

**400W Surface Mount Transient Voltage Suppressor**

**Features**

SMA



- Stand-off voltage from 5.0 to 170 volts
- 400W Peak Pulse Power capability on 10/1000  $\mu$ s waveform repetition rate(duty cycle): 0.01%
- Ideal for ESD protection of data lines in accordance with IEC 1000-4-2 (IEC801-2)
- Ideal for EFT protection of data lines in accordance with IEC 1000-4-4 (IEC801-4)
- Fast response time: typically less than 1.0ps from 0v to VBR
- Low incremental surge resistance, excellent clamping capability
- Typical IR less than 1  $\mu$ A 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

**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 170	V	
<b>PPPM</b>	Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform	Minimum 400	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	1.0	W	At TL(Lead Temperature)=75°C ( <b>Note 1</b> )
<b>IFSM</b>	Peak Forward Surge Current	40.0	A	8.3ms single half sine-wave superimposed on rated load (uni-direction only), TL=75°C
<b>V<sub>F</sub></b>	Maximum Instantaneous Forward Voltage	3.5	V	8.3ms single half sine-wave (uni-direction only), TL=75°C
<b>T<sub>J</sub>,T<sub>STG</sub></b>	Operating Junction and Storage Temperature Range	-55 to 150	° C	

**Note:** (1) Mounted on copper pad area of 0.2" x 0.2" (5.0mmx5.0mm).

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## SMAJ5.0A~170CA

### Mechanical Data

<b>Case:</b>	JEDEC DO-214AC 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
<b>Mounting position:</b>	Any
<b>Weight:</b>	0.002 ounces, 0.064 gram

### 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 @ $V_{WM}$	
					$V_{BR}$		$I_T$ (mA)				
Uni-Polar	Bi-Polar	Uni	Bi	$V_{WM}$ (V)	Min.	Max.		$V_C$ (V)	IPPM (A)	$I_D$ ( $\mu$ A) (note2)	
SMAJ5.0A	SMAJ5.0CA	AE	WE	5.0	6.4	7.08	10	9.2	43.5	800/1600	
SMAJ6.0A	SMAJ6.0CA	AG	WG	6.0	6.67	7.37		10.3	38.8	800/1600	
SMAJ6.5A	SMAJ6.5CA	AK	WK	6.5	7.22	7.98		11.2	35.7	500/1000	
SMAJ7.0A	SMAJ7.0CA	AM	WM	7.0	7.78	8.6		12.0	33.3	200/400	
SMAJ7.5A	SMAJ7.5CA	AP	WP	7.5	8.33	9.21	1.0	12.9	31.0	100/200	
SMAJ8.0A	SMAJ8.0CA	AR	WR	8.0	8.89	9.83		13.6	29.4	50/100	
SMAJ8.5A	SMAJ8.5CA	AT	WT	8.5	9.44	10.4		14.4	27.8	10/20	
SMAJ9.0A	SMAJ9.0CA	AV	WV	9.0	10.0	11.1	1.0	15.4	26.0	5/10	
SMAJ10A	SMAJ10CA	AX	WX	10	11.1	12.3		17.0	23.5	1/2	
SMAJ11A	SMAJ11CA	AZ	WZ	11	12.2	13.5		1.0	18.2	22.0	1.0
SMAJ12A	SMAJ12CA	BE	XE	12	13.3	14.7			19.9	20.1	
SMAJ13A	SMAJ13CA	BG	XG	13	14.4	15.9			21.5	18.6	
SMAJ14A	SMAJ14CA	BK	XK	14	15.6	17.2		1.0	23.2	17.2	1.0
SMAJ15A	SMAJ15CA	BM	XM	15	16.7	18.5			24.4	16.4	
SMAJ16A	SMAJ16CA	BP	XP	16	17.8	19.7			26.0	15.4	
SMAJ17A	SMAJ17CA	BR	XR	17	18.9	20.9	27.6		14.5		

