



## Transient Voltage Suppressor

**Breakdown Voltage 6.8 to 400 Volts**  
**Peak Pulse Power 400 Watts**

### Features

- Breakdown Voltages ( $V_{BR}$ ) from 6.8 to 400V
- 400W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle): 0.01%
- Fast Response Time
- Low incremental surge resistance
- Excellent clamping capability
- Available in uni-directional and bi-directional
- High temperature soldering guaranteed: 265 $^{\circ}$ C / 10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3kg) tension

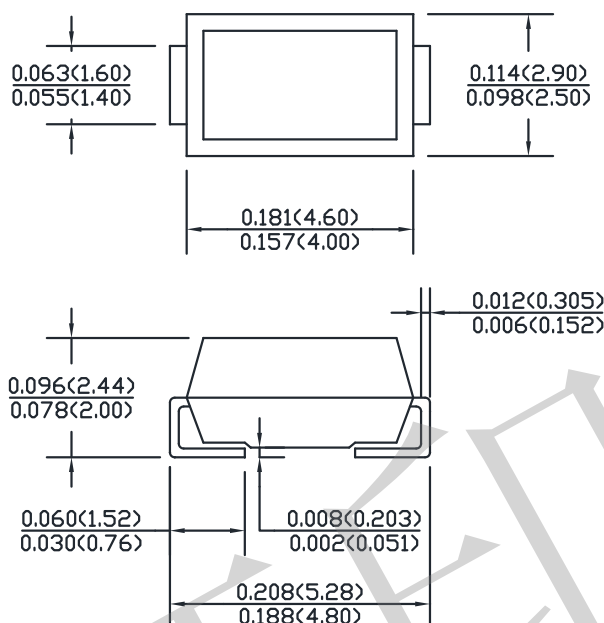
### Application

- Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFE, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication

### Mechanical Data

- **Case:** Void-free transfer molded thermosetting epoxy body meeting UL94V-O
- **Terminals:** Tin-Lead or ROHS Compliant annealed matte-Tin plating readily solderable per MIL-STD-750, Method 2026
- **Marking:** Body marked with part number
- **Polarity:** Cathode indicated by band. No marking on bi-directional devices
- **Weight:** 0.053g (Approximately)

#### CASE: SMA (DO214AC)



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics @ 25 $^{\circ}$ C unless otherwise specified

Symbol	Conditions	Value	Unit
$P_{PPM}$	Peak pulse power capability with a 10/1000 $\mu$ s	400	W
$I_{PPM}$	Peak pulse current with a 10/1000 $\mu$ s	SEE TABLE 1	A
$P_{M(AV)}$	Steady state power dissipation at $T_L=65^{\circ}$ C, Lead lengths 0.375" (10mm)	5.0	W
	Steady state power dissipation at $T_A=25^{\circ}$ C when mounted on FR4 PC described for thermal resistance	1.52	W
$I_{FSM}$	Peak forward surge current, 8.3ms single half sine-wave unidirectional only(1)	40	A
$V_F$	Maximum instantaneous forward voltage at 30A for unidirectional only(2)	3.5/5.0	V
$R_{\theta JL}$	Thermal resistance junction to lead	17	$^{\circ}$ C/W
$R_{\theta JA}$	Thermal resistance junction to ambient	82	$^{\circ}$ C/W
$T_J, T_{STG}$	Operating and Storage Temperature	-65 to +150	$^{\circ}$ C

#### Notes:

- (1) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum
- (2)  $V_F=3.5V$  for SMAJP4KE220(A) and below;  $V_F=5.0V$  for SMAJP4KE250(A) and above

