

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) $\pm 30\text{KV}$ (air)
- $\pm 30\text{KV}$ (contact)
- 400W peak pulse power capability at 10/1000 μs waveform, repetition rate (duty cycle): 0.01%
- Typical IR less than 1 μA above 12V
- Plastic package has underwriters laboratory flammability 94V-0
- High Temperature soldering: 260 $^{\circ}\text{C}$ /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 $^{\circ}$ ambient temperature unless otherwise specified

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 μs waveform (Note1,2)	P_{PPM}	Minimum 400	W
Peak pulse current of at 10/1000 μs waveform (Note1)	I_{PPM}	See Table	A
Steady state power dissipation at $T_A=50^{\circ}\text{C}$	$P_{\text{M(AV)}}$	3.3	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (Note3)	I_{FSM}	40	A
Operating junction and Storage Temperature Range	T_J, T_{STG}	-65 to 150	$^{\circ}\text{C}$
Typical thermal resistance junction to lead	$R_{\theta\text{JL}}$	30	$^{\circ}\text{C/W}$

P4SMA SERIES

Rev-1.3

Typical thermal resistance junction to ambient	$R_{\theta JA}$	120	$^{\circ}\text{C/W}$
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Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^{\circ}\text{C}$ 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.

5. Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

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		MIN	MAX					
P4SMA6.8A	P4SMA6.8CA	6V8A	6V8C	5.8	6.45	7.14	10	10.5	39	400	y
P4SMA7.5A	P4SMA7.5CA	7V5A	7V5C	6.4	7.13	7.88	10	11.3	36.3	400	y
P4SMA8.2A	P4SMA8.2CA	8V2A	8V2C	7.02	7.79	8.61	10	12.1	33.9	200	y
P4SMA9.1A	P4SMA9.1CA	9V1A	9V1C	7.78	8.65	9.55	1	13.4	30.6	50	y
P4SMA10A	P4SMA10CA	10A	10C	8.55	9.5	10.5	1	14.5	28.3	10	y
P4SMA11A	P4SMA11CA	11A	11C	9.4	10.5	11.6	1	15.6	26.3	5	y
P4SMA12A	P4SMA12CA	12A	12C	10.2	11.4	12.6	1	16.7	24.6	5	y
P4SMA13A	P4SMA13CA	13A	13C	11.1	12.4	13.7	1	18.2	22.5	1	y
P4SMA15A	P4SMA15CA	15A	15C	12.8	14.3	15.8	1	21.2	19.3	1	y
P4SMA16A	P4SMA16CA	16A	16C	13.6	15.2	16.8	1	22.5	18.2	1	y
P4SMA18A	P4SMA18CA	18A	18C	15.3	17.1	18.9	1	25.5	16.1	1	y
P4SMA20A	P4SMA20CA	20A	20C	17.1	19	21	1	27.7	14.8	1	y
P4SMA22A	P4SMA22CA	22A	22C	18.8	20.9	23.1	1	30.6	13.4	1	y
