SuperTVS – 600W Transient Voltage Suppressor

1. Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Meets MSL level 1, per J-STD-020
- 600W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1μA above 10V
- Plastic package has underwriters laboratory flammability 94V-0
- High Temperature soldering: 260℃/10 seconds at terminals

2. Mechanical Data

- Case: JEDEC DO-214AA. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 12mm tape
- Weight: 0.10g

3. Maximum Ratings and Characteristics

Ratings at 25° ambient temperature unless otherwise specified

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000us waveform(Note1,2)	P_{PPM}	600	W
Peak pulse current of at 10/1000us waveform(Note1)	I_{PPM}	See Table	A
Steady state power dissipation at TA=50℃	$P_{M(AV)}$	5.0	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)(Note3)	I_{FSM}	100	A
Operating junction and Storage Temperature Range	T_J, T_{STG}	-65 to 150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	℃/W

Notes：

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25℃ per Fig.2.
2. Mounted on 5.0mm×5.0mm copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

4. Electrical Characteristics (TA=25°C)

Part Number	Part Number	Marking		Reverse Stand off Voltage V_R	Breakdown Voltage V_{BR} (Volts) @ I_T		Test Current I_T	Maximum Clamping Voltage V_C @ I_{pp}	Maximum Peak Pulse Current I_{pp}	Maximum Reverse Leakage I_R @ V_R	ROHS2.0
UNI	BI	UNI	BI	(V)	MIN	MAX	(mA)	(V)	(A)	(μA)	
SMBJ5.0A	SMBJ5.0CA	KE	AE	5	6.4	7	10	9.2	65.3	400	y
SMBJ6.0A	SMBJ6.0CA	KG	AG	6	6.67	7.37	10	10.3	58.3	400	y
SMBJ6.5A	SMBJ6.5CA	KK	AK	6.5	7.22	7.98	10	11.2	53.6	250	y
SMBJ7.0A	SMBJ7.0CA	KM	AM	7	7.78	8.6	10	12	50	100	y
SMBJ7.5A	SMBJ7.5CA	KP	AP	7.5	8.33	9.21	1	12.9	46.6	80	y
SMBJ8.0A	SMBJ8.0CA	KR	AR	8	8.89	9.83	1	13.6	44.2	50	y
SMBJ8.5A	SMBJ8.5CA	KT	AT	8.5	9.44	10.4	1	14.4	41.7	20	y
SMBJ9.0A	SMBJ9.0CA	KV	AV	9	10	11.1	1	15.4	39	10	y
SMBJ10A	SMBJ10CA	KX	AX	10	11.1	12.3	1	17	35.3	5	y
SMBJ11A	SMBJ11CA	KZ	AZ	11	12.2	13.5	1	18.2	33	1	y
SMBJ12A	SMBJ12CA	LE	BE	12	13.3	14.7	1	19.9	30.2	1	y
SMBJ13A	SMBJ13CA	LG	BG	13	14.4	15.9	1	21.5	28	1	y
SMBJ14A	SMBJ14CA	LK	BK	14	15.6	17.2	1	23.2	25.9	1	y
SMBJ15A	SMBJ15CA	LM	BM	15	16.7	18.5	1	24.4	24.6	1	y
SMBJ16A	SMBJ16CA	LP	BP	16	17.8	19.7	1	26	23.1	1	y
SMBJ17A	SMBJ17CA	LR	BR	17	18.9	20.9	1	27.6	21.8	1	y
SMBJ18A	SMBJ18CA	LT	BT	18	20	22.1	1	29.2	20.6	1	y
SMBJ20A	SMBJ20CA	LV	BV	20	22.2	24.5	1	32.4	18.6	1	y
SMBJ22A	SMBJ22CA	LX	BX	22	24.4	26.9	1	35.5	16.9	1	y
SMBJ24A	SMBJ24CA	LZ	BZ	24	26.7	29.5	1	38.9	15.5	1	y
SMBJ26A	SMBJ26CA	ME	CE	26	28.9	31.9	1	42.1	14.3	1	y
SMBJ28A	SMBJ28CA	MG	CG	28	31.1	34.4	1	45.4	13.3	1	y
SMBJ30A	SMBJ30CA	MK	CK	30	33.3	36.8	1	48.4	12.4	1	y
SMBJ33A	SMBJ33CA	MM	CM	33	36.7	40.6	1	53.3	11.3	1	y
SMBJ36A	SMBJ36CA	MP	CP	36	40	44.2	1	58.1	10.4	1	y
SMBJ40A	SMBJ40CA	MR	CR	40	44.4	49.1	1	64.5	9.3	1	y
SMBJ43A	SMBJ43CA	MT	CT	43	47.8	52.8	1	69.4	8.7	1	y

