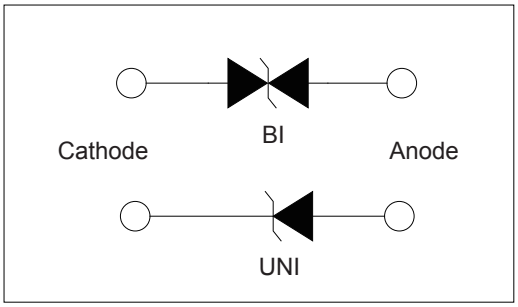
(TVS) P4SMA Series

Surface Mount Transient Voltage Suppressors

Features



1. Halogen-free
2. Rohs compliant
3. Typical maximum temperature coefficient
4. $\Delta V_{BR}=0.1\%xV_{BR}@25°C \times \Delta T$
5. Glass passivated Chip junction in DO-214AC package
6. 400W peak pulse capadility at 10x1000μs waveform,repetition rate (duty cycles):0.01%
7. Fast response time:typically less than 1.0ps from 0 Volts to BV min
8. Excellent clamping capability
9. Low incremental surge resistance
10. Typical IR less than 5μA above 11V
11. High temperature soldering guaranteed: 260°C/40 seconds / 0.375”, (9.5mm) lead length, 5lbs., (2.3kg)tension
12. Plastic package has underwriters laboratory flammability classification 94v-0



Applications

TVS devices are ideal for the protection of I/O interfaces,VCC bus and other vulnerable circuits used in telecom, computer, industrial and consumer electronic applications.

Mechanical Characteristics

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation at TA=25°C by 10x1000μs test waveform (Fig.1)(Note 1),(Note 2)	P_{PPM}	400	Watts
Power Dissipation on inifinite heat sink at TA=50°C	P_D	3.3	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine Wave(Note 3)	I_{FSM}	40	Amps
Maximum Instantaneous Forward Voltage at 25A for Unidirectional only (Note 4)	V_F	3.5/6.5	V
Operating junction and Storage Temperature Range.	T_J,T_{STG}	-55°C to 175°C	°C
Typical Thermal Resistance Junction to Lead	R_{uJL}	30	°C/W
Typical Thermal Resistance Junction to Ambient	R_{uJA}	120	°C/W

Notes:
1. Non-repetitive current pulse , per Fig. 3 and derated above TA = 25°C per Fig. 2.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perminute maximum.
3. VF<3.5V for devices of VBR _< 200V and VF<5.0V for devices of VBR _> 201V.

Type Number		Reverse Stand-Off Voltage	Breakdown Voltage@IT		TestCurrent	Maximum Clamping Voltage @IPP	Peak Pulse Current	Reverse Leakage @VRWM
(UNI)	(BI)	VRWM(V)	VBR MIN. (V)	VBR. MAX. (V)	IT(mA)	VC(V)	IPP(A)	IR(μA)
P4SMA6.8A	P4SMA6.8CA	5.80	6.40	7.25	10	9.2	43.5	800
P4SMA7.5A	P4SMA7.5CA	6.40	7.22	8.30	10	10.3	38.8	800
P4SMA8.2A	P4SMA8.2CA	7.02	7.78	8.95	10	12.0	33.3	200
P4SMA9.1A	P4SMA9.1CA	7.78	8.33	9.58	1	12.9	31.0	100
P4SMA10A	P4SMA10CA	8.55	9.44	10.82	1	13.6	29.4	50
P4SMA11A	P4SMA11CA	9.40	10.00	11.50	1	18.2	22.0	5
P4SMA12A	P4SMA12CA	10.20	11.10	12.80	1	19.9	20.1	5
P4SMA13A	P4SMA13CA	11.10	12.20	14.00	1	21.5	18.6	5
P4SMA15A	P4SMA15CA	12.80	14.40	16.50	1	24.4	16.4	5
P4SMA16A	P4SMA16CA	13.60	15.60	17.90	1	26.0	15.3	5
P4SMA18A	P4SMA18CA	15.30	16.70	19.20	1	29.2	13.7	5
P4SMA20A	P4SMA20CA	17.10	18.90	21.70	1	32.4	12.3	5
P4SMA22A	P4SMA22CA	18.80	20.00	23.30	1	35.5	11.2	5
P4SMA24A	P4SMA24CA	20.50	22.20	25.50	1	38.9	10.3	5
P4SMA27A	P4SMA27CA	23.10	24.40	28.00	1	42.1	9.5	5
P4SMA30A	P4SMA30CA	25.60	28.90	33.20	1	48.4	8.3	5
P4SMA33A	P4SMA33CA	28.20	31.10	35.80	1	53.3	7.5	5
P4SMA36A	P4SMA36CA	20.80	33.30	38.30	1	58.1	6.9	5
P4SMA39A	P4SMA39CA	33.30	36.70	42.20	1	64.5	6.2	5
P4SMA43A	P4SMA43CA	36.80	40.00	46.00	1	69.4	5.7	5
P4SMA47A	P4SMA47CA	40.20	44.00	51.10	1	72.7	5.5	5
P4SMA51A	P4SMA51CA	43.60	47.80	54.90	1	82.4	4.9	5
P4SMA56A	P4SMA56CA	47.80	50.00	57.50	1	87.1	4.6	5
P4SMA62A	P4SMA62CA	53.00	56.70	65.20	1	96.8	4.1	5
P4SMA68A	P4SMA68CA	58.10	64.40	74.10	1	103.0	3.9	5
P4SMA75A	P4SMA75CA	64.10	71.10	81.80	1	121.0	3.3	5
P4SMA82A	P4SMA82CA	70.10	77.80	89.50	1	137.0	2.9	5
P4SMA91A	P4SMA91CA	77.80	86.70	99.70	1	146.0	2.7	5
P4SMA100A	P4SMA100CA	85.50	94.40	108.20	1	162.0	2.5	5
P4SMA110A	P4SMA110CA	94.00	100.00	115.50	1	177.0	2.3	5
P4SMA120A	P4SMA120CA	102.00	111.00	128.00	1	193.0	2.0	5
P4SMA130A	P4SMA130CA	111.00	122.00	140.50	1	209.0	1.9	5
P4SMA150A	P4SMA150CA	128.00	144.00	165.50	1	243.0	1.6	5
P4SMA180A	P4SMA180CA	154.00	167.00	192.60	1	292.0	1.3	5
P4SMA200A	P4SMA200CA	171.00	189.00	217.50	1	324.0	1.2	5
P4SMA220A	P4SMA220CA	185.00	198.00	230.40	1	356.0	1.1	5
P4SMA250A	P4SMA250CA	214.00	231.00	268.80	1	405.0	1.0	5

