



8.0SMDJ Series 8000W Transient Voltage Suppressor

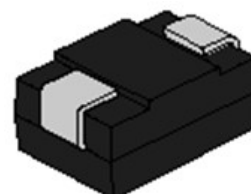
Rev.1.1

DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 8000W peak pulse power capability at 10/1000 μ s waveform.
- ✧ Typical I_R less than 5 μ A above 22V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260 $^{\circ}$ C/40s at terminals.
- ✧ Plastic package has under writers laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}$ C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.



SMC



Bi-directional



Uni-directional

Symbol

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}$ C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T_J/T_{STG}	-55 to +150	$^{\circ}$ C
Peak pulse power dissipation at 10/1000 μ s waveform	P_{PP}	8000	W
Steady state power dissipation at $T_L=75^{\circ}$ C	$P_{M(AV)}$	6.5	W
Maximum instantaneous forward voltage at 100A for unidirectional only	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I_{FSM}	300	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}$ C/W

Notes:

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

MARKING



8BEP: Device Marking Code
2009: In ninth week, 2020

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

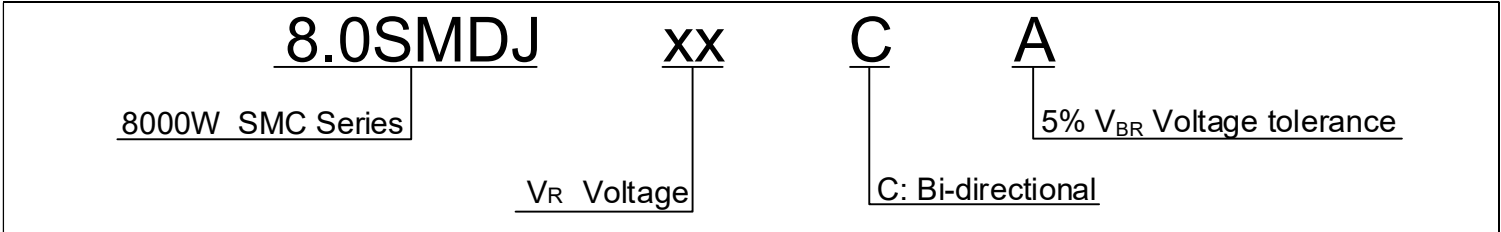
Part Number		Marking		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}^{\circ}$	I_{PP}°	$V_C@I_{PP}^{\circ}$	I_{PP}°
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A	max(V)	A
8.0SMDJ12A	8.0SMDJ12CA	8PEP	8BEP	12	800	13.30	14.70	10	19.9	402.1	25.7	2613.7
8.0SMDJ13A	8.0SMDJ13CA	8PEQ	8BEQ	13	500	14.40	15.90	10	21.5	372.1	27.8	2418.7
8.0SMDJ14A	8.0SMDJ14CA	8PER	8BER	14	200	15.60	17.20	10	23.2	344.9	30.0	2241.9
8.0SMDJ15A	8.0SMDJ15CA	8PES	8BES	15	100	16.70	18.50	1	24.4	327.9	31.5	2131.4
8.0SMDJ16A	8.0SMDJ16CA	8PET	8BET	16	50	17.80	19.70	1	26.0	307.7	33.6	2000.1
8.0SMDJ17A	8.0SMDJ17CA	8PEU	8BEU	17	20	18.90	20.90	1	27.6	290.0	35.7	1885.0
8.0SMDJ18A	8.0SMDJ18CA	8PEV	8BEV	18	10	20.00	22.10	1	29.2	274.0	37.7	1781.0
8.0SMDJ20A	8.0SMDJ20CA	8PEW	8BEW	20	5	22.20	24.50	1	32.4	247.0	41.9	1605.5
8.0SMDJ22A	8.0SMDJ22CA	8PEX	8BEX	22	5	24.40	26.90	1	35.5	225.4	45.9	1464.8
8.0SMDJ24A	8.0SMDJ24CA	8PEZ	8BEZ	24	5	26.70	29.50	1	38.9	205.7	50.3	1336.8
8.0SMDJ26A	8.0SMDJ26CA	8PFE	8BFE	26	5	28.90	31.90	1	42.1	190.1	54.4	1235.7
8.0SMDJ28A	8.0SMDJ28CA	8PFG	8BFG	28	5	31.10	34.40	1	45.4	176.2	58.7	1145.4
8.0SMDJ30A	8.0SMDJ30CA	8PFK	8BFK	30	5	33.30	36.80	1	48.4	165.3	62.5	1074.5
8.0SMDJ33A	8.0SMDJ33CA	8PFM	8BFM	33	5	36.70	40.60	1	53.3	150.1	68.9	975.7
8.0SMDJ36A	8.0SMDJ36CA	8PFP	8BFP	36	5	40.00	44.20	1	58.1	137.8	75.1	895.7
8.0SMDJ40A	8.0SMDJ40CA	8PFR	8BFR	40	5	44.40	49.10	1	64.5	124.1	83.3	806.7
8.0SMDJ43A	8.0SMDJ43CA	8PFT	8BFT	43	5	47.80	52.80	1	69.4	115.3	89.7	749.5
8.0SMDJ45A	8.0SMDJ45CA	8PFV	8BFV	45	5	50.00	55.30	1	72.7	110.1	93.9	715.7
8.0SMDJ48A	8.0SMDJ48CA	8PFX	8BFX	48	5	53.30	58.90	1	77.4	103.4	100.0	671.8
8.0SMDJ51A	8.0SMDJ51CA	8PFZ	8BFZ	51	5	56.70	62.70	1	82.4	97.1	106.5	631.2
8.0SMDJ54A	8.0SMDJ54CA	8PGE	8BGE	54	5	60.00	66.30	1	87.1	92.0	112.5	598.0
8.0SMDJ58A	8.0SMDJ58CA	8PGG	8BGG	58	5	64.40	71.20	1	93.6	85.5	120.9	555.8
8.0SMDJ60A	8.0SMDJ60CA	8PGK	8BGK	60	5	66.70	73.70	1	96.8	82.7	125.1	537.2
8.0SMDJ64A	8.0SMDJ64CA	8PGM	8BGM	64	5	71.10	78.60	1	103.0	77.7	133.1	504.9

