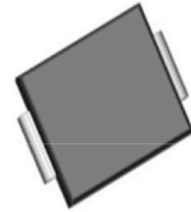


# 5.0SMCJ10 thru 5.0SMCJ170A

Surface Mount Transient Voltage Suppressors  
Peak Pulse Power 5000W Stand-off Voltage 10 to 170V

## Features

- Available in uni-directional polarity only
- Excellent clamping capability
- Moisture sensitivity: level 1, per J-STD-020
- Excellent clamping capability and Fast response time
- 5000 W peak pulse power capability with a 10/1000  $\mu$ s waveform
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



DO-214AB (SMC)

## Typical Applications

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

## Devices for Bidirectional Applications

For bi-directional devices, use suffix C or CA ( e.g. 5.0SMCJ10C or 5.0SMCJ10CA).  
 Electrical characteristics apply in both directions.

<b>Maximum Ratings</b> (TA = 25 °C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000us waveform	$P_{PPM}^{1)}$	5000	W
Peak pulse current with a 10/1000us waveform	$I_{PPM}^{1)}$	See Next Table	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-65 to +175	°C
Thermal resistance, junction to ambient	$R_{\theta JA}^{2)}$	100	°C/W
Thermal resistance, junction to mount	$R_{\theta JM}^{3)}$	20.8	°C/W

Notes:

- 1) Non-repetitive current, per fig.3 and derated above TA=25°C per fig.2.
- 2) Mounted on minimum recommended pad layout
- 3) Mounted on infinite heat sink



# 5.0SMCJ10 thru 5.0SMCJ170A

Surface Mount Transient Voltage Suppressors  
 Peak Pulse Power 5000W Stand-off Voltage 10 to 170V

<b>Electrical Characteristics</b> (TA = 25 °C unless otherwise noted)									
Part Number	Device marking code		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Max Reverse Leakage Current	Max. Clamp Voltage	Peak Pulse Current
	UNI	BI		V <sub>WM</sub>	V <sub>BR</sub> @ I <sub>T</sub>				
			Min		Max	I <sub>T</sub>	I <sub>D</sub> @ V <sub>WM</sub>	V <sub>C</sub> @ I <sub>PPM</sub>	I <sub>PPM</sub>
