



# P4SMAJ SERIES

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR POWER 400 Watt

**STAND-OFF VOLTAGE**

**5 to 220 Volt**

**SMA / DO-214AC**

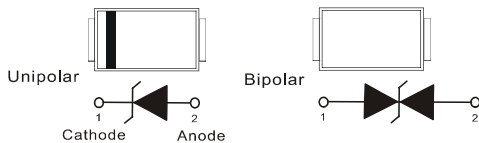
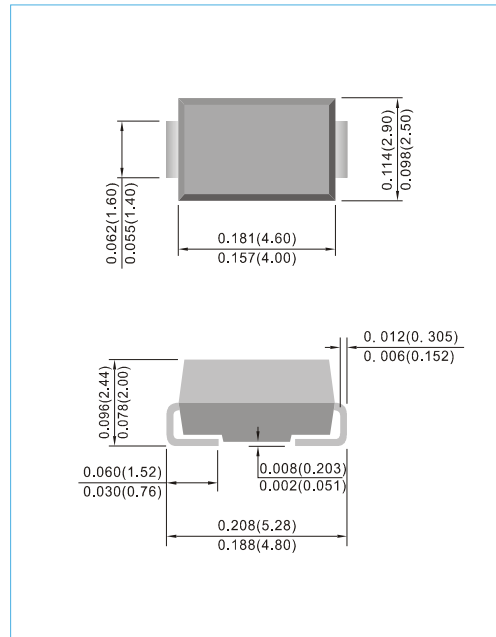
Unit : inch(mm)

### FEATURES

- For surface mounted applications in order to optimize board space.
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- High temperature soldering : 260°C /10 seconds at terminals
- ESD IEC-61000-4-2 Air  $\pm$  30kV, Contact  $\pm$  30kV
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: JEDEC DO-214AC, Molded plastic over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Standard Packaging: 12mm tape (EIA-481)
- Weight: 0.0023 ounces, 0.0679 grams



### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types P4SMAJ5.0 thru types P4SMAJ220.  
 Electrical characteristics apply in both directions.

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on $T_A = 25^\circ\text{C}$ (Notes 1,2,5, Fig.1)	$P_{PP}$	400	Watts
Peak Forward Surge Current per Fig.5 (Notes 3)	$I_{FSM}$	40	Amps
Peak Pulse Current on $t_p=10/1000\mu\text{s}$ waveform (Notes 1) Fig.2	$I_{PPM}$	see Table 1	Amps
Typical Thermal Resistance Junction to Air (Notes 2)	$R_{\theta JA}$	70	$^\circ\text{C} / \text{W}$
ESD IEC-61000-4-2 (Air) ESD IEC-61000-4-2 (Contact)	$V_{ESD}$	$\pm 30$ $\pm 30$	kV
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-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 5mm<sup>2</sup> copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minutes maximum.
4. Lead temperature at 75°C =  $T_L$ .
5. Peak pulse power waveform is 10/1000  $\mu\text{s}$ .
6. A transient suppressor is selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level.