Ratings and Characteristic Curves

Figure 1 - Peak Pulse Power Rating Curve

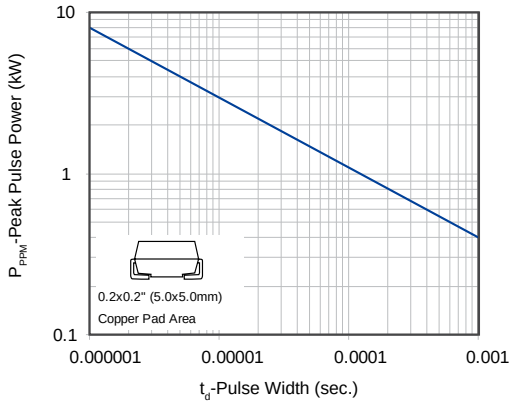


Figure 2 - Pulse Derating Curve

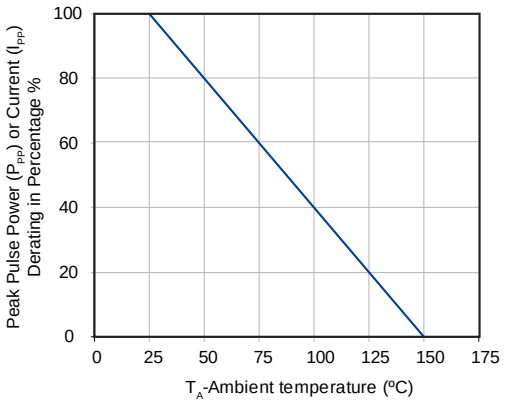


Figure 3 - Pulse Waveform

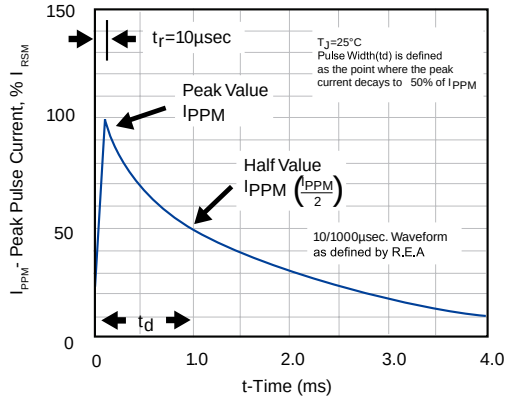


Figure 4 - Typical Junction Capacitance

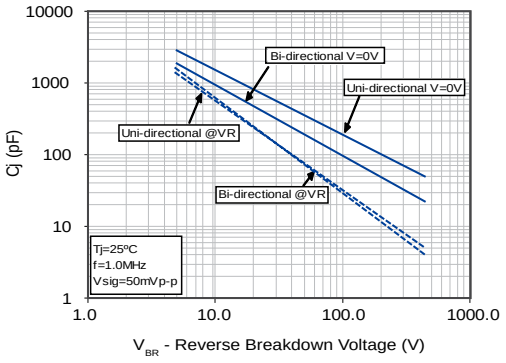


Figure 5 - Steady State Power Derating Curve

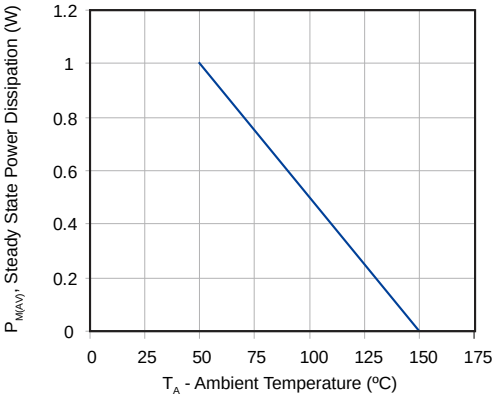
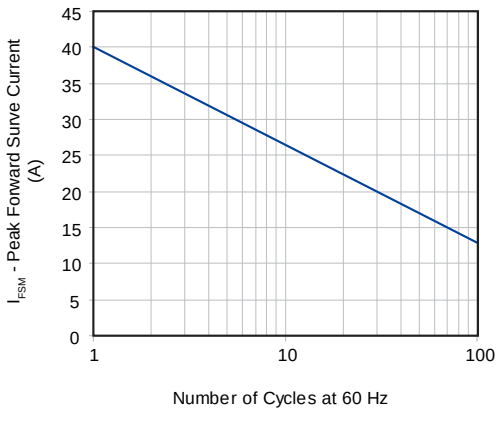
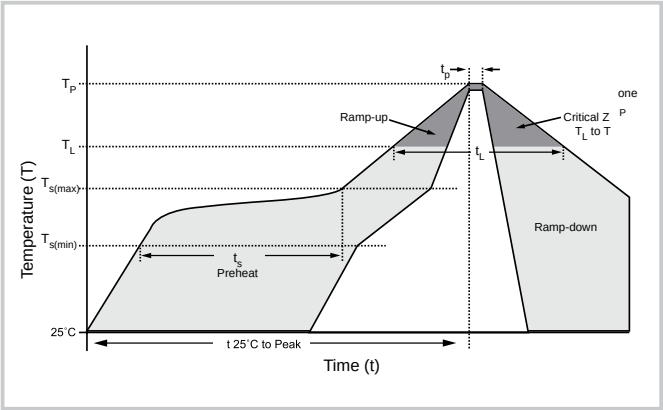


Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current



Soldering Parameters

Feflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(min)}$)	200°C
	- Time (min to max) (t_s)	60-180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (t_s)	60-150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20-40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



