

## 1. General description

400W transient voltage suppressor (TVS) in SOD123 package, designed to protect electronic circuits against damage induced by lightning surges or other transient voltage events.

## 2. Features and benefits

- Peak pulse power 400W @ 10/1000µs waveform
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and PCB space-saving
- Typical  $I_R < 1\mu A$  when  $V_{BR\ min} > 12V$
- Fast response time: typically  $< 1.0ps$  from 0V to  $V_{BR}$  minimum
- IEC 61000-4-2 ESD 30kV (Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- Guaranteed high temperature for reflow soldering: 260°C/10sec
- Mold compound complies to UL94V-0 flammability classification
- Meets MSL level 1, per J-STD-020
- Pb-free lead finish
- Halogen free and RoHS compliant



Bi-directional



Uni-directional

## 3. Applications

- Power supplies
- Industrial applications
- Power management circuits
- I/O interfaces



## 4. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
P4SODxxxXX	SOD123	P4SODxxxXXX	Tape and reel	3000	SOD123J	18-Oct-2020
eg. P4SOD5.0CA	SOD123	P4SOD5.0CAX	Tape and reel	3000	SOD123J	18-Oct-2020

## 5. Absolute maximum ratings

In accordance with the Absolute Maximum Rating System (IEC 60134).

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Values	Unit
<b>Absolute maximum rating</b>				
$P_{PPM}$	peak pulse power	[1]	400	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at $T_a = 50\text{ }^\circ\text{C}$	1	W
$T_{stg}$	storage temperature range		-65 to 150	$^\circ\text{C}$
$T_j$	operating temperature range		-65 to 150	$^\circ\text{C}$

[1] In accordance with IEC 61643-321 (10/1000 µs current waveform).

## 6. Characteristics

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

PN (Uni)	PN (Bi)	Reverse Stand off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR}$ @ $I_T$ (V)		Test current $I_T$ (mA)	Max. Clamping Voltage $V_C$ @ $I_{pp}$ (V)	Max. Peak Pulse Current $I_{pp}$ (A)	Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A)	Marking	
			Min	Max					Uni	Bi
P4SOD5.0A	P4SOD5.0CA	5	6.4	7	10	9.2	43.5	200	05	05
P4SOD6.0A	P4SOD6.0CA	6	6.67	7.37	10	10.3	38.8	200	06	06
P4SOD6.5A	P4SOD6.5CA	6.5	7.22	7.98	10	11.2	35.7	125	6F	6F
P4SOD7.0A	P4SOD7.0CA	7	7.78	8.6	10	12	33.3	75	07	07
P4SOD8.0A	P4SOD8.0CA	8	8.89	9.83	1	13.6	29.4	25	08	08
P4SOD9.0A	P4SOD9.0CA	9	10	11.1	1	15.4	26	5	09	09
P4SOD10A	P4SOD10CA	10	11.1	12.3	1	17	23.5	2.5	10	10
P4SOD11A	P4SOD11CA	11	12.2	13.5	1	18.2	22	1	11	11
P4SOD12A	P4SOD12CA	12	13.3	14.7	1	19.9	20.1	1	12	12
P4SOD13A	P4SOD13CA	13	14.4	15.9	1	21.5	18.6	1	13	13
P4SOD14A	P4SOD14CA	14	15.6	17.2	1	23.2	17.2	1	14	14
P4SOD15A	P4SOD15CA	15	16.7	18.5	1	24.4	16.4	1	15	15
P4SOD16A	P4SOD16CA	16	17.8	19.7	1	26	15.4	1	16	16
P4SOD17A	P4SOD17CA	17	18.9	20.9	1	27.6	14.5	1	17	17
P4SOD18A	P4SOD18CA	18	20	22.1	1	29.2	13.7	1	18	18
P4SOD20A	P4SOD20CA	20	22.2	24.5	1	32.4	12.3	1	20	20
P4SOD22A	P4SOD22CA	22	24.4	26.9	1	35.5	11.3	1	22	22
P4SOD24A	P4SOD24CA	24	26.7	29.5	1	38.9	10.3	1	24	24
P4SOD26A	P4SOD26CA	26	28.9	31.9	1	42.1	9.5	1	26	26
P4SOD28A	P4SOD28CA	28	31.1	34.4	1	45.4	8.8	1	28	28
P4SOD30A	P4SOD30CA	30	33.3	36.8	1	48.4	8.3	1	30	30
P4SOD33A	P4SOD33CA	33	36.7	40.6	1	53.3	7.5	1	33	33
P4SOD36A	P4SOD36CA	36	40	44.2	1	58.1	6.9	1	36	36
P4SOD40A	P4SOD40CA	40	44.4	49.1	1	64.5	6.2	1	40	40
P4SOD43A	P4SOD43CA	43	47.8	52.8	1	69.4	5.8	1	43	43
P4SOD45A	P4SOD45CA	45	50	55.3	1	72.7	5.5	1	45	45
P4SOD48A	P4SOD48CA	48	53.3	58.9	1	77.4	5.2	1	48	48
P4SOD51A	P4SOD51CA	51	56.7	62.7	1	82.4	4.9	1	51	51
P4SOD54A	P4SOD54CA	54	60	66.3	1	87.1	4.6	1	54	54
P4SOD58A	P4SOD58CA	58	64.4	71.2	1	93.6	4.3	1	58	58
P4SOD60A	P4SOD60CA	60	66.7	73.7	1	96.8	4.1	1	60	60
P4SOD64A	P4SOD64CA	64	71.1	78.6	1	103	3.9	1	64	64
P4SOD70A	P4SOD70CA	70	77.8	86	1	113	3.5	1	70	70
P4SOD75A	P4SOD75CA	75	83.3	92.1	1	121	3.3	1	75	75
P4SOD78A	P4SOD78CA	78	86.7	95.8	1	126	3.2	1	78	78
P4SOD85A	P4SOD85CA	85	94.4	104	1	137	2.9	1	85	85