ELECTRICAL CHARACTERISTICS (TA=25℃, continued)

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @ I _{PP} ①	I _{PP} ②	V _C @ I _{PP} ②	I _{PP} ②
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A	max(V)	A
8.0SMDJ70A	8.0SMDJ70CA	8PGP	8BGP	70	5	77.80	86.00	1	113.0	71.0	146.0	461.5
8.0SMDJ75A	8.0SMDJ75CA	8PGR	8BGR	75	5	83.30	92.10	1	121.0	66.2	156.3	430.3
8.0SMDJ78A	8.0SMDJ78CA	8PGT	8BGT	78	5	86.70	95.80	1	126.0	63.5	162.8	412.8
8.0SMDJ85A	8.0SMDJ85CA	8PGV	8BGV	85	5	94.40	104.0	1	137.0	58.4	177.0	379.6
8.0SMDJ90A	8.0SMDJ90CA	8PGX	8BGX	90	5	100.0	111.0	1	146.0	55.0	188.6	357.5
8.0SMDJ100A	8.0SMDJ100CA	8PGZ	8BGZ	100	5	111.0	123.0	1	162.0	49.4	209.3	321.1
8.0SMDJ110A	8.0SMDJ110CA	8PHE	8BHE	110	5	122.0	135.0	1	177.0	45.2	228.7	293.8

- ① Surge waveform: 10/1000μs
- ② Surge waveform: 8/20μs
- 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

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25°C, unless otherwise noted)

FIG.1:V- I curve characteristics
(Uni-directional)

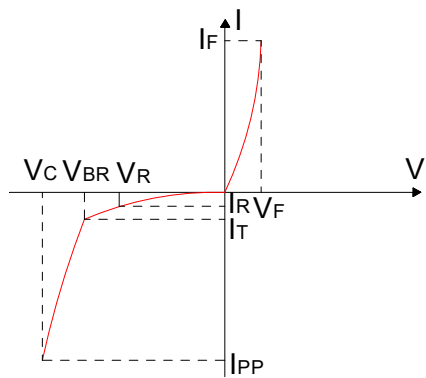


FIG.2:V- I curve characteristics
(Bi-directional)