			V	V	V	mA	µA	V	A
5.0SMCJ10	JDW	KDW	10	11.1	13.6	5	5	18.8	265.0
5.0SMCJ10A	JDX	KDX	10	11.1	12.3	5	5	17.0	294.1
5.0SMCJ11	JDY	KDY	11	12.2	14.9	5	5	20.1	248.8
5.0SMCJ11A	JDZ	KDZ	11	12.2	13.5	5	5	18.2	274.7
5.0SMCJ12	JED	KED	12	13.3	16.3	5	5	22.0	227.0
5.0SMCJ12A	JEE	KEE	12	13.3	14.7	5	5	19.9	251.0
5.0SMCJ13	JEF	KEF	13	14.4	17.6	5	2	23.8	210.0
5.0SMCJ13A	JEG	KEG	13	14.4	15.9	5	2	21.5	233.0
5.0SMCJ14	JEH	KEH	14	15.6	19.1	5	2	25.8	194.0
5.0SMCJ14A	JEK	KEK	14	15.6	17.2	5	2	23.2	216.0
5.0SMCJ15	JEL	KEL	15	16.7	20.4	5	2	26.9	186.0
5.0SMCJ15A	JEM	KEM	15	16.7	18.5	5	2	24.4	205.0
5.0SMCJ16	JEN	KEN	16	17.8	21.8	5	2	28.8	174.0
5.0SMCJ16A	JEP	KEP	16	17.8	19.7	5	2	26.0	192.0
5.0SMCJ17	JEQ	KEQ	17	18.9	23.1	5	2	30.5	164.0
5.0SMCJ17A	JER	KER	17	18.9	20.9	5	2	27.6	181.0
5.0SMCJ18	JES	KES	18	20.0	24.4	5	2	32.2	155.0
5.0SMCJ18A	JET	KET	18	20.0	22.1	5	2	29.2	171.0
5.0SMCJ20	JEU	KEU	20	22.2	27.1	5	2	35.8	140.0
5.0SMCJ20A	JEV	KEV	20	22.2	24.5	5	2	32.4	154.0
5.0SMCJ22	JEW	KEW	22	24.4	29.8	5	2	39.4	127.0
5.0SMCJ22A	JEX	KEX	22	24.4	26.9	5	2	35.5	141.0
5.0SMCJ24	JEY	KEY	24	26.7	32.6	5	2	43.0	116.0
5.0SMCJ24A	JEZ	KEZ	24	26.7	29.5	5	2	38.9	129.0
5.0SMCJ26	JFD	KFD	26	28.9	35.3	5	2	46.6	107.0
5.0SMCJ26A	JFE	KFE	26	28.9	31.9	5	2	42.1	119.0
5.0SMCJ28	JFF	KFF	28	31.1	38.0	5	2	50.0	100.0
5.0SMCJ28A	JFG	KFG	28	31.1	34.4	5	2	45.4	110.0
5.0SMCJ30	JFH	KFH	30	33.3	40.7	5	2	53.5	93.5
5.0SMCJ30A	JFK	KFK	30	33.3	36.8	5	2	48.4	103.0
5.0SMCJ33	JFL	KFL	33	36.7	44.9	5	2	59.0	84.7
5.0SMCJ33A	JFM	KFM	33	36.7	40.6	5	2	53.3	93.8
5.0SMCJ36	JFN	KFN	36	40.0	48.9	5	2	64.3	77.8
5.0SMCJ36A	JFP	KFP	36	40.0	44.2	5	2	58.1	86.1
5.0SMCJ40	JFQ	KFQ	40	44.4	54.3	5	2	71.4	70.0
5.0SMCJ40A	JFR	KFR	40	44.4	49.1	5	2	64.5	77.5
5.0SMCJ43	JFS	KFS	43	47.8	58.4	5	2	76.7	65.2
5.0SMCJ43A	JFT	KFT	43	47.8	52.8	5	2	69.4	72.0
5.0SMCJ45	JFU	KFU	45	50.0	61.1	5	2	80.3	62.3



