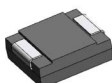


SMDJ

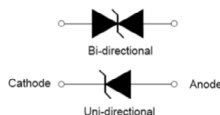
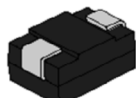
3000 W Transient voltage suppressor



Product features

- Low profile SMC package
- Excellent clamping capability
- 3000 W peak pulse power capability at 10/1000 μ s waveform
- Typical I_R less than 1 μ A above 14 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

SMDJ 5.0 C A

Family name _____
 V_R voltage _____
 Bi-/Uni-Directional (Blank=Uni, C=Bi) _____
 Voltage tolerance _____

Alternate ordering part number

SMDJE 5-0 C A

Family name _____
 V_R voltage ("-" indicates decimal point) _____
 Bi-/Uni-Directional (Blank=Uni, C=Bi) _____
 Voltage tolerance _____

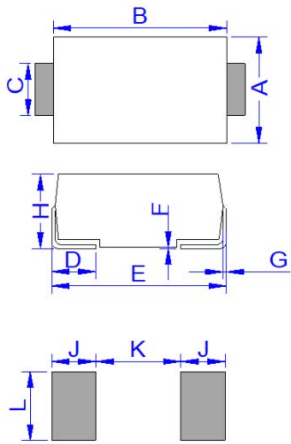
Absolute maximum ratings

(+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}	3000	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}	300	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

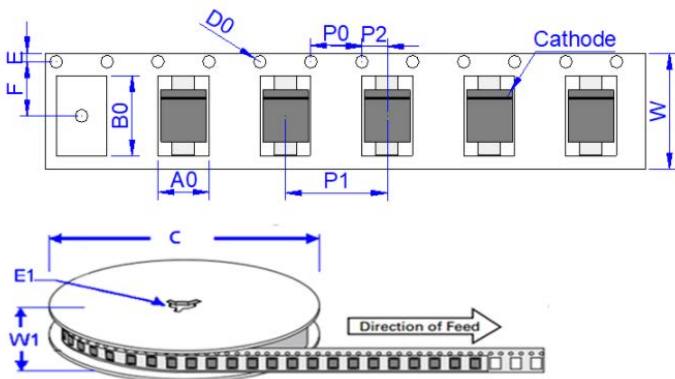


Cathode band (uni-polar only)
Part marking: xxx = Refer to marking designator listed in Electrical Characteristics table
yyyy- date code

Packaging information (mm)

Drawing not to scale.

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



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

SMDJ

3000 W Transient voltage suppressor

Technical Data 11217
Effective February 2025

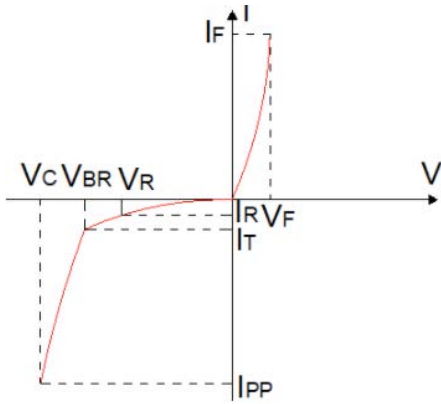
Electrical characteristics (+25 °C)

