

SMDJE

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

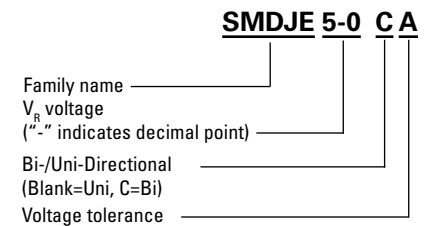
Applications

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

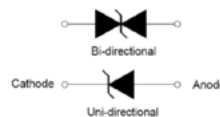
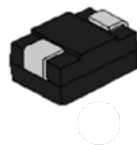
Environmental compliance and general specifications



Ordering part number



PIN configuration



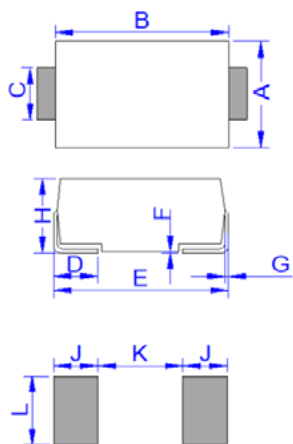
Absolute maximum ratings

(+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



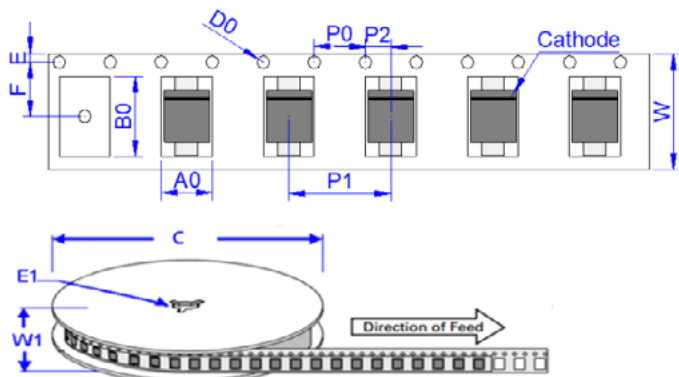
Cathode band (Uni-polar only)

Part marking: xxxx = Date code
yyy- Refer to marking designator listed in Electrical Characteristics table

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

SMDJE
3000 W Transient voltage suppressor

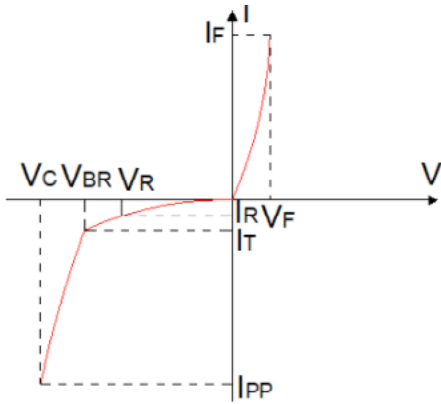
Technical Data 11217
Effective March 2021

Electrical characteristics (+25 °C)

