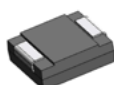


SMDJE

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 QVGQ2

Applications

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

Environmental compliance and general specifications



Ordering part number

SMDJE 5-0 C A

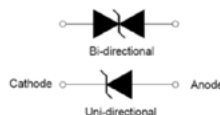
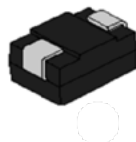
Family name _____

V_R voltage _____
 ("-" indicates decimal point)

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

Voltage tolerance _____

PIN configuration



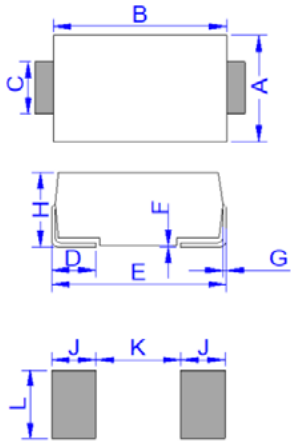
Absolute maximum ratings

(+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	3.30	3.94	0.130	0.155
B	4.30	4.80	0.169	0.189
C	1.90	2.20	0.075	0.087
D	0.95	1.52	0.037	0.060
E	5.20	5.60	0.205	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.10	2.40	0.083	0.094
J	2.20		0.087	
K		2.60		0.102
L	2.30		0.091	

Part marking



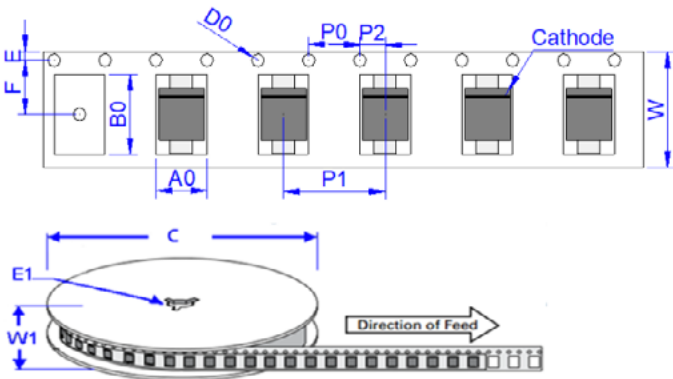
Cathode band (Uni-polar only)

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

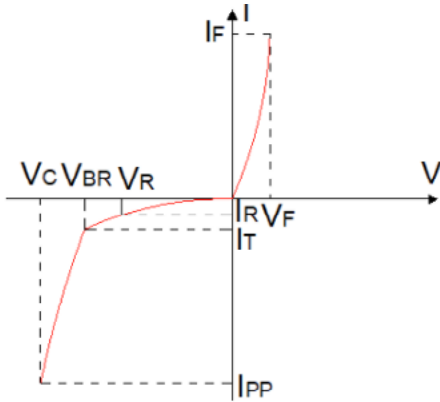
Technical Data 11217
Effective November 2020

Electrical characteristics (+25 °C)

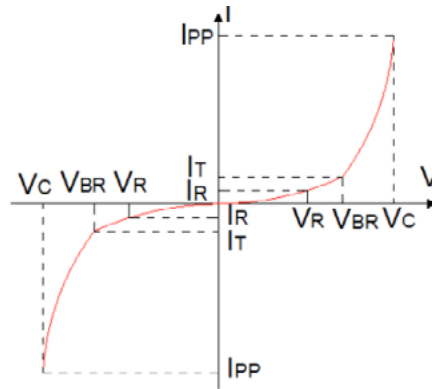
Part number		Marking		V_R	$I_R @ V_R$	$V_{BR} @ I_T$		I_T	$V_C @ I_{PP}$	I_{PP}
Uni-polar	Bi-polar	Uni	Bi	(V)	(μA)	min (V)	max (V)	(mA)	max (V)	(A)
SMDJE5-0A	SMDJE5-0CA	HDE	IDE	5	800	6.4	7	10	9.2	326.1
SMDJE6-0A	SMDJE6-0CA	HDG	IDG	6	800	6.67	7.37	10	10.3	291.3
SMDJE6-5A	SMDJE6-5CA	HDK	IDK	6.5	500	7.22	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

