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Microsemi
Progress Powered by Technology

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SMAJ5.0 THRU SMAJ170CA

500 Watt Transient Voltage Suppressor 5.0 to 170 Volts

Features

- For Surface Mount Applications (flat handling surface for accurate placement)
- Available as a undirectional or bidirectional device
- Fast response time: typically less than 1.0ps from 0 volts to V_{BR} minimum
- Suppresses transients up to 500W @ 1.0 ms including ESD per human body model test above 16 kv (class 3)
- Available on Tape and Reel.

Mechanical Data

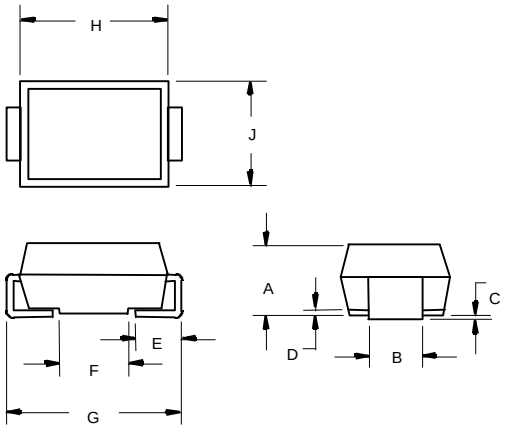
- Package similar to JEDEC DO-214AC (see dimension 'A' note)
- Terminals solderable per MIL-STD-750, Method 2026
- Polarity is indicated by cathode band. Bidirectional devices have no polarity band.
- Maximum temperature for soldering: 260°C for 10 seconds.

Maximum Ratings @ 25 °C Unless Otherwise Specified

Peak Pulse Power Dissipation	P_{PP}	500W	(Note: 1,5)
Peak Forward Surge Current	I_{FSM}	40A	(Note: 3)
Peak Pulse Current On 10/1000µs Waveform	I_{PP}	See Table 1	(Note:1)
Steady State Power Dissipation	$P_{(AV)}$	1.0W	(Note: 2,4)
Operating And Storage Temperatures	T_J , T_{STG}	-55°C to +150°C	
Thermal Resistance	$R_{\theta JL}$	25°C/W	

NOTES:
1. Non-repetitive current pulse, per Figure 2 and derated above T_A=25°C per Figure 1.
2. Mounted on 4.0mm^2 copper pads to each terminal.
3. 8.3ms single half sine wave duty cycle = 4 pulses per minute maximum. Peak forward voltage at 40A is 3.5 volts (unipolar only).
4. Lead temperature at 75°C = T_L.
5. Peak pulse current waveform is 10/1000µs. with maximum duty cycle of 0.01%

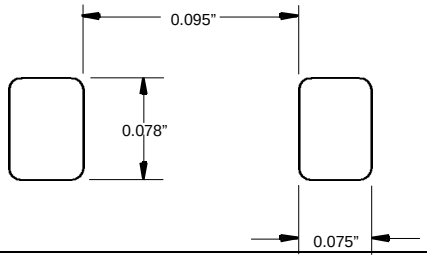
DO-214AC
(SMAJ)



DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
A	.078	.115	1.98	2.92	1
B	.052	.058	1.32	1.47	
C	---	.005	---	.127	
D	---	.02	---	.51	
E	.030	.060	.76	1.52	
F	.055	.075	1.65	2.13	
G	.194	.216	4.93	5.48	
H	.160	.180	3.99	4.50	
J	.100	.110	2.57	2.79	

NOTE 1: THIS MAXIMUM DIMENSION IS LARGER THAN THE STANDARD JEDEC CALL OUT. STANDARD JEDEC IS .105 INCHES OR 2.66 MM.