**Electrical Characteristics @ 25°C (Unless Otherwise Noted) TABLE1**

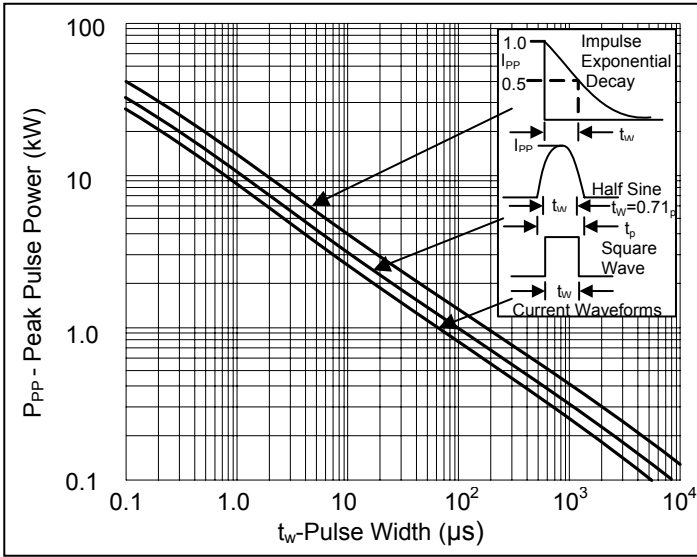
Type Number	Breakdown Voltage $V_{BR}$ @ $I_{BR}$			Rated Stand Off Voltage	Maximum Standby current $I_D$ @ $V_{WM}$	Maximum Peak Pulse Current	Maximum Clamping Voltage $V_C$ @ $I_{PP}$	Maximum Temperature Coefficient of $V_{(BR)}$
	MIN	MAX						
	$V_{BR}(V)$		$I_{BR}(mA)$					
SMAJP4KE6.8	6.12	7.48	10	5.50	500	37.0	10.8	.057
SMAJP4KE6.8A	6.45	7.14	10	5.80	500	38.0	10.5	.057
SMAJP4KE7.5	6.75	8.25	10	6.05	200	34.0	11.7	.061
SMAJP4KE7.5A	7.13	7.88	10	6.40	200	35.0	11.3	.061
SMAJP4KE8.2	7.38	9.02	10	6.63	100	32.0	12.5	.065
SMAJP4KE8.2A	7.79	8.61	10	7.02	100	33.0	12.1	.065
SMAJP4KE9.1	8.19	10.0	1	7.37	20	29.0	13.8	.068
SMAJP4KE9.1A	8.65	9.55	1	7.78	20	30.0	13.4	.068
SMAJP4KE10	9.00	11.0	1	8.10	20	27.0	15.0	.073
SMAJP4KE10A	9.50	10.5	1	8.55	5	28.0	14.5	.073
SMAJP4KE11	9.90	12.1	1	8.92	2	25.0	16.2	.075
SMAJP4KE11A	10.5	11.6	1	9.40	2	26.0	15.6	.075
SMAJP4KE12	10.8	13.2	1	9.72	1	23.0	17.3	.078
SMAJP4KE12A	11.4	12.6	1	10.2	1	24.0	16.7	.078
SMAJP4KE13	11.7	14.3	1	10.5	1	21.0	19.0	.081
SMAJP4KE13A	12.4	13.7	1	11.1	1	22.0	18.2	.081
SMAJP4KE15	13.5	16.5	1	12.1	1	18.0	22.0	.084
SMAJP4KE15A	14.3	15.8	1	12.8	1	19.0	21.2	.084
SMAJP4KE16	14.4	17.6	1	12.9	1	17.0	23.5	.086
SMAJP4KE16A	15.2	16.8	1	13.6	1	18.0	22.5	.086
SMAJP4KE18	16.2	19.8	1	14.5	1	15.0	26.5	.088
