

## 600W Surface Mount Transient Voltage Suppressor

### Features

- Stand-off voltage from 5.0 to 440 volts
- 600W Peak Pulse Power capability on 10/1000  $\mu$ s waveform repetition rate(duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0v to VBR
- Low incremental surge resistance, excellent clamping capability
- Typical IR less than 1 uA above 10V
- High temperature soldering guaranteed:250°C/10 seconds at terminals
- This series is UL recognized under component index. File number E315008
- RoHS Compliant

SMB



### Mechanical Data

<b>Case:</b>	SMB JEDEC DO-214AA molded plastic
<b>Epoxy:</b>	Meets UL 94V-0 flammability rating
<b>Terminals:</b>	Plated axial leads, solderable per MIL-STD-750, Method 2026
<b>Polarity:</b>	Cathode indicated by color band except Bi-directional
<b>Weight:</b>	0.003 ounces, 0.093 gram

### Maximum Ratings ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	Value	Unit	Conditions	
<b>V<sub>WM</sub></b>	Stand-Off Voltage	5.0 to 440	V		
<b>PPPM</b>	Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform	600 Minimum	W	Non-repetitive current pulse	
<b>IPPM</b>	Peak Pulse current on 10/1000 $\mu$ s waveform	See Table	A	Non-repetitive current pulse	
<b>PM(AV)</b>	Steady State Power Dissipation	5.0	W	At TL(Lead Temperature)=75°C (Note 1)	
<b>IFSM</b>	Peak Forward Surge Current	100	A	Note 1 & 2	
<b>V<sub>F</sub></b>	Maximum Instantaneous Forward Voltage	3.5	$V_{WM} < 200$	V	IF=50A, Unidirectional Only
		5.0	$V_{WM} \geq 200$		
<b>T<sub>J</sub>,T<sub>STG</sub></b>	Operating and Storage Temperature Range	-55 to 150	°C		

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## SMBJ5.0A -440CA

**Note:** (1) PCB mounted on copper pad area of 0.2" x 0.2" (5.0mmx5.0mm).  
 (2) 8.3ms single half sine-wave superimposed on rated load.

### Electrical Characteristics ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

P/N (note1)		Device Marking Code		Stand-Off Voltage	Breakdown Voltage @ Test Current			Max. Clamping Voltage @ IPPM	Max. Peak Pulse Current	Max. Reverse Leakage Current @ $V_{WM}$
					$V_{BR}$		I <sub>T</sub> (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	$V_{WM}$ (V)	Min.	Max.			$V_C$ (V)	IPPM (A)
SMBJ5.0A	SMBJ5.0CA	KE	KE	5.0	6.40	7.07	10	9.2	65.2	800/1600
SMBJ6.0A	SMBJ6.0CA	KG	KG	6.0	6.67	7.37	10	10.3	58.3	800/1600
SMBJ6.5A	SMBJ6.5CA	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500/1000
SMBJ7.0A	SMBJ7.0CA	KM	KM	7.0	7.78	8.60	10	12.0	50.0	200/400
SMBJ7.5A	SMBJ7.5CA	KP	AP	7.5	8.33	9.21	1.0	12.9	46.5	100/200
SMBJ8.0A	SMBJ8.0CA	KR	AR	8.0	8.89	9.83	1.0	13.6	44.1	50/100
SMBJ8.5A	SMBJ8.5CA	KT	AT	8.5	9.44	10.4	1.0	14.4	41.7	20
SMBJ9.0A	SMBJ9.0CA	KV	AV	9.0	10.0	11.1	1.0	15.4	39.0	10
SMBJ10A	SMBJ10CA	KX	AX	10	11.1	12.3	1.0	17.0	35.3	5.0
SMBJ11A	SMBJ11CA	KZ	KZ	11	12.2	13.5	1.0	18.2	33.0	5.0
SMBJ12A	SMBJ12CA	LE	BE	12	13.3	14.7	1.0	19.9	30.2	5.0
SMBJ13A	SMBJ13CA	LG	LG	13	14.4	15.9	1.0	21.5	27.9	1.0
SMBJ14A	SMBJ14CA	LK	BK	14	15.6	17.2	1.0	23.2	25.9	1.0
SMBJ15A	SMBJ15CA	LM	BM	15	16.7	18.5	1.0	24.4	24.6	1.0
SMBJ16A	SMBJ16CA	LP	LM	16	17.8	19.7	1.0	26.0	23.1	1.0
SMBJ17A	SMBJ17CA	LR	LR	17	18.9	20.9	1.0	27.6	21.7	1.0
SMBJ18A	SMBJ18CA	LT	BT	18	20.0	22.1	1.0	29.2	20.5	1.0
SMBJ20A	SMBJ20CA	LV	LV	20	22.2	24.5	1.0	32.4	18.5	1.0
SMBJ22A	SMBJ22CA	LX	BX	22	24.4	26.9	1.0	35.5	16.9	1.0
SMBJ24A	SMBJ24CA	LZ	BZ	24	26.7	29.5	1.0	38.9	15.4	1.0
SMBJ26A	SMBJ26CA	ME	CE	26	28.9	31.9	1.0	42.1	14.3	1.0
SMBJ28A	SMBJ28CA	MG	MG	28	31.1	34.4	1.0	45.4	13.2	1.0
SMBJ30A	SMBJ30CA	MK	CK	30	33.3	36.8	1.0	48.4	12.4	1.0
SMBJ33A	SMBJ33CA	MM	CM	33	36.7	40.6	1.0	53.3	11.3	1.0