# 5.0SMCJ10 thru 5.0SMCJ170A

Surface Mount Transient Voltage Suppressors  
Peak Pulse Power 5000W Stand-off Voltage 10 to 170V

<b>Electrical Characteristics</b> (TA = 25 °C unless otherwise noted)									
Part Number	Device marking code		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Max Reverse Leakage Current	Max. Clamp Voltage	Peak Pulse Current
	UNI	BI	V <sub>WM</sub>	V <sub>BR</sub> @ I <sub>T</sub>		I <sub>T</sub>	I <sub>D</sub> @ V <sub>WM</sub>	V <sub>C</sub> @ I <sub>PPM</sub>	I <sub>PPM</sub>
				Min	Max				
				V	V	V	mA	μA	V
5.0SMCJ45A	JFV	KFV	45	50.0	55.3	5	2	72.7	68.8
5.0SMCJ48	JFW	KFW	48	53.3	65.2	5	2	85.5	58.5
5.0SMCJ48A	JFX	KFX	48	53.3	58.9	5	2	77.4	64.6
5.0SMCJ51	JFY	KFY	51	56.7	69.3	5	2	91.1	54.9
5.0SMCJ51A	JFZ	KFZ	51	56.7	62.7	5	2	82.4	60.7
5.0SMCJ54	JGD	KGD	54	60.0	73.3	5	2	96.3	51.9
5.0SMCJ54A	JGE	KGE	54	60.0	66.3	5	2	87.1	57.4
5.0SMCJ58	JGF	KGF	58	64.4	78.7	5	2	103.0	48.5
5.0SMCJ58A	JGG	KGG	58	64.4	71.2	5	2	94.0	53.4
5.0SMCJ60	JGH	KGH	60	66.7	81.5	5	2	107.0	46.7
5.0SMCJ60A	JGK	KGK	60	66.7	73.7	5	2	97.0	51.7
5.0SMCJ64	JGL	KGL	64	71.1	86.9	5	2	114.0	43.9
5.0SMCJ64A	JGM	KGM	64	71.1	78.6	5	2	103.0	48.5
5.0SMCJ70	JGN	KGN	70	77.8	95.1	5	2	125.0	40.0
5.0SMCJ70A	JGP	KGP	70	77.8	86.0	5	2	113.0	44.2
5.0SMCJ75	JGQ	KGQ	75	83.3	102.0	5	2	134.0	37.3
5.0SMCJ75A	JGR	KGR	75	83.3	92.1	5	2	121.0	41.3
5.0SMCJ78	JGS	KGS	78	86.7	106.0	5	2	139.0	36.0
5.0SMCJ78A	JGT	KGT	78	86.7	95.8	5	2	126.0	39.7
5.0SMCJ85	JGU	KGU	85	94.4	115.0	5	2	151.0	33.1
5.0SMCJ85A	JGV	KGV	85	94.4	104.0	5	2	137.0	36.5
5.0SMCJ90	JGW	KGW	90	100.0	122.0	5	2	160.0	31.3
5.0SMCJ90A	JGX	KGX	90	100.0	111.0	5	2	146.0	34.2
5.0SMCJ100	JGY	KGY	100	111.0	136.0	5	2	179.0	27.9
5.0SMCJ100A	JGZ	KGZ	100	111.0	123.0	5	2	162.0	30.9
5.0SMCJ110	JHD	KHD	110	122.0	149.0	5	2	196.0	25.5
5.0SMCJ110A	JHE	KHE	110	122.0	135.0	5	2	177.0	28.2
5.0SMCJ120A	JHF	KHF	120	133.0	147.0	5	2	193.0	26.4
5.0SMCJ130A	JHG	KHG	130	144.0	159.0	5	2	209.0	24.4
5.0SMCJ150A	JHH	KHH	150	167.0	185.0	5	2	243.0	21.0
5.0SMCJ160A	JHK	KHK	160	178.0	197.0	5	2	259.0	19.7
5.0SMCJ170A	JHL	KHL	170	189.0	209.0	5	2	275.0	18.5

# 5.0SMCJ10 thru 5.0SMCJ170A

Surface Mount Transient Voltage Suppressors  
Peak Pulse Power 5000W Stand-off Voltage 10 to 170V

## Ratings and Characteristics Curves

(TA = 25°C unless otherwise noted)