Part number		Marking		V_R	$I_R @ V_R$	$V_{BR} @ I_T$		I_T	$V_C @ I_{PP}$	I_{PP}
Uni-polar	Bi-polar	Uni	Bi	(V)	(μA)	min (V)	max (V)	(mA)	max (V)	(A)
SMDJ5.0A	SMDJ5.0CA	HDE	IDE	5	800	6.4	7	10	9.2	326.1
SMDJ6.0A	SMDJ6.0CA	HDG	IDG	6	800	6.67	7.37	10	10.3	291.3
SMDJ6.5A	SMDJ6.5CA	HDK	IDK	6.5	500	7.22	7.98	10	11.2	267.9
SMDJ7.0A	SMDJ7.0CA	HDM	IDM	7	200	7.78	8.6	10	12	250
SMDJ7.5A	SMDJ7.5CA	HDP	IDP	7.5	100	8.33	9.21	1	12.9	232.6
SMDJ8.0A	SMDJ8.0CA	HDR	IDR	8	50	8.89	9.83	1	13.6	220.6
SMDJ8.5A	SMDJ8.5CA	HDT	IDT	8.5	20	9.44	10.4	1	14.4	208.3
SMDJ9.0A	SMDJ9.0CA	HDV	IDV	9	10	10	11.1	1	15.4	194.8
SMDJ10A	SMDJ10CA	HDX	IDX	10	5	11.1	12.3	1	17	176.5
SMDJ11A	SMDJ11CA	HDZ	IDZ	11	2	12.2	13.5	1	18.2	164.8
SMDJ12A	SMDJ12CA	HEE	IEE	12	2	13.3	14.7	1	19.9	150.8
SMDJ13A	SMDJ13CA	HEG	IEG	13	2	14.4	15.9	1	21.5	139.5
SMDJ14A	SMDJ14CA	HEK	IEK	14	2	15.6	17.2	1	23.2	129.3
SMDJ15A	SMDJ15CA	HEM	IEM	15	1	16.7	18.5	1	24.4	123
SMDJ16A	SMDJ16CA	HEP	IEP	16	1	17.8	19.7	1	26	115.4
SMDJ17A	SMDJ17CA	HER	IER	17	1	18.9	20.9	1	27.6	108.7
SMDJ18A	SMDJ18CA	HET	IET	18	1	20	22.1	1	29.2	102.7
SMDJ20A	SMDJ20CA	HEV	IEV	20	1	22.2	24.5	1	32.4	92.6
SMDJ22A	SMDJ22CA	HEX	IEX	22	1	24.4	26.9	1	35.5	84.5
SMDJ24A	SMDJ24CA	HEZ	IEZ	24	1	26.7	29.5	1	38.9	77.1
SMDJ26A	SMDJ26CA	HFE	IFE	26	1	28.9	31.9	1	42.1	71.3
SMDJ28A	SMDJ28CA	HFG	IFG	28	1	31.1	34.4	1	45.4	66.1
SMDJ30A	SMDJ30CA	HFK	IFK	30	1	33.3	36.8	1	48.4	62
SMDJ33A	SMDJ33CA	HFM	IFM	33	1	36.7	40.6	1	53.3	56.3
SMDJ36A	SMDJ36CA	HFP	IFP	36	1	40	44.2	1	58.1	51.6
SMDJ40A	SMDJ40CA	HFR	IFR	40	1	44.4	49.1	1	64.5	46.5
SMDJ43A	SMDJ43CA	HFT	IFT	43	1	47.8	52.8	1	69.4	43.2
SMDJ45A	SMDJ45CA	HFV	IFV	45	1	50	55.3	1	72.7	41.3
SMDJ48A	SMDJ48CA	HFX	IFX	48	1	53.3	58.9	1	77.4	38.8
SMDJ51A	SMDJ51CA	HFZ	IFZ	51	1	56.7	62.7	1	82.4	36.4
SMDJ54A	SMDJ54CA	HGE	IGE	54	1	60	66.3	1	87.1	34.4
SMDJ58A	SMDJ58CA	HGG	IGG	58	1	64.4	71.2	1	93.6	32.1
SMDJ60A	SMDJ60CA	HGK	IGK	60	1	66.7	73.7	1	96.8	31
SMDJ64A	SMDJ64CA	HGM	IGM	64	1	71.1	78.6	1	103	29.1
SMDJ70A	SMDJ70CA	HGP	IGP	70	1	77.8	86	1	113	26.5
SMDJ75A	SMDJ75CA	HGR	IGR	75	1	83.3	92.1	1	121	24.8
SMDJ78A	SMDJ78CA	HGT	IGT	78	1	86.7	95.8	1	126	23.8
SMDJ85A	SMDJ85CA	HGV	IGV	85	1	94.4	104	1	137	21.9
SMDJ90A	SMDJ90CA	HGX	IGX	90	1	100	111	1	146	20.5
SMDJ100A	SMDJ100CA	HGZ	IGZ	100	1	111	123	1	162	18.5
SMDJ110A	SMDJ110CA	HHE	IHE	110	1	122	135	1	177	16.9
SMDJ120A	SMDJ120CA	HHG	IHG	120	1	133	147	1	193	15.5
SMDJ130A	SMDJ130CA	HHK	IHK	130	1	144	159	1	209	14.4
SMDJ150A	SMDJ150CA	HHM	IHM	150	1	167	185	1	243	12.3
SMDJ160A	SMDJ160CA	HHP	IHP	160	1	178	197	1	259	11.6
SMDJ170A	SMDJ170CA	HHR	IHR	170	1	189	209	1	275	10.9
SMDJ180A	SMDJ180CA	HHT	IHT	180	1	201	222	1	292	10.3
SMDJ190A	SMDJ190CA	HHV	IHV	190	1	211	234	1	307	9.7
SMDJ200A	SMDJ200CA	HHX	IHX	200	1	224	247	1	324	9.3
SMDJ210A	SMDJ210CA	HHZ	IHZ	210	1	233	258	1	337	8.8
SMDJ220A	SMDJ220CA	HIE	IIE	220	1	244	270	1	356	8.4

