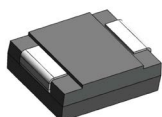


SMCJ

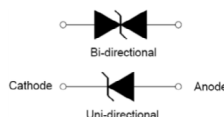
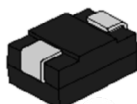
1500 W Transient voltage suppressor



Product features

- Low profile SMC package
- Excellent clamping capability
- 1500 W peak pulse power capability at 10/1000 μ s waveform
- Typical I_R less than 1 μ A above 11 V
- Fast response time: typically less than 1.0 ps from 0 V to V_{BR} minimum
- High temperature reflow soldering: +260 °C /40 s at terminal
- Plastic package meets UL 94 V-0 flammability rating
- Meets moisture sensitivity level (MSL) level 1
- Terminal: Solder plated leads, solderable per J-STD-002
- For surface mounted applications in order to optimize board space
- UL 497B recognized.
File No. : E198449 Guide QVGO2

PIN configuration



Applications

- Consumer electronics
- Telecommunications
- Computing and servers
- Appliances
- Industrial automation
- Power conversion

Environmental compliance and general specifications

- IEC61000-4-2 (ESD) $\pm$ 30 kV (air),
 $\pm$ 30 kV (contact)



Ordering part number

SMCJ 5.0 C A

Family name _____

V_R voltage _____

Bi-/Uni-Directional (Blank=Uni, C=Bi) _____

Voltage tolerance _____

Alternate ordering part number

SMCJE 5.0 C A

Family name _____

V_R voltage ("-" indicates decimal point) _____

Bi-/Uni-Directional (Blank=Uni, C=Bi) _____

Voltage tolerance _____

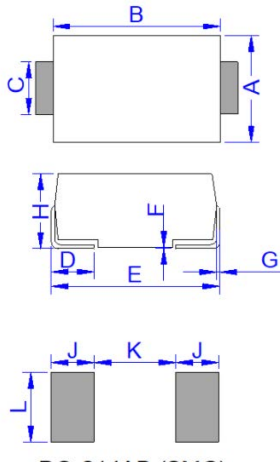
Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage operating junction temperature range	T_{STG}/T_J	-55 to +150	°C
Steady state power dissipation at $T_L = +75$ °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 100 A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3 ms single half sine wave ¹	I_{FSM}	200	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	°C/W

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

Mechanical parameters, pad layout- mm



Dimension	Millimeters		Inches	
	Minimum	Maximum	Minimum	Maximum
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

Part marking

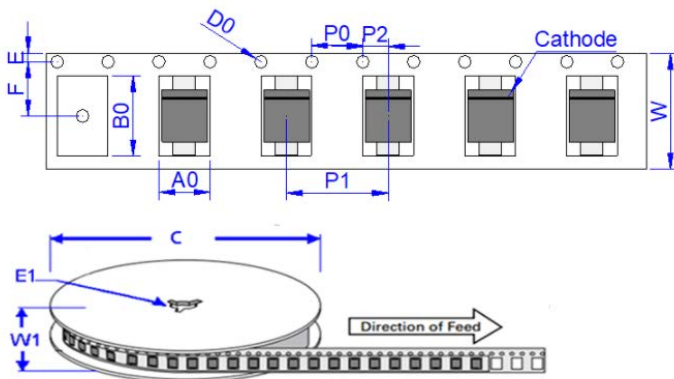


Part marking: xxx = Refer to marking designator listed in Electrical Characteristics table
yyyy- date code

Packaging information (mm)

Drawing not to scale.

