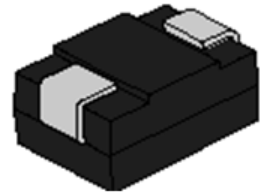


Description

The 5.0SMDJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- ◆ 5000W peak pulsepower capability at 10 x 1000 μ s waveform, repetition rate (duty cycle):0.01%
- ◆ Glass Passivated chip junction
- ◆ For surface mounted applications to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Low incremental surge resistance
- ◆ Excellent clamping capability
- ◆ Plastic package has UL flammability classification 94V-0
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to BV min
- ◆ Typical IR less than 5 μ A above 22V
- ◆ High temperature soldering: 260°C/40 seconds at terminals
- ◆ IEC-61000-4-2 ESD 15KV(Air),8KV(Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2(IEC801-2)
- ◆ EFT protection of data lines in accordance with IEC61000-4-4(IEC801-4)
- ◆ AEC -Q101 qualified.



SMC



Bi-directional



Uni-directional
Symbol

Applications

TVS devices are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.



Maximum Ratings and Electrical Characteristics

(TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10x1000µs waveform (Fig.2)(Note 1) (Note 2)	P _{PPM}	5000	W
Power Dissipation on infinite heat sink at TA=50°C	P _D	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only(Note 3)	I _{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only	V _F	3.5V/5.0	V
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C
Typical Thermal Resistance Junction to Lead	R _{uJL}	15	°C/W
Typical Thermal Resistance Junction to Ambient	R _{uJA}	75	°C/W

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. Mounted on copper pad area of 0.31x0.31" (8.0 x 8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Electrical Characteristics

PART NUMBER		REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE VBR(V)MAX.@I T	TEST CURRENT	REVERSE LEAKAGE @VRWM	PEAK PULSE CURRENT	MAXIMUM CLAMPING VOLTAGE @Ipp	
BI- POLAR	UNI-POLAR	VRWM (V)	VBR Min(V)	VBR Max(V)	IT (mA)	IR (µA)	Ipp (A)	Vc (v)
5.0SMDJ5.0CA	5.0SMDJ5.0A	5.0	6.4	7.25	50	5000	554.3	9.2
5.0SMDJ6.0CA	5.0SMDJ6.0A	6.0	6.67	7.67	50	5000	495.1	10.3
5.0SMDJ 6.5CA	5.0SMDJ 6.5A	6.5	7.22	8.30	50	2000	455.4	11.2
5.0SMDJ7.0 CA	5.0SMDJ7.0 A	7.0	7.78	8.95	50	1000	425.0	12.0
5.0SMDJ 7.5CA	5.0SMDJ 7.5A	7.5	8.33	9.58	5	250	395.3	12.9
5.0SMDJ 8.0CA	5.0SMDJ 8.0A	8.0	8.89	10.23	5	150	357.0	13.6
5.0SMDJ8.5 CA	5.0SMDJ8.5 A	8.5	9.44	10.82	5	50	354.2	14.4
5.0SMDJ9.0 CA	5.0SMDJ9.0 A	9.0	10.00	11.50	5	20	331.2	15.4
5.0SMDJ10CA	5.0SMDJ10A	10.0	11.1	12.30	5	15	300.0	17.0
5.0SMDJ11CA	5.0SMDJ11A	11.0	12.20	14.00	5	2	280.2	18.2
5.0SMDJ12CA	5.0SMDJ12A	12.0	13.30	14.70	5	2	256.3	19.9
5.0SMDJ13CA	5.0SMDJ13A	13.0	14.40	16.50	5	2	237.2	21.5
5.0SMDJ14CA	5.0SMDJ14A	14.0	15.60	17.20	5	2	219.8	23.2
5.0SMDJ15CA	5.0SMDJ15A	15.0	16.70	19.20	5	2	209.0	24.4
5.0SMDJ16CA	5.0SMDJ16A	16.0	17.80	19.70	5	2	196.2	26.0
5.0SMDJ17CA	5.0SMDJ17A	17.0	18.90	21.70	5	2	184.8	27.6
5.0SMDJ18CA	5.0SMDJ18A	18.0	20.00	23.30	5	2	174.7	29.2
5.0SMDJ20CA	5.0SMDJ20A	20.0	22.20	25.50	5	2	157.4	32.4
5.0SMDJ22CA	5.0SMDJ22A	22.0	24.40	28.00	5	2	143.7	35.5
5.0SMDJ24CA	5.0SMDJ24A	24.0	26.70	30.70	5	2	131.1	38.9
5.0SMDJ26CA	5.0SMDJ26A	26.0	28.90	33.20	5	2	121.1	42.1
5.0SMDJ28CA	5.0SMDJ28A	28.0	31.10	35.80	5	2	112.3	45.4
5.0SMDJ30CA	5.0SMDJ30A	30.0	33.30	38.30	5	2	105.4	48.4
5.0SMDJ33CA	5.0SMDJ33A	33.0	36.70	40.60	5	2	95.7	53.3