P4SMA24A	P4SMA24CA	24A	24C	20.5	22.8	25.2	1	33.2	12.3	1	y
P4SMA27A	P4SMA27CA	27A	27C	23.1	25.7	28.4	1	37.5	10.9	1	y
P4SMA30A	P4SMA30CA	30A	30C	25.6	28.5	31.5	1	41.4	9.9	1	y
P4SMA33A	P4SMA33CA	33A	33C	28.2	31.4	34.7	1	45.7	9	1	y
P4SMA36A	P4SMA36CA	36A	36C	30.8	34.2	37.8	1	49.9	8.2	1	y
P4SMA39A	P4SMA39CA	39A	39C	33.3	37.1	41	1	53.9	7.6	1	y
P4SMA43A	P4SMA43CA	43A	43C	36.8	40.9	45.2	1	59.3	6.9	1	y
P4SMA47A	P4SMA47CA	47A	47C	40.2	44.7	49.4	1	64.8	6.3	1	y
P4SMA51A	P4SMA51CA	51A	51C	43.6	48.5	53.6	1	70.1	5.8	1	y
P4SMA56A	P4SMA56CA	56A	56C	47.8	53.2	58.8	1	77	5.3	1	y
P4SMA62A	P4SMA62CA	62A	62C	53	58.9	65.1	1	85	4.8	1	y
P4SMA68A	P4SMA68CA	68A	68C	58.1	64.6	71.4	1	92	4.5	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	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)	
P4SMA75A	P4SMA75CA	75A	75C	64.1	71.3	78.8	1	103	4	1	y
P4SMA82A	P4SMA82CA	82A	82C	70.1	77.9	86.1	1	113	3.6	1	y
P4SMA91A	P4SMA91CA	91A	91C	77.8	86.5	95.5	1	125	3.3	1	y
P4SMA100A	P4SMA100CA	100A	100C	85.5	95	105	1	137	3	1	y
P4SMA110A	P4SMA110CA	110A	110C	94	105	116	1	152	2.7	1	y
P4SMA120A	P4SMA120CA	120A	120C	102	114	126	1	165	2.5	1	y
P4SMA130A	P4SMA130CA	130A	130C	111	124	137	1	179	2.3	1	y
P4SMA150A	P4SMA150CA	150A	150C	128	143	158	1	207	2	1	y
P4SMA160A	P4SMA160CA	160A	160C	136	152	168	1	219	1.9	1	y
P4SMA170A	P4SMA170CA	170A	170C	145	162	179	1	234	1.8	1	y
P4SMA180A	P4SMA180CA	180A	180C	154	171	189	1	246	1.7	1	y
P4SMA200A	P4SMA200CA	200A	200C	171	190	210	1	274	1.5	1	y
P4SMA220A	P4SMA220CA	220A	220C	185	209	231	1	328	1.3	1	y
P4SMA250A	P4SMA250CA	250A	250C	214	237	263	1	344	1.2	1	y
P4SMA300A	P4SMA300CA	300A	300C	256	285	315	1	414	1	1	y
P4SMA350A	P4SMA350CA	350A	350C	300	332	368	1	482	0.9	1	y
P4SMA400A	P4SMA400CA	400A	400C	342	380	420	1	548	0.8	1	y
P4SMA440A	P4SMA440CA	440A	440C	376	418	462	1	602	0.7	1	y
P4SMA480A	P4SMA480CA	480A	480C	408	456	504	1	658	0.6	1	y
P4SMA510A	P4SMA510CA	510A	510C	434	485	535	1	698	0.6	1	y
P4SMA530A	P4SMA530CA	530A	530C	451	503.5	556.5	1	725	0.6	1	y
P4SMA540A	P4SMA540CA	540A	540C	460	513	567	1	740	0.5	1	y
P4SMA550A	P4SMA550CA	550A	550C	468	522.5	577.5	1	760	0.5	1	y

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.

