ElecSuper SuperTVS – 400W 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
- IEC 61000-4-2(ESD)±30KV(air) ±30KV(contact)
- 400W 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-214AC. 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: 0.07g

3. Marking Information

BI- directional	UNI-directional	Marking
		XXXX= Product type marking code (See Electrical Characteristics Table)

4. 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}	400	W
Peak pulse current of at 10/1000us waveform	I_{PPM}	See Table	A
Steady state power dissipation at TA=50℃	$P_{M(AV)}$	3.3	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (Note3)	I_{FSM}	40	A

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Operating junction and Storage Temperature Range	T_J, T_{STG}	-65 to 150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	30	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	120	℃/W
Maximum instantaneous forward voltage @ at 25A for unidirectional only (Note4)	V_F	3.5/5	V
Maximum instantaneous forward voltage @ at 1A for unidirectional only	V_F	1.5	V

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. VF<3.5V for devices of VBR<200V and VF<5.0V for devices of VBR>201V.

5. Electrical Characteristics (TA=25℃)

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)	
SMAJ5.0A	SMAJ5.0CA	AE	WE	5	6.4	7	10	9.2	43.5	400	y
SMAJ6.0A	SMAJ6.0CA	AG	WG	6	6.67	7.37	10	10.3	38.8	400	y
SMAJ6.5A	SMAJ6.5CA	AK	WK	6.5	7.22	7.98	10	11.2	35.7	250	y
SMAJ7.0A	SMAJ7.0CA	AM	WM	7	7.78	8.6	10	12	33.3	100	y
SMAJ7.5A	SMAJ7.5CA	AP	WP	7.5	8.33	9.21	1	12.9	31	80	y
SMAJ8.0A	SMAJ8.0CA	AR	WR	8	8.89	9.83	1	13.6	29.4	50	y
SMAJ8.5A	SMAJ8.5CA	AT	WT	8.5	9.44	10.4	1	14.4	27.8	20	y
SMAJ9.0A	SMAJ9.0CA	AV	WV	9	10	11.1	1	15.4	26	10	y
SMAJ10A	SMAJ10CA	AX	WX	10	11.1	12.3	1	17	23.5	5	y
SMAJ11A	SMAJ11CA	AZ	WZ	11	12.2	13.5	1	18.2	22	1	y
SMAJ12A	SMAJ12CA	BE	XE	12	13.3	14.7	1	19.9	20.1	1	y
SMAJ13A	SMAJ13CA	BG	XG	13	14.4	15.9	1	21.5	18.6	1	y
SMAJ14A	SMAJ14CA	BK	XK	14	15.6	17.2	1	23.2	17.2	1	y
SMAJ15A	SMAJ15CA	BM	XM	15	16.7	18.5	1	24.4	16.4	1	y
SMAJ16A	SMAJ16CA	BP	XP	16	17.8	19.7	1	26	15.4	1	y
SMAJ17A	SMAJ17CA	BR	XR	17	18.9	20.9	1	27.6	14.5	1	y
SMAJ18A	SMAJ18CA	BT	XT	18	20	22.1	1	29.2	13.7	1	y
SMAJ20A	SMAJ20CA	BV	XV	20	22.2	24.5	1	32.4	12.3	1	y
SMAJ22A	SMAJ22CA	BX	XX	22	24.4	26.9	1	35.5	11.3	1	y
SMAJ24A	SMAJ24CA	BZ	XZ	24	26.7	29.5	1	38.9	10.3	1	y