## P4SMAJ SERIES

Part Number		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage		Max. Clamp Voltage 10/1000 $\mu$ s	Peak Pulse Current 10/1000 $\mu$ s	Marking Code	
			$V_{BR} @ I_T$			$I_R @ V_{RWM}$					
		$V_{RWM}$ (Notes 6)	Min.	Max.	$I_T$	UNI	BI	$V_C @ I_{PP}$	$I_{PP}$		
UNI	BI	V	V	V	mA	$\mu$ A	$\mu$ A	V	A	UNI	BI
P4SMAJ5.0	P4SMAJ5.0C	5	6.4	7.55	10	800	1600	9.6	41.6	HD	TD
P4SMAJ5.0A	P4SMAJ5.0CA	5	6.4	7	10	800	1600	9.2	43.5	HE	TE
P4SMAJ6.0	P4SMAJ6.0C	6	6.67	8.45	10	800	1600	11.4	35.1	HF	TF
P4SMAJ6.0A	P4SMAJ6.0CA	6	6.67	7.37	10	800	1600	10.3	38.8	HG	TG
P4SMAJ6.5	P4SMAJ6.5C	6.5	7.22	9.14	10	500	1000	12.3	32.5	HH	TH
P4SMAJ6.5A	P4SMAJ6.5CA	6.5	7.22	7.98	10	500	1000	11.2	35.7	HK	TK
P4SMAJ7.0	P4SMAJ7.0C	7	7.78	9.86	10	200	400	13.3	30.1	HL	TL
P4SMAJ7.0A	P4SMAJ7.0CA	7	7.78	8.6	10	200	400	12	33.3	HM	TM
P4SMAJ7.5	P4SMAJ7.5C	7.5	8.33	10.67	1	100	200	14.3	28	HN	TN
P4SMAJ7.5A	P4SMAJ7.5CA	7.5	8.33	9.21	1	100	200	12.9	31	HP	TP
P4SMAJ8.0	P4SMAJ8.0C	8	8.89	11.3	1	50	100	15	26.5	HQ	TQ
P4SMAJ8.0A	P4SMAJ8.0CA	8	8.89	9.83	1	50	100	13.6	29.4	HR	TR
P4SMAJ8.5	P4SMAJ8.5C	8.50	9.44	11.92	1	10	20	15.9	25.1	HS	TS
P4SMAJ8.5A	P4SMAJ8.5CA	8.50	9.44	10.4	1	10	20	14.4	27.7	HT	TT
P4SMAJ9.0	P4SMAJ9.0C	9	10	12.6	1	5	5	16.9	23.6	HU	TU
P4SMAJ9.0A	P4SMAJ9.0CA	9	10	11.1	1	5	5	15.4	26	HV	TV
P4SMAJ10	P4SMAJ10C	10	11.1	14.1	1	5	5	18.8	21.2	HW	TW
P4SMAJ10A	P4SMAJ10CA	10	11.1	12.3	1	5	5	17	23.5	HX	TX
P4SMAJ11	P4SMAJ11C	11	12.2	15.4	1	1	1	20.1	20	HY	TY
P4SMAJ11A	P4SMAJ11CA	11	12.2	13.5	1	1	1	18.2	22	HZ	TZ
P4SMAJ12	P4SMAJ12C	12	13.3	16.9	1	1	1	22	18.1	ID	UD
P4SMAJ12A	P4SMAJ12CA	12	13.3	14.7	1	1	1	19.9	20.1	IE	UE
P4SMAJ13	P4SMAJ13C	13	14.4	18.2	1	1	1	23.8	16.8	IF	UF
P4SMAJ13A	P4SMAJ13CA	13	14.4	15.9	1	1	1	21.5	18.6	IG	UG
P4SMAJ14	P4SMAJ14C	14	15.6	19.8	1	1	1	25.8	15.5	IH	UH
P4SMAJ14A	P4SMAJ14CA	14	15.6	17.2	1	1	1	23.2	17.2	IK	UK
P4SMAJ15	P4SMAJ15C	15	16.7	21.1	1	1	1	26.9	14.8	IL	UL
P4SMAJ15A	P4SMAJ15CA	15	16.7	18.5	1	1	1	24.4	16.4	IM	UM
P4SMAJ16	P4SMAJ16C	16	17.8	22.6	1	1	1	28.8	13.8	IN	UN
P4SMAJ16A	P4SMAJ16CA	16	17.8	19.7	1	1	1	26	15.3	IP	UP
P4SMAJ17	P4SMAJ17C	17	18.9	23.9	1	1	1	30.5	13.1	IQ	UQ
P4SMAJ17A	P4SMAJ17CA	17	18.9	20.9	1	1	1	27.6	14.5	IR	UR
P4SMAJ18	P4SMAJ18C	18	20	25.3	1	1	1	32.2	12.4	IS	US
P4SMAJ18A	P4SMAJ18CA	18	20	22.1	1	1	1	29.2	13.7	IT	UT
P4SMAJ20	P4SMAJ20C	20	22.2	28.1	1	1	1	35.8	11.1	IU	UU
P4SMAJ20A	P4SMAJ20CA	20	22.2	24.5	1	1	1	32.4	12.3	IV	UV
P4SMAJ22	P4SMAJ22C	22	24.4	30.9	1	1	1	39.4	10.1	IW	UW
P4SMAJ22A	P4SMAJ22CA	22	24.4	26.9	1	1	1	35.5	11.2	IX	UX
P4SMAJ24	P4SMAJ24C	24	26.7	33.8	1	1	1	43	9.3	IY	UY
P4SMAJ24A	P4SMAJ24CA	24	26.7	29.5	1	1	1	38.9	10.3	IZ	UZ
P4SMAJ26	P4SMAJ26C	26	28.9	36.6	1	1	1	46.6	8.6	JD	VD
P4SMAJ26A	P4SMAJ26CA	26	28.9	31.9	1	1	1	42.1	9.5	JE	VE
P4SMAJ28	P4SMAJ28C	28	31.1	39.4	1	1	1	50	8	JF	VF
P4SMAJ28A	P4SMAJ28CA	28	31.1	34.4	1	1	1	45.4	8.8	JG	VG
P4SMAJ30	P4SMAJ30C	30	33.3	42.2	1	1	1	53.5	7.5	JH	VH
P4SMAJ30A	P4SMAJ30CA	30	33.3	36.8	1	1	1	48.4	8.3	JK	VK
P4SMAJ33	P4SMAJ33C	33	36.7	46.5	1	1	1	59	6.8	JL	VL
P4SMAJ33A	P4SMAJ33CA	33	36.7	40.6	1	1	1	53.3	7.5	JM	VM
P4SMAJ36	P4SMAJ36C	36	40	50.7	1	1	1	64.3	6.2	JN	VN
P4SMAJ36A	P4SMAJ36CA	36	40	44.2	1	1	1	58.1	6.9	JP	VP
P4SMAJ40	P4SMAJ40C	40	44.4	56.3	1	1	1	71.4	5.6	JQ	VQ
P4SMAJ40A	P4SMAJ40CA	40	44.4	49.1	1	1	1	64.5	6.2	JR	VR