Part Number	Part Number	Marking		Reverse Stand off Voltage V_R	Breakdown Voltage V_{BR} (Volts) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{pp} (V)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Reverse Leakage I_R @ V_R (μA)	ROHS2.0
UNI	BI	UNI	BI	(Volts)	MIN	MAX	(mA)	(V)			
SMBJ45A	SMBJ45CA	MV	CV	45	50	55.3	1	72.7	8.3	1	y
SMBJ48A	SMBJ48CA	MX	CX	48	53.3	58.9	1	77.4	7.8	1	y
SMBJ51A	SMBJ51CA	MZ	CZ	51	56.7	62.7	1	82.4	7.3	1	y
SMBJ54A	SMBJ54CA	NE	DE	54	60	66.3	1	87.1	6.9	1	y
SMBJ58A	SMBJ58CA	NG	DG	58	64.4	71.2	1	93.6	6.5	1	y
SMBJ60A	SMBJ60CA	NK	DK	60	66.7	73.7	1	96.8	6.2	1	y
SMBJ64A	SMBJ64CA	NM	DM	64	71.1	78.6	1	103	5.9	1	y
SMBJ70A	SMBJ70CA	NP	DP	70	77.8	86	1	113	5.3	1	y
SMBJ75A	SMBJ75CA	NR	DR	75	83.3	92.1	1	121	5	1	y
SMBJ78A	SMBJ78CA	NT	DT	78	86.7	95.8	1	126	4.8	1	y
SMBJ85A	SMBJ85CA	NV	DV	85	94.4	104	1	137	4.4	1	y
SMBJ90A	SMBJ90CA	NX	DX	90	100	111	1	146	4.1	1	y
SMBJ100A	SMBJ100CA	NZ	DZ	100	111	123	1	162	3.7	1	y
SMBJ110A	SMBJ110CA	PE	EE	110	122	135	1	177	3.4	1	y
SMBJ120A	SMBJ120CA	PG	EG	120	133	147	1	193	3.1	1	y
SMBJ130A	SMBJ130CA	PK	EK	130	144	159	1	209	2.9	1	y
SMBJ150A	SMBJ150CA	PM	EM	150	167	185	1	243	2.5	1	y
SMBJ160A	SMBJ160CA	PP	EP	160	178	197	1	259	2.3	1	y
SMBJ170A	SMBJ170CA	PR	ER	170	189	209	1	275	2.2	1	y
SMBJ180A	SMBJ180CA	PT	ET	180	201	222	1	292	2.1	1	y
SMBJ200A	SMBJ200CA	PV	EV	200	224	247	1	324	1.9	1	y
SMBJ220A	SMBJ220CA	PX	EX	220	246	272	1	356	1.7	1	y
SMBJ250A	SMBJ250CA	PZ	EZ	250	279	309	1	405	1.5	1	y
SMBJ300A	SMBJ300CA	QE	FE	300	335	371	1	486	1.3	1	y
SMBJ350A	SMBJ350CA	QG	FG	350	391	432	1	567	1.1	1	y
SMBJ400A	SMBJ400CA	QK	FK	400	447	494	1	648	0.9	1	y
SMBJ440A	SMBJ440CA	QM	FM	440	492	543	1	713	0.9	1	y

For bidirectional type having V_{RWM} of 10 volts and less, the IR limit is double.