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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)			
SMAJ26A	SMAJ26CA	CE	YE	26	28.9	31.9	1	42.1	9.5	1	y
SMAJ28A	SMAJ28CA	CG	YG	28	31.1	34.4	1	45.4	8.8	1	y
SMAJ30A	SMAJ30CA	CK	YK	30	33.3	36.8	1	48.4	8.3	1	y
SMAJ33A	SMAJ33CA	CM	YM	33	36.7	40.6	1	53.3	7.5	1	y
SMAJ36A	SMAJ36CA	CP	YP	36	40	44.2	1	58.1	6.9	1	y
SMAJ40A	SMAJ40CA	CR	YR	40	44.4	49.1	1	64.5	6.2	1	y
SMAJ43A	SMAJ43CA	CT	YT	43	47.8	52.8	1	69.4	5.8	1	y
SMAJ45A	SMAJ45CA	CV	YV	45	50	55.3	1	72.7	5.5	1	y
SMAJ48A	SMAJ48CA	CX	YX	48	53.3	58.9	1	77.4	5.2	1	y
SMAJ51A	SMAJ51CA	CZ	YZ	51	56.7	62.7	1	82.4	4.9	1	y
SMAJ54A	SMAJ54CA	RE	ZE	54	60	66.3	1	87.1	4.6	1	y
SMAJ58A	SMAJ58CA	RG	ZG	58	64.4	71.2	1	93.6	4.3	1	y
SMAJ60A	SMAJ60CA	RK	ZK	60	66.7	73.7	1	96.8	4.1	1	y
SMAJ64A	SMAJ64CA	RM	ZM	64	71.1	78.6	1	103	3.9	1	y
SMAJ70A	SMAJ70CA	RP	ZP	70	77.8	86	1	113	3.5	1	y
SMAJ75A	SMAJ75CA	RR	ZR	75	83.3	92.1	1	121	3.3	1	y
SMAJ78A	SMAJ78CA	RT	ZT	78	86.7	95.8	1	126	3.2	1	y
SMAJ85A	SMAJ85CA	RV	ZV	85	94.4	104	1	137	2.9	1	y
SMAJ90A	SMAJ90CA	RX	ZX	90	100	111	1	146	2.7	1	y
SMAJ100A	SMAJ100CA	RZ	ZZ	100	111	123	1	162	2.5	1	y
SMAJ110A	SMAJ110CA	SE	VE	110	122	135	1	177	2.3	1	y
SMAJ120A	SMAJ120CA	SG	VG	120	133	147	1	193	2.1	1	y
SMAJ130A	SMAJ130CA	SK	VK	130	144	159	1	209	1.9	1	y
SMAJ150A	SMAJ150CA	SM	VM	150	167	185	1	243	1.6	1	y
SMAJ160A	SMAJ160CA	SP	VP	160	178	197	1	259	1.5	1	y
SMAJ170A	SMAJ170CA	SR	VR	170	189	209	1	275	1.5	1	y
SMAJ180A	SMAJ180CA	ST	VT	180	201	222	1	292	1.4	1	y
SMAJ200A	SMAJ200CA	SV	VV	200	224	247	1	324	1.2	1	y
SMAJ220A	SMAJ220CA	SX	VX	220	246	272	1	356	1.1	1	y
SMAJ250A	SMAJ250CA	SZ	VZ	250	279	309	1	405	1	1	y
SMAJ300A	SMAJ300CA	TE	UE	300	335	371	1	486	0.8	1	y
SMAJ350A	SMAJ350CA	TG	UG	350	391	432	1	567	0.7	1	y
SMAJ400A	SMAJ400CA	TK	UK	400	447	494	1	648	0.6	1	y
SMAJ440A	SMAJ440CA	TM	UM	440	492	543	1	713	0.6	1	y

For bidirectional type having VR of 10 volts and less, the IR limit is double.

