

# SMB6.8(C)A THRU SMB600(C)A

## 600W Surface Mount Transient Voltage Suppressors

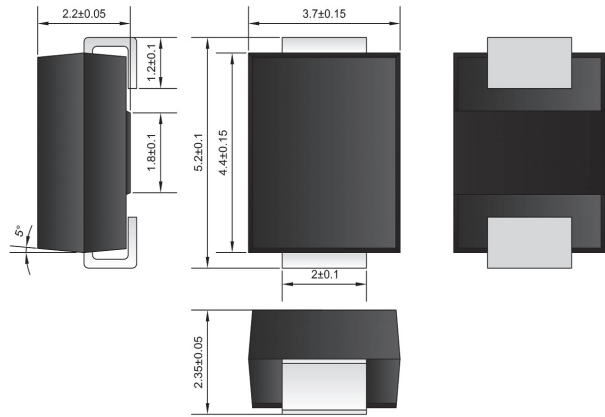
### ■ Features

- 600W peak pulse power capability with a 10/1000us waveform, repetition rate (duty cycle): 0.01%.
- Excellent clamping capability.
- Low incremental surge resistance.
- Glass passivated chip junction.
- Ultra high-speed switching.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228

### ■ Mechanical data

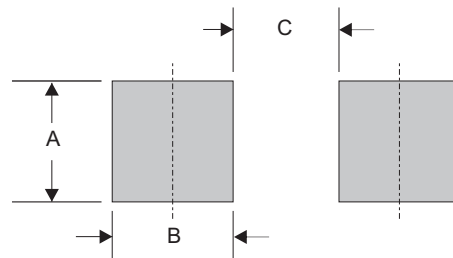
- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AA / SMB
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Weight : 0.003 ounce, 0.091 gram

### ■ Outline SMB(DO-214AA)



Dimensions in millimeters

### ■ SMB foot print



A	B	C
0.091 (2.30)	0.098 (2.50)	0.071 (1.80)

Dimensions in inches and (millimeters)

### ■ Maximum ratings and electrical characteristics

Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.

Parameter	Conditions	Symbol	P6SMB series	UNIT
Peak power dissipation	with a 10/1000us waveform, note 1	$P_{PPM}$	600	W
Peak forward surge current	8.3ms single half sine-wave superimposed on rate load (JEDEC method), note 2	$I_{FSM}$	100	A
Steady state power dissipation	on infinite heatsink at $T_L = 75^\circ\text{C}$	$P_D$	5.0	W
Peak pulse current	with a 10/1000us waveform, note 1	$I_{PPM}$	See Table 1	A
Maximum instantaneous forward voltage	at 25A for unidirectional only, note 3	$V_F$	3.5 / 5.0	V
Operating temperature		$T_J$	-55 ~ +150	°C
Storage temperature		$T_{STG}$	-55 ~ +150	°C

Notes : 1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2.  
 2. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.  
 3.  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$ .

