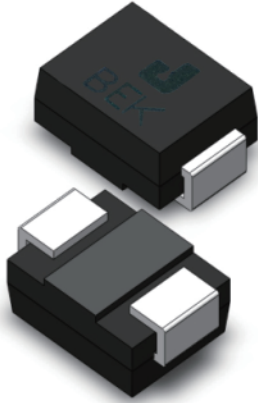


为 您 的 产 品 保 驾 护 航

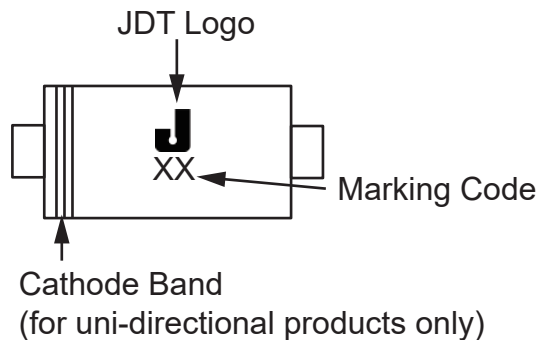
PRODUCT DATASHEET

SMD TVS Devices

SMCJ Series SMD TVS Devices



Pin Description



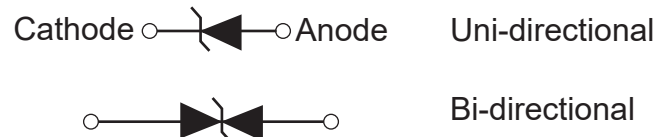
Description

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

Features

- Low leakage
- Glass passivated chip
- Very fast response time
- Uni and Bidirectional unit
- Excellent clamping capability
- 1500W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01%

Schematic Diagram



Maximum Ratings($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation on 10/1000 μ s waveform	P_{PP}	1500	W
Maximum instantaneous forward voltage at 25A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note1)	I_{FSM}	200	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^{\circ}\text{C/W}$
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}\text{C/W}$
Operating and Storage Temperature Range	T_J / T_{STG}	-55 to +150	$^{\circ}\text{C}$

Notes: Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

Performance Specification I.