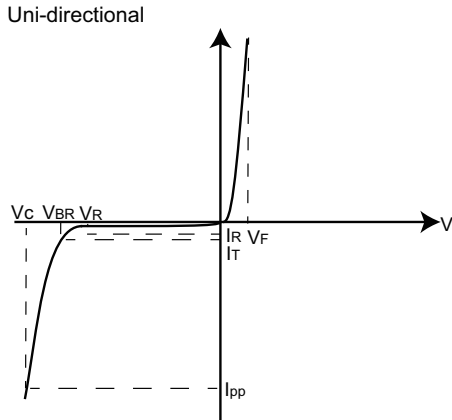


Fig. 1. I-V curve characteristics; Uni-directional

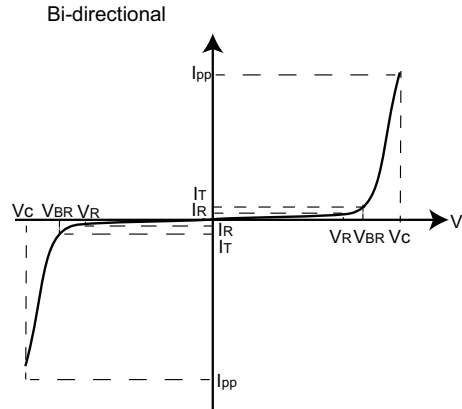


Fig. 2. I-V curve characteristics; Bi-directional

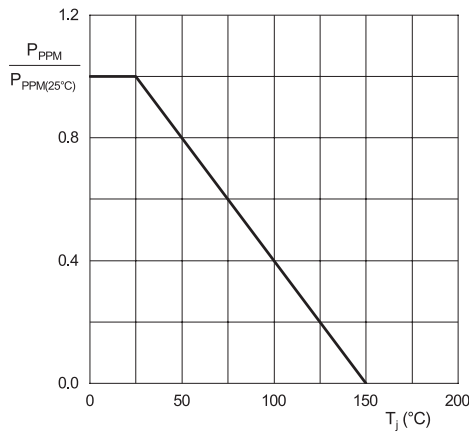


Fig. 3. Peak pulse power derating curve

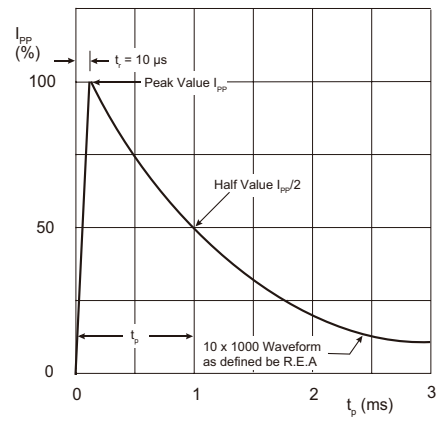


Fig. 4. Pulse waveform

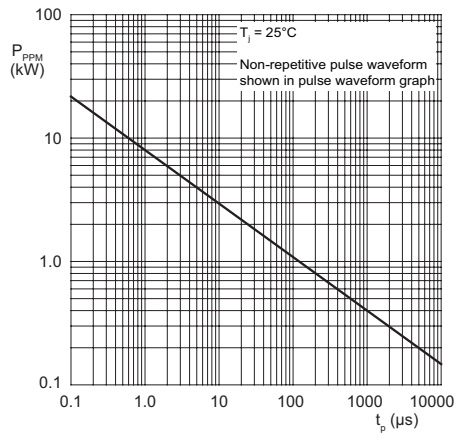


