3.0SMCJ Series

Surface Mount - 3000W - DO-214AB



device and is currently conducting reliability testing. Parts ers and specifications are subject to change until the datasheet is made final.







Maximum Ratings and Thermal Characteristics (T_a=25°C unless otherwise noted)

Parameter Symbol Value Unit Peak Pulse Power Dissipation by 10/1000µs Waveform (Fig.4)(Note 3000 W P_{PPM} 1), (Note 2) Power dissipation on infinite W P_{D} 6.5 heatsink at $T_c = 25$ °C Operating Temperature Range T_{J} -65 to 150 °C Storage Temperature Range -65 to 175 °C $\mathsf{T}_{\mathsf{STG}}$ Typical Thermal Resistance Junction $\boldsymbol{R}_{_{\boldsymbol{\theta}JL}}$ 15 °C/W to Lead Typical Thermal Resistance Junction

Notes:

to Ambient

1. Non-repetitive current pulse , per Fig. 4 and derated above T, (initial) =25°C per Fig. 3. 2. Mounted on copper pad area of 0.31x0.31" (8.0 x 8.0mm) to each terminal

75

 $R_{\theta,JA}$

°C/W

Functional Diagram



Description

The 3.0SMCJ Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- ■3000W P_{PPM} peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%
- ■For surface mounted applications in order to optimize board space
- Low profile package
- ■Typical failure mode is short from over-specified voltage or current
- ■Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- ■ESD protection of data lines in accordance with IEC 61000-4-2,30kV(Air), 30kV (Contact)
- ■EFT protection of data lines in accordance with IEC 61000-4-4
- ■Built-in strain relief
- Glass passivated chip iunction
- ■Fast response time: typically less than 1.0ps

- from 0V to BV min
- ■Excellent clamping capability
- Low incremental surge resistance
- High temperature to reflow soldering guaranteed: 260°C/40sec
- ■V_{BR} @ T_J= V_{BR}@25°C $\times (1 + \alpha T \times (T_{J} - 25))$ (a T:Temperature Coefficient, typical value is 0.1%)
- UL Recognized compound meeting flammability rating V-0.
- ■Meet MSL level1, per J-STD-020, LF maximun peak of 260°C
- Matte tin lead-free plated
- Halogen free and RoHS compliant
- ■Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/ JEDEC J-STD- 609A.01)

Applications

TVS components are ideal for the protection of I/O Interfaces, V_{cc} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.