Electrical Characteristics

PART NUMBER		REVERSE STAND-OFF VOLTAGE	N VOLTAGE BREAKDOWN VOLTAGE	VBR(V)MAX. @IT	CURRENT TEST	LEAKAGE CURRENT	CURRENT PULSE PEAK	MAXIMUM CLAMPING VOLTAGE	@Ipp Vc
BI- POLAR	UNI-POLAR	VRWM (V)	VBR Min(V)	VBR Max(V)	IT (mA)	IR (μ A)	Ipp (A)	Vc (v)	
5.0SMDJ36CA	5.0SMDJ36A	36.0	40.00	46.00	5	2	87.8	58.1	
5.0SMDJ40CA	5.0SMDJ40A	40.0	44.40	51.10	5	2	79.1	64.5	
5.0SMDJ43CA	5.0SMDJ43A	43.0	47.8	52.8	5	2	73.5	69.4	
5.0SMDJ45CA	5.0SMDJ45A	45.0	50.00	57.50	5	2	70.2	72.7	
5.0SMDJ48CA	5.0SMDJ48A	48.0	53.30	58.90	5	2	65.9	77.4	
5.0SMDJ51CA	5.0SMDJ51A	51.0	56.70	65.20	5	2	61.9	82.4	
5.0SMDJ54CA	5.0SMDJ54A	54.0	60.00	69.00	5	2	58.6	87.1	
5.0SMDJ58CA	5.0SMDJ58A	58.0	64.4	71.2	5	2	54.5	93.6	
5.0SMDJ60CA	5.0SMDJ60A	60.0	66.7	73.7	5	2	52.7	96.8	
5.0SMDJ64CA	5.0SMDJ64A	64.0	71.10	81.80	5	2	49.5	103.0	
5.0SMDJ70CA	5.0SMDJ70A	70.0	77.8	95.1	5	2	45.1	113.0	
5.0SMDJ75CA	5.0SMDJ75A	75.0	83.3	92.1	5	2	42.1	121.0	
5.0SMDJ78CA	5.0SMDJ78A	78.0	86.70	99.70	5	2	40.5	126.0	
5.0SMDJ85CA	5.0SMDJ85A	85.0	94.40	108.20	5	2	37.2	137.0	
5.0SMDJ90CA	5.0SMDJ90A	90.0	100.0	111.0	5	2	34.9	146.0	
5.0SMDJ100CA	5.0SMDJ100A	100.0	111.0	123.00	5	2	31.5	162.0	
5.0SMDJ110CA	5.0SMDJ110A	110.0	122.0	135.00	5	2	28.8	177.0	
5.0SMDJ120CA	5.0SMDJ120A	120.0	133.0	147.00	5	2	26.4	193.0	
5.0SMDJ130CA	5.0SMDJ130A	130.0	144.0	159.00	5	2	24.4	209.0	
5.0SMDJ150CA	5.0SMDJ150A	150.0	167.0	185.00	5	2	21.0	243.0	
5.0SMDJ160CA	5.0SMDJ160A	160.0	178.0	197.00	5	2	19.7	259.0	
5.0SMDJ170CA	5.0SMDJ170A	170.0	189.0	209.00	5	2	18.5	275.0	
5.0SMDJ180CA	5.0SMDJ180A	180.0	201.0	222.0	5	2	17.5	292.0	
5.0SMDJ190CA	5.0SMDJ190A	190.0	211.0	233.00	5	2	16.5	308.0	