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P/N		Device Marking Code		Stand-Off Voltage	Breakdown Voltage @ Test Current			Max. Clamping Voltage @ IPPM	Max. Peak Pulse Current	Max. Reverse Leakage Current @ V <sub>WM</sub>
					V <sub>BR</sub>		I <sub>T</sub> (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	V <sub>WM</sub> (Volts)	Min.	Max.		V <sub>C</sub> (Volts)	IPPM (Amps)	I <sub>D</sub> (μA)
SMBJ36A	SMBJ36CA	MP	CP	36	40.0	44.2	1.0			
SMBJ40A	SMBJ40CA	MR	CR	40	44.4	49.1	1.0	64.5	9.3	1.0
SMBJ43A	SMBJ43CA	MT	CT	43	47.8	52.8	1.0	69.4	8.6	1.0
SMBJ45A	SMBJ45CA	MV	MV	45	50.0	55.3	1.0	72.7	8.3	1.0
SMBJ48A	SMBJ48CA	MX	MX	48	53.3	58.9	1.0	77.4	7.8	1.0
SMBJ51A	SMBJ51CA	MZ	MZ	51	56.7	62.7	1.0	82.4	7.3	1.0
SMBJ54A	SMBJ54CA	NE	NE	54	60.0	66.3	1.0	87.1	6.9	1.0
SMBJ58A	SMBJ58CA	NG	NG	58	64.4	71.2	1.0	93.6	6.4	1.0
SMBJ60A	SMBJ60CA	NK	NK	60	66.7	73.7	1.0	96.8	6.2	1.0
SMBJ64A	SMBJ64CA	NM	NM	64	71.1	78.6	1.0	103	5.8	1.0
SMBJ70A	SMBJ70CA	NP	NP	70	77.8	86.0	1.0	113	5.3	1.0
SMBJ75A	SMBJ75CA	NR	NR	75	83.3	92.1	1.0	121	5.0	1.0
SMBJ78A	SMBJ78CA	NT	NT	78	86.7	95.8	1.0	126	4.8	1.0
SMBJ85A	SMBJ85CA	NV	NV	85	94.4	104	1.0	137	4.4	1.0
SMBJ90A	SMBJ90CA	NX	NX	90	100	111	1.0	146	4.1	1.0
SMBJ100A	SMBJ100CA	NZ	NZ	100	111	123	1.0	162	3.7	1.0
SMBJ110A	SMBJ110CA	PE	PE	110	122	135	1.0	177	3.4	1.0
SMBJ120A	SMBJ120CA	PG	PG	120	133	147	1.0	193	3.1	1.0
SMBJ130A	SMBJ130CA	PK	PK	130	144	159	1.0	209	2.9	1.0
SMBJ150A	SMBJ150CA	PM	PM	150	167	185	1.0	243	2.5	1.0
SMBJ160A	SMBJ160CA	PP	PP	160	178	197	1.0	259	2.3	1.0
SMBJ170A	SMBJ170CA	PR	PR	170	189	209	1.0	275	2.2	1.0
SMBJ180A*	SMBJ180CA*	PT	ET	180	201	222	1.0	292	2.1	1.0
SMBJ200A*	SMBJ200CA*	PV	EV	200	224	247	1.0	324	1.9	1.0