3.0SMCJ SeriesSurface Mount – 3000W – D0-214AB



Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number (Bi)	Marking	Reverse Stand off Voltage	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current	Maximum Clamping Voltage V _C @ I _{pp}	Maximum Peak Pulse Current I _{pp} (10/1000µs)	Maximum Clamping Voltage V _C @ I _{pp}	Maximum Peak Pulse Current I _{pp} (8/20µs)	Maximum Reverse Leakage I _R @ V _R	Maximum Temperature coefficient of
(DI)		V _R (Volts)	MIN	MAX	(mA)	(10/1000µs) (V)	(A)	(8/20µs) (V)	(δ/20μs) (A)	ω ν _R (μΑ)	V _{BR} (%/C)
3.0SMCJ5.0CA	3DDE	5.0	6.40	7.00	10	9.2	326.1	11.89	1630.5	800	0.041
3.0SMCJ6.0CA	3DDG	6.0	6.67	7.37	10	10.3	291.3	13.31	1456.5	800	0.046
3.0SMCJ6.5CA	3DDK	6.5	7.22	7.98	10	11.2	267.9	14.47	1339.5	500	0.052
3.0SMCJ7.0CA	3DDM	7.0	7.78	8.60	10	12.0	250.0	15.50	1250.0	200	0.058
3.0SMCJ7.5CA	3DDP	7.5	8.33	9.21	1	12.9	232.6	16.67	1163.0	100	0.061
3.0SMCJ8.0CA	3DDR	8.0	8.89	9.83	1	13.6	220.6	17.57	1103.0	50	0.064
3.0SMCJ8.5CA	3DDT	8.5	9.44	10.40	1	14.4	208.3	18.60	1041.5	20	0.066
3.0SMCJ9.0CA	3DDV	9.0	10.00	11.10	1	15.4	194.8	19.90	974.0	10	0.069
3.0SMCJ10CA	3DDX	10.0	11.10	12.30	1	17.0	176.5	21.96	882.5	5	0.071
3.0SMCJ11CA	3DDZ	11.0	12.20	13.50	1	18.2	164.8	23.51	824.0	2	0.074
3.0SMCJ12CA	3DEE	12.0	13.30	14.70	1	19.9	150.8	25.71	754.0	2	0.075
3.0SMCJ13CA	3DEG	13.0	14.40	15.90	1	21.5	139.5	27.78	697.5	2	0.076
3.0SMCJ14CA	3DEK	14.0	15.60	17.20	1	23.2	129.3	29.97	646.5	2	0.08
3.0SMCJ15CA	3DEM	15.0	16.70	18.50	1	24.4	123.0	31.52	615.0	2	0.083
3.0SMCJ16CA	3DEP	16.0	17.80	19.70	1	26.0	115.4	33.59	577.0	2	0.084
3.0SMCJ17CA	3DER	17.0	18.90	20.90	1	27.6	108.7	35.66	543.5	2	0.085
3.0SMCJ18CA	3DET	18.0	20.00	22.10	1	29.2	102.7	37.73	513.5	2	0.088
3.0SMCJ20CA	3DEV	20.0	22.20	24.50	1	32.4	92.6	41.86	463.0	2	0.091
3.0SMCJ22CA	3DEX	22.0	24.40	26.90	1	35.5	84.5	45.87	422.5	2	0.092
3.0SMCJ24CA	3DEZ	24.0	26.70	29.50	1	38.9	77.1	50.26	385.5	2	0.092
3.0SMCJ26CA	3DFE	26.0	28.90	31.90	1	42.1	71.3	54.39	356.5	2	0.093
3.0SMCJ28CA	3DFG	28.0	31.10	34.40	1	45.4	66.1	58.66	330.5	2	0.094
3.0SMCJ30CA	3DFK	30.0	33.30	36.80	1	48.4	62.0	62.53	310.0	2	0.096
3.0SMCJ33CA	3DFM	33.0	36.70	40.60	1	53.3	56.3	68.86	281.5	2	0.097
3.0SMCJ36CA	3DFP	36.0	40.00	44.20	1	58.1	51.6	75.06	258.0	2	0.098
3.0SMCJ40CA	3DFR	40.0	44.40	49.10	1	64.5	46.5	83.33	232.5	2	0.099
3.0SMCJ43CA	3DFT	43.0	47.80	52.80	1	69.4	43.2	89.66	216.0	2	0.100
3.0SMCJ45CA	3DFV	45.0	50.00	55.30	1	72.7	41.3	93.93	206.5	2	0.101
3.0SMCJ48CA	3DFX	48.0	53.30	58.90	1	77.4	38.8	100.00	194.0	2	0.101
3.0SMCJ51CA	3DFZ	51.0	56.70	62.70	1	82.4	36.4	106.46	182.0	2	0.101
3.0SMCJ54CA	3DGE	54.0	60.00	66.30	1	87.1	34.4	112.53	172.0	2	0.102
3.0SMCJ58CA	3DGG	58.0	64.40	71.20	1	93.6	32.1	120.93	160.5	2	0.103

Notes

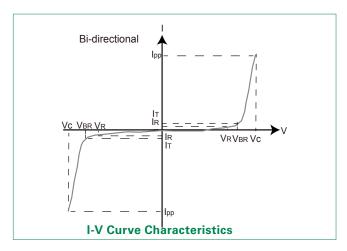


^{1.} V_{BR} measured after I_{T} applied for 300 μ s, I_{T} = square wave pulse or equivalent.

^{2.} Surge current waveform per 10 μ s/1000 μ s exponential wave and derated per Fig. 2

^{3.} All terms and symbols are consistent with ANSI/IEEE C62.35

I-V Curve Characteristics



- P_{PPM} Peak Pulse Power Dissipation Max power dissipation
- ${f V_{\scriptscriptstyle R}}$ Stand-off Voltage Maximum voltage that can be applied to the TVS without operation
- ${f V_{BR}}$ **Breakdown Voltage** Maximum voltage that flows though the TVS at a specified test current (I,)
- $m V_c$ Clamping Voltage Peak voltage measured across the TVS at a specified $\rm I_{PPM}$ (peak impulse current)
- I Reverse Leakage Current Current measured at V A