Electrical Characteristics

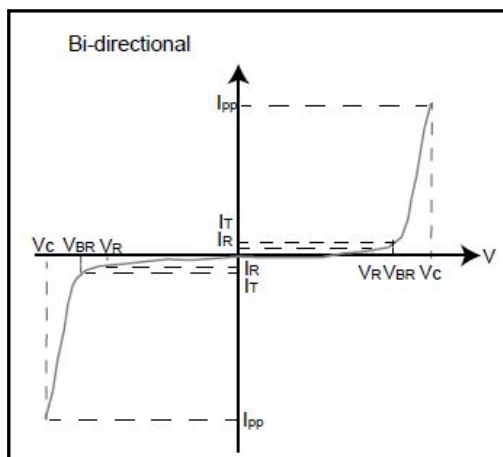
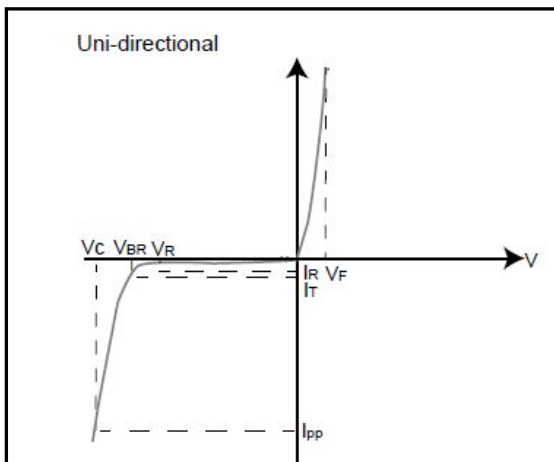
PART NUMBER		REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE VBR(V)MAX.@IT		TEST CURRENT	REVERSE LEAKAGE @VRWM	PEAK PULSE CURRENT	MAXIMUM CLAMPING VOLTAGE @Ipp
BI-POLAR	UNI-POLAR	VRWM (V)	VBR MIN(V)	VBR MAX(V)	IT (mA)	IR (μA)	Ipp (A)	Vc (v)
5.0SMDJ200CA	5.0SMDJ200A	200.0	224.0	247.00	5	2	15.5	324.0
5.0SMDJ210CA	5.0SMDJ220A	210.0	237.00	263.00	5	2	14.6	356.0
5.0SMDJ220CA	5.0SMDJ220A	220.0	246.00	272.00	5	2	13.7	356.0
5.0SMDJ250CA	5.0SMDJ250A	250.0	279.00	309.00	5	2	12.0	405.0
5.0SMDJ300CA	5.0SMDJ300A	300.0	335.0	371.00	5	2	9.1	486.0
5.0SMDJ350CA	5.0SMDJ350A	350.0	391.00	432.00	5	2	7.7	567.0
5.0SMDJ400CA	5.0SMDJ400A	400.0	447.00	494.00	5	2	6.72	648.0
5.0SMDJ440CA	5.0SMDJ440A	440.0	492.00	543.00	5	2	6.16	713.0

Notes:

For bidirectional type having VRWM of 20 volts and less, the IR limit is double.