5. Ratings and Characteristic Curves (TA =25℃ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

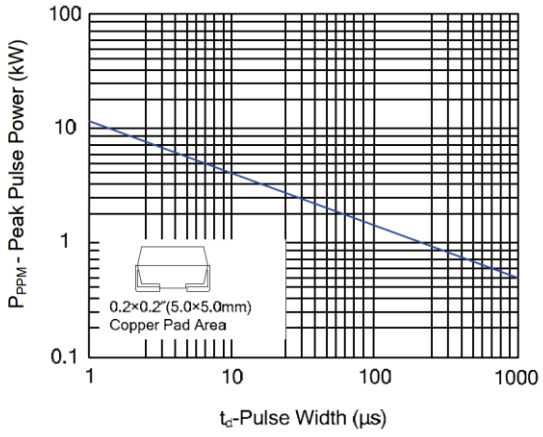


Figure 2 Pulse Derating Curve

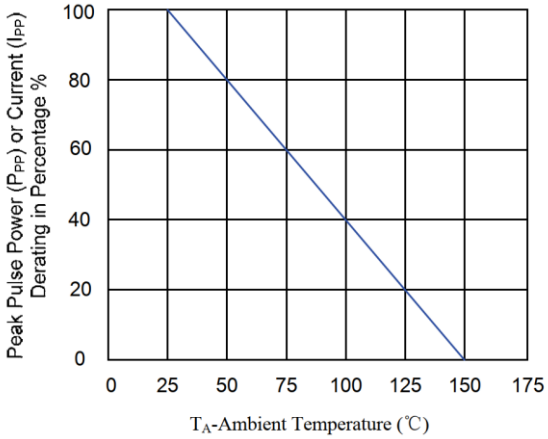


Figure 3 Pulse Waveform

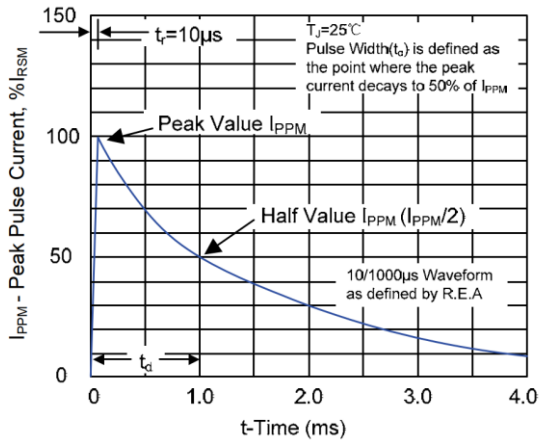


Figure 4 Typical Junction Capacitance

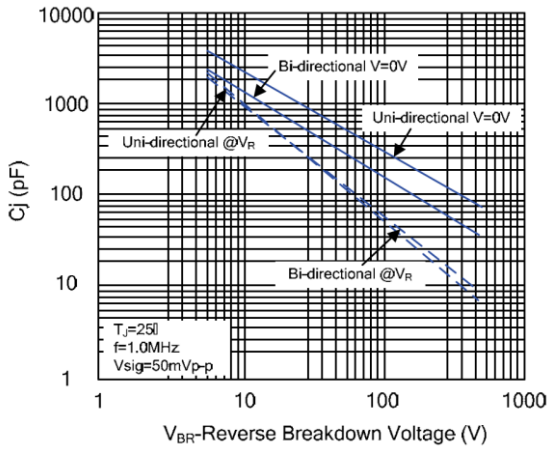


Figure 5 Steady State Power Dissipation Derating Curve

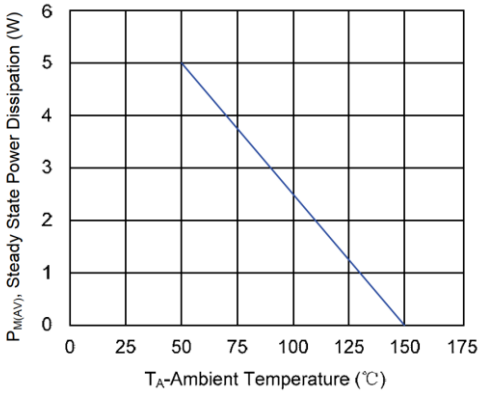
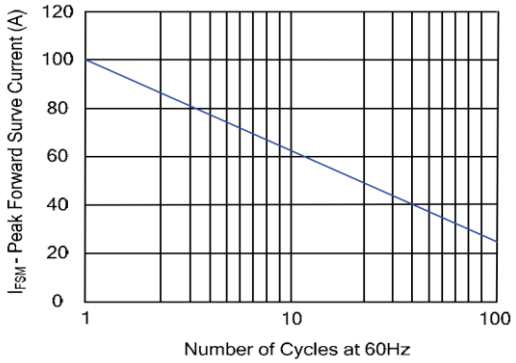
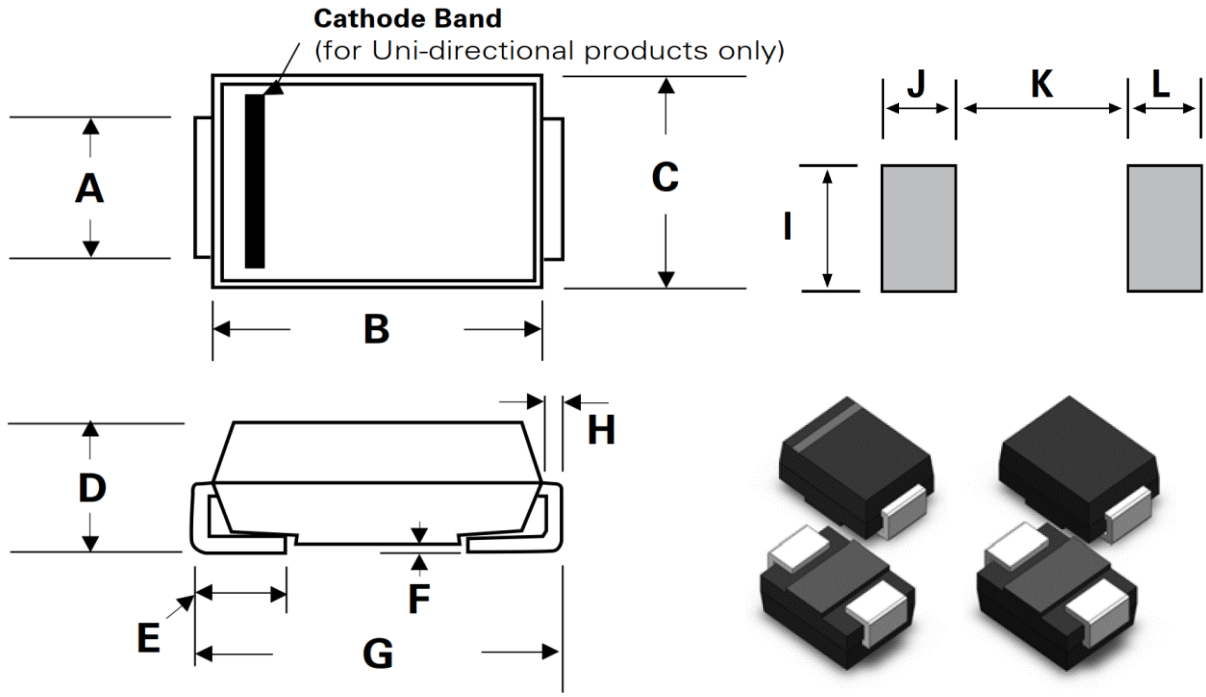