PAD LAYOUT



Electrical Characteristics @ 25 °C Unless Otherwise Specified

PART NUMBER	WORKING PEAK REVERSE VOLTAGE V_{WM} (V)	BREAKDOWN VOLTAGE V_{BR} MIN @ I_T (V)	TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C (V)	PEAK PULSE CURRENT I_{PP} (A)	MAXIMUM REVERSE LEAKAGE @ V_{WM} I_D (µA)
SMAJ5.0	5.0	6.40	10	9.6	52	800
SMAJ5.0A	5.0	6.40	10	9.2	54.3	800
SMAJ6.0	6.0	6.67	10	11.4	43.9	800
SMAJ6.0A	6.0	6.67	10	10.3	48.5	800
SMAJ6.5	6.5	7.22	10	12.3	40.7	500
SMAJ6.5A	6.5	7.22	10	11.2	44.7	500
SMAJ7.0	7.0	7.78	10	13.3	37.8	200
SMAJ7.0A	7.0	7.78	10	12.0	41.7	200
SMAJ7.5	7.5	8.33	1	14.3	35.0	100
SMAJ7.5A	7.5	8.33	1	12.9	38.8	100
SMAJ8.0	8.0	8.89	1	15.0	33.3	50
SMAJ8.0A	8.0	8.89	1	13.6	36.7	50
SMAJ8.5	8.5	9.44	1	15.9	31.4	10
SMAJ8.5A	8.5	9.44	1	14.4	34.7	10
SMAJ9.0	9.0	10.0	1	16.9	29.5	5
SMAJ9.0A	9.0	10.0	1	15.4	32.5	5
SMAJ10	10	11.1	1	18.8	26.6	5
SMAJ10A	10	11.1	1	17.0	29.4	5
SMAJ11	11	12.2	1	20.1	24.9	5
SMAJ11A	11	12.2	1	18.2	27.4	5
SMAJ12	12	13.3	1	22.0	22.7	5
SMAJ12A	12	13.3	1	19.9	25.1	5
SMAJ13	13	14.4	1	23.8	21.0	5
SMAJ13A	13	14.4	1	21.5	23.2	5
SMAJ14	14	15.6	1	25.8	19.4	5
SMAJ14A	14	15.6	1	23.2	21.5	5
SMAJ15	15	16.7	1	26.9	18.8	5
SMAJ15A	15	16.7	1	24.4	20.6	5
SMAJ16	16	17.8	1	28.8	17.6	5
SMAJ16A	16	17.8	1	26.0	19.2	5
SMAJ17	17	18.9	1	30.5	16.4	5
SMAJ17A	17	18.9	1	27.6	18.1	5
SMAJ18	18	20.0	1	32.2	15.5	5
SMAJ18A	18	20.0	1	29.2	17.2	5
SMAJ20	20	22.2	1	35.8	13.9	5
SMAJ20A	20	22.2	1	32.4	15.4	5
SMAJ22	22	24.4	1	39.4	12.7	5
SMAJ22A	22	24.4	1	35.5	14.1	5
SMAJ24	24	26.7	1	43.0	11.6	5
SMAJ24A	24	26.7	1	38.9	12.8	5
SMAJ26	26	28.9	1	46.6	10.7	5
SMAJ26A	26	28.9	1	42.1	11.9	5
SMAJ28	28	31.1	1	50.0	9.9	5
SMAJ28A	28	31.1	1	45.4	11.0	5
SMAJ30	30	33.3	1	53.5	9.3	5
SMAJ30A	30	33.3	1	48.4	10.3	5
SMAJ33	33	36.7	1	59.0	8.5	5
SMAJ33A	33	36.7	1	53.3	9.4	5
SMAJ36	36	40.0	1	64.3	9.8	5
SMAJ36A	36	40.0	1	58.1	8.6	5
SMAJ40	40	44.4	1	71.4	7.0	5
SMAJ40A	40	44.4	1	64.5	7.8	5

NOTE 1 : Non "A" parts have higher clamping voltage. Order with "C" or "CA" suffix for bidirectional types. Device marking code does not include the SMAJ prefix (ex: the SMAJ5.0A is marked only as 5.0A).

