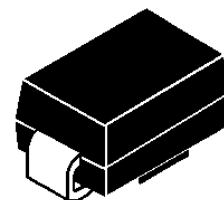




400W Surface Mount Transient Voltage Suppressors

Features

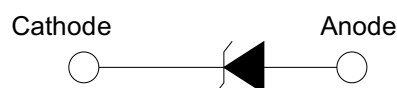
- Peak power dissipation 400W @10 x 1000 us Pulse
- Low profile package.
- Excellent clamping capability.
- Glass passivated junction.
- Fast response time: typically less than 1ps from 0 Volts to BV min
- Typical I_R less than 1uA when V_{BR} min above 12V.
- IEC 61000-4-2 ESD 30KV(Air), 30KV(Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2
- EFT protection of data lines in accordance with IEC 61000-4-4
- Halogen free and RoHS compliant
- Lead-free finish



SMA



Bi-directional



Uni-directional

Mechanical Characteristics

- CASE: SMA (DO-214AC) Molded Plastic over glass passivated junction.
- Mounting Position: Any
- Polarity: by cathode band denotes uni-directional device, none cathode band denotes bi-directional device.
- Terminal: Solder plated

Maximum Ratings and Characteristics @ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 us Waveform (Note 1, 2, FIG.1)	P_{PPM}	Min 400	W
Power Dissipation on Infinite Heat Sink at $T_L=50^\circ\text{C}$	P_D	3.3	W
Peak Pulse Current of on 10/1000us Waveform (Note 1, FIG.3)	I_{PPM}	See Table 1	A
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave (Note 2, 3)	I_{FSM}	60	A
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^\circ\text{C}$ per Fig.2.
2. Mounted on $5.0 \times 5.0 \text{ mm}^2$ (0.03mm thick) Copper Pads to each terminal.
3. Measured on 8.3ms single half sine-wave, or equivalent square wave, for Unidirectional device only.

P4SMA Series

Electrical Specification @Tamb 25°C

Type Number		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RMW}
(Uni)	(Bi)	V _{RMW} (V)	V _{BR MIN} (V)	V _{BR MAX} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
P4SMA6.8A	P4SMA6.8CA	5.80	6.45	7.14	10	10.5	39.0	1000
P4SMA7.5A	P4SMA7.5CA	6.40	7.13	7.88	10	11.3	36.3	500
P4SMA8.2A	P4SMA8.2CA	7.02	7.79	8.61	10	12.1	33.9	200
P4SMA9.1A	P4SMA9.1CA	7.78	8.65	9.55	1	13.4	30.6	50
P4SMA10A	P4SMA10CA	8.55	9.50	10.50	1	14.5	28.3	10
P4SMA11A	P4SMA11CA	9.40	10.50	11.60	1	15.6	26.3	5
P4SMA12A	P4SMA12CA	10.20	11.40	12.60	1	16.7	24.6	5
P4SMA13A	P4SMA13CA	11.10	12.40	13.70	1	18.2	22.5	1
P4SMA15A	P4SMA15CA	12.80	14.30	15.80	1	21.2	19.3	1
P4SMA16A	P4SMA16CA	13.60	15.20	16.80	1	22.5	18.2	1
P4SMA18A	P4SMA18CA	15.30	17.10	18.90	1	25.2	16.1	1
P4SMA20A	P4SMA20CA	17.10	19.00	21.00	1	27.7	14.8	1
P4SMA22A	P4SMA22CA	18.80	20.90	23.10	1	30.6	13.4	1
P4SMA24A	P4SMA24CA	20.50	22.80	25.20	1	33.2	12.3	1
P4SMA27A	P4SMA27CA	23.10	25.70	28.40	1	37.5	10.9	1
P4SMA30A	P4SMA30CA	25.60	28.50	31.50	1	41.4	9.9	1
P4SMA33A	P4SMA33CA	28.20	31.40	34.70	1	45.7	9.0	1
P4SMA36A	P4SMA36CA	30.80	34.20	37.80	1	49.9	8.2	1
P4SMA39A	P4SMA39CA	33.30	37.10	41.00	1	53.9	7.6	1
P4SMA43A	P4SMA43CA	36.80	40.90	45.20	1	59.3	6.9	1
P4SMA47A	P4SMA47CA	40.20	44.70	49.40	1	64.8	6.3	1
P4SMA51A	P4SMA51CA	43.60	48.50	53.60	1	70.1	5.8	1
P4SMA56A	P4SMA56CA	47.80	53.20	58.80	1	77.0	5.3	1
P4SMA62A	P4SMA62CA	53.00	58.90	65.10	1	85.0	4.8	1
P4SMA68A	P4SMA68CA	58.10	64.60	71.40	1	92.0	4.5	1
P4SMA75A	P4SMA75CA	64.10	71.30	78.80	1	103.0	4.0	1
P4SMA82A	P4SMA82CA	70.10	77.90	86.10	1	113.0	3.6	1
P4SMA91A	P4SMA91CA	77.80	86.50	95.50	1	125.0	3.3	1
P4SMA100A	P4SMA100CA	85.50	95.00	105.00	1	137.0	3.0	1
P4SMA110A	P4SMA110CA	94.00	105.00	116.00	1	152.0	2.7	1
P4SMA120A	P4SMA120CA	102.00	114.00	126.00	1	165.0	2.5	1
P4SMA130A	P4SMA130CA	111.00	124.00	137.00	1	179.0	2.3	1
P4SMA150A	P4SMA150CA	128.00	143.00	158.00	1	207.0	2.0	1
P4SMA160A	P4SMA160CA	136.00	152.00	168.00	1	219.0	1.9	1
P4SMA170A	P4SMA170CA	145.00	162.00	179.00	1	234.0	1.8	1
P4SMA180A	P4SMA180CA	154.00	171.00	189.00	1	246.0	1.7	1