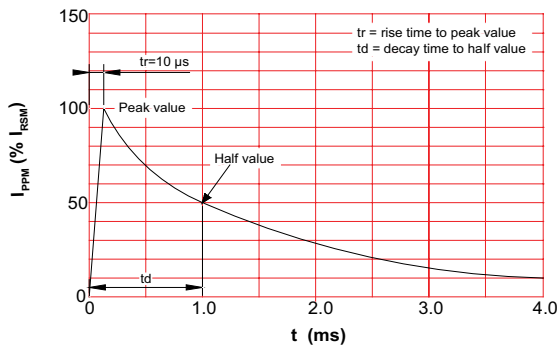
V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse leakage current

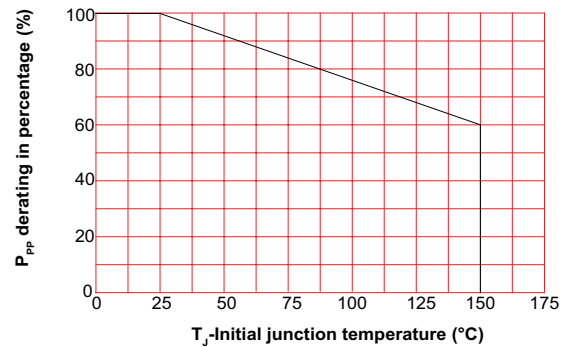
I_T : Test current

V_F : Forward voltage drop for Uni-directional TVS diode

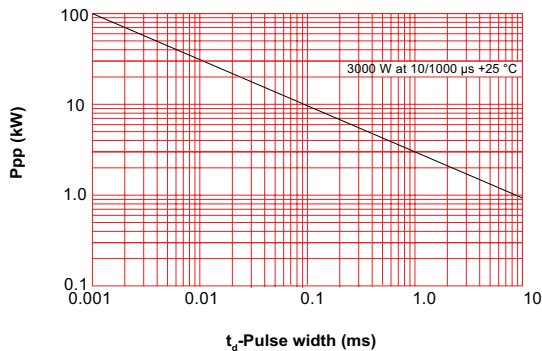
Pulse waveform



Pulse derating curve



Peak pulse power dissipation vs. pulse width



Solder reflow profile

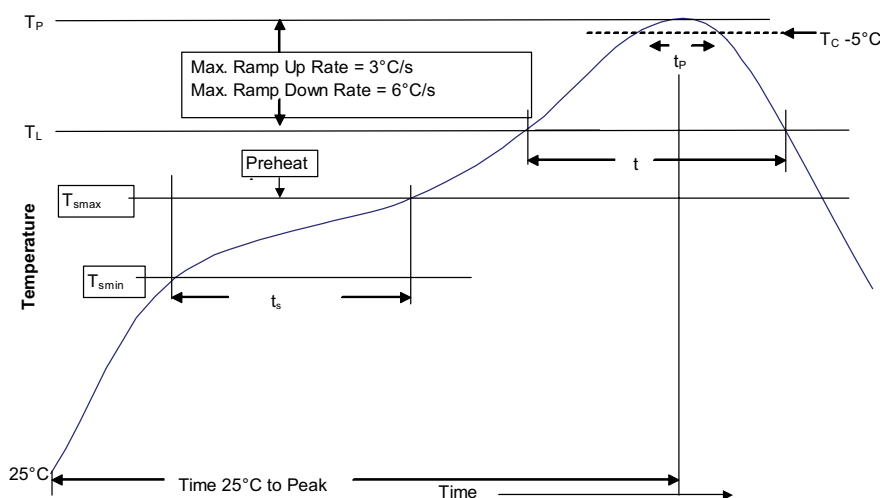


Table 1 - Standard SnPb solder (T_C)

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		
• 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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