Model		Reverse Stand off Voltage V_R	Breakdown Voltage $V_{BR} @ I_T$		Test Current I_T	Clamping Voltage $V_C @ I_{PP}$	Peak Pulse Current I_{PP}	Reverse Leakage $I_R @ V_R$	Marking	
(Uni)	(Bi)	(V)	Min(V)	Max(V)	(mA)	Max(V)	Max(A)	Max(μA)	Uni.	Bi.
SMCJ5.0A	SMCJ5.0CA	5.0	6.40	7.00	10	9.2	163.0	300	GDE	BDE
SMCJ6.0A	SMCJ6.0CA	6.0	6.67	7.37	10	10.3	145.6	250	GDG	BDG
SMCJ6.5A	SMCJ6.5CA	6.5	7.22	7.98	10	11.2	134.0	150	GDK	BDK
SMCJ7.0A	SMCJ7.0CA	7.0	7.78	8.60	10	12.0	125.0	100	GDM	BDM
SMCJ7.5A	SMCJ7.5CA	7.5	8.33	9.21	1	12.9	116.3	50	GDP	BDP
SMCJ8.0A	SMCJ8.0CA	8.0	8.89	9.83	1	13.6	110.3	30	GDR	BDR
SMCJ8.5A	SMCJ8.5CA	8.5	9.44	10.4	1	14.4	104.2	20	GDT	BDT
SMCJ9.0A	SMCJ9.0CA	9.0	10.0	11.1	1	15.4	97.4	10	GDV	BDV
SMCJ10A	SMCJ10CA	10.0	11.1	12.3	1	17.0	88.2	5	GDX	BDX
SMCJ11A	SMCJ11CA	11.0	12.2	13.5	1	18.2	82.4	2	GDZ	BDZ
SMCJ12A	SMCJ12CA	12.0	13.3	14.7	1	19.9	75.4	1	GEE	BEE
SMCJ13A	SMCJ13CA	13.0	14.4	15.9	1	21.5	69.8	1	GEG	BEG
SMCJ14A	SMCJ14CA	14.0	15.6	17.2	1	23.2	64.7	1	GEK	BEK
SMCJ15A	SMCJ15CA	15.0	16.7	18.5	1	24.4	61.5	1	GEM	BEM
SMCJ16A	SMCJ16CA	16.0	17.8	19.7	1	26.0	57.7	1	GEP	BEP
SMCJ17A	SMCJ17CA	17.0	18.9	20.9	1	27.6	54.4	1	GER	BER
SMCJ18A	SMCJ18CA	18.0	20.0	22.1	1	29.2	51.4	1	GET	BET
SMCJ20A	SMCJ20CA	20.0	22.2	24.5	1	32.4	46.3	1	GEV	BEV
SMCJ22A	SMCJ22CA	22.0	24.4	26.9	1	35.5	42.3	1	GEX	BEX
SMCJ24A	SMCJ24CA	24.0	26.7	29.5	1	38.9	38.6	1	GEZ	BEZ
SMCJ26A	SMCJ26CA	26.0	28.9	31.9	1	42.1	35.6	1	GFE	BFE
SMCJ28A	SMCJ28CA	28.0	31.1	34.4	1	45.4	33.1	1	GFG	BFG
SMCJ30A	SMCJ30CA	30.0	33.3	36.8	1	48.4	31.0	1	GFK	BFK
SMCJ33A	SMCJ33CA	33.0	36.7	40.6	1	53.3	28.2	1	GFM	BFM
SMCJ36A	SMCJ36CA	36.0	40.0	44.2	1	58.1	25.8	1	GFP	BFP
SMCJ40A	SMCJ40CA	40.0	44.4	49.1	1	64.5	23.3	1	GFR	BFR
SMCJ43A	SMCJ43CA	43.0	47.8	52.8	1	69.4	21.6	1	GFT	BFT
SMCJ45A	SMCJ45CA	45.0	50.0	55.3	1	72.7	20.6	1	GFV	BFV
SMCJ48A	SMCJ48CA	48.0	53.3	58.9	1	77.4	19.4	1	GFX	BFX
SMCJ51A	SMCJ51CA	51.0	56.7	62.7	1	82.4	18.2	1	GFZ	BFZ
SMCJ54A	SMCJ54CA	54.0	60.0	66.3	1	87.1	17.2	1	GGE	BGE
SMCJ58A	SMCJ58CA	58.0	64.4	71.2	1	93.6	16.1	1	GGG	BGG
SMCJ60A	SMCJ60CA	60.0	66.7	73.7	1	96.8	15.5	1	GGK	BGK
SMCJ64A	SMCJ64CA	64.0	71.1	78.6	1	103.0	14.6	1	GGM	BGM

Performance Specification II.