SMAJP4KE18A	17.1	18.0	1	15.3	1	16.0	25.2	.088
SMAJP4KE20	18.0	22.0	1	16.2	1	14.0	29.1	.090
SMAJP4KE20A	19.0	21.0	1	17.1	1	14.5	27.7	.090
SMAJP4KE22	19.8	24.2	1	17.8	1	12.5	31.9	.092
SMAJP4KE22A	20.9	23.1	1	18.8	1	13.0	30.6	.092
SMAJP4KE24	21.6	26.4	1	19.4	1	11.5	34.7	.094
SMAJP4KE24A	22.8	25.2	1	20.5	1	12.0	33.2	.094
SMAJP4KE27	24.3	29.7	1	21.8	1	10.0	39.1	.096
SMAJP4KE27A	25.7	28.4	1	23.1	1	11.0	37.5	.096
SMAJP4KE30	27.0	33.0	1	24.3	1	9.0	43.5	.097
SMAJP4KE30A	28.5	31.5	1	25.6	1	9.5	41.4	.097
SMAJP4KE33	29.7	36.3	1	26.8	1	8.5	47.7	.098
SMAJP4KE33A	31.4	34.7	1	28.2	1	9.0	45.7	.098
SMAJP4KE36	32.4	39.6	1	29.1	1	7.5	52.0	.099
SMAJP4KE36A	34.2	37.8	1	30.8	1	8.0	49.9	.099
SMAJP4KE39	35.1	42.9	1	31.6	1	7.0	56.4	.100
SMAJP4KE39A	37.1	41.0	1	33.3	1	7.5	53.9	.100
SMAJP4KE43	38.7	47.3	1	34.8	1	6.5	61.9	.101
SMAJP4KE43A	40.9	45.2	1	36.8	1	7.0	59.3	.101
SMAJP4KE47	42.3	51.7	1	38.1	1	5.9	67.8	.101
SMAJP4KE47A	44.7	49.4	1	40.2	1	6.2	64.8	.101
SMAJP4KE51	45.9	56.1	1	41.3	1	5.4	73.5	.102
SMAJP4KE51A	48.5	53.6	1	43.6	1	5.7	70.1	.102
SMAJP4KE56	50.4	61.6	1	45.4	1	5.0	80.5	.103
SMAJP4KE56A	53.2	58.8	1	47.8	1	5.2	77.0	.103
SMAJP4KE62	55.8	68.2	1	50.2	1	4.5	89.0	.104
SMAJP4KE62A	58.9	65.1	1	53.0	1	4.7	85.0	.104
SMAJP4KE68	61.2	74.8	1	55.1	1	4.1	98.0	.104
SMAJP4KE68A	64.6	71.4	1	58.1	1	4.4	92.0	.104
SMAJP4KE75	67.5	82.5	1	60.7	1	3.7	108.0	.105
SMAJP4KE75A	71.3	78.8	1	64.1	1	3.9	103.0	.105