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					$V_{BR}$		$I_T$ (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	$V_{WM}$ (Volts)	Min.	Max.		$V_C$ (Volts)	IPP (Amps)	$I_D$ ( $\mu A$ )
SMBJ220A*	SMBJ220CA*	PX	EX	220	246	272	1.0			
SMBJ250A*	SMBJ250CA*	PZ	EZ	250	279	309	1.0	405	1.5	1.0
SMBJ300A*	SMBJ300CA*	QZ	FE	300	335	371	1.0	486	1.3	1.0
SMBJ350A*	SMBJ350CA*	QG	FG	350	391	432	1.0	567	1.1	1.0
SMBJ400A*	SMBJ400CA*	QK	FG	400	447	494	1.0	648	0.9	1.0
SMBJ440A*	SMBJ440CA*	QM	FM	440	492	543	1.0	713	0.9	1.0

- Note:**
1. For parts with suffix A, the  $V_{BR}$  is +/- 5%.
  2. For Bi-directional type having  $V_{WM}$  of 10V or less, the  $I_D$  limit is double.
  3. Part number with \*, don't get UL approval.

### Typical Characteristics Curves

Fig.1- Peak Pulse Power Derating Curve

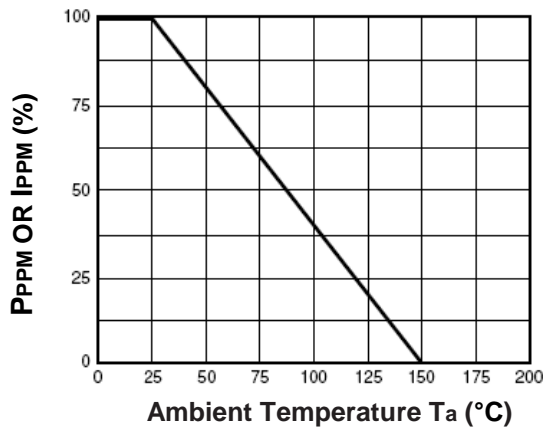
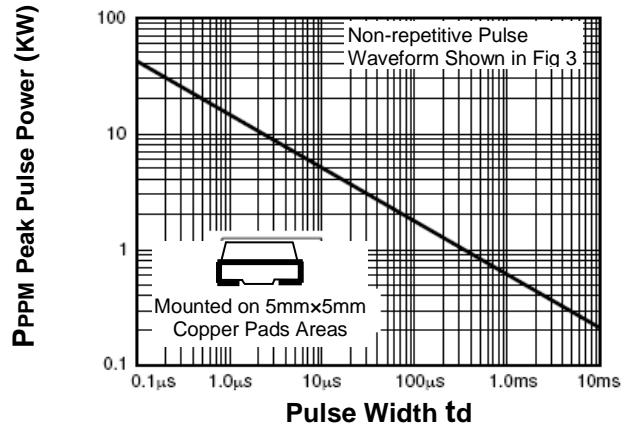