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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 @ $V_{WM}$
					$V_{BR}$		$I_T$ (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	$V_{WM}$ (V)	Min.	Max.		$V_C$ (V)	IPPM (A)	$I_D$ ( $\mu$ A)
SMAJ18A	SMAJ18CA	BT	XT	18	20.0	22.1	1.0	29.2	13.7	1.0
SMAJ20A	SMAJ20CA	BV	XV	20	22.2	24.5		32.4	12.3	
SMAJ22A	SMAJ22CA	BX	XX	22	24.4	26.9		35.5	11.3	
SMAJ24A	SMAJ24CA	BZ	XZ	24	26.7	29.5		38.9	10.3	
SMAJ26A	SMAJ26CA	CE	YE	26	28.9	31.9	1.0	42.1	9.5	1.0
SMAJ28A	SMAJ28CA	CG	YG	28	31.1	34.4		45.4	8.8	
SMAJ30A	SMAJ30CA	CK	YK	30	33.3	36.8		48.4	8.3	
SMAJ33A	SMAJ33CA	CM	YM	33	36.7	40.6		53.3	7.5	
SMAJ36A	SMAJ36CA	CP	YP	36	40.0	44.2	1.0	58.1	6.9	1.0
SMAJ40A	SMAJ40CA	CR	YR	40	44.4	49.1		64.5	6.2	
SMAJ43A	SMAJ43CA	CT	YT	43	47.8	52.8		69.4	5.8	
SMAJ45A	SMAJ45CA	CV	YV	45	50.0	55.3		72.7	5.5	
SMAJ48A	SMAJ48CA	CX	YX	48	53.3	58.9	1.0	77.4	5.2	1.0
SMAJ51A	SMAJ51CA	CZ	YZ	51	56.7	62.7		82.4	4.9	
SMAJ54A	SMAJ54CA	RE	ZE	54	60.0	66.3		87.1	4.6	
SMAJ58A	SMAJ58CA	RG	ZG	58	64.4	71.2		93.6	4.3	
SMAJ60A	SMAJ60CA	RK	ZK	60	66.7	73.7	1.0	96.8	4.1	1.0
SMAJ64A	SMAJ64CA	RM	ZM	64	71.1	78.6		103.0	3.9	
SMAJ70A	SMAJ70CA	RP	ZP	70	77.8	86.0		113.0	3.5	
SMAJ75A	SMAJ75CA	RR	ZR	75	83.3	92.1		121.0	3.3	
SMAJ78A	SMAJ78CA	RT	ZT	78	86.7	95.8	1.0	126.0	3.2	1.0
SMAJ85A	SMAJ85CA	RV	ZV	85	94.4	104		137.0	2.9	
SMAJ90A	SMAJ90CA	RX	ZX	90	100	111		146.0	2.7	

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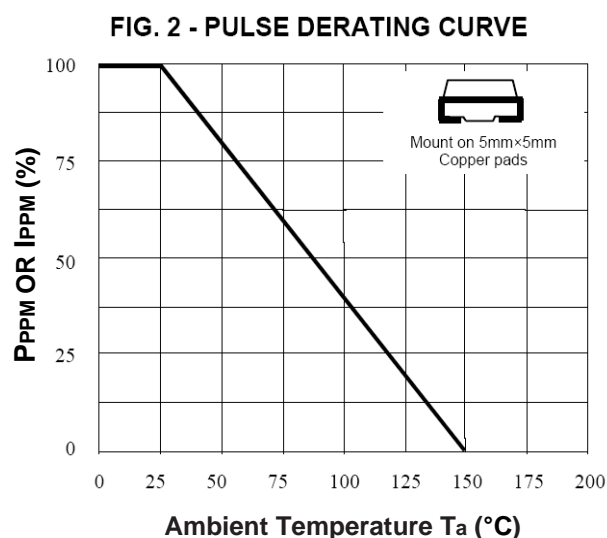
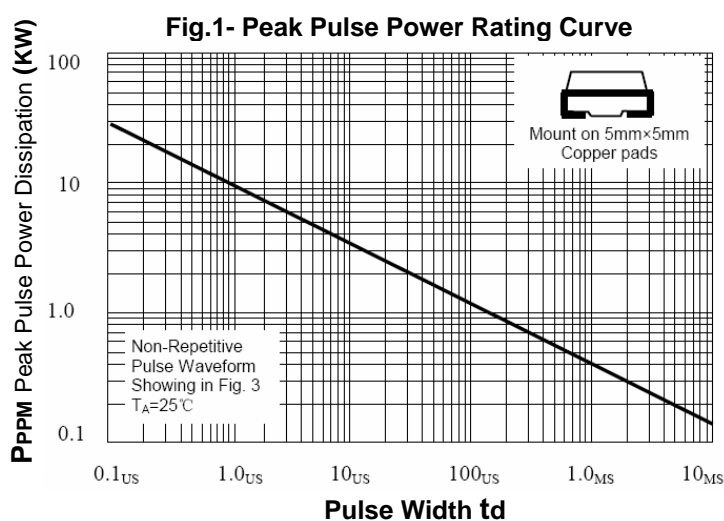
## SMAJ5.0A~170CA