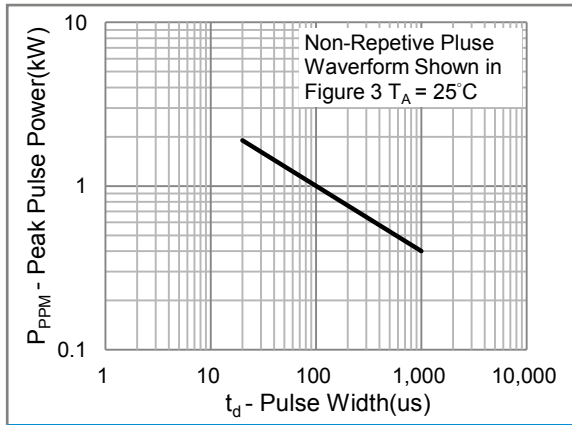


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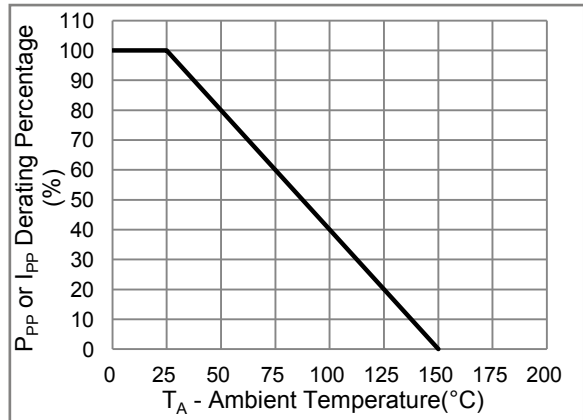
Part Number		Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Reverse Leakage		Max. Clamp Voltage 10/1000µs	Peak Pulse Current 10/1000µs	Marking Code	
			V <sub>BR</sub> @ I <sub>T</sub>			I <sub>R</sub> @ V <sub>RRM</sub>					
			V <sub>RRM</sub> (Notes 6)	Min.		Max.	I <sub>T</sub>				
UNI	BI	V	V	V	mA	µA	µA	V	A	UNI	BI
P4SMAJ43	P4SMAJ43C	43	47.8	60.5	1	1	1	76.7	5.2	JS	VS
P4SMAJ43A	P4SMAJ43CA	43	47.8	52.8	1	1	1	69.4	5.7	JT	VT
P4SMAJ45	P4SMAJ45C	45	50	63.3	1	1	1	80.3	5	JU	VU
P4SMAJ45A	P4SMAJ45CA	45	50	55.3	1	1	1	72.7	5.5	JV	VV
P4SMAJ48	P4SMAJ48C	48	53.3	67.5	1	1	1	85.5	4.7	JW	VW
P4SMAJ48A	P4SMAJ48CA	48	53.3	58.9	1	1	1	77.4	5.2	JX	VX
P4SMAJ51	P4SMAJ51C	51	56.7	71.8	1	1	1	91.1	4.4	JY	VY
P4SMAJ51A	P4SMAJ51CA	51	56.7	62.7	1	1	1	82.4	4.9	JZ	VZ
P4SMAJ54	P4SMAJ54C	54	60	76	1	1	1	96.3	4.2	RD	WD
P4SMAJ54A	P4SMAJ54CA	54	60	66.3	1	1	1	87.1	4.6	RE	WE
P4SMAJ58	P4SMAJ58C	58	64.4	81.6	1	1	1	103	3.9	RF	WF
P4SMAJ58A	P4SMAJ58CA	58	64.4	71.2	1	1	1	93.6	4.3	RG	WG
P4SMAJ60	P4SMAJ60C	60	66.7	84.5	1	1	1	107	3.7	RH	WH
P4SMAJ60A	P4SMAJ60CA	60	66.7	73.7	1	1	1	96.8	4.1	RK	WK
P4SMAJ64	P4SMAJ64C	64	71.1	90.1	1	1	1	114	3.5	RL	WL
P4SMAJ64A	P4SMAJ64CA	64	71.1	78.6	1	1	1	103	3.9	RM	WM
P4SMAJ70	P4SMAJ70C	70	77.8	98.6	1	1	1	125	3.2	RN	WN
P4SMAJ70A	P4SMAJ70CA	70	77.8	86	1	1	1	113	3.5	RP	WP
P4SMAJ75	P4SMAJ75C	75	83.3	105.7	1	1	1	134	3	RQ	WQ
P4SMAJ75A	P4SMAJ75CA	75	83.3	92.1	1	1	1	121	3.3	RR	WR
P4SMAJ78	P4SMAJ78C	78	86.7	109.8	1	1	1	139	2.9	RS	WS