Model		Reverse Stand off Voltage V_R	Breakdown Voltage $V_{BR} @ I_T$		Test Current I_T	Clamping Voltage $V_C @ I_{PP}$	Peak Pulse Current I_{PP}	Reverse Leakage $I_R @ V_R$	Marking	
(Uni)	(Bi)	(V)	Min(V)	Max(V)	(mA)	Max(V)	Max(A)	Max(μA)	Uni.	Bi.
SMCJ70A	SMCJ70CA	70.0	77.8	86.0	1	113.0	13.3	1	GGP	BGP
SMCJ75A	SMCJ75CA	75.0	83.3	92.1	1	121.0	12.4	1	GGR	BGR
SMCJ78A	SMCJ78CA	78.0	86.7	95.8	1	126.0	11.9	1	GGT	BGT
SMCJ85A	SMCJ85CA	85.0	94.4	104.0	1	137.0	11.0	1	GGV	BGV
SMCJ90A	SMCJ90CA	90.0	100.0	111.0	1	146.0	10.3	1	GGX	BGX
SMCJ100A	SMCJ100CA	100.0	111.0	123.0	1	162.0	9.3	1	GGZ	BGZ
SMCJ110A	SMCJ110CA	110.0	122.0	135.0	1	177.0	8.5	1	GHE	BHE
SMCJ120A	SMCJ120CA	120.0	133.0	147.0	1	193.0	7.8	1	GHG	BHG
SMCJ130A	SMCJ130CA	130.0	144.0	159.0	1	209.0	7.2	1	GHK	BHK
SMCJ150A	SMCJ150CA	150.0	167.0	185.0	1	243.0	6.2	1	GHM	BHM
SMCJ160A	SMCJ160CA	160.0	178.0	197.0	1	259.0	5.8	1	GHP	BHP
SMCJ170A	SMCJ170CA	170.0	189.0	209.0	1	275.0	5.5	1	GHR	BHR
SMCJ180A	SMCJ180CA	180.0	201.0	222.0	1	292.0	5.2	1	GHT	BHT
SMCJ190A	SMCJ190CA	190.0	211.0	234.0	1	307.0	4.9	1	GHU	BHU
SMCJ200A	SMCJ200CA	200.0	224.0	247.0	1	324.0	4.7	1	GHV	BHV
SMCJ210A	SMCJ210CA	200.0	233.0	258.0	1	337.0	4.5	1	GHW	BHW
SMCJ220A	SMCJ220CA	220.0	246.0	272.0	1	356.0	4.2	1	GHX	BHX
SMCJ250A	SMCJ250CA	250.0	279.0	309.0	1	405.0	3.7	1	GHZ	BHZ
SMCJ300A	SMCJ300CA	300.0	335.0	371.0	1	486.0	3.1	1	GJE	BJE
SMCJ350A	SMCJ350CA	350.0	391.0	432.0	1	567.0	2.7	1	GJG	BJG
SMCJ400A	SMCJ400CA	400.0	447.0	494.0	1	648.0	2.3	1	GJK	BJK
SMCJ440A	SMCJ440CA	440.0	492.0	543.0	1	713.0	2.1	1	GJM	BJM
SMCJ510A	SMCJ510CA	510.0	570.0	640.5	1	833.4	1.8	1	GJP	BJP