**Electrical Characteristics @ 25°C (Unless Otherwise Noted) TABLE1**

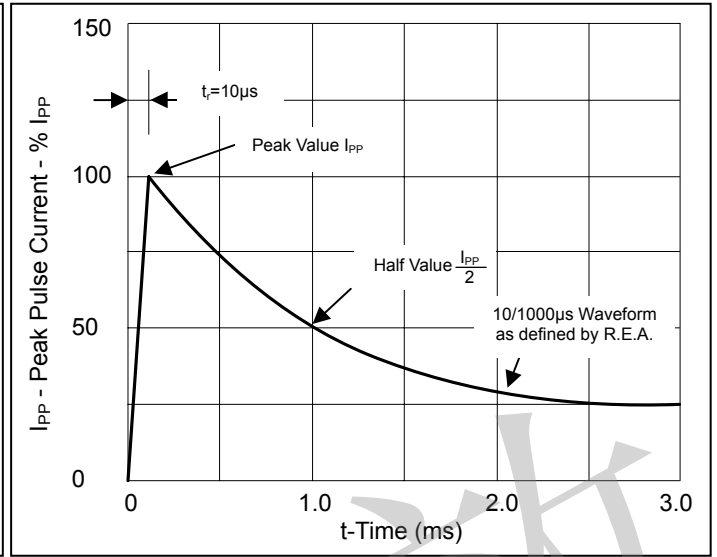
Type Number	Breakdown Voltage $V_{BR}$ @ $I_{BR}$			Rated Stand Off Voltage	Maximum Standby current $I_D$ @ $V_{WM}$	Maximum Peak Pulse Current	Maximum Clamping Voltage $V_C$ @ $I_{PP}$	Maximum Temperature Coefficient of $V_{BR}$
	MIN	MAX						
	$V_{BR}(V)$		$I_{BR}(mA)$					
SMAJP4KE82	73.8	90.2	1	66.4	1	3.4	118.0	.105
SMAJP4KE82A	77.9	86.1	1	70.1	1	3.5	113.0	.105
SMAJP4KE91	81.9	100.0	1	73.7	1	3.1	131.0	.106
SMAJP4KE91A	86.5	95.5	1	77.8	1	3.2	125.0	.106
SMAJP4KE100	90.0	110.0	1	81.0	1	2.8	144.0	.106
SMAJP4KE100A	95.0	105.0	1	85.5	1	2.9	137.0	.106
SMAJP4KE110	99.0	121.0	1	89.2	1	2.5	158.0	.107
SMAJP4KE110A	105.0	116.0	1	94.0	1	2.6	152.0	.107
SMAJP4KE120	108.0	132.0	1	97.2	1	2.3	173.0	.107
SMAJP4KE120A	114.0	126.0	1	102.0	1	2.4	165.0	.107
SMAJP4KE130	117.0	143.0	1	105.0	1	2.1	187.0	.107
SMAJP4KE130A	124.0	137.0	1	111.0	1	2.2	179.0	.107
SMAJP4KE150	135.0	165.0	1	121.0	1	1.9	215.0	.108
SMAJP4KE150A	143.0	158.0	1	128.0	1	1.95	207.0	.108
SMAJP4KE160	144.0	176.0	1	130.0	1	1.7	230.0	.108
SMAJP4KE160A	152.0	168.0	1	136.0	1	1.8	219.0	.108
SMAJP4KE170	153.0	187.0	1	138.0	1	1.6	244.0	.108
SMAJP4KE170A	162.0	179.0	1	145.0	1	1.7	234.0	.108
SMAJP4KE180	162.0	198.0	1	146.0	1	1.5	258.0	.108
SMAJP4KE180A	171.0	189.0	1	154.0	1	1.6	246.0	.108
SMAJP4KE200	180.0	220.0	1	162.0	1	1.4	287.0	.108
SMAJP4KE200A	190.0	210.0	1	171.0	1	1.5	274.0	.108
SMAJP4KE220	198.0	242.0	1	175.0	1	1.0	344.0	.110
SMAJP4KE220A	209.0	231.0	1	185.0	1	1.0	328.0	.110
SMAJP4KE250	225.0	275.0	1	202.0	1	1.0	360.0	.110
SMAJP4KE250A	237.0	263.0	1	214.0	1	1.0	344.0	.110
SMAJP4KE300	270.0	330.0	1	243.0	1	1.0	430.0	.110
SMAJP4KE300A	285.0	315.0	1	256.0	1	1.0	414.0	.110
SMAJP4KE350	315.0	385.0	1	284.0	1	1.0	504.0	.110
SMAJP4KE350A	333.0	368.0	1	300.0	1	1.0	482.0	.110
SMAJP4KE400	360.0	440.0	1	324.0	1	1.0	574.0	.110
SMAJP4KE400A	380.0	420.0	1	342.0	1	1.0	548.0	.110