※ For Bi-directional type having V_{RWM} of 10 Volts and less, the I_R limit is double.

※ For parts without A, the VBR is ± 10% and VC is 5% higher than with A parts.

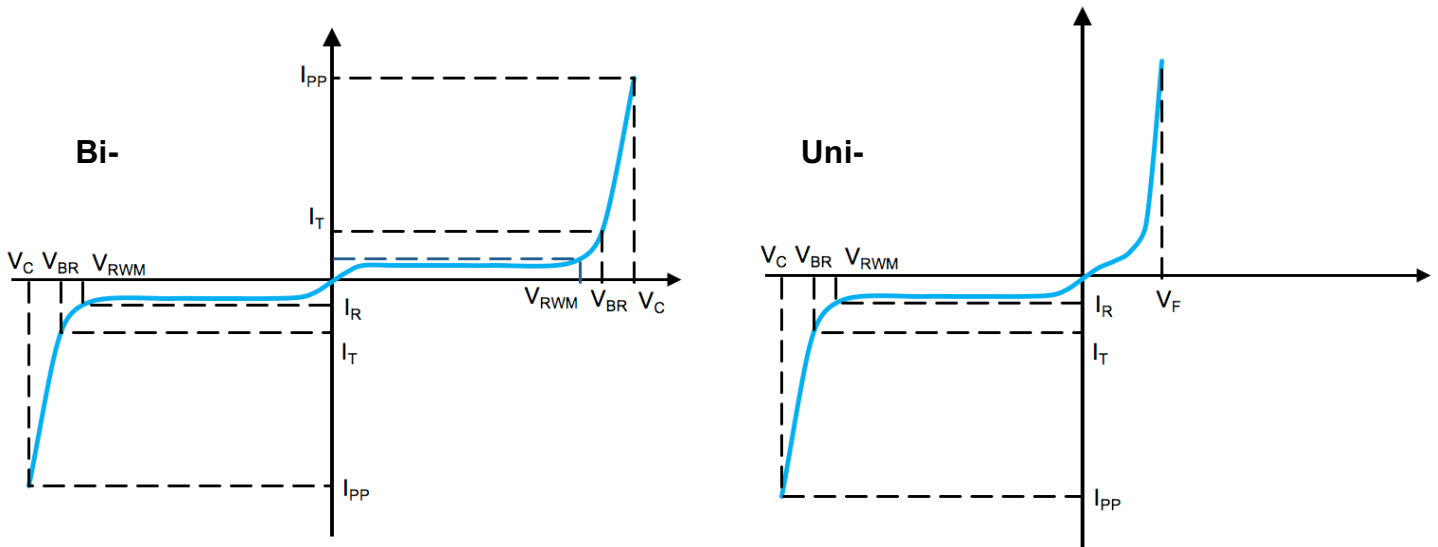
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Type Number		Reverse Stand-Off Voltage	Breakdown Voltage Min. @ I_T	Breakdown Voltage Max. @ I_T	Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
(Uni)	(Bi)	$V_{RWM}(V)$	$V_{BR MIN}(V)$	$V_{BR MAX}(V)$	$I_T (mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
P4SMA200A	P4SMA200CA	171.00	190.00	210.00	1	274.0	1.5	1
P4SMA220A	P4SMA220CA	185.00	209.00	231.00	1	328.0	1.3	1
P4SMA250A	P4SMA250CA	214.00	237.00	263.00	1	344.0	1.2	1
P4SMA300A	P4SMA300CA	256.00	285.00	315.00	1	414.0	1.0	1
P4SMA350A	P4SMA350CA	300.00	332.00	368.00	1	482.0	0.9	1
P4SMA400A	P4SMA400CA	342.00	380.00	420.00	1	548.0	0.8	1
P4SMA440A	P4SMA440CA	376.00	418.00	462.00	1	602.0	0.7	1
P4SMA480A	P4SMA480CA	408.00	456.00	504.00	1	658.0	0.6	1
P4SMA510A	P4SMA510CA	434.00	485.00	535.00	1	698.0	0.6	1
P4SMA530A	P4SMA530CA	451.00	503.50	556.50	1	725.0	0.6	1
P4SMA540A	P4SMA540CA	460.00	513.00	567.00	1	740.0	0.5	1
P4SMA550A	P4SMA550CA	468.00	522.50	577.50	1	760.0	0.5	1