Supplied in tape and reel packaging, 3,000 parts per 13" diameter reel (EIA-481 compliant)



Dimension	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	0.315 ± 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

SMCJ

1500 W Transient voltage suppressor

Technical Data 11215
Effective February 2025

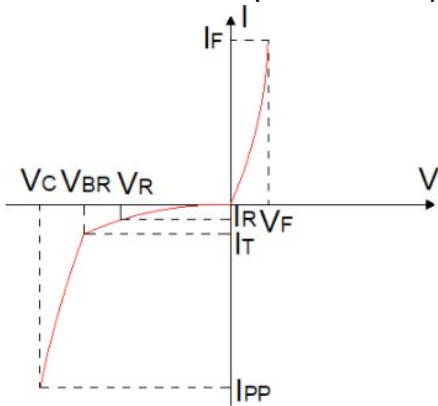
Electrical characteristics (+25 °C)

Part number		Marking		V_R	$I_R @ V_R$	$V_{BR} @ I_R$		I_T	$V_C @ I_{PP}$	I_{PP}
Uni-polar	Bi-polar	Uni	Bi	(V)	(μA)	min (V)	max (V)	(mA)	max (V)	(A)
SMCJ5.0A	SMCJ5.0CA	GDE	BDE	5	300	6.4	7	10	9.2	163
SMCJ6.0A	SMCJ6.0CA	GDG	BDG	6	250	6.67	7.37	10	10.3	145.6
SMCJ6.5A	SMCJ6.5CA	GDK	BDK	6.5	150	7.22	7.98	10	11.2	134
SMCJ7.0A	SMCJ7.0CA	GDM	BDM	7	100	7.78	8.6	10	12	125
SMCJ7.5A	SMCJ7.5CA	GDP	BDP	7.5	50	8.33	9.21	1	12.9	116.3
SMCJ8.0A	SMCJ8.0CA	GDR	BDR	8	30	8.89	9.83	1	13.6	110.3
SMCJ8.5A	SMCJ8.5CA	GDT	BDT	8.5	20	9.44	10.4	1	14.4	104.2
SMCJ9.0A	SMCJ9.0CA	GDV	BDV	9	10	10	11.1	1	15.4	97.4
SMCJ10A	SMCJ10CA	GDX	BDX	10	5	11.1	12.3	1	17	88.2
SMCJ11A	SMCJ11CA	GDZ	BDZ	11	2	12.2	13.5	1	18.2	82.4
SMCJ12A	SMCJ12CA	GEE	BEE	12	1	13.3	14.7	1	19.9	75.4
SMCJ13A	SMCJ13CA	GEG	BEG	13	1	14.4	15.9	1	21.5	69.8
SMCJ14A	SMCJ14CA	GEK	BEK	14	1	15.6	17.2	1	23.2	64.7
SMCJ15A	SMCJ15CA	GEM	BEM	15	1	16.7	18.5	1	24.4	61.5
SMCJ16A	SMCJ16CA	GEP	BEP	16	1	17.8	19.7	1	26	57.7
SMCJ17A	SMCJ17CA	GER	BER	17	1	18.9	20.9	1	27.6	54.4
SMCJ18A	SMCJ18CA	GET	BET	18	1	20	22.1	1	29.2	51.4
SMCJ20A	SMCJ20CA	GEV	BEV	20	1	22.2	24.5	1	32.4	46.3
SMCJ22A	SMCJ22CA	GEX	BEX	22	1	24.4	26.9	1	35.5	42.3
SMCJ24A	SMCJ24CA	GEZ	BEZ	24	1	26.7	29.5	1	38.9	38.6
SMCJ26A	SMCJ26CA	GFE	BFE	26	1	28.9	31.9	1	42.1	35.6
SMCJ28A	SMCJ28CA	GFG	BFG	28	1	31.1	34.4	1	45.4	33.1