For parts without A (VBR is ± 10% and Vc is 5% higher than A parts

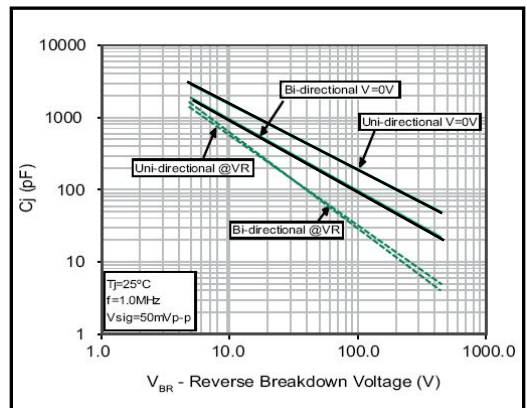
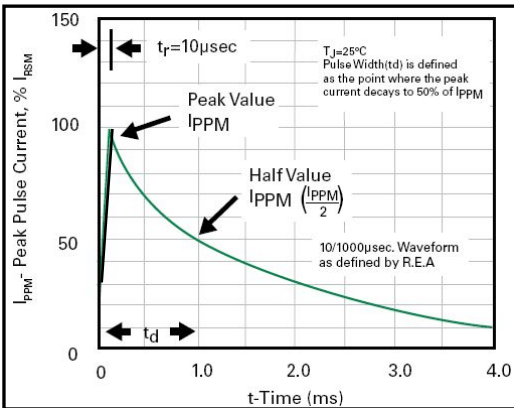
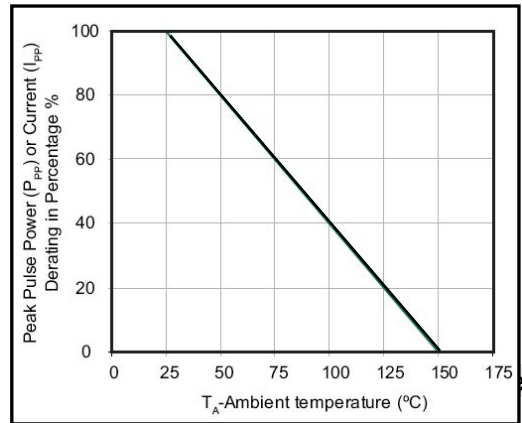
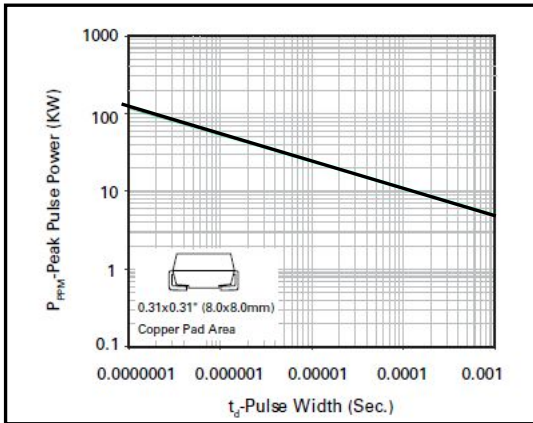
I-V Curve Characteristics



Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

Figure 1 - Peak Pulse Power Rating Curve

Figure 2 - Pulse Derating Curve



Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 5 - Steady State Power Dissipation Derating Curve

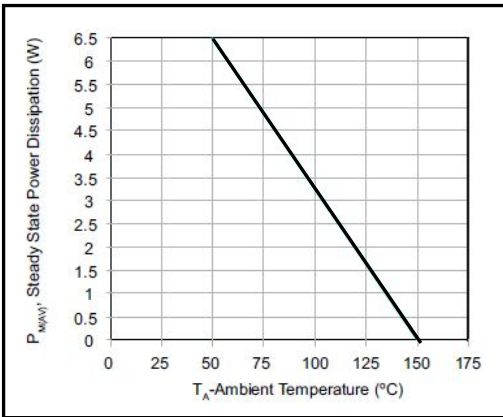
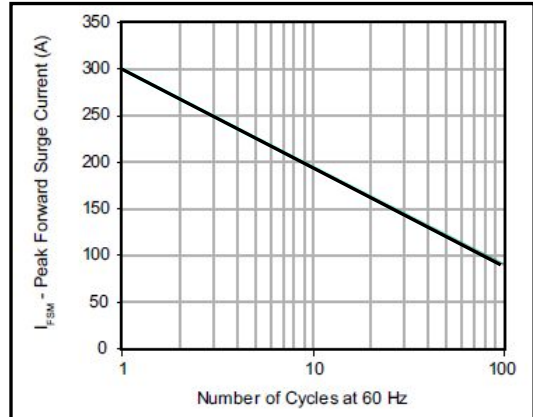


