

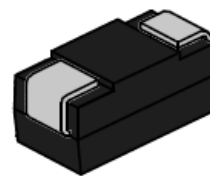


P4SMAxx(C)AS Series 400W Transient Voltage Suppressor

Rev.1.0

DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.



SMA



Bi-directional



Uni-directional

Symbol

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 400W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I_R less than 1μA above 12V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260°C/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/T_J	-55 to +150	°C
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	400	W
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	3.3	W
Maximum instantaneous forward voltage at 25A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I_{FSM}	60	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	30	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	120	°C/W

Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

MARKING



6V8CS : Device Marking Code
1921: the 21th week, 2019

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Part Number		Marking		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	$I_{PP}^{①}$
Uni-polar	Bi-polar	Uni	Bi	V	μA	min(V)	max(V)	mA	V	A
P4SMA6.8AS	P4SMA6.8CAS	6V8AS	6V8CS	5.8	120	6.45	7.14	10	10.5	39.0
P4SMA7.5AS	P4SMA7.5CAS	7V5AS	7V5CS	6.4	80	7.13	7.88	10	11.3	36.3
P4SMA8.2AS	P4SMA8.2CAS	8V2AS	8V2CS	7.02	50	7.79	8.61	10	12.1	33.9
P4SMA9.1AS	P4SMA9.1CAS	9V1AS	9V1CS	7.78	20	8.65	9.55	1	13.4	30.6
P4SMA10AS	P4SMA10CAS	10AS	10CS	8.55	10	9.50	10.50	1	14.5	28.3
P4SMA11AS	P4SMA11CAS	11AS	11CS	9.4	5	10.50	11.60	1	15.6	26.3
P4SMA12AS	P4SMA12CAS	12AS	12CS	10.2	2	11.40	12.60	1	16.7	24.6
P4SMA13AS	P4SMA13CAS	13AS	13CS	11.1	1	12.40	13.70	1	18.2	22.5
P4SMA15AS	P4SMA15CAS	15AS	15CS	12.8	1	14.30	15.80	1	21.2	19.3
P4SMA16AS	P4SMA16CAS	16AS	16CS	13.6	1	15.20	16.80	1	22.5	18.2
P4SMA18AS	P4SMA18CAS	18AS	18CS	15.3	1	17.10	18.90	1	25.2	16.1
P4SMA20AS	P4SMA20CAS	20AS	20CS	17.1	1	19.00	21.00	1	27.7	14.8
P4SMA22AS	P4SMA22CAS	22AS	22CS	18.8	1	20.90	23.10	1	30.6	13.4
P4SMA24AS	P4SMA24CAS	24AS	24CS	20.5	1	22.80	25.20	1	33.2	12.3
P4SMA27AS	P4SMA27CAS	27AS	27CS	23.1	1	25.70	28.40	1	37.5	10.9
P4SMA30AS	P4SMA30CAS	30AS	30CS	25.6	1	28.50	31.50	1	41.4	9.9
P4SMA33AS	P4SMA33CAS	33AS	33CS	28.2	1	31.40	34.70	1	45.7	9.0
P4SMA36AS	P4SMA36CAS	36AS	36CS	30.8	1	34.20	37.80	1	49.9	8.2
P4SMA39AS	P4SMA39CAS	39AS	39CS	33.3	1	37.10	41.00	1	53.9	7.6
P4SMA43AS	P4SMA43CAS	43AS	43CS	36.8	1	40.90	45.20	1	59.3	6.9
P4SMA47AS	P4SMA47CAS	47AS	47CS	40.2	1	44.70	49.40	1	64.8	6.3
P4SMA51AS	P4SMA51CAS	51AS	51CS	43.6	1	48.50	53.60	1	70.1	5.8
P4SMA56AS	P4SMA56CAS	56AS	56CS	47.8	1	53.20	58.80	1	77.0	5.2