P4SMAJ78A	P4SMAJ78CA	78	86.7	95.8	1	1	1	126	3.2	RT	WT
P4SMAJ85	P4SMAJ85C	85	94.4	119.2	1	1	1	151	2.6	RU	WU
P4SMAJ85A	P4SMAJ85CA	85	94.4	104	1	1	1	137	2.9	RV	WV
P4SMAJ90	P4SMAJ90C	90	100	126.5	1	1	1	160	2.5	RW	WW
P4SMAJ90A	P4SMAJ90CA	90	100	111	1	1	1	146	2.7	RX	WX
P4SMAJ100	P4SMAJ100C	100	111	141	1	1	1	179	2.2	RY	WY
P4SMAJ100A	P4SMAJ100CA	100	111	123	1	1	1	162	2.5	RZ	WZ
P4SMAJ110	P4SMAJ110C	110	122	154.5	1	1	1	196	2	SD	XD
P4SMAJ110A	P4SMAJ110CA	110	122	135	1	1	1	177	2.3	SE	XE
P4SMAJ120	P4SMAJ120C	120	133	169	1	1	1	214	1.9	SF	XF
P4SMAJ120A	P4SMAJ120CA	120	133	147	1	1	1	193	2	SG	XG
P4SMAJ130	P4SMAJ130C	130	144	182.5	1	1	1	231	1.7	SH	XH
P4SMAJ130A	P4SMAJ130CA	130	144	159	1	1	1	209	1.9	SK	XK
P4SMAJ150	P4SMAJ150C	150	167	211.5	1	1	1	268	1.5	SL	XL
P4SMAJ150A	P4SMAJ150CA	150	167	185	1	1	1	243	1.6	SM	XM
P4SMAJ160	P4SMAJ160C	160	178	226	1	1	1	287	1.4	SN	XN
P4SMAJ160A	P4SMAJ160CA	160	178	197	1	1	1	259	1.5	SP	XP
P4SMAJ170	P4SMAJ170C	170	189	239.5	1	1	1	304	1.3	SQ	XQ
P4SMAJ170A	P4SMAJ170CA	170	189	209	1	1	1	275	1.4	SR	XR
P4SMAJ180	P4SMAJ180C	180	198	253.8	1	1	1	322	1.2	SS	YS
P4SMAJ180A	P4SMAJ180CA	180	198	222	1	1	1	292	1.3	ST	YT
P4SMAJ190	P4SMAJ190C	190	209	267.9	1	1	1	340	1.2	SU	YU
P4SMAJ190A	P4SMAJ190CA	190	209	243.2	1	1	1	308	1.3	SV	YV
P4SMAJ200	P4SMAJ200C	200	220	282	1	1	1	358	1.1	SW	YW
P4SMAJ200A	P4SMAJ200CA	200	220	247	1	1	1	324	1.2	SX	YX
P4SMAJ210	P4SMAJ210C	210	231	296.1	1	1	1	376	1.1	SY	YY
P4SMAJ210A	P4SMAJ210CA	210	231	268.8	1	1	1	340	1.2	SZ	YZ
P4SMAJ220	P4SMAJ220C	220	242	310.2	1	1	1	394	1	GD	ZD
P4SMAJ220A	P4SMAJ220CA	220	242	272	1	1	1	356	1.1	GE	ZE