Fig.2- Peak Pulse Power Rating Curve



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## SMBJ5.0A -440CA

Fig.3- Pulse Waveform

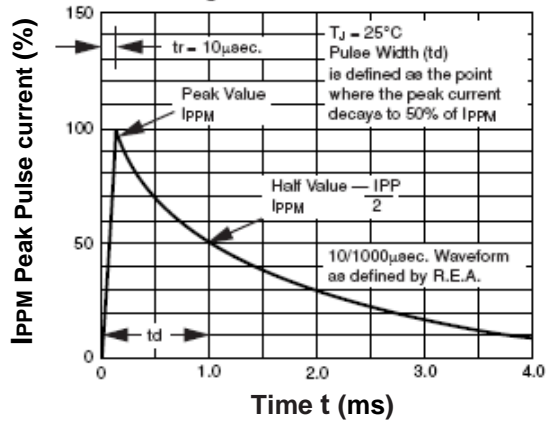


Fig.4- Max. Non-Repetitive Forward Surge Current

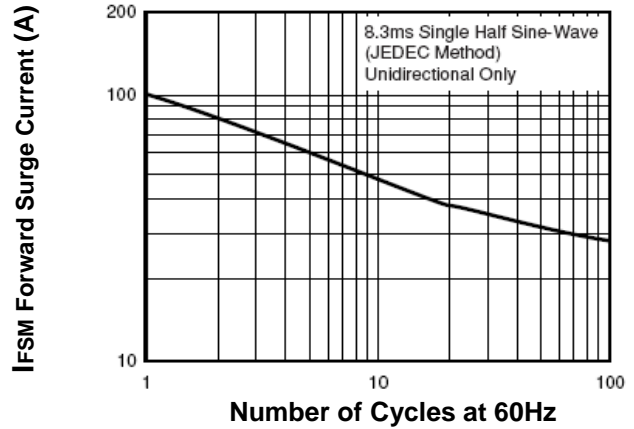


Fig.5- Capacitance for Uni-direction

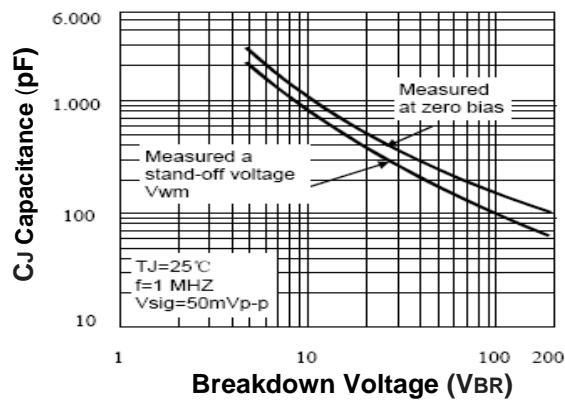
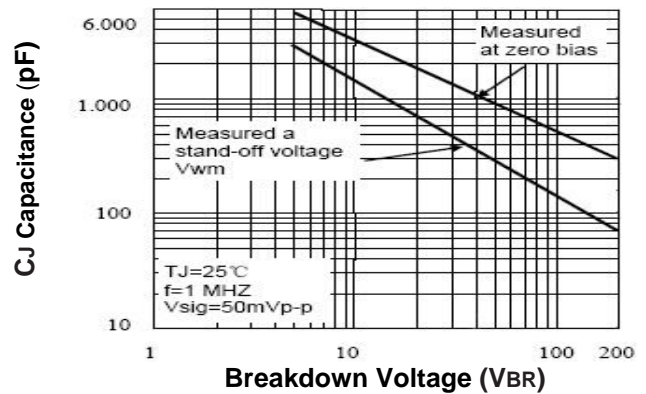
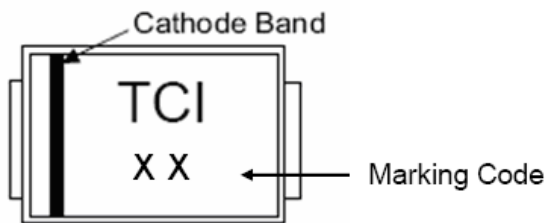