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

P/N		Device Marking Code		Stand-Off Voltage	Breakdown Voltage @ Test Curr.			Max. Clamping Vltg. @ IPPM	Max. Peak Pulse Current	Max. Reverse Leakage Current @ $V_{WM}$
					$V_{BR}$		$I_T$ (mA)			
Uni-Polar	Bi-Polar	Uni	Bi	$V_{WM}$ (V)	Min.	Max.		$V_C$ (V)	IPPM (A)	$I_D$ ( $\mu$ A)
SMAJ100A	SMAJ100CA	RZ	ZZ	100	111	123	1.0	162.0	2.5	1.0
SMAJ110A	SMAJ110CA	SE	VE	110	122	135		177.0	2.3	
SMAJ120A	SMAJ120CA	SG	VG	120	133	147		193.0	2.1	
SMAJ130A	SMAJ130CA	SK	VK	130	144	159		209.0	1.9	
SMAJ150A	SMAJ150CA	SM	VM	150	167	185	1.0	243.0	1.6	1.0
SMAJ160A	SMAJ160CA	SP	VP	160	178	197		259.0	1.5	
SMAJ170A	SMAJ170CA	SR	VR	170	189	209		275.0	1.4	

- 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.

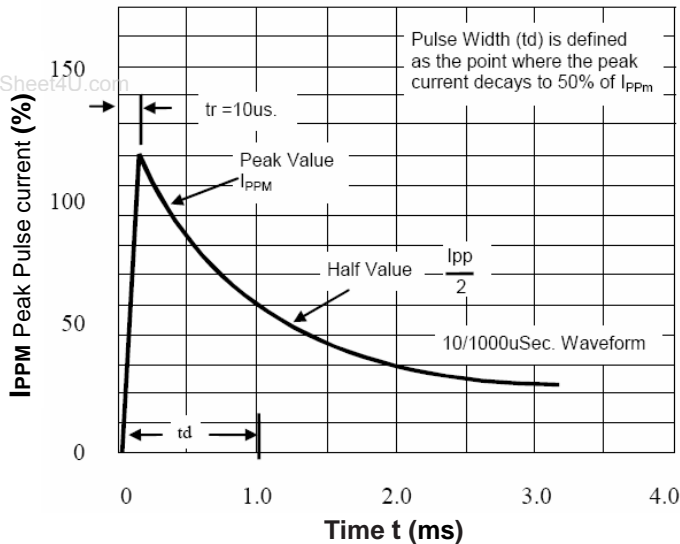
### Typical Characteristics Curves



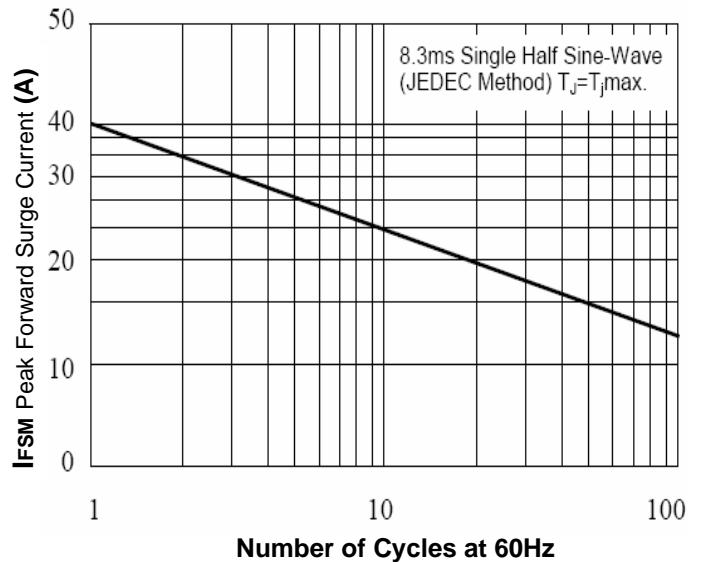
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## SMAJ5.0A~170CA

