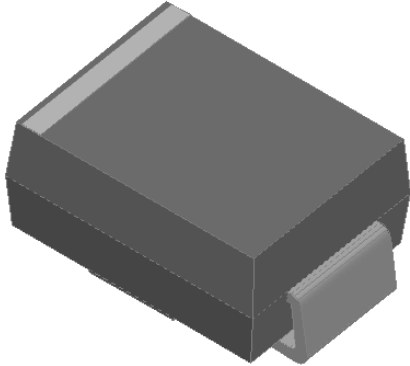




# P4SMA SERIES

## Surface Mount Transient Voltage Suppressor

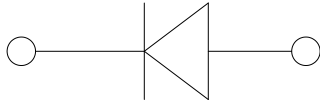


### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Available in uni-directional 400 W peak pulse power capability with a 10/1000  $\mu$ s waveform
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

### Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, automotive, and telecommunication.



### Mechanical Data

- **Package:** DO-214AC (SMA)  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

### ■Maximum Ratings ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform (1) (2) (Fig.1)	PPPM	W	400
Peak pulse current, with a 10/1000us waveform (1)	IPPM	A	See Next Table
Power dissipation, on infinite heat sink at $T_L=75^\circ\text{C}$	PD	W	1.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (2)	IFSM	A	40
Operating junction and storage temperature range	$T_J, T_{STG}$	$^\circ\text{C}$	-55 to +150

### ■Electrical Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 25A for unidirectional only (3)	$V_F$	V	3.5/5.0
Maximum instantaneous forward voltage @ at 1A for unidirectional only	$V_F$	V	1.5

### ■Thermal Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	$R_{\theta JL}$	$^\circ\text{C/W}$	junction to lead	30
	$R_{\theta JA}$	$^\circ\text{C/W}$	junction to ambient, $L_{Lead} = 10 \text{ mm}$	120



# P4SMA SERIES

**Note**

- (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal
- (3)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$

**Ordering Information (Example)**

PREFERRED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
P4SMA SERIES	F2	Approximate 0.059	2000	8000	64000	7" reel
P4SMA SERIES	F1	Approximate 0.059	5000	10000	80000	13" reel

**Electrical Characteristics ( $T_a = 25^\circ\text{C}$  Unless otherwise specified)**

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R^{(6)}$ ( $\mu\text{A}$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}^{(4)}$ (A)	Maximum Clamping Voltage $V_C @ I_{PP}$ (V)
		Min(V)	Max (V)	$I_T^{(5)}$ (mA)				
P4SMA6.8A	P4SMA6.8CA	6.46	7.14	10	1000	5.8	38.1	10.5
P4SMA7.5A	P4SMA7.5CA	7.13	7.88	10	500	6.4	35.4	11.3
P4SMA8.2A	P4SMA8.2CA	7.79	8.61	10	200	7.0	33.0	12.1
P4SMA9.1A	P4SMA9.1CA	8.65	9.56	1	50	7.8	29.8	13.4
P4SMA10A	P4SMA10CA	9.50	10.50	1	10	8.6	27.6	14.5
P4SMA11A	P4SMA11CA	10.45	11.55	1	5	9.4	25.6	15.6
P4SMA12A	P4SMA12CA	11.40	12.60	1	5	10.2	23.9	16.7
P4SMA13A	P4SMA13CA	12.35	13.65	1	5	11.1	22.0	18.2
P4SMA15A	P4SMA15CA	14.25	15.75	1	5	12.8	18.8	21.2
P4SMA16A	P4SMA16CA	15.20	16.80	1	5	13.6	17.7	22.5
P4SMA18A	P4SMA18CA	17.10	18.90	1	5	15.3	15.8	25.2
P4SMA20A	P4SMA20CA	19.00	21.00	1	5	17.1	14.4	27.7
P4SMA22A	P4SMA22CA	20.90	23.10	1	5	18.8	13.0	30.6
P4SMA24A	P4SMA24CA	22.80	25.20	1	5	20.5	12.0	33.2
P4SMA27A	P4SMA27CA	25.65	28.35	1	5	23.1	10.6	37.5
P4SMA30A	P4SMA30CA	28.50	31.50	1	5	25.6	9.6	41.4
P4SMA33A	P4SMA33CA	31.35	34.65	1	5	28.2	8.7	45.7
P4SMA36A	P4SMA36CA	34.20	37.80	1	5	30.8	8.0	49.9
P4SMA39A	P4SMA39CA	37.05	40.95	1	5	33.3	7.4	53.9
P4SMA43A	P4SMA43CA	40.85	45.15	1	5	36.8	6.7	59.3
P4SMA47A	P4SMA47CA	44.65	49.35	1	5	40.2	6.1	64.8
P4SMA51A	P4SMA51CA	48.45	53.55	1	5	43.6	5.7	70.1
P4SMA56A	P4SMA56CA	53.20	58.80	1	5	47.8	5.2	77.0
P4SMA62A	P4SMA62CA	58.90	65.10	1	5	53.0	4.7	85.0
P4SMA68A	P4SMA68CA	64.60	71.40	1	5	58.1	4.3	92.0
P4SMA75A	P4SMA75CA	71.25	78.75	1	5	64.1	3.9	103.0
P4SMA82A	P4SMA82CA	77.90	86.10	1	5	70.1	3.5	113.0
P4SMA91A	P4SMA91CA	86.45	95.55	1	5	77.8	3.2	125.0
P4SMA100A	P4SMA100CA	95.00	105.00	1	5	85.5	2.9	137.0