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

Figure 1 - TVS Transients Clamping Waveform

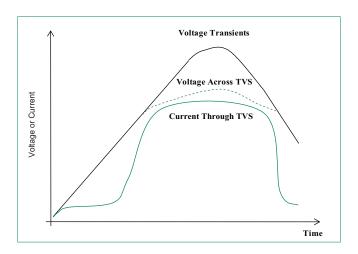


Figure 2 - Peak Pulse Power Rating

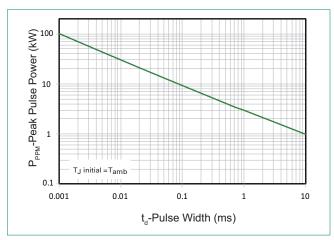




Figure 3 - Peak Pulse Power Derating Curve

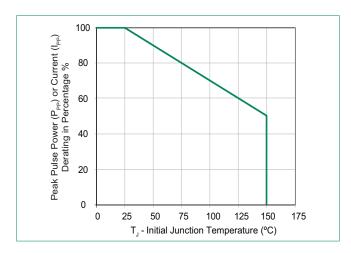


Figure 5 - Typical Junction Capacitance

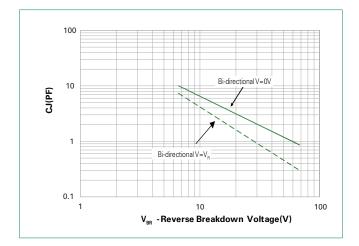


Figure 4 - Pulse Waveform

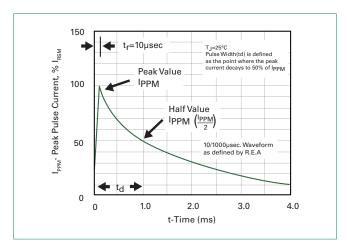
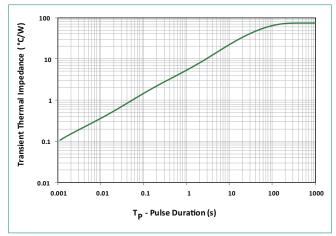


Figure 6 - Typical Transient Thermal Impedance



3.0SMCJ Series Surface Mount – 3000W – DO-214AB

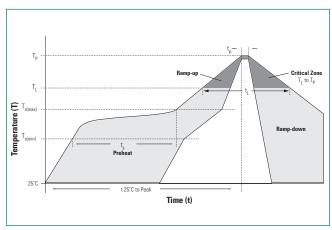


Soldering Parameters

Reflow Con	Lead-free assembly		
Pre Heat	- Temperature Min (T _{s(min)})	150°C	
	- Temperature Max (T _{s(max)})	200°C	
	-Time (min to max) (t _s)	60 - 180 secs	
Average ran	3°C/second max		
T _{S(max)} to T _A	3°C/second max		
Reflow	- Temperature (T _L) (Liquidus)	217°C	
	-Time (min to max) (T _s)	60 – 150 seconds	
Peak Tempe	260 ^{+0/-5} °C		
Time within	20 - 40 seconds		
Ramp-down	6°C/second max		
Time 25°C t	8 minutes Max.		
Do not exce	260°C		

Physical Specifications

Weight	0.007 ounce, 0.21 grams			
Case	JEDEC DO214AB. Molded plastic body over glass passivated junction			
Terminal	Matte Tin-plated leads, Solderable per JESD22-B102			

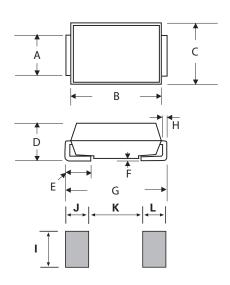


Environmental Specifications

High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Temperature Cycling	JESD22-A104
MSL	JEDEC-J-STD-020, LEVEL 1
H3TRB	JESD22-A101
RSH	JESD22-A111

Dimensions

DO-214AB (SMC J-Bend)



Dimensions	Inc	hes	Millimeters			
Dimensions	Min	Max	Min	Max		
А	0.114	0.126	2.900	3.200		
В	0.260	0.280	6.600	7.110		
С	0.220	0.245	5.590	6.220		
D	0.079	0.103	2.060	2.620		
E	0.030	0.060	0.760	1.520		
F	-	0.008	-	0.203		
G	0.305	0.320	7.750	8.130		
Н	0.006	0.012	0.152	0.305		
I	0.129	-	3.300	-		
J	0.094	-	2.400	-		
K	-	0.165	-	4.200		
L	0.094	-	2.400	-		