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

※ For parts without A, the VBR is $\pm 10\%$ and VC is 5% higher than with A parts.

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation - Max power dissipation

V_{RWM} Reverse Stand-off Voltage - Maximum voltage that can be applied to TVS without operation

V_{BR} Breakdown Voltage – Maximum voltage that flows though the TVS at a specified current (I_T)

V_C Clamping Voltage – Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current – Current measured at V_R

V_F Forward Voltage Drop for Uni-directional

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

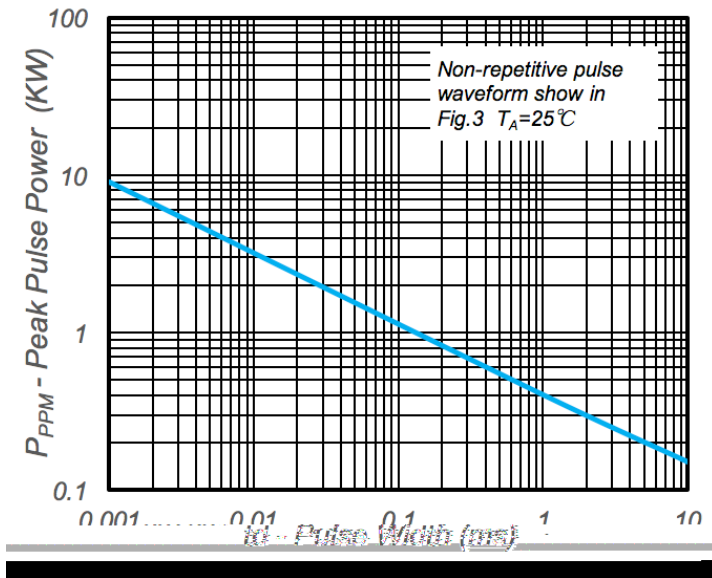


Fig.1 Peak Pulse Power Rating

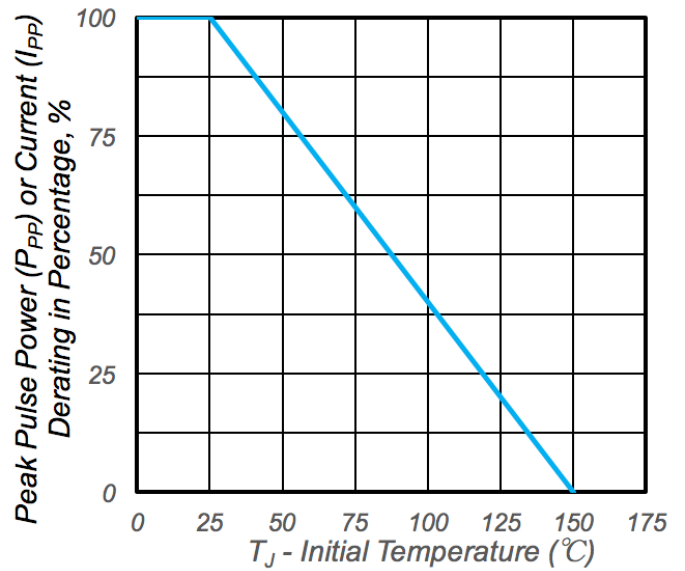


Fig.2 Pulse Derating Curve

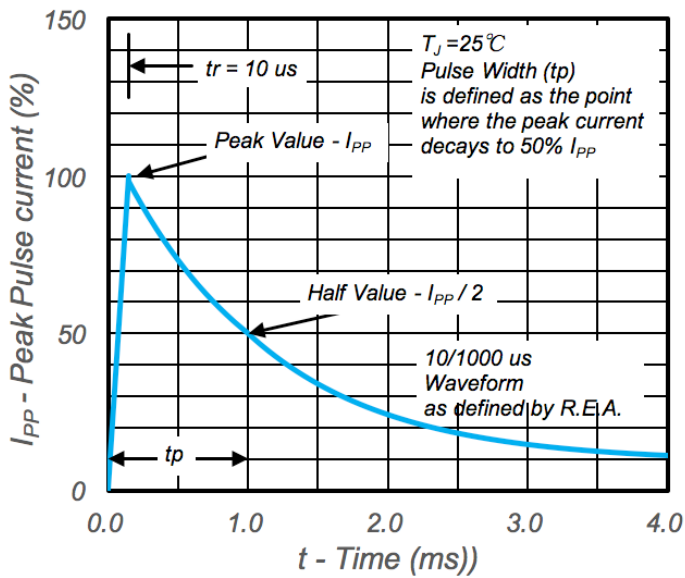


Fig.3 Pulse Waveform

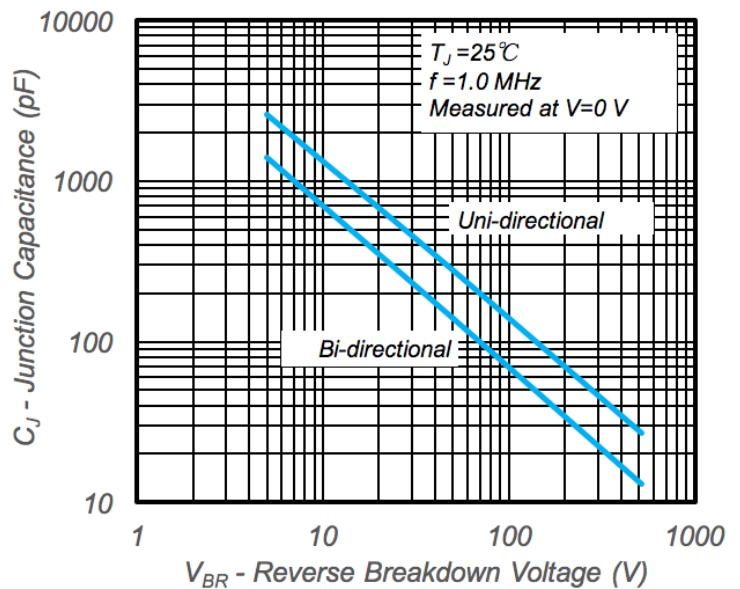
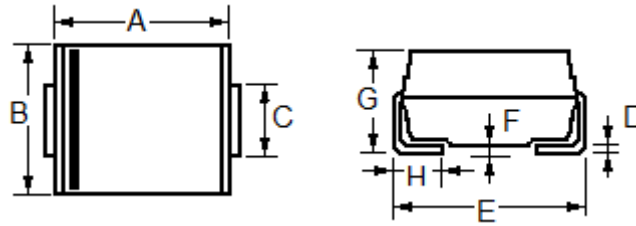


Fig.4 Typical Junction Capacitance

Package Outline Dimensions

DO-214AC (SMA)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	3.99	4.50	0.157	0.177
B	2.54	2.79	0.100	0.110
C	1.25	1.65	0.049	0.065
D	0.152	0.305	0.006	0.012
E	4.93	5.28	0.194	0.208
F	----	0.203	----	0.008
G	1.98	2.29	0.078	0.090
H	0.76	1.52	0.030	0.060