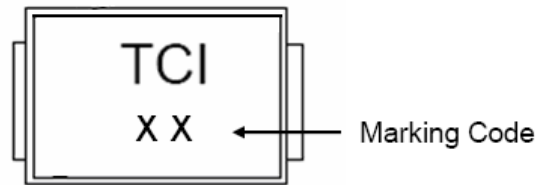
Fig.6- Capacitance for Bi-direction



### Marking Information:



Uni-directional

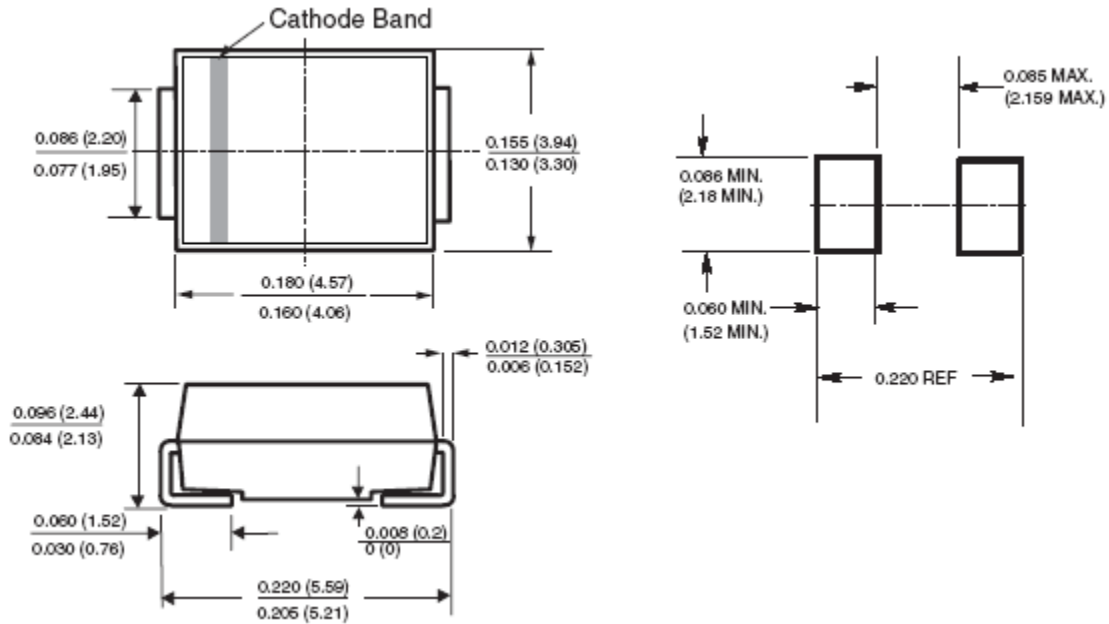


Bi-directional

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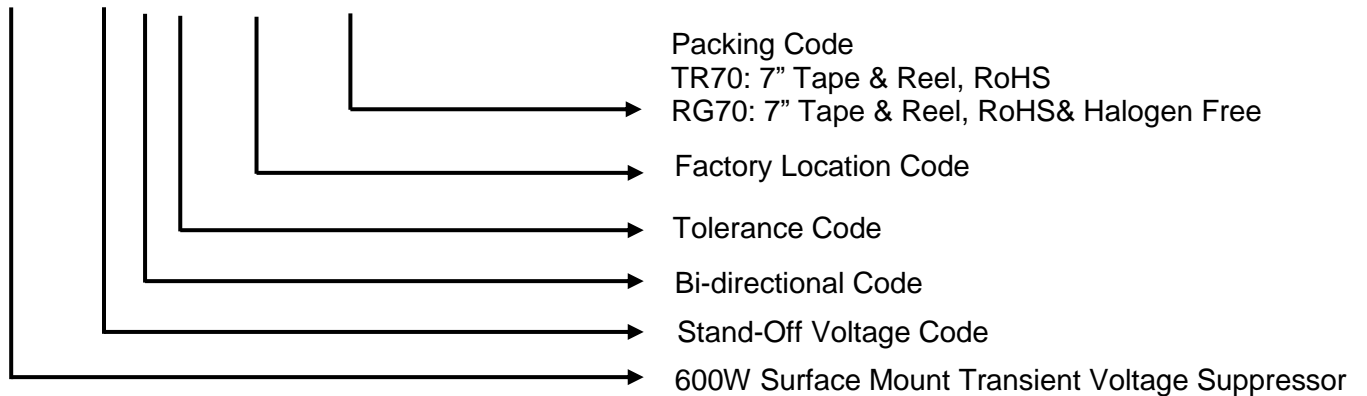
### Dimensions in inches (mm)



**SMB  
DO-214AA**

### Ordering Information

**SMBJ XX C A - XX - XX**



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**SMBJ5.0A -440CA**

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