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

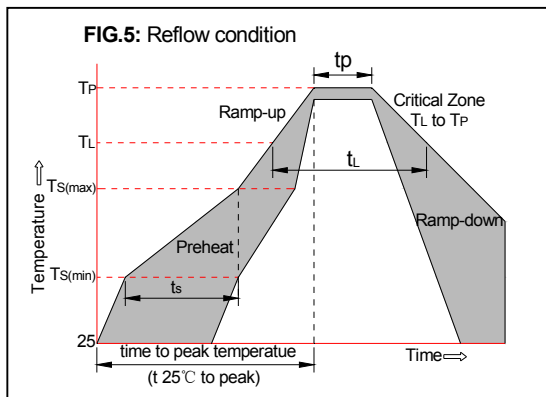


Part	Numbering		System
5.0SMDJ	XXX	C	A
(1)	(2)	(3)	(4)

- (1) SERIES.
- (2) V_R VOLTAGE.
- (3) BI-DIRECTIONAL.
- (4) 5% VOLTAGE TOLERANCE.

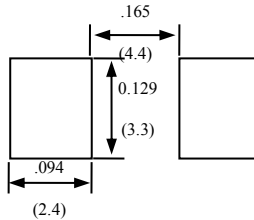
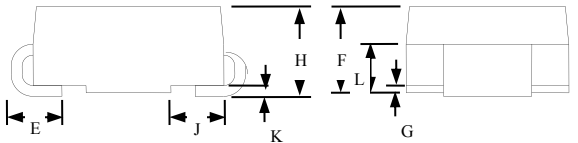
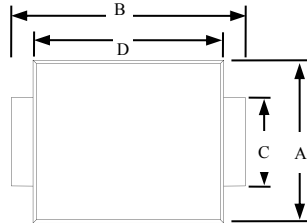
SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C




Product Dimensions

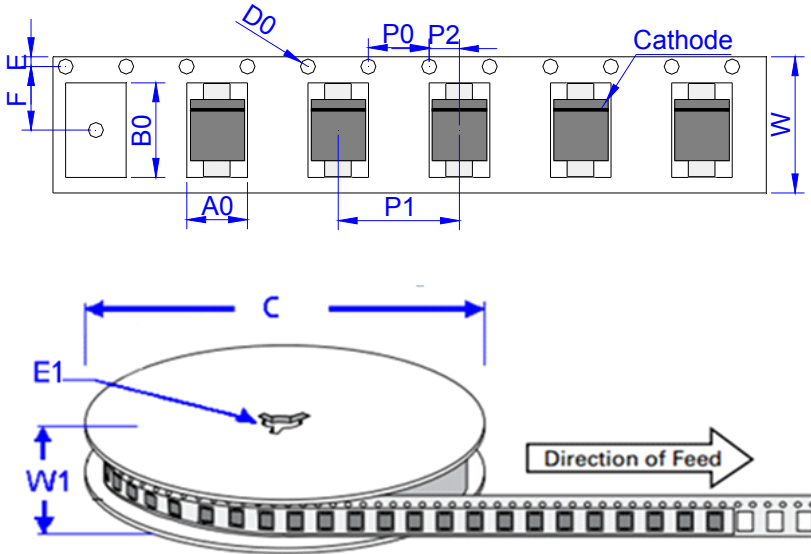
Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.220	0.245	5.59	6.22
B	0.305	0.320	7.75	8.13
C	0.114	0.126	2.90	3.20
D	0.260	0.280	6.60	7.11
E	0.030	0.060	0.76	1.52
F	0.077	0.094	1.95	2.40
G	-	0.008	-	0.203
H	0.79	0.103	2.06	2.62
J	0.030	0.060	0.76	1.52
K	0.008	0.014	0.20	0.35
L	0.039	0.049	0.99	1.24



Summary of Packing Options


Package Type	Packaging Option	Packing Quantity	Industry Standard
DO-214AB(SMC) 	Tape&Reel-16mm/13"	2500PCS	EIA STD RS-481

TAPE AND REEL SPECIFICATION-SMC



Ref.	Dimensions	
	Millimeters	Inches
A0	6.05 ± 0.3	0.238 ± 0.012
B0	8.31 ± 0.3	0.327 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	7.50 ± 0.2	0.295 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	16.0 ± 0.2	0.630 ± 0.008
W1	19.7 ± 2.0	0.776 ± 0.079

Summary of Packing Options

Package Type	Packaging Option	Packing Quantity	Industry Standard
DO-214AB(SMC) 	Tape&Reel-16mm/13” tape	3000PCS	EIA STD RS-481