1. For bi-directional construction, indicate a C or CA suffix after part number, i.e. SMAJP4KE200C or SMAJP4KE200CA

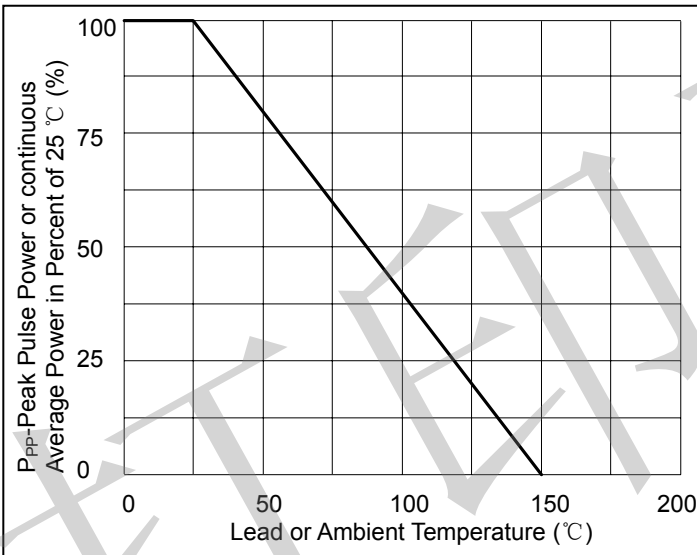
## Characteristic Curve



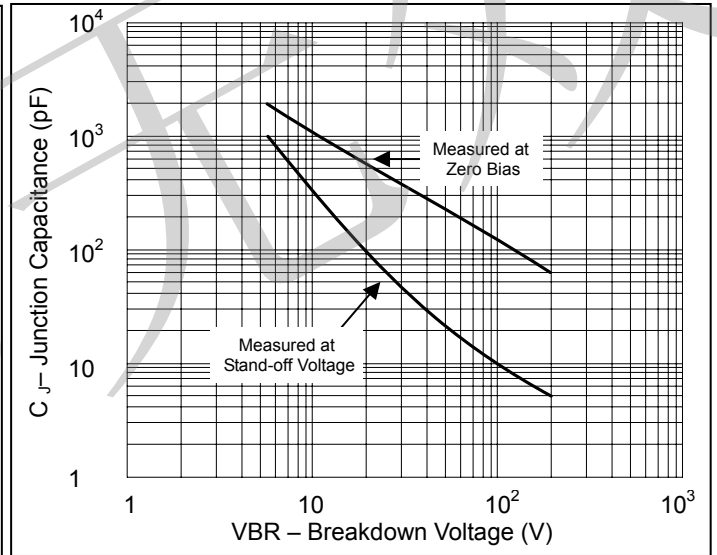
**Fig. 1 Peak Pulse Power vs. Pulse Time**



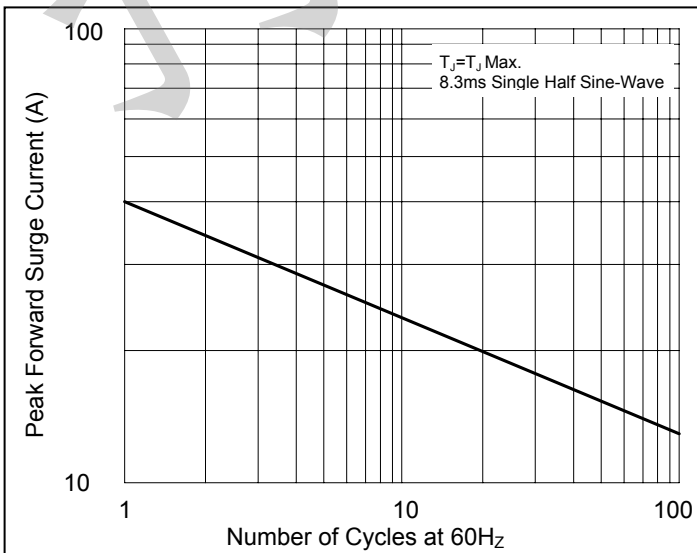
**Fig. 2 Pulse Waveform for Exponential Surge**



**Fig. 3 Derating Curve**



**Fig. 4 Typical Capacitance vs. Breakdown Voltage (Unipolar)**



**Fig. 5 Max. Non-Repetitive Forward Surge Current Uni-Directional Only**