Fig. 5. Pulse rating curve

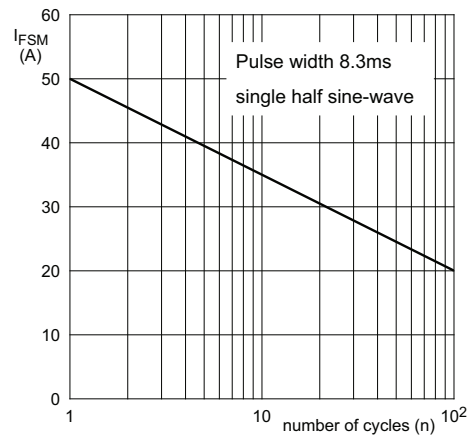


Fig. 6. Maximum non-repetitive surge current Uni-directional only

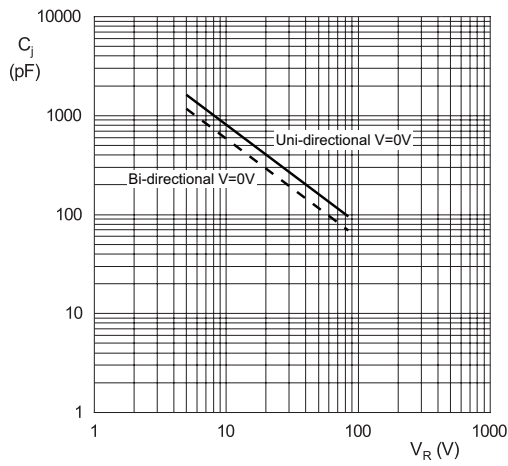


Fig. 7. Typical junction capacitance

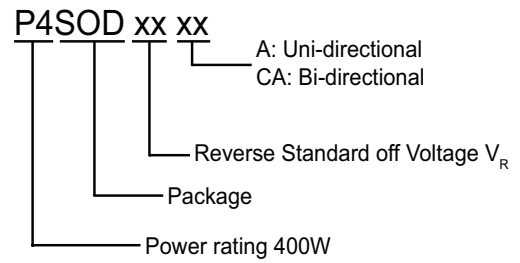


Fig. 8. Part numbering

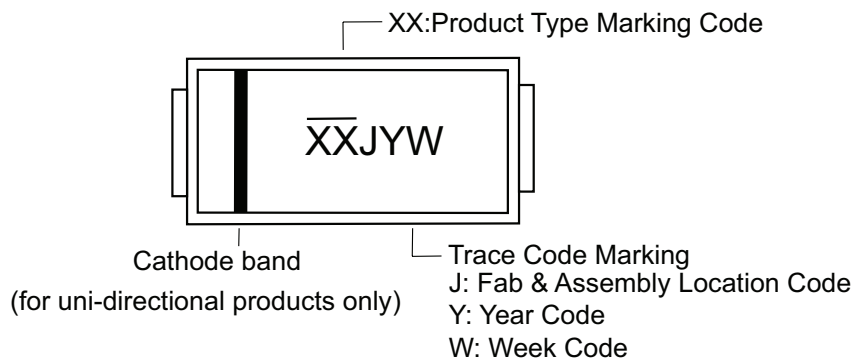
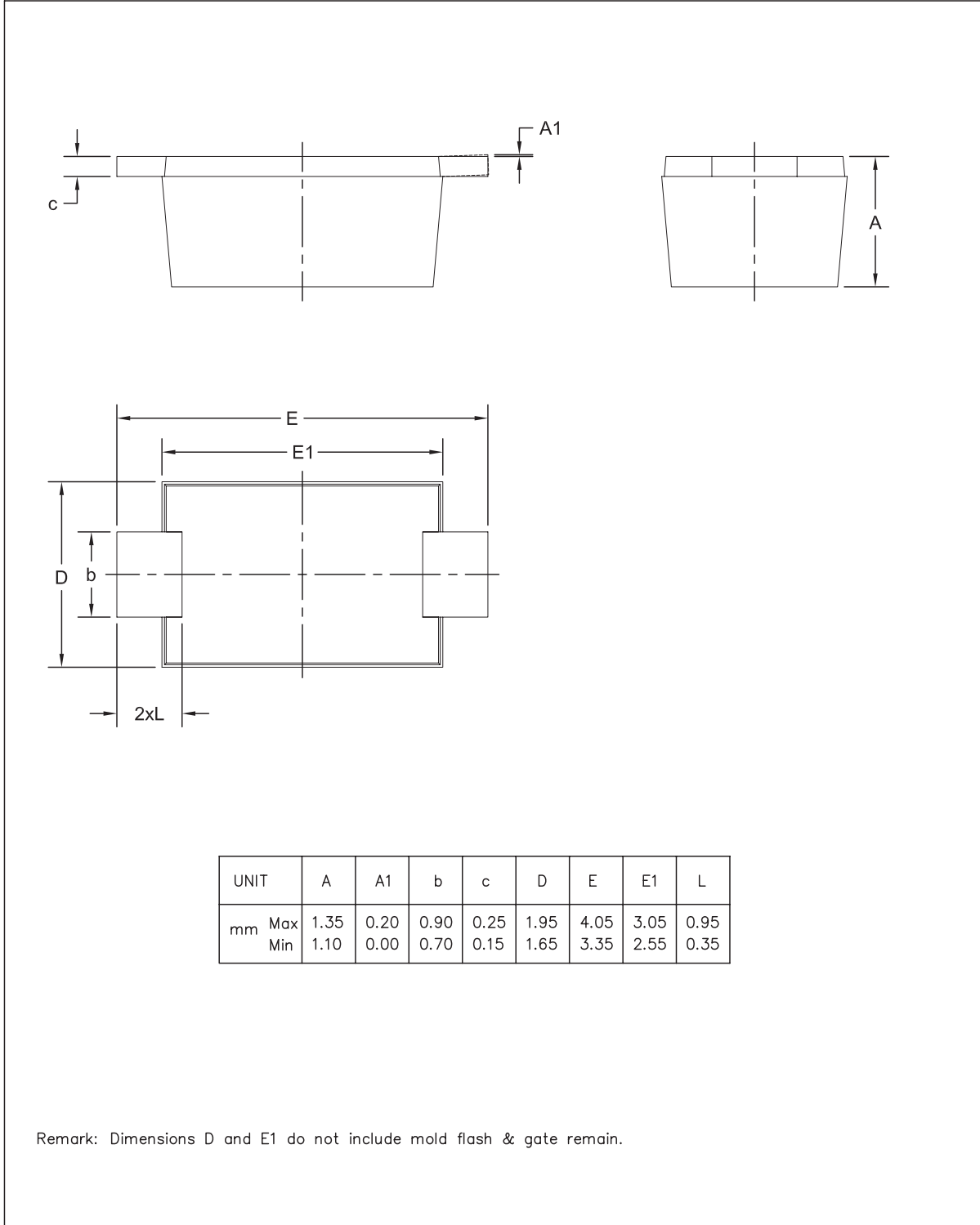


Fig. 9. Part marking

### 7. Package outline

SOD123



UNIT	A	A1	b	c	D	E	E1	L	
mm	Max	1.35	0.20	0.90	0.25	1.95	4.05	3.05	0.95
	Min	1.10	0.00	0.70	0.15	1.65	3.35	2.55	0.35

Remark: Dimensions D and E1 do not include mold flash & gate remain.

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Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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