Typical Performance Characteristics

($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

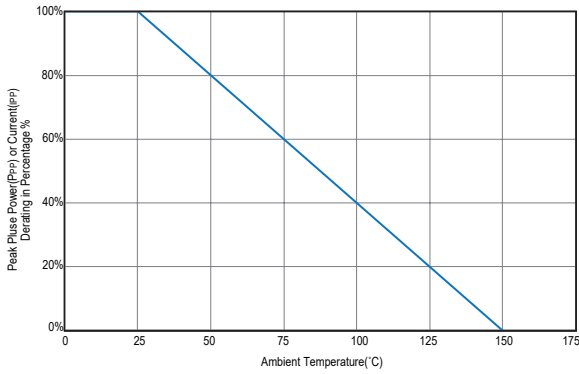


Fig. 1: Pulse Derating Curve

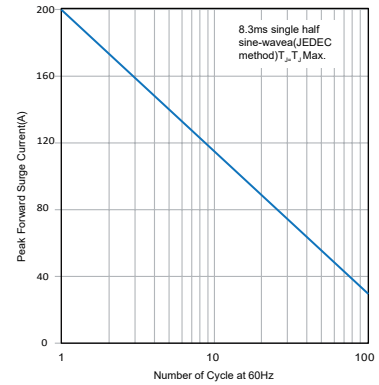


Fig. 2: Max. Non-Repetitive Surge Current

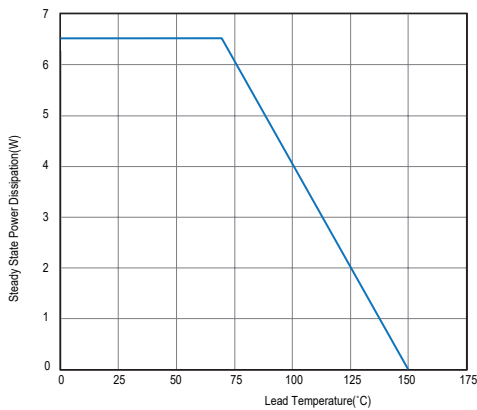


Fig. 3: Steady State Power Derating Curve

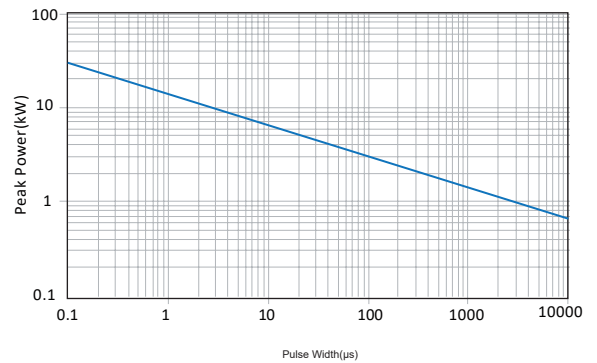


Fig. 4: Peak Pulse Power Rating Curve

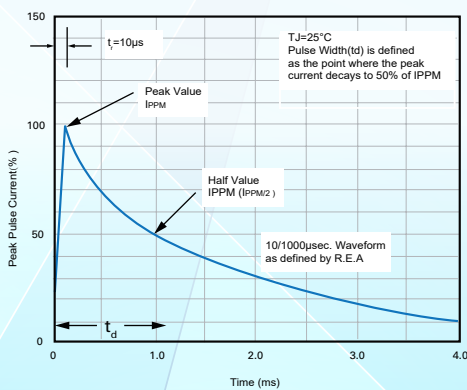


Fig 5: Pulse Waveform

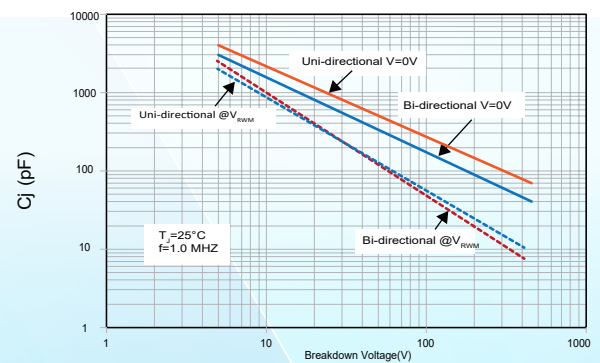
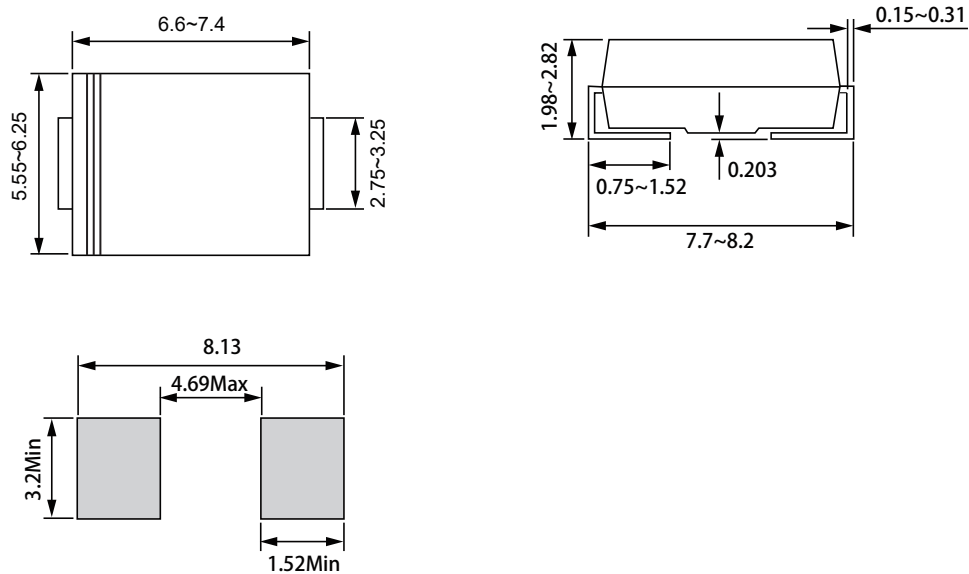