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

Figure 1. Peak Pulse Power Rating Curve

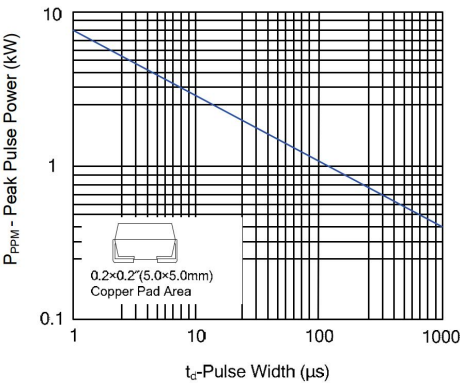


Figure 2 Pulse Derating Curve

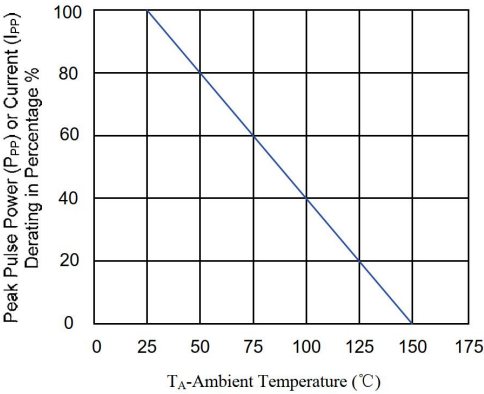


Figure 3 Pulse Waveform

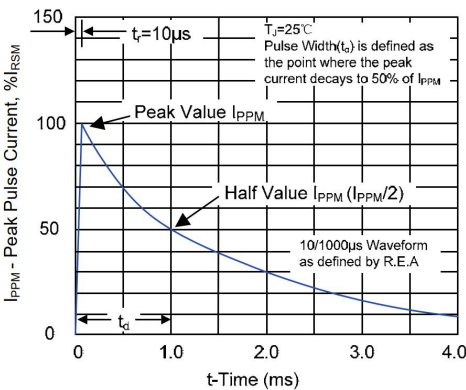


Figure 4 Typical Junction Capacitance

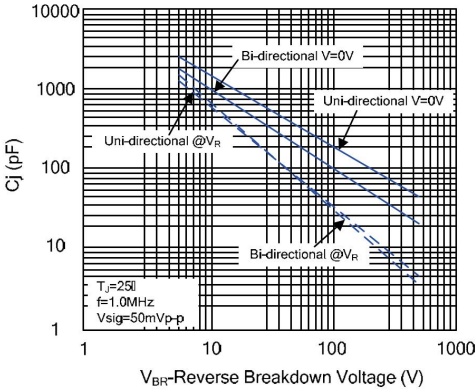


Figure 5 Steady State Power Dissipation Derating Curve

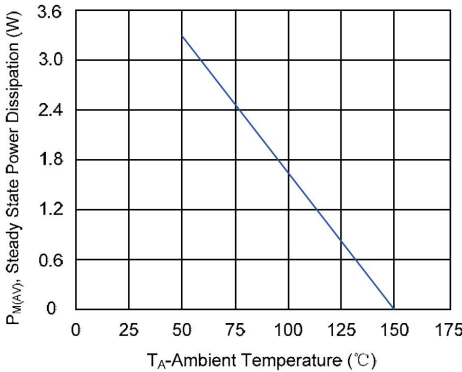
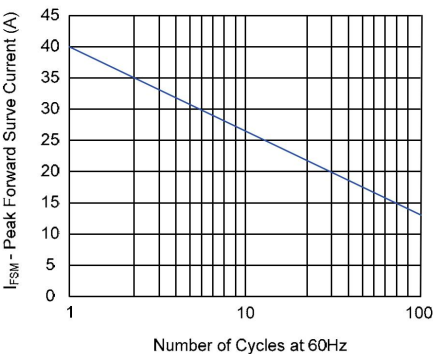
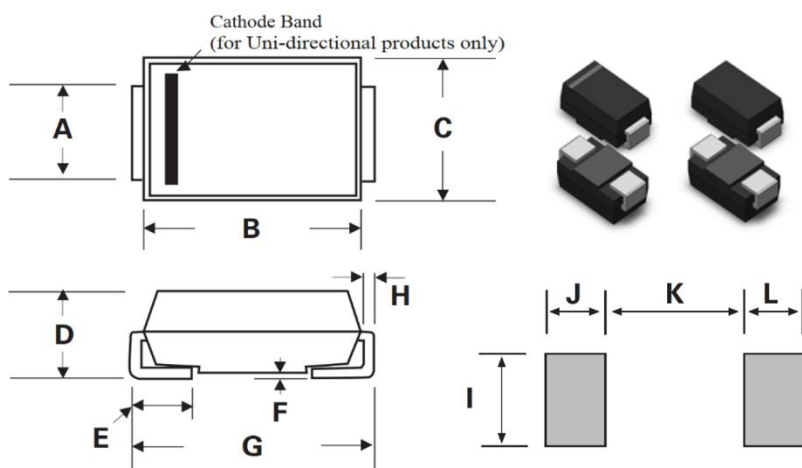


Figure 6 Maximum Non-Repetitive Forward Surge Current
Uni-Directional Only



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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