SMCJ30A	SMCJ30CA	GFK	BFK	30	1	33.3	36.8	1	48.4	31
SMCJ33A	SMCJ33CA	GFM	BFM	33	1	36.7	40.6	1	53.3	28.2
SMCJ36A	SMCJ36CA	GFP	BFP	36	1	40	44.2	1	58.1	25.8
SMCJ40A	SMCJ40CA	GFR	BFR	40	1	44.4	49.1	1	64.5	23.3
SMCJ43A	SMCJ43CA	GFT	BFT	43	1	47.8	52.8	1	69.4	21.6
SMCJ45A	SMCJ45CA	GFV	BFV	45	1	50	55.3	1	72.7	20.6
SMCJ48A	SMCJ48CA	GFX	BFX	48	1	53.3	58.9	1	77.4	19.4
SMCJ51A	SMCJ51CA	GFZ	BFZ	51	1	56.7	62.7	1	82.4	18.2
SMCJ54A	SMCJ54CA	GGE	BGE	54	1	60	66.3	1	87.1	17.2
SMCJ58A	SMCJ58CA	GGG	BGG	58	1	64.4	71.2	1	93.6	16.1
SMCJ60A	SMCJ60CA	GGK	BGK	60	1	66.7	73.7	1	96.8	15.5
SMCJ64A	SMCJ64CA	GGM	BGM	64	1	71.1	78.6	1	103	14.6
SMCJ70A	SMCJ70CA	GGP	BGP	70	1	77.8	86	1	113	13.3
SMCJ75A	SMCJ75CA	GGR	BGR	75	1	83.3	92.1	1	121	12.4
SMCJ78A	SMCJ78CA	GGT	BGT	78	1	86.7	95.8	1	126	11.9
SMCJ85A	SMCJ85CA	GGV	BGV	85	1	94.4	104	1	137	11
SMCJ90A	SMCJ90CA	GGX	BGX	90	1	100	111	1	146	10.3
SMCJ100A	SMCJ100CA	GGZ	BGZ	100	1	111	123	1	162	9.3
SMCJ110A	SMCJ110CA	GHE	BHE	110	1	122	135	1	177	8.5
SMCJ120A	SMCJ120CA	GHG	BHG	120	1	133	147	1	193	7.8
SMCJ130A	SMCJ130CA	GHK	BHK	130	1	144	159	1	209	7.2
SMCJ150A	SMCJ150CA	GHM	BHM	150	1	167	185	1	243	6.2
SMCJ160A	SMCJ160CA	GHP	BHP	160	1	178	197	1	259	5.8
SMCJ170A	SMCJ170CA	GHR	BHR	170	1	189	209	1	275	5.5
SMCJ180A	SMCJ180CA	GHT	BHT	180	1	201	222	1	292	5.2
SMCJ190A	SMCJ190CA	GHU	BHU	190	1	211	234	1	307	4.9
SMCJ200A	SMCJ200CA	GHV	BHV	200	1	224	247	1	324	4.7
SMCJ210A	SMCJ210CA	GHW	BHW	210	1	233	258	1	337	4.5
SMCJ220A	SMCJ220CA	GHX	BHX	220	1	246	272	1	356	4.2
SMCJ250A	SMCJ250CA	GJG	BJG	250	1	279	309	1	405	3.7
SMCJ300A	SMCJ300CA	GJK	BJK	300	1	335	371	1	486	3.1
SMCJ350A	SMCJ350CA	GJM	BJM	350	1	391	432	1	567	2.7
SMCJ400A	SMCJ400CA	GJP	BJP	400	1	447	494	1	648	2.3
SMCJ440A	SMCJ440CA	GJR	BJR	440	1	492	543	1	713	2.1