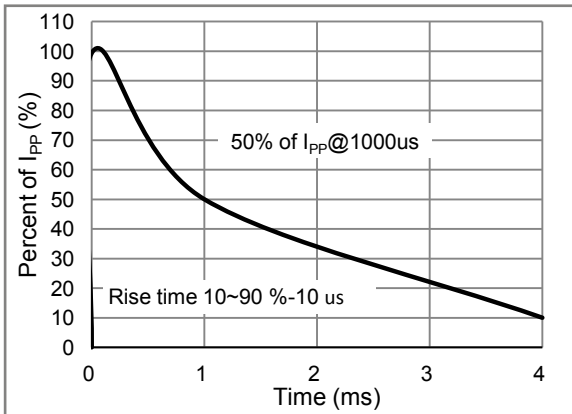
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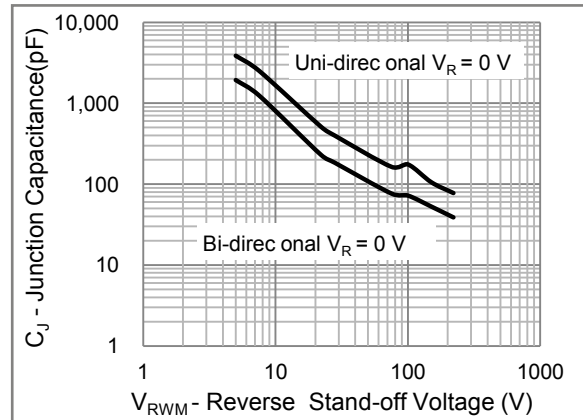
**Fig.1 Peak Pulse Power Rating**



**Fig.2 Derating Curve**



**Fig.3 Pulse Waveform**

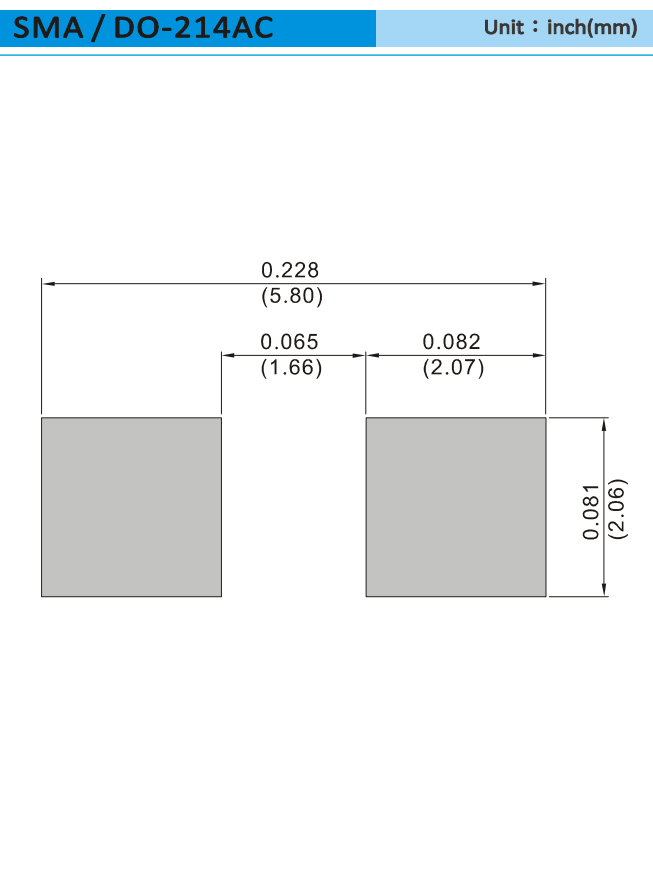


**Fig.4 Typical Capacitance**



## P4SMAJ SERIES

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

- Packing information  
T/R - 7.5K per 13" plastic Reel  
T/R - 1.8K per 7" plastic Reel



## P4SMAJ SERIES

### Part No\_packing code\_Version

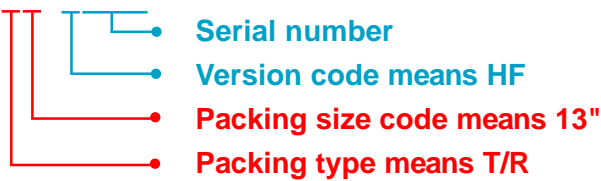
P4SMAJ5.0\_R1\_00001

P4SMAJ5.0\_R2\_00001

For example :

**RB500V-40\_R2\_00001**

Part No.



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			