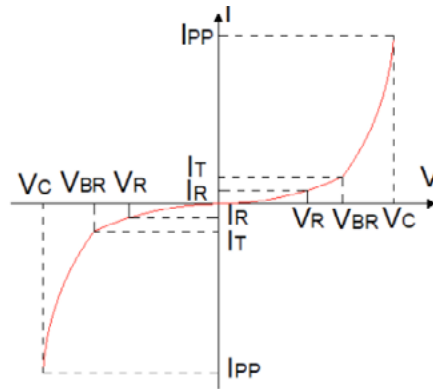
Part number	Bi-polar	Marking		V_R (V)	$I_R @ V_R$ (μ A)	$V_{BR} @ I_T$ min (V)	max (V)	I_T (mA)	$V_C @ I_{PP}$ max (V)	I_{PP} (A)
		Uni	Bi							
SMDJE5-0A	SMDJE5-0CA	HDE	IDE	5	800	6.4	7	10	9.2	326.1
SMDJE6-0A	SMDJE6-0CA	HDG	IDG	6	800	6.67	7.37	10	10.3	291.3
SMDJE6-5A	SMDJE6-5CA	HDK	IDK	6.5	500	7.22	7.98	10	11.2	267.9
SMDJE7-0A	SMDJE7-0CA	HDM	IDM	7	200	7.78	8.6	10	12	250
SMDJE7-5A	SMDJE7-5CA	HDP	IDP	7.5	100	8.33	9.21	1	12.9	232.6
SMDJE8-0A	SMDJE8-0CA	HDR	IDR	8	50	8.89	9.83	1	13.6	220.6
SMDJE8-5A	SMDJE8-5CA	HDT	IDT	8.5	20	9.44	10.4	1	14.4	208.3
SMDJE9-0A	SMDJE9-0CA	HDV	IDV	9	10	10	11.1	1	15.4	194.8
SMDJE10A	SMDJE10CA	HDX	IDX	10	5	11.1	12.3	1	17	176.5
SMDJE11A	SMDJE11CA	HDZ	IDZ	11	2	12.2	13.5	1	18.2	164.8
SMDJE12A	SMDJE12CA	HEE	IEE	12	2	13.3	14.7	1	19.9	150.8
SMDJE13A	SMDJE13CA	HEG	IEG	13	2	14.4	15.9	1	21.5	139.5
SMDJE14A	SMDJE14CA	HEK	IEK	14	2	15.6	17.2	1	23.2	129.3
SMDJE15A	SMDJE15CA	HEM	IEM	15	1	16.7	18.5	1	24.4	123
SMDJE16A	SMDJE16CA	HEP	IEP	16	1	17.8	19.7	1	26	115.4
SMDJE17A	SMDJE17CA	HER	IER	17	1	18.9	20.9	1	27.6	108.7
SMDJE18A	SMDJE18CA	HET	IET	18	1	20	22.1	1	29.2	102.7
SMDJE20A	SMDJE20CA	HEV	IEV	20	1	22.2	24.5	1	32.4	92.6
SMDJE22A	SMDJE22CA	HEX	IEX	22	1	24.4	26.9	1	35.5	84.5
SMDJE24A	SMDJE24CA	HEZ	IEZ	24	1	26.7	29.5	1	38.9	77.1
SMDJE26A	SMDJE26CA	HFE	IFE	26	1	28.9	31.9	1	42.1	71.3
SMDJE28A	SMDJE28CA	HFG	IFG	28	1	31.1	34.4	1	45.4	66.1
SMDJE30A	SMDJE30CA	HFK	IFK	30	1	33.3	36.8	1	48.4	62
SMDJE33A	SMDJE33CA	HFM	IFM	33	1	36.7	40.6	1	53.3	56.3
SMDJE36A	SMDJE36CA	HFP	IFP	36	1	40	44.2	1	58.1	51.6
SMDJE40A	SMDJE40CA	HFR	IFR	40	1	44.4	49.1	1	64.5	46.5
SMDJE43A	SMDJE43CA	HFT	IFT	43	1	47.8	52.8	1	69.4	43.2
SMDJE45A	SMDJE45CA	HFV	IFV	45	1	50	55.3	1	72.7	41.3
SMDJE48A	SMDJE48CA	HFX	IFX	48	1	53.3	58.9	1	77.4	38.8
SMDJE51A	SMDJE51CA	HFZ	IFZ	51	1	56.7	62.7	1	82.4	36.4
SMDJE54A	SMDJE54CA	HGE	IGE	54	1	60	66.3	1	87.1	34.4
SMDJE58A	SMDJE58CA	HGG	IGG	58	1	64.4	71.2	1	93.6	32.1
SMDJE60A	SMDJE60CA	HGK	IGK	60	1	66.7	73.7	1	96.8	31
SMDJE64A	SMDJE64CA	HGM	IGM	64	1	71.1	78.6	1	103	29.1
SMDJE70A	SMDJE70CA	HGP	IGP	70	1	77.8	86	1	113	26.5
SMDJE75A	SMDJE75CA	HGR	IGR	75	1	83.3	92.1	1	121	24.8
SMDJE78A	SMDJE78CA	HGT	IGT	78	1	86.7	95.8	1	126	23.8
SMDJE85A	SMDJE85CA	HGV	IGV	85	1	94.4	104	1	137	21.9
SMDJE90A	SMDJE90CA	HGX	IGX	90	1	100	111	1	146	20.5
SMDJE100A	SMDJE100CA	HGZ	IGZ	100	1	111	123	1	162	18.5
SMDJE110A	SMDJE110CA	HHE	IHE	110	1	122	135	1	177	16.9
SMDJE120A	SMDJE120CA	HHG	IHG	120	1	133	147	1	193	15.5
SMDJE130A	SMDJE130CA	HHK	IHK	130	1	144	159	1	209	14.4
SMDJE150A	SMDJE150CA	HHM	IHM	150	1	167	185	1	243	12.3
SMDJE160A	SMDJE160CA	HHP	IHP	160	1	178	197	1	259	11.6
SMDJE170A	SMDJE170CA	HHR	IHR	170	1	189	209	1	275	10.9
SMDJE180A	SMDJE180CA	HHT	IHT	180	1	201	222	1	292	10.3
SMDJE190A	SMDJE190CA	HHV	IHV	190	1	211	234	1	307	9.7
SMDJE200A	SMDJE200CA	HHX	IHX	200	1	224	247	1	324	9.3
SMDJE210A	SMDJE210CA	HHZ	IHZ	210	1	233	258	1	337	8.8
SMDJE220A	SMDJE220CA	HIE	IIE	220	1	244	270	1	356	8.4

