	4.6
1.5SMC250C	BHI	5	204	225	250	275	1	350	4.1
1.5SMC250CA	BHJ	5	214	237	250	262	1	344	4.4

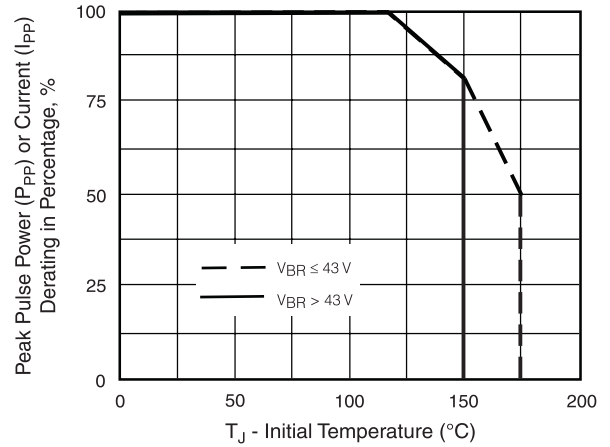
(1) Tested with pulses.  
Pulse test:  $t_p \leq 50$  ms;  $\delta < 2\%$

**1500 W Surface Mount Transient Voltage Suppressor**

**Rating and Characteristics** (Ta 25 °C unless otherwise noted)

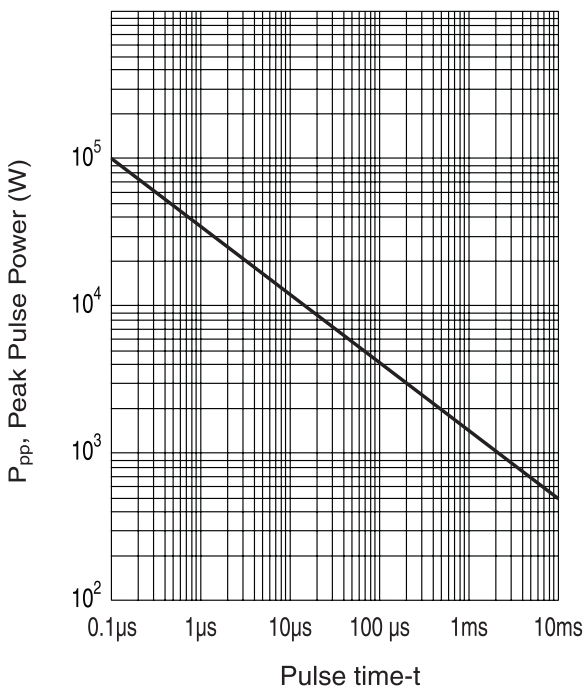


Pulse wave form 10/1000

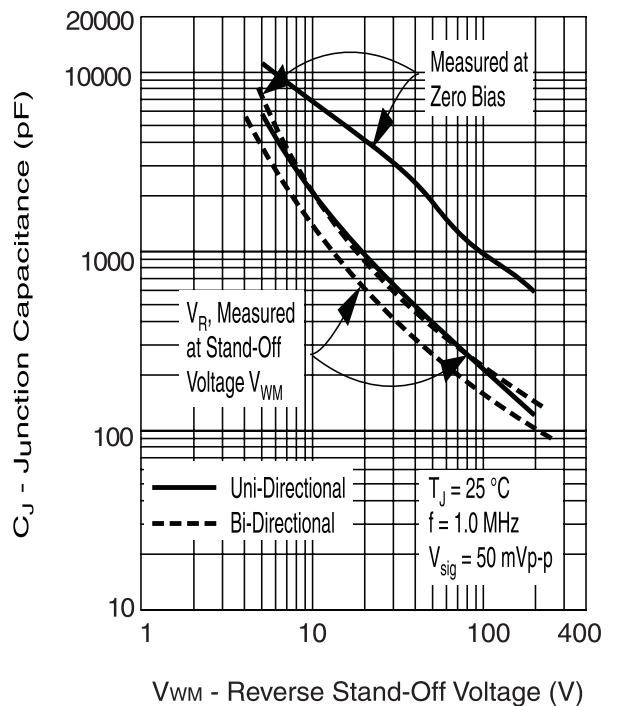


Pulse Power or Current vs. Initial Junction Temperature

**PEAK PULSE POWER RATING CURVE**



**TYPICAL JUNCTION CAPACITANCE**





**1500 W Surface Mount Transient Voltage Suppressor**

**Revision History**

DATE	REVISION	DESCRIPTION OF CHANGES
10-Oct-2011	0	Original Data Sheet
12-May-2014	1	Update Peak Pulse Power Derating Curve
18-Nov-2016	2	Include Rthjl and Rthja parameters
02-Dec-2016	3	Include Rthja parameter
25-Mar-2019	4	Include 1.5SMC480A, 1.5SMC510A and 1.5SMC540A

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