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

Figure 1. Peak Pulse Power Rating Curve

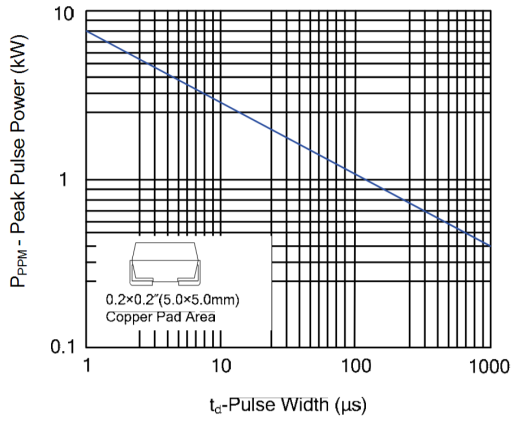


Figure 2 Pulse Derating Curve

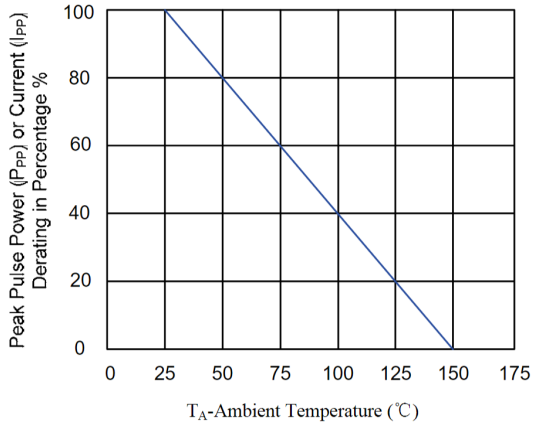


Figure 3 Pulse Waveform

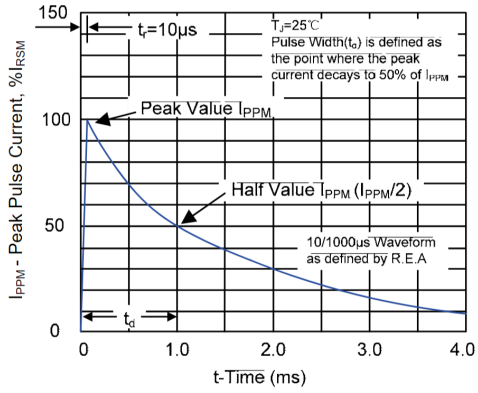


Figure 4 Typical Junction Capacitance

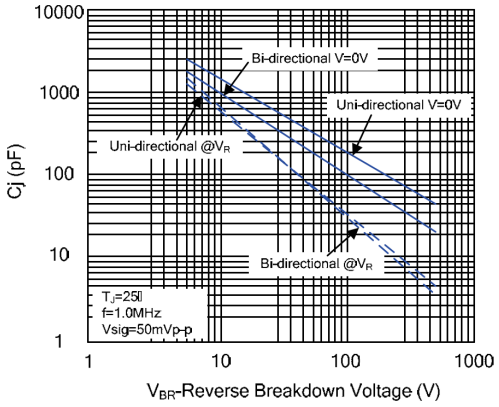


Figure 5 Steady State Power Dissipation Derating Curve

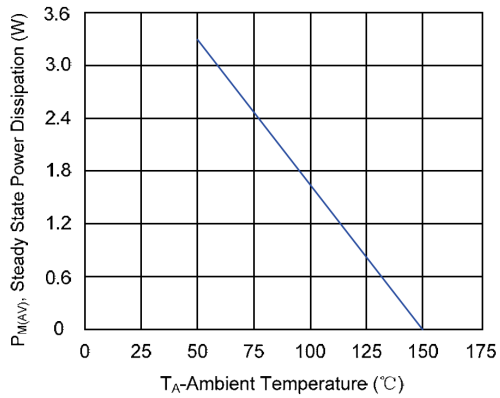
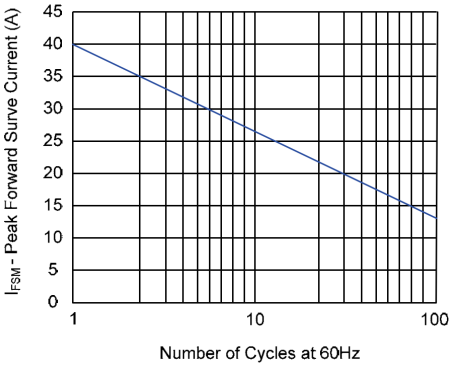
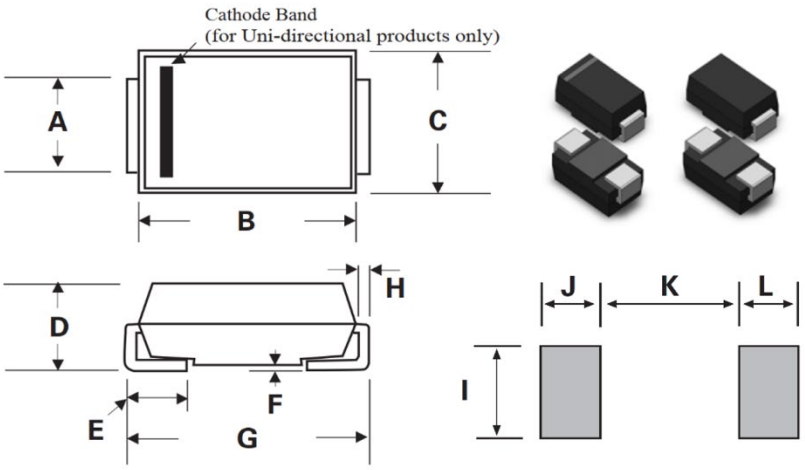


Figure 6 Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



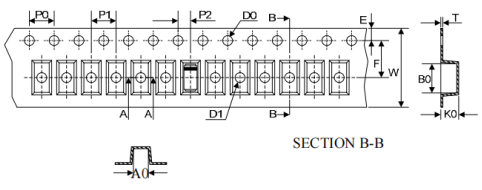
7. Dimension (SMA/DO-214AC)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.049	0.065	1.25	1.65
B	0.157	0.177	3.99	4.5
C	0.1	0.11	2.54	2.79
D	0.078	0.09	1.98	2.29
E	0.03	0.06	0.78	1.52
F	-	0.008	-	0.203
G	0.194	0.208	4.93	5.28
H	0.006	0.012	0.152	0.305
I	0.07	-	1.8	-
J	0.082	-	2.1	-
K	-	0.09	-	2.3
L	0.082	-	2.1	-

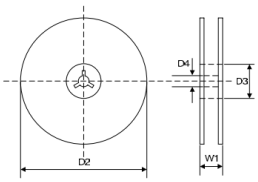
8. Packaging

Tape



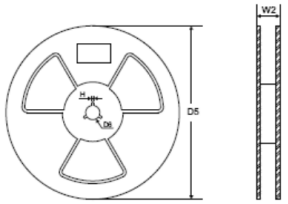
Symbol	Dimension (mm)
W	12.00±0.20
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	Φ1.5±0.10
D1	Φ1.5±0.10
E	1.75±0.10
F	5.50±0.05
A0	2.79±0.10
B0	5.33±0.10
K0	2.55±0.15
T	0.25±0.05

7" Reel



D2	Φ178.0±2.0
D3	Φ50.0Min.
D4	Φ13.0±0.5
W1	16.0±2.0
Quantity: 1000PCS	

13" Reel



D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	16.0±2.0
Quantity: 5000PCS	

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