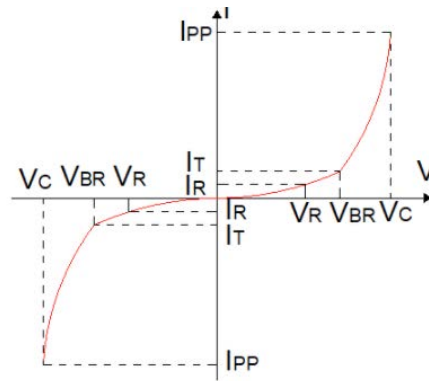
Note: Standard part numbers listed
Alternate part numbers have the
addition of an E and a “-” for the “.”
where applicable. Example standard
part number SMCJ5.0A, Alternate part
number SMCJE5-0A

Ratings and V-I characteristic curves (+25 °C unless otherwise noted)

V- I curve characteristics (Uni-directional)



V- I curve characteristics (Bi-directional)



Surge waveform: 10/1000 μ s

V_R : Stand-off voltage – Maximum voltage that can be applied

V_{BR} : Breakdown voltage

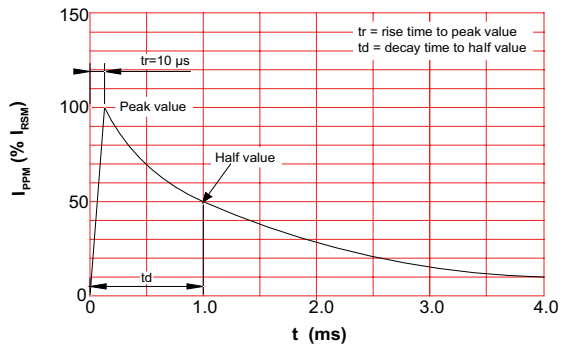
V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse leakage current

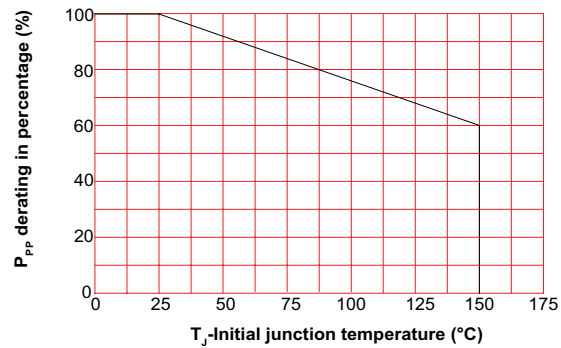
I_T : Test current

V_F : Forward voltage drop for Uni-directional TVS diode

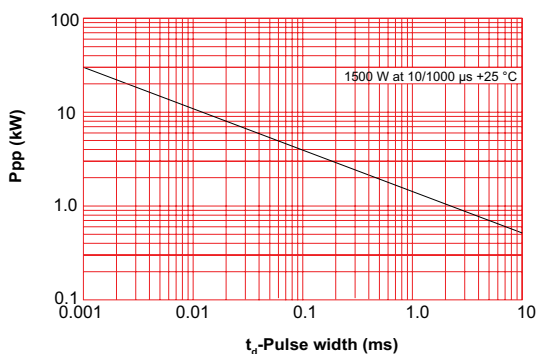
Pulse waveform



Pulse derating curve



Peak pulse power dissipation vs. pulse width



Solder reflow profile

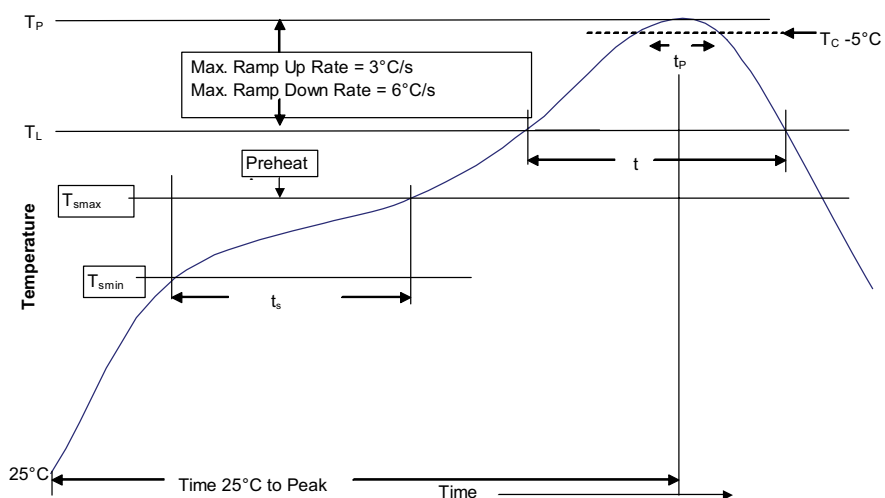


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T_{smin})	100 °C	150 °C
• Temperature max. (T_{smax})	150 °C	200 °C
• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-180 seconds
Ramp up rate T_L to T_p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature (T_p)*	Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_C)	20 seconds*	40 seconds*
Ramp-down rate (T_p to T_L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics

© 2025 Eaton
All Rights Reserved
Printed in USA
Publication No. 11215
February 2025

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.