Fig 6: Typical Junction Capacitance

Mechanical Data

Case	Molded Plastic
Terminals	Solderable per MIL-STD-750, method 2026
Polarity	Color band denoted cathode end except bipolar

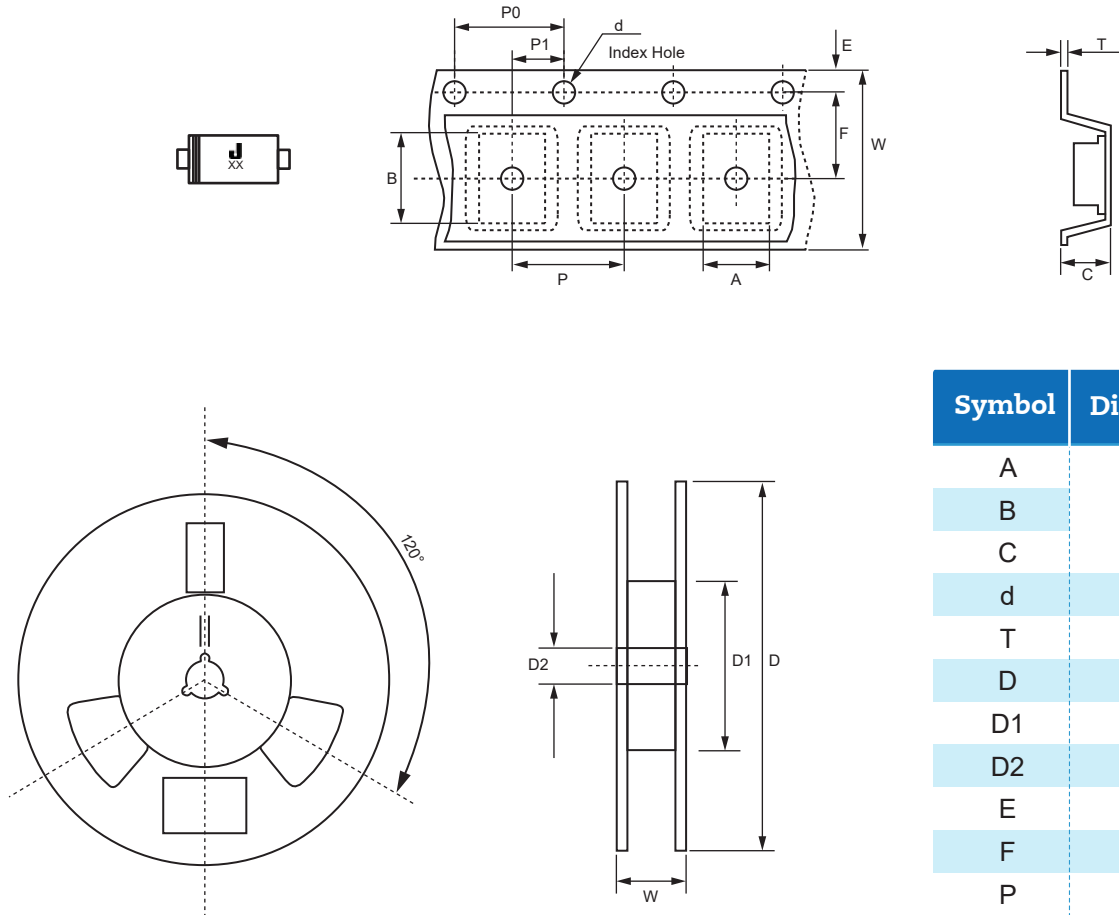


Recommend Pad Layout

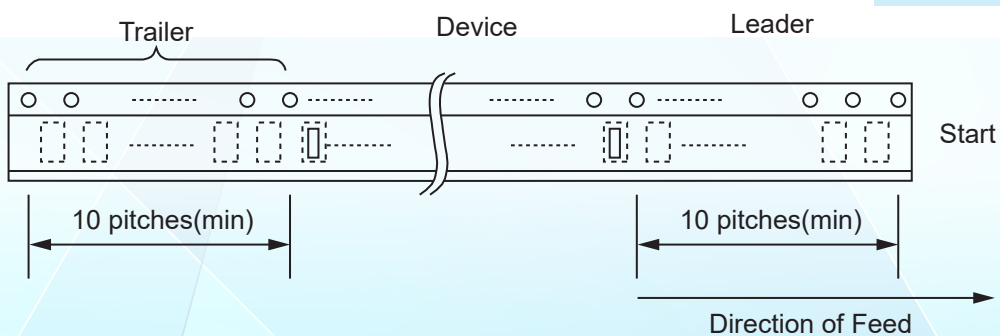
Packaging Quantity

Package	Weight	Quantity	Reel Size	Packaging Option
DO-214AB	0.26g(approx)	3000pcs	13 inch	Tape and reel-12mm tape/13"reel

Tape and Reel Specification

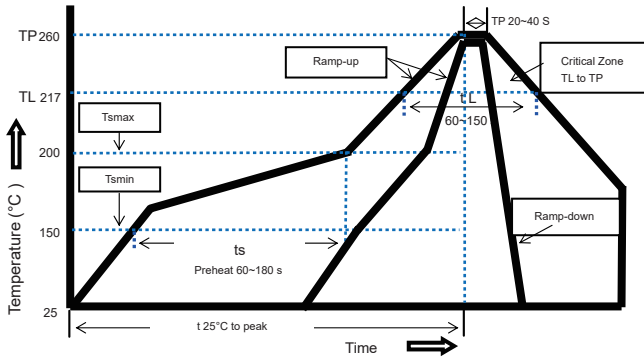


Symbol	Dimensions(mm)
A	
B	See Note 1
C	
d	1.55±0.05
T	0.40(Max)
D	330
D1	50.00(Min)
D2	13.00 ^{+0.50} _{-0.20}
E	1.75±0.10
F	7.50±0.05
P	8.00±0.10
P0	4.00±0.10
P1	2.00±0.05
W	16.00±0.10
W1	16.40 ^{+2.00} _{-0.00}
W2	22.4(Max)



Notes: 1. A, B, and C the clearance between the component and the cavity must be within 0.5mm max. for 8mm tape and 12mm tape, 1.0mm max. for 16mm tape and 24mm tape.

Soldering Parameters



- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free
- Recommended maximum paste thickness is 0.25mm
Devices can be cleaned using standard industry methods and solvents.
- Note 1: All temperature refer to topside of the package, measured on the package body surface.
- Note 2: If reflow temperatures exceed the recommended

Profile Feature

Pb-Free Assembly

Average Ramp-Up Rate
(Ts max to T p) 3°C/second max.

Preheat

-Temperature Min(Ts min) 150°C
-Temperature Max(Ts max) 200°C
-Time(Ts min to Ts max) 60~180 seconds

Time maintained above:

-Temperature(TL) 217°C
-Time(tL) 60~150 seconds

Peak Temperature(Tp) 260°C

Ramp-Down Rate 6°C/second max.

Time 25°C to Peak Temperature 8 minutes max

Storage Condition 0°C~35°C, ≤70%RH

Part Number System

SMCJ XXX C A

5% VOLTAGE TOLERANCE

BI-DIRECTIONAL

VOLTAGE

SERIES