Physical Speci ications

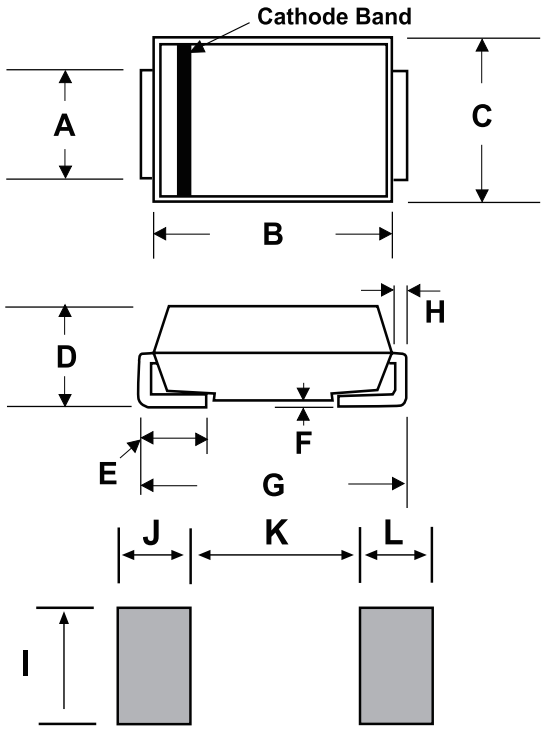
Weight	0.002 ounce,0.061 gram
Case	JEDEC DO-214AC molded plastic body over passivated junction.
Polarity	Color band denotes the cathode except Bipolar.
Termina	Matte Tin axial leads, solderable per JESD22-B102D.

Environmental Speci ications

Temperature Cycle	JESD22-A104
Pressure Cooker	JESD 22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

Dimensions

DO-214AC(SMA)



Unit:mm

DIM	Inches		Millimeters	
	Min	Max	Min	Max
A	0.049	0.065	1.250	1.650
B	0.157	0.177	3.990	4.500
C	0.100	0.110	2.540	2.790
D	0.078	0.090	1.980	2.290
E	0.030	0.060	0.780	1.520
F	-	0.008	-	0.203
G	0.194	0.208	4.930	5.280
H	0.006	0.012	0.152	0.305
I	0.070	-	1.800	-
J	0.082	-	2.100	-
K	-	0.090	-	2.300
L	0.082	-	2.100	-