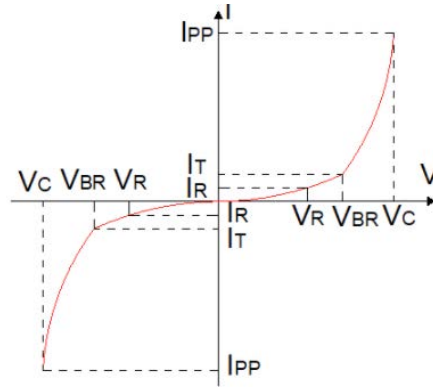
Note: Standard part numbers listed
Alternate part numbers have the
addition of an E and a "-" for the "."
where applicable. Example standard
part number SMDJ5.0A, Alternate part
number SMDJE5-0A

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

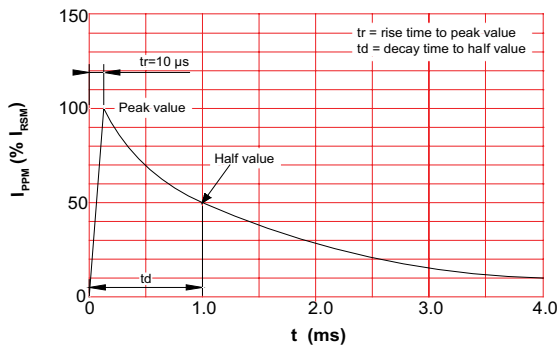
V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse leakage current

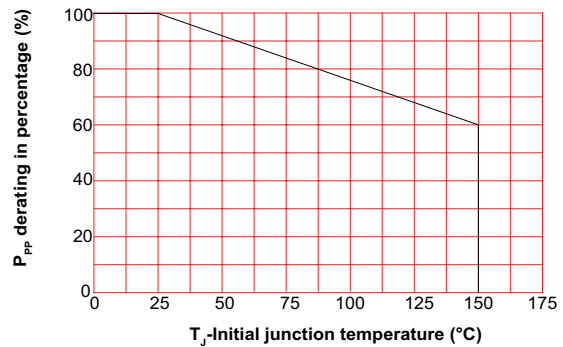
I_T : Test current

V_F : Forward voltage drop for Uni-directional TVS diode

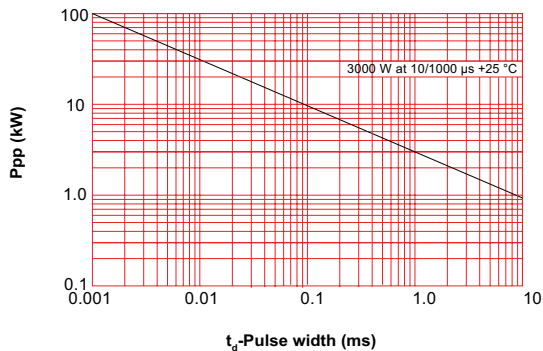
Pulse waveform



Pulse derating curve



Peak pulse power dissipation vs. pulse width



Solder reflow profile

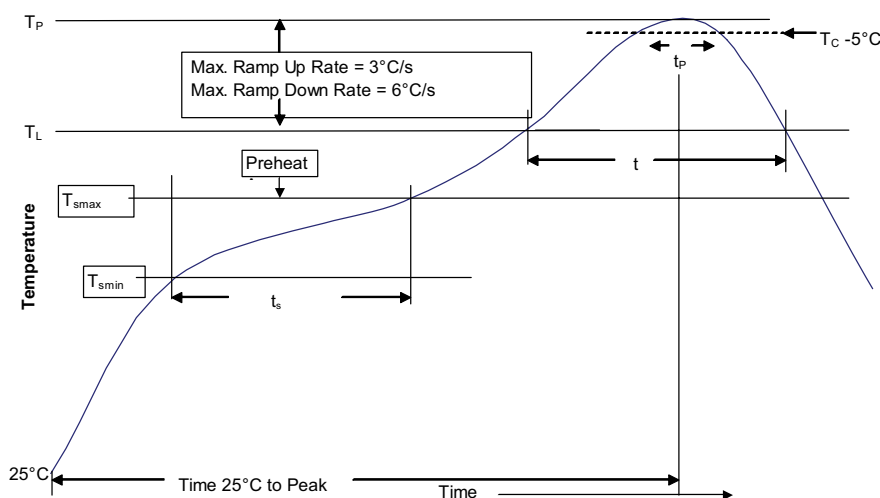


Table 1 - Standard SnPb solder (T_C)

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.

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Printed in USA
Publication No. 11217
February 2025

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