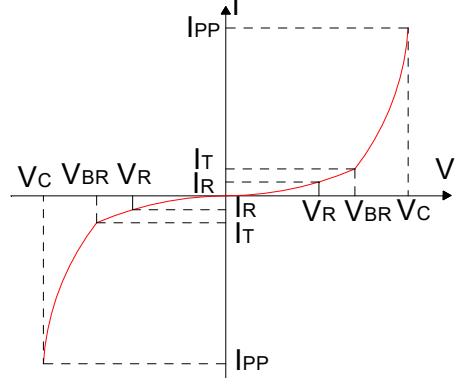


FIG.3: Pulse waveform

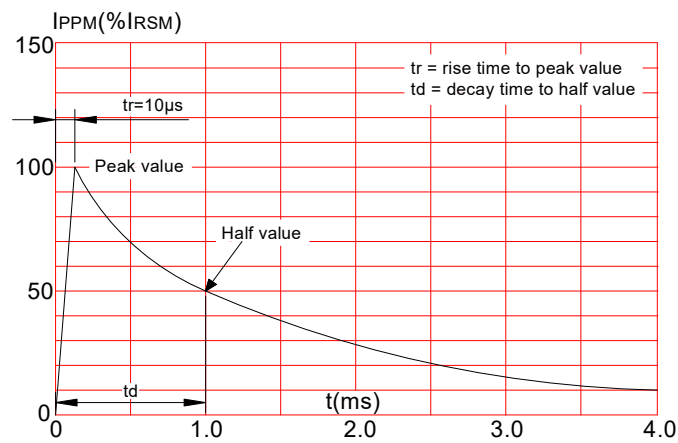


FIG.4: Pulse waveform

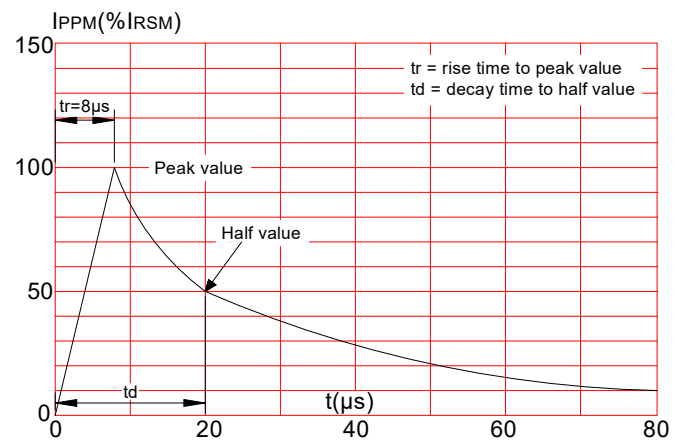


FIG.5: Pulse derating curve (10/1000µs)

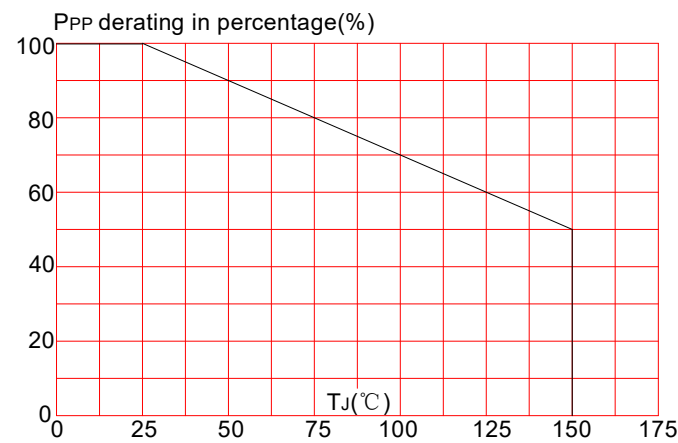
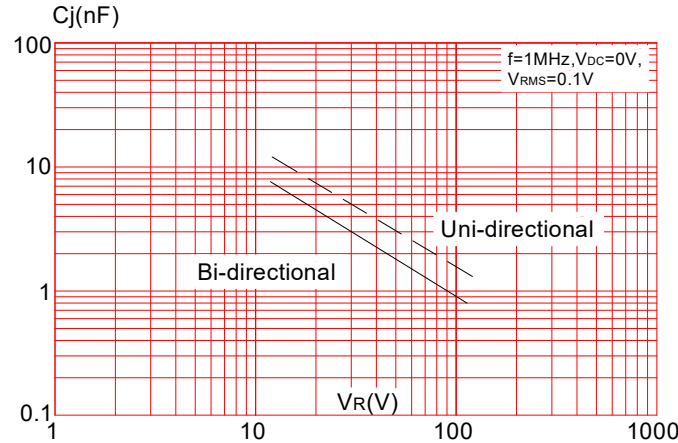
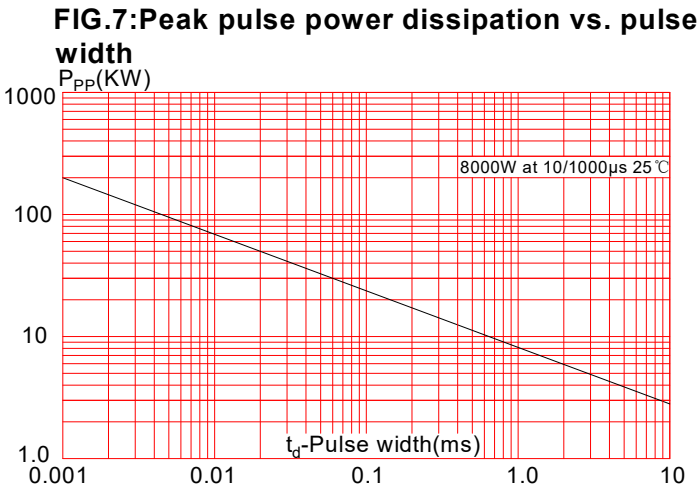