ELECTRICAL CHARACTERISTICS (T_A=25°C, continued)

Part Number		Marking		V _R	I _R @ V _R	V _{BR} @I _T		I _T	V _C @ I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	V	A
P4SMA62AS	P4SMA62CAS	62AS	62CS	53.0	1	58.90	65.10	1	85.0	4.8
P4SMA68AS	P4SMA68CAS	68AS	68CS	58.1	1	64.60	71.40	1	92.0	4.5
P4SMA75AS	P4SMA75CAS	75AS	75CS	64.1	1	71.30	78.80	1	103.0	4.0
P4SMA82AS	P4SMA82CAS	82AS	82CS	70.1	1	77.90	86.10	1	113.0	3.6
P4SMA91AS	P4SMA91CAS	91AS	91CS	77.8	1	86.50	95.50	1	125.0	3.3
P4SMA100AS	P4SMA100CAS	100AS	100CS	85.5	1	95.00	105.0	1	137.0	3.0
P4SMA110AS	P4SMA110CAS	110AS	110CS	94.0	1	105.0	116.0	1	152.0	2.7
P4SMA120AS	P4SMA120CAS	120AS	120CS	102	1	114.0	126.0	1	165.0	2.5

① Surge waveform: 10/1000μs

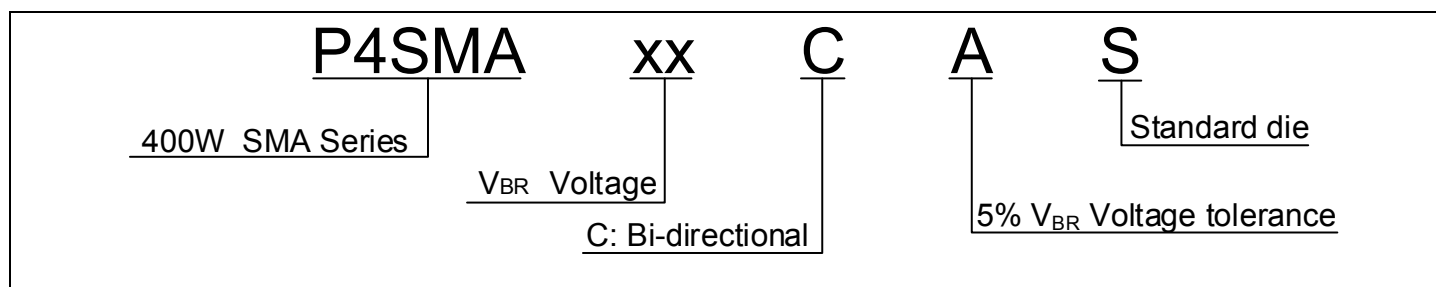
V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

FIG.1:V- I curve characteristics (Uni-directional)

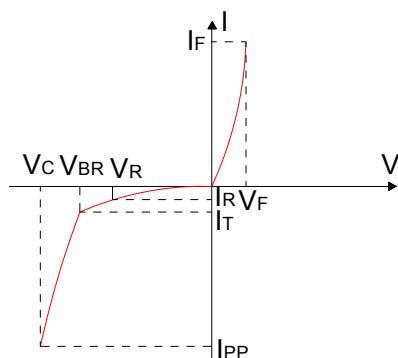


FIG.2:V- I curve characteristics (Bi-directional)

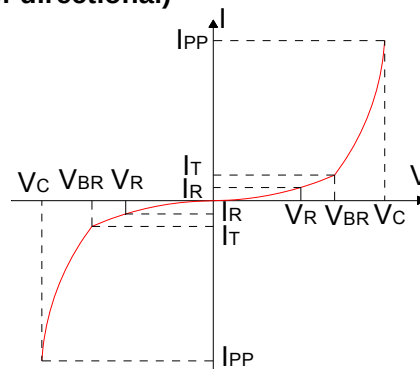


FIG.3: Pulse waveform