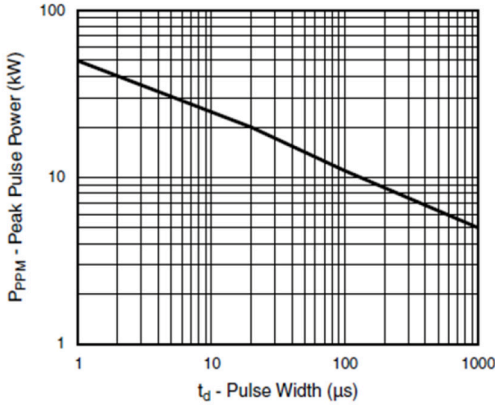


Fig. 1 - Peak Pulse Power Rating Curve

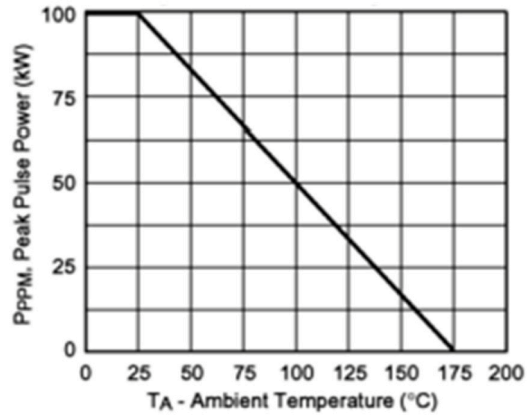


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

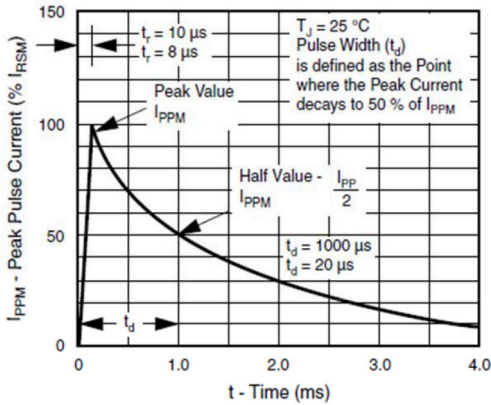


Fig. 3 - Pulse Waveform

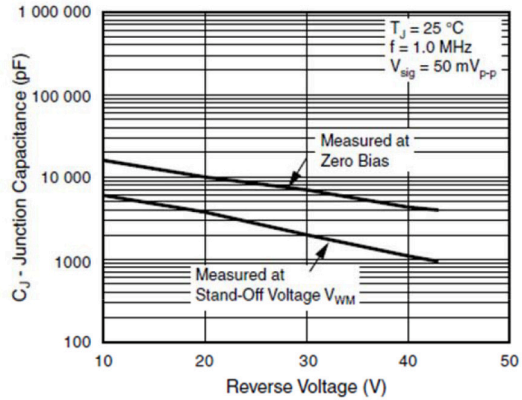


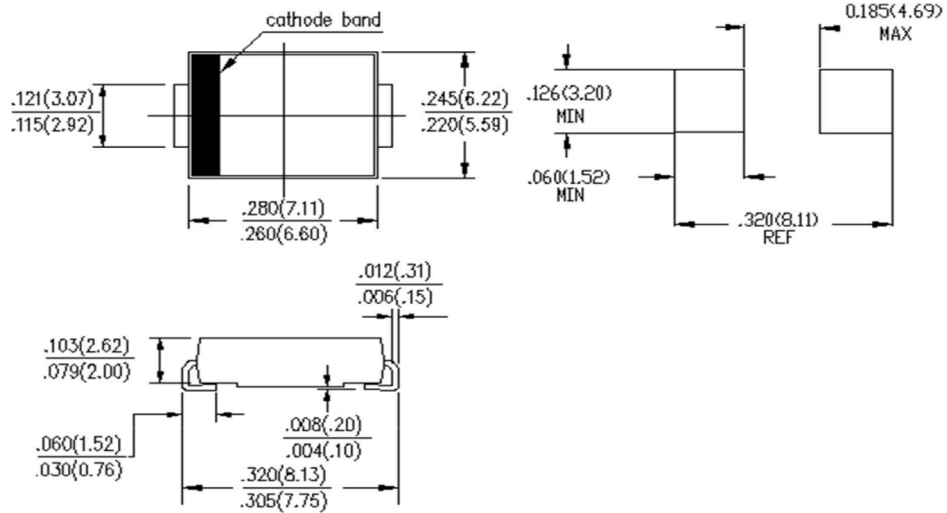
Fig. 4 - Typical Junction Capacitance

# 5.0SMCJ10 thru 5.0SMCJ170A

Surface Mount Transient Voltage Suppressors  
Peak Pulse Power 5000W Stand-off Voltage 10 to 170V

## Package Outline Dimensions

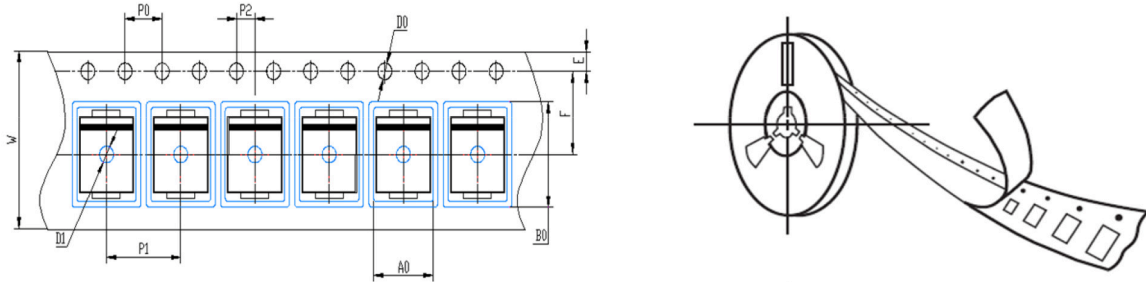
in inches (millimeters)