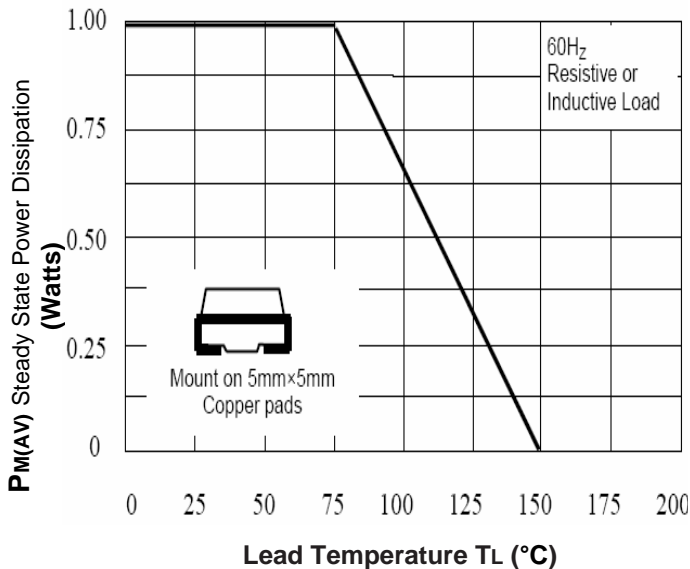
**Fig.3- Pulse Waveform**



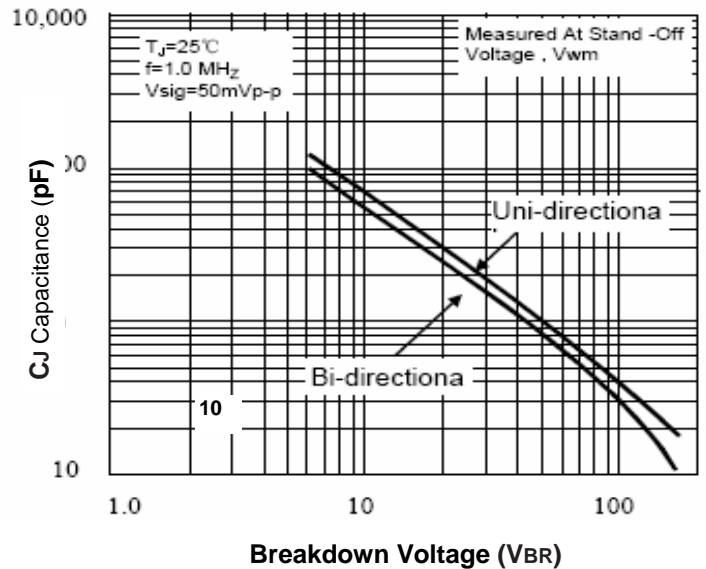
**Fig.4- Max. Non-Repetitive Forward Surge Current Uni-directional only**



**Fig.5- Steady State Power Derating Curve**



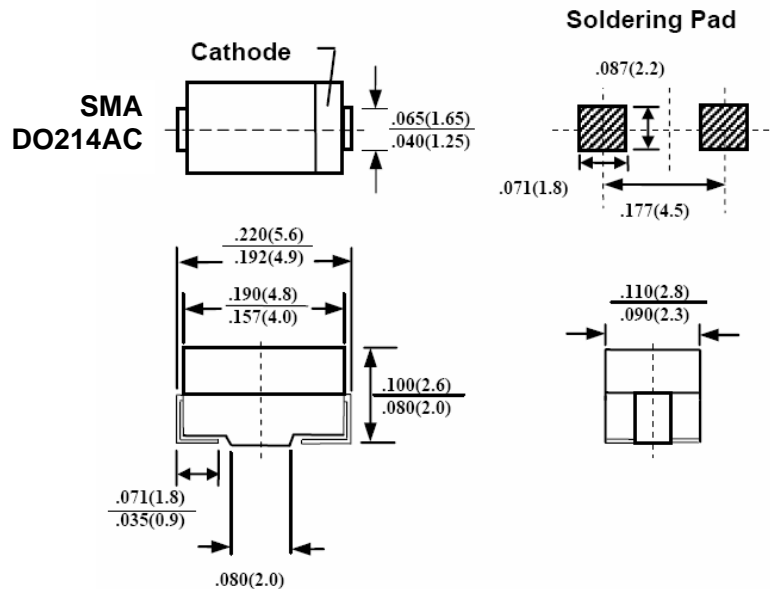
**Fig.6- Capacitance**



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### Dimensions



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