# P4SMA SERIES

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R^{(3)}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $IPP^{(2)}$ (A)	Maximum Clamping Voltage $V_c$ @ $I_{PP}$ (V)
		Min(V)	Max (V)	$IT^{(1)}$ (mA)				
P4SMA110A	P4SMA110CA	104.50	115.50	1	5	94.0	2.6	152.0
P4SMA120A	P4SMA120CA	114.00	126.00	1	5	102.0	2.4	165.0
P4SMA130A	P4SMA130CA	123.50	136.50	1	5	111.0	2.2	179.0
P4SMA150A	P4SMA150CA	142.50	157.50	1	5	128.0	1.9	207.0
P4SMA160A	P4SMA160CA	152.00	168.00	1	5	136.0	1.8	219.0
P4SMA170A	P4SMA170CA	161.50	178.50	1	5	145.0	1.7	234.0
P4SMA180A	P4SMA180CA	171.00	189.00	1	5	154.0	1.6	246.0

## Notes:

- (4) Pulse test:  $t_p \leq 50ms$
- (5) Surge current waveform per Fig. 3 and derated per Fig.2.
- (6) For bi-directional types having VWM of 10 V and less, the  $I_R$  limit is doubled

## ■ Characteristics (Typical)

FIG1: Peak Pulse Power Rating Curve

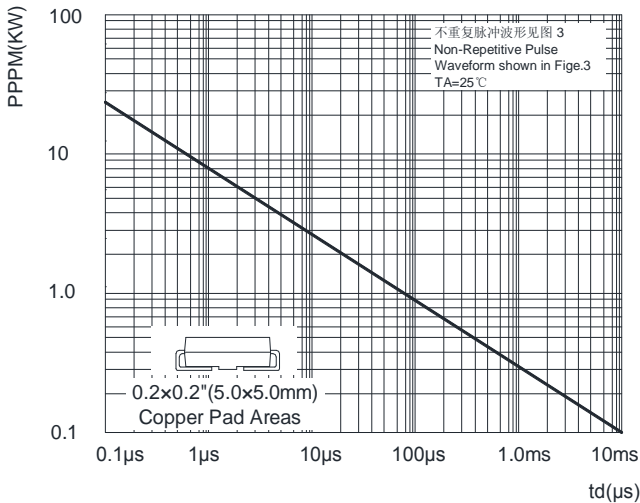


FIG2: Pulse Power or Current vs. Initial Junction Temperature

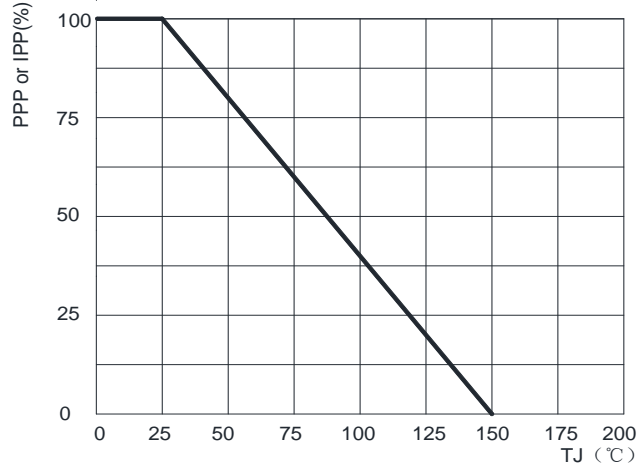


FIG3: Pulse Waveform

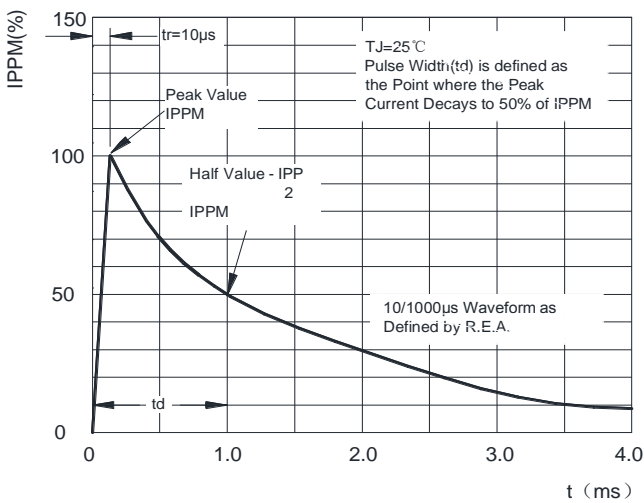


FIG4: Typical Transient Thermal Impedance

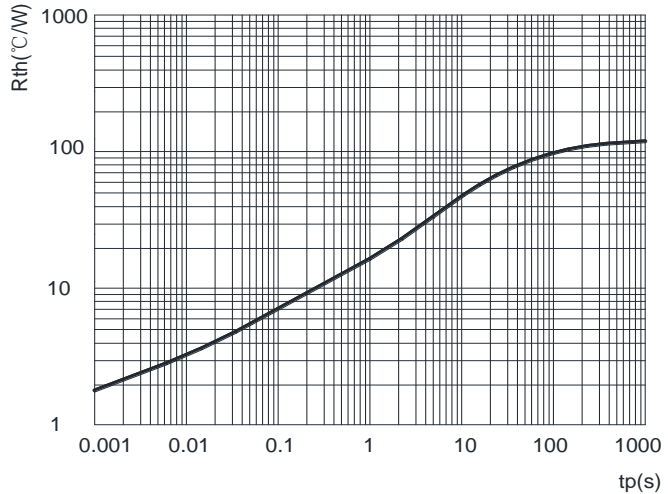
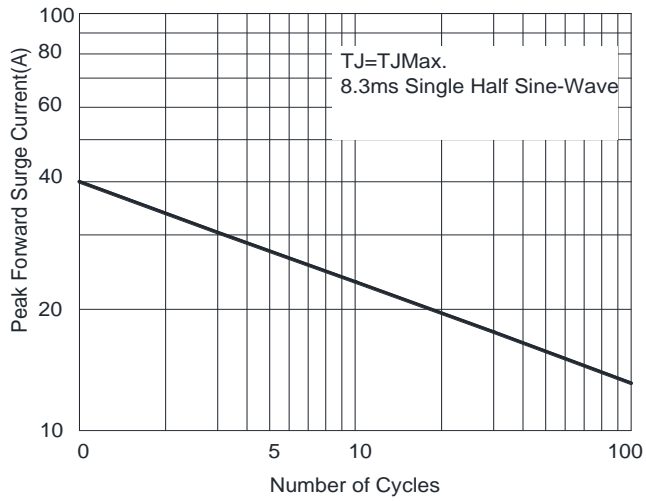
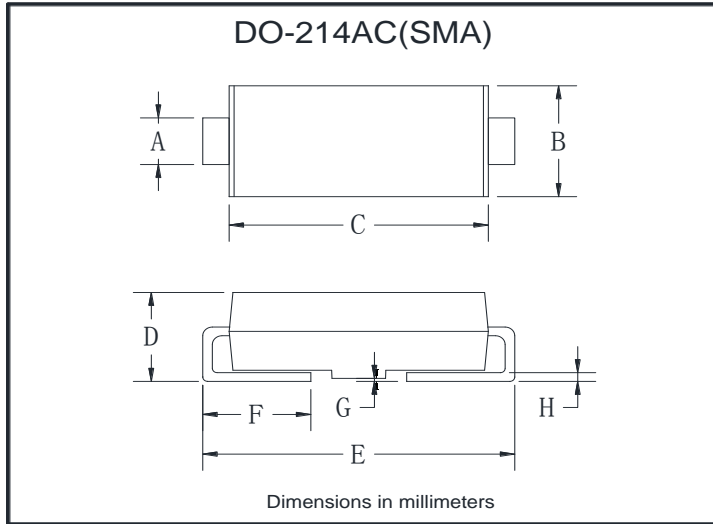


FIG5: Maximum Non-Repetitive Surge Current

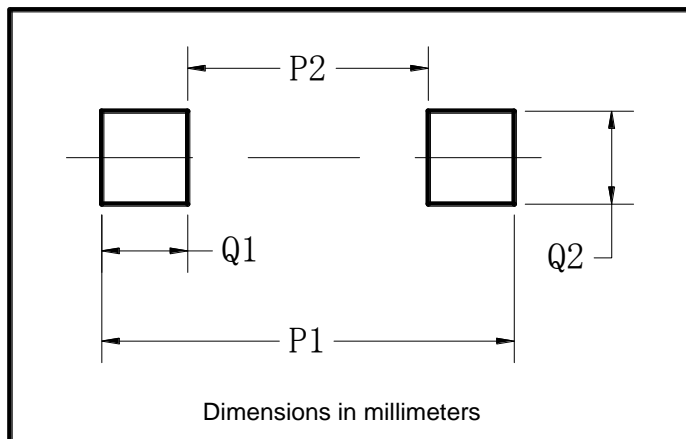


## ■ Outline Dimensions



DO-204AC(SMA)		
Dim	Min	Max
A	1.25	1.58
B	2.40	2.83
C	4.25	4.75
D	1.90	2.30
E	4.93	5.28
F	0.76	1.41
G	0.08	0.20
H	0.15	0.31

## ■ Suggested Pad Layout



Dim	Min
P1	5.58
P2	1.66
Q1	1.96
Q2	2.04



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