## RATINGS AND CHARACTERISTIC CURV SMB6.8(C)A THRU SMB600(C)A

### ■ Electrical characteristics

table 1

Part No.	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Peak Forward Surge Current	Maximum Clamping Voltage @I <sub>PP</sub>		Maximum Leakage Current	Marking Code	
	V <sub>RWM</sub>	V <sub>BRMin</sub>	V <sub>BRMax</sub>	I <sub>T</sub>	I <sub>FSM</sub>	V <sub>C</sub>	I <sub>PP</sub>	I <sub>R</sub> @V <sub>RWM</sub>		
	Volts	Volts	Volts	mA	A	Volts	A	uA	UNI	BI
SMB6.8(C)A	5.8	6.45	7.14	10	100	10.5	57.14	500	6V8A	6V8C
SMB7.5(C)A	6.4	7.13	7.88	10	100	11.3	53.10	500	7V5A	7V5C
SMB8.2(C)A	7.0	7.79	8.61	10	100	12.1	49.59	200	8V2A	8V2C
SMB9.1(C)A	7.8	8.65	9.56	1.0	100	13.4	44.78	50	9V1A	9V1C
SMB10(C)A	8.6	9.50	10.50	1.0	100	14.5	41.38	10	10A	10C
SMB11(C)A	9.4	10.45	11.55	1.0	100	15.6	38.46	5	11A	11C
SMB12(C)A	10.2	11.40	12.60	1.0	100	16.7	35.93	5	12A	12C
SMB13(C)A	11.1	12.35	13.65	1.0	100	18.2	32.97	5	13A	13C
SMB15(C)A	12.8	14.25	15.75	1.0	100	21.2	28.30	5	15A	15C
SMB16(C)A	13.6	15.20	16.80	1.0	100	22.5	26.67	5	16A	16C
SMB18(C)A	15.3	17.10	18.90	1.0	100	25.5	23.81	5	18A	18C
SMB20(C)A	17.1	19.00	21.00	1.0	100	27.7	21.66	5	20A	20C
SMB22(C)A	18.8	20.90	23.10	1.0	100	30.6	19.61	5	22A	22C
SMB24(C)A	20.5	22.80	25.20	1.0	100	33.2	18.07	5	24A	24C
SMB27(C)A	23.1	25.65	28.35	1.0	100	37.5	16.00	5	27A	27C
SMB30(C)A	25.6	28.50	31.50	1.0	100	41.4	14.49	5	30A	30C
SMB33(C)A	28.2	31.35	34.65	1.0	100	45.7	13.13	5	33A	33C
SMB36(C)A	30.8	34.20	37.80	1.0	100	49.9	12.02	5	36A	36C
SMB39(C)A	33.3	37.05	40.95	1.0	100	53.9	11.13	5	39A	39C
SMB43(C)A	36.8	40.85	45.15	1.0	100	59.3	10.12	5	43A	43C
SMB47(C)A	40.2	44.65	49.35	1.0	100	64.8	9.26	5	47A	47C
SMB51(C)A	43.6	48.45	53.55	1.0	100	70.1	8.56	5	51A	51C
SMB56(C)A	47.8	53.20	58.80	1.0	100	77.0	7.79	5	56A	56C
SMB62(C)A	53.0	58.90	65.10	1.0	100	85.0	7.06	5	62A	62C
SMB68(C)A	58.1	64.60	71.40	1.0	100	92.0	6.52	5	68A	68C
SMB75(C)A	64.1	71.25	78.75	1.0	100	103.0	5.83	5	75A	75C
SMB82(C)A	70.1	77.90	86.10	1.0	100	113.0	5.31	5	82A	82C
SMB91(C)A	77.8	86.45	95.55	1.0	100	125.0	4.80	5	91A	91C
SMB100(C)A	85.5	95.00	105.00	1.0	100	137.0	4.38	5	100A	100C
SMB110(C)A	94.0	104.50	115.50	1.0	100	152.0	3.95	5	110A	110C
SMB120(C)A	102.0	114.00	126.00	1.0	100	165.0	3.64	5	120A	120C
SMB130(C)A	111.0	123.50	136.50	1.0	100	179.0	3.35	5	130A	130C
SMB150(C)A	128.0	142.50	157.50	1.0	100	207.0	2.90	5	150A	150C
SMB160(C)A	136.0	152.00	168.00	1.0	100	219.0	2.74	5	160A	160C

## RATINGS AND CHARACTERISTIC CURV SMB6.8(C)A THRU SMB600(C)A

### ■ Electrical characteristics

Part No.	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Peak Forward Surge Current	Maximum Clamping Voltage @ $I_{PP}$		Maximum Leakage Current	Marking Code	
	$V_{RWM}$	$V_{BRMin}$	$V_{BRMax}$	$I_T$	$I_{FSM}$	$V_C$	$I_{PP}$	$I_R@V_{RWM}$		
	Volts	Volts	Volts	mA	A	Volts	A	uA	UNI	BI
SMB170(C)A	145.0	161.50	178.50	1.0	100	234.0	2.56	5	170A	170C
SMB180(C)A	154.0	171.00	189.00	1.0	100	246.0	2.44	5	180A	180C
SMB200(C)A	171.0	190.00	210.00	1.0	100	274.0	2.19	5	200A	200C
SMB220(C)A	185.0	209.00	231.00	1.0	100	328.0	1.83	5	220A	220C
SMB250(C)A	214.0	237.50	262.50	1.0	100	344.0	1.74	5	250A	250C
SMB300(C)A	256.0	285.00	315.00	1.0	100	414.0	1.45	5	300A	300C
SMB350(C)A	300.0	332.50	367.50	1.0	100	482.0	1.24	5	350A	350C
SMB380(C)A	324.9	361.00	399.00	1.0	100	524.4	1.14	5	380A	380C
SMB400(C)A	342.0	380.00	420.00	1.0	100	548.0	1.09	5	400A	400C
SMB440(C)A	376.0	418.00	462.00	1.0	100	607.2	0.99	5	440A	440C
SMB500(C)A	427.5	475.00	525.00	1.0	100	690.0	0.87	5	500A	500C
SMB510(C)A	434.0	485.00	535.00	1.0	100	698.0	0.86	5	510A	510C
SMB520(C)A	444.6	494.00	546.00	1.0	100	717.6	0.84	5	520A	520C
SMB550(C)A	470.3	522.50	577.50	1.0	100	759.0	0.79	5	550A	550C
SMB600(C)A	513.0	570.00	630.00	1.0	100	828.0	0.72	5	600A	600C

Note 1. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.  
 2. For bi-directional types having  $V_{RWM}$  of 10 volts and less, the  $I_R$  limit is doubled.