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

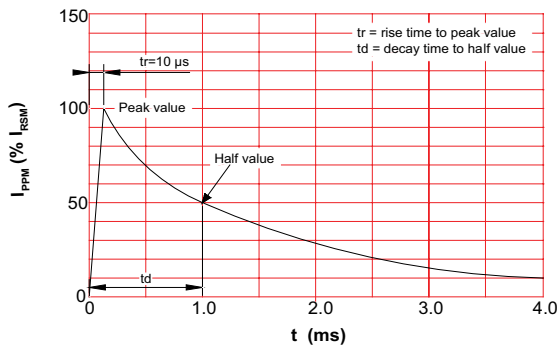
V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse leakage current

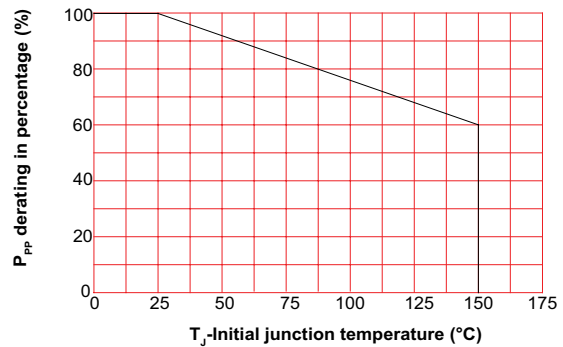
I_T : Test current

V_F : Forward voltage drop for Uni-directional TVS diode

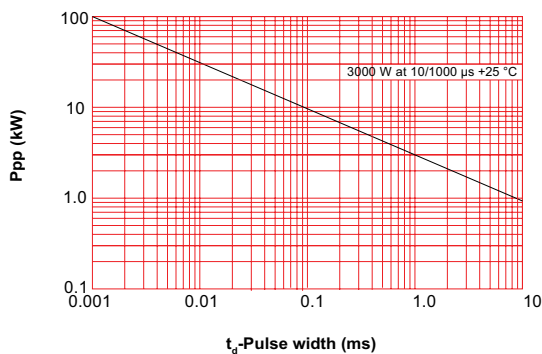
Pulse waveform



Pulse derating curve



Peak pulse power dissipation vs. pulse width



Solder reflow profile

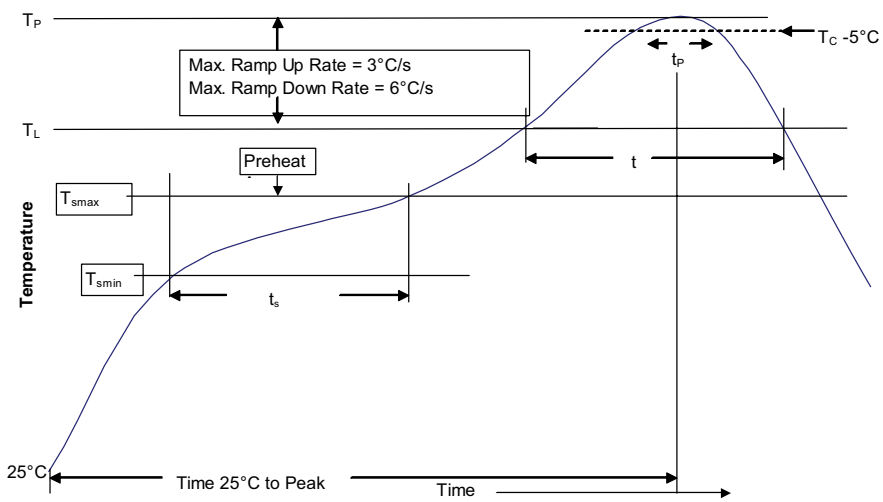


Table 1 - Standard SnPb solder (T_C)

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	<ul style="list-style-type: none"> Temperature min. (T_{smin}) Temperature max. (T_{smax}) Time (T_{smin} to T_{smax}) (t_s) 	<ul style="list-style-type: none"> 100 °C 150 °C 60-120 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

© 2021 Eaton
 All Rights Reserved
 Printed in USA
 Publication No. 11217
 March 2021

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.









Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Eaton:

[SMDJE60A](#) [SMDJE6-0A](#) [SMDJE60CA](#) [SMDJE6-0CA](#) [SMDJE70A](#) [SMDJE7-0A](#) [SMDJE90CA](#) [SMDJE9-0CA](#)
[SMDJE85A](#) [SMDJE8-5A](#) [SMDJE85CA](#) [SMDJE8-5CA](#) [SMDJE90A](#) [SMDJE9-0A](#) [SMDJE70CA](#) [SMDJE7-0CA](#)
[SMDJE75A](#) [SMDJE7-5A](#) [SMDJE75CA](#) [SMDJE7-5CA](#) [SMDJE5-0A](#) [SMDJE5-0CA](#) [SMDJE6-5A](#) [SMDJE6-5CA](#)
[SMDJE8-0A](#) [SMDJE8-0CA](#)