## Packing Information

3000 pcs/Reel, 14 Reels/Box; 16mm Tape, 13" Reel

### Tape & Reel Specification



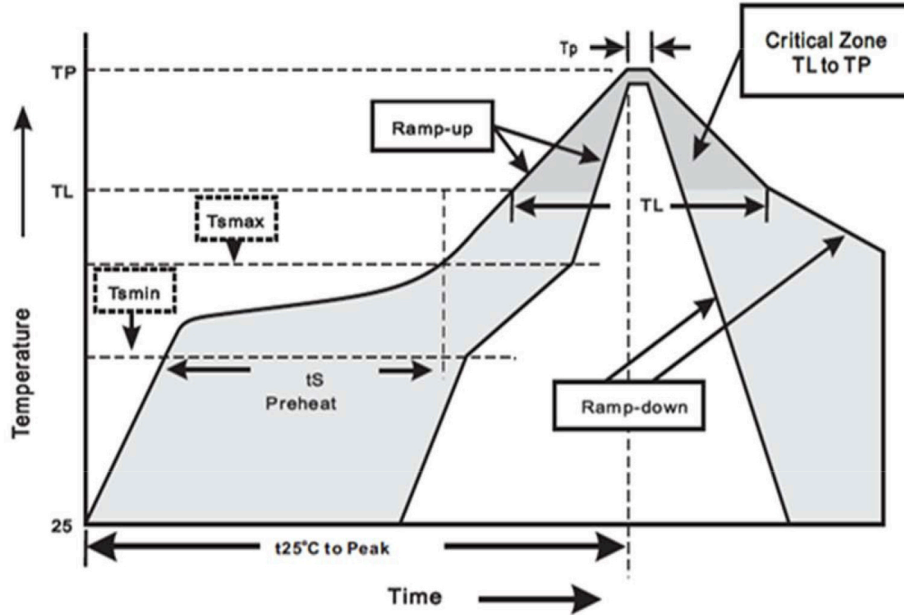
Symbol	SMC (mm)
W	16 ± 0.2
E	1.75 ± 0.1
F	7.5 ± 0.05
D0	1.5 ± 0.1
D1	1.50 +0.1/-0
P0	4.0 ± 0.1
P1	8.0 ± 0.1
P2	2.0 ± 0.05
A0	6.22 ± 0.1
B0	8.31 ± 0.1



# 5.0SMCJ10 thru 5.0SMCJ170A

Surface Mount Transient Voltage Suppressors  
Peak Pulse Power 5000W Stand-off Voltage 10 to 170V

## Soldering Parameters



Reflow Soldering		Sn-Pb Eutectic Assembly	Pb-Free Assembly
Pre Heat	- Temperature Min (Ts(min))	100°C	150°C
	- Temperature Max (Ts(max))	150°C	200°C
	- Time (min to max) (ts)	60 – 120 secs	60 – 180 secs
Average ramp up rate (Liquidus Temp (TL) to peak)		3°C/second max	3°C/second max
TS(max) to TL - Ramp-up Rate		3°C/second max	3°C/second max
Reflow	- Temperature (TL) (Liquidus)	183°C	217°C
	- Time (min to max) (ts)	60 – 150 seconds	60 – 150 seconds
Peak Temperature (TP)		240+0/-5 °C	240+0/-5°C
Time within 5°C of actual peak Temperature (tp)		10 – 30 seconds	20 – 40 seconds
Ramp-down Rate		6°C/second max	6°C/second max
Time 25°C to peak Temperature (TP)		6 minutes Max.	8 minutes Max.
Do not exceed		260°C	260°C

Wave Soldering	
Peak Temperature :	260+0/-5°C
Dipping Time :	10 seconds
Soldering :	1 time