Electrical Characteristics @ 25 °C Unless Otherwise Specified

PART NUMBER	WORKING PEAK REVERSE VOLTAGE V_{WM} (V)	BREAKDOWN VOLTAGE V_{BR} MIN @ I_T (V)	TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ I_{PP} Vc (V)	PEAK PULSE CURRENT I_{PP} (A)	MAXIMUM REVERSE LEAKAGE @ V_{WM} I_D (µA)
SMAJ43	43	47.8	1	76.7	6.5	5
SMAJ43A	43	47.8	1	69.4	7.2	5
SMAJ45	45	50.0	1	80.3	6.2	5
SMAJ45A	45	50.0	1	72.7	6.9	5
SMAJ48	48	53.3	1	85.5	5.8	5
SMAJ48A	48	53.3	1	77.4	6.5	5
SMAJ51	51	56.7	1	91.1	5.5	5
SMAJ51A	51	56.7	1	82.4	6.1	5
SMAJ54	54	60.0	1	96.3	5.2	5
SMAJ54A	54	60.0	1	87.1	5.7	5
SMAJ58	58	64.4	1	103.0	4.9	5
SMAJ58A	58	64.4	1	93.6	5.3	5
SMAJ60	60	66.7	1	107.0	4.7	5
SMAJ60A	60	66.7	1	96.8	5.2	5
SMAJ64	64	71.1	1	114.0	4.4	5
SMAJ64A	64	71.1	1	103.0	4.9	5
SMAJ70	70	77.8	1	125	4.0	5
SMAJ70A	70	77.8	1	113	4.4	5
SMAJ75	75	83.3	1	134	3.7	5
SMAJ75A	75	83.3	1	121	4.1	5
SMAJ78	78	86.7	1	139	3.6	5
SMAJ78A	78	86.7	1	126	4.0	5
SMAJ85	85	94.4	1	151	3.3	5
SMAJ85A	85	94.4	1	137	3.6	5
SMAJ90	90	100	1	160	3.1	5
SMAJ90A	90	100	1	146	3.4	5
SMAJ100	100	111	1	179	2.8	5
SMAJ100A	100	111	1	162	3.1	5
SMAJ110	110	122	1	196	2.6	5
SMAJ110A	110	122	1	177	2.8	5
SMAJ120	120	133	1	214	2.3	5
SMAJ120A	120	133	1	193	2.6	5
SMAJ130	130	144	1	231	2.2	5
SMAJ130A	130	144	1	209	2.4	5
SMAJ150	150	167	1	268	1.9	5
SMAJ150A	150	167	1	243	2.1	5
SMAJ160	160	178	1	287	1.7	5
SMAJ160A	160	178	1	259	1.9	5
SMAJ170	170	189	1	304	1.6	5
SMAJ170A	170	189	1	275	1.8	5

NOTE 1 : Non "A" parts have higher clamping voltage. Order with "C" or "CA" suffix for bidirectional types. Device marking code does not include the SMAJ prefix (ex: the SMAJ5.0A is marked only as 5.0A).

SMAJ5.0 thru SMAJ170CA

Figure 1
Derating Curve

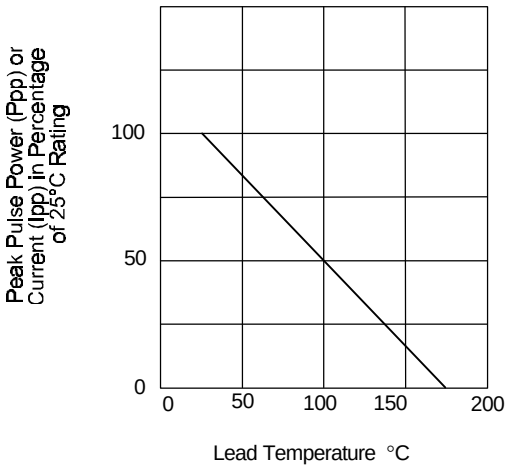
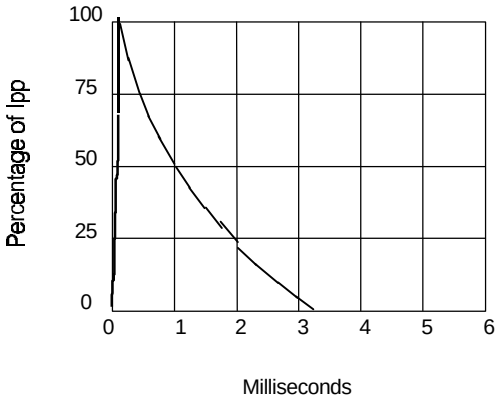
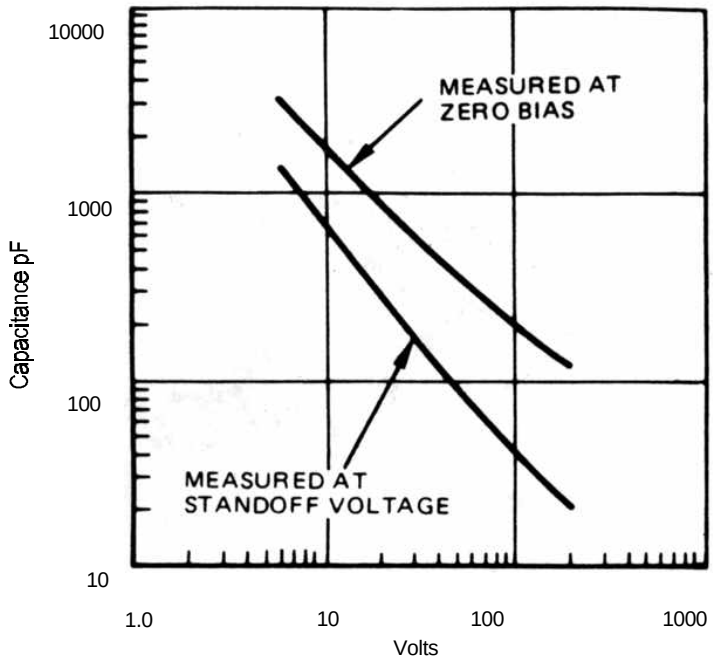