Figure 6 Maximum Non-Repetitive Forward Surge Current
Uni-Directional Only

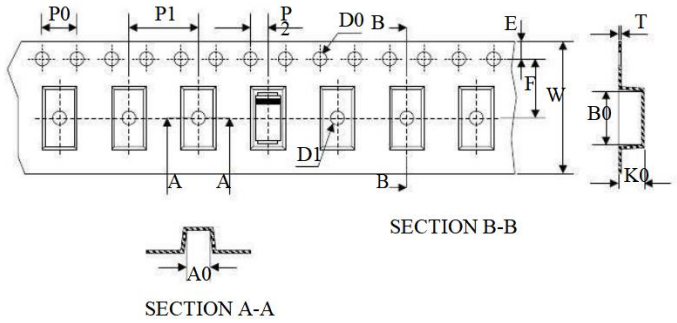


6. Dimension (SMB/DO-214AA)

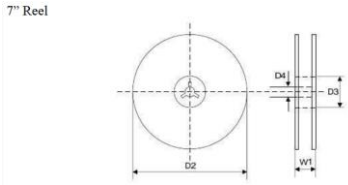


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.077	0.086	1.95	2.2
B	0.16	0.18	4.06	4.57
C	0.13	0.155	3.3	3.94
D	0.084	0.096	2.13	2.44
E	0.03	0.06	0.76	1.52
F	-	0.008	-	0.203
G	0.205	0.22	5.21	5.59
H	0.006	0.012	0.152	0.305
I	0.089	-	2.26	-
J	0.085	-	2.16	-
K	-	0.107	-	2.74
L	0.085	-	2.16	-

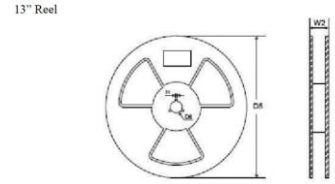
7. Packaging



Symbol	Dimension
W	12.0±0.20
P0	4.0±0.10
P1	8.00±0.10
P2	2.0±0.10
D0	φ1.55±0.10
D1	φ1.5±0.10
E	1.75±0.10
F	5.50±0.10
A0	3.86±0.15
B0	5.65±0.10
K0	2.75±0.15
T	0.25±0.05



D2	φ178.0±2.0
D3	φ50.0min.
D4	φ13.0±0.5
W1	16.0±2.0
Quantity: 500PCS	



D5	330.0±2.0
D6	13.5±0.5
H	2.5±1.0
W2	16.0±2.0
Quantity: 3000PCS	

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