# RATINGS AND CHARACTERISTIC CURV SMB6.8(C)A THRU SMB600(C)A

## Rating and characteristic curves

Fig.1 - Peak Pulse Power Rating Curve

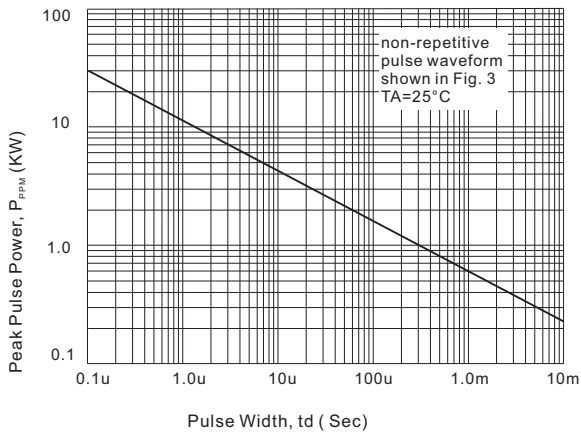


Fig.2 - Pulse Derating Curve

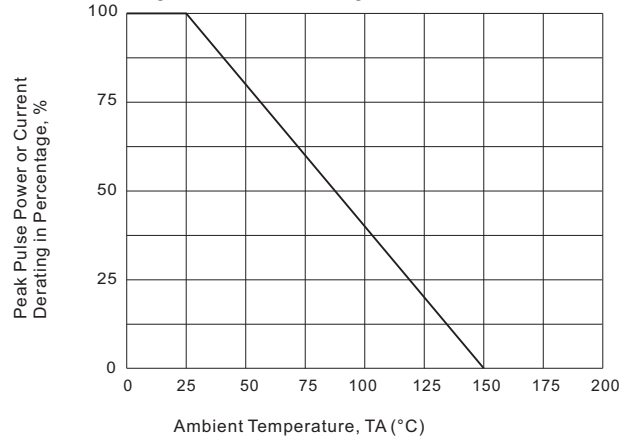


Fig.3 - Pulse Waveform

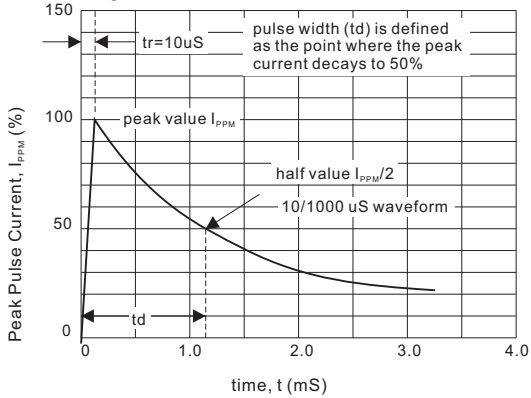


Fig.4 - Typical Junction Capacitance

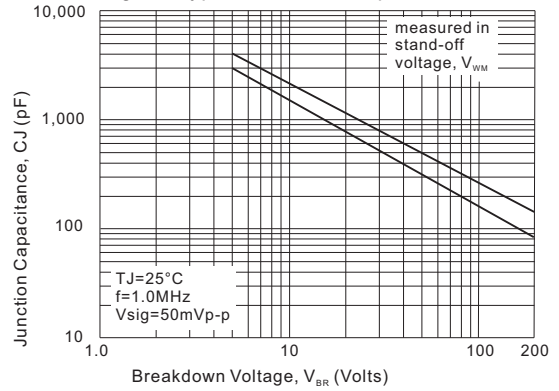


Fig.5 - Steady State Power Derating Curve

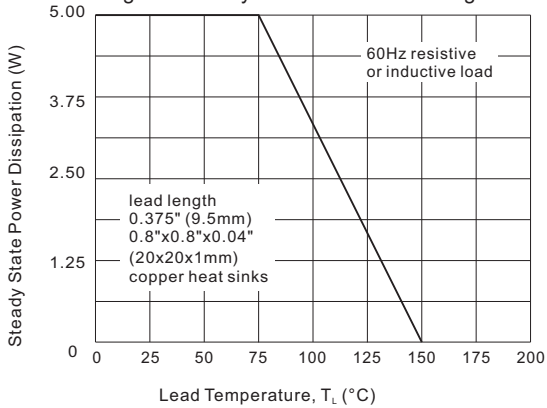


Fig.6 - Maximum Non-Repetitive Forward Surge Current