Figure 2
Pulse Waveform For Exponential Surge



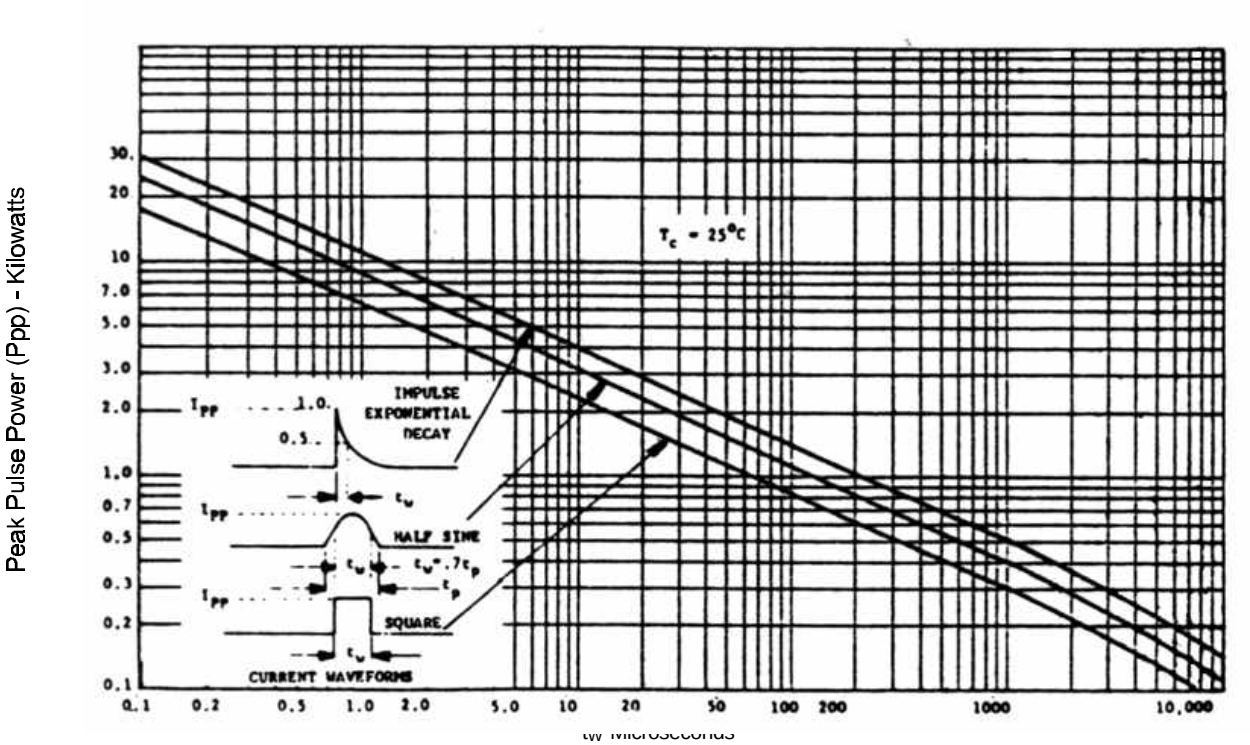
Pulse Current (I_P) In Percentage Of I_{PP} - Amperes *versus* Time (t) - Milliseconds

Figure 3
Typical Capacitance versus Breakdown Voltage



Typical Capacitance (pF) - picofarads *versus* Breakdown Voltage (V_{BR}) - Volts

Figure 4
Peak Pulse Power versus Pulse Width



Peak Pulse Power(P_{PP}) - Kilowatts *versus*
Pulse Width (t_W) - Microseconds