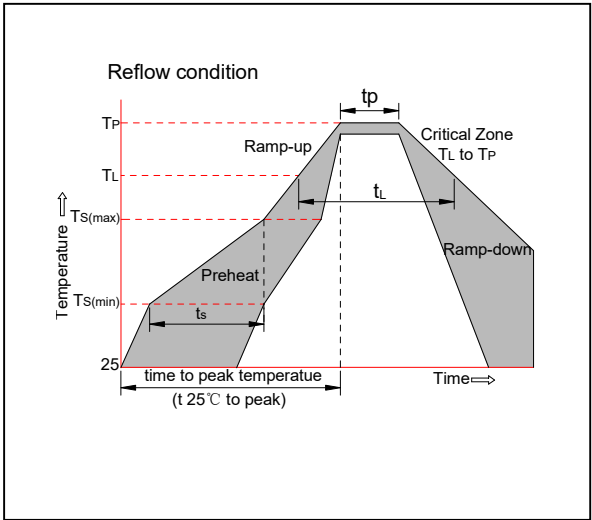
FIG.6: Typical junction capacitance



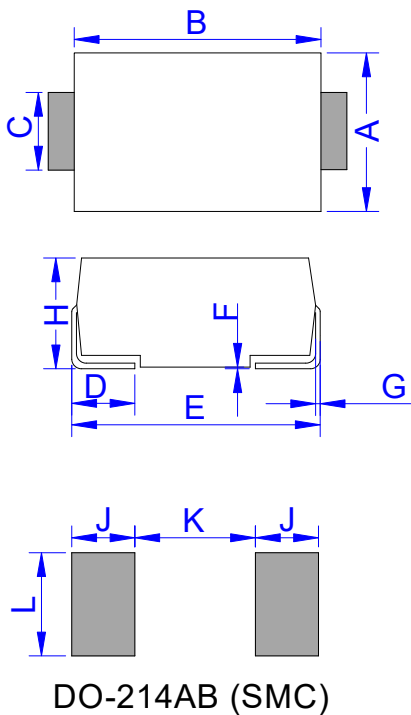


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

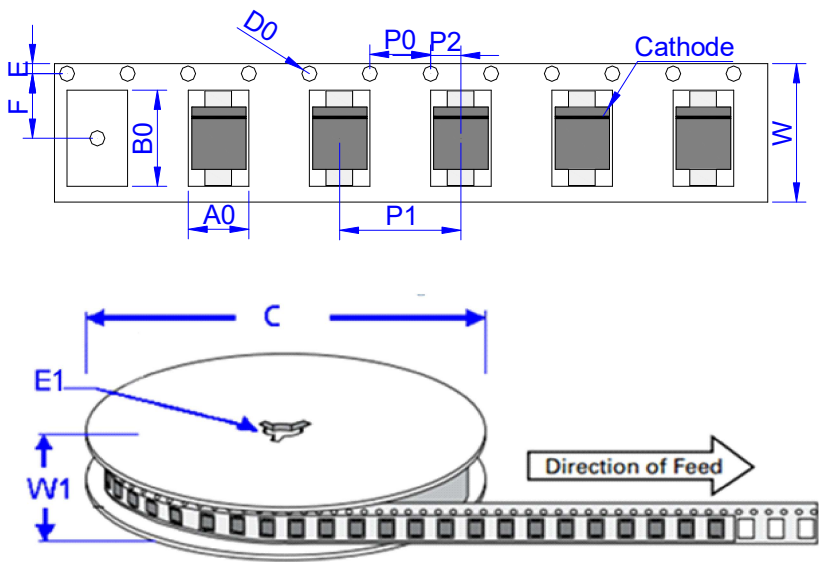


PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
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	

TAPE AND REEL SPECIFICATION-SMC



Ref.	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

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
8.0SMDJxxCA/A	0.294/0.342 (NOTE)	3,000	48,000	13 inch reel pack

Notes: 0.342g/PCS for single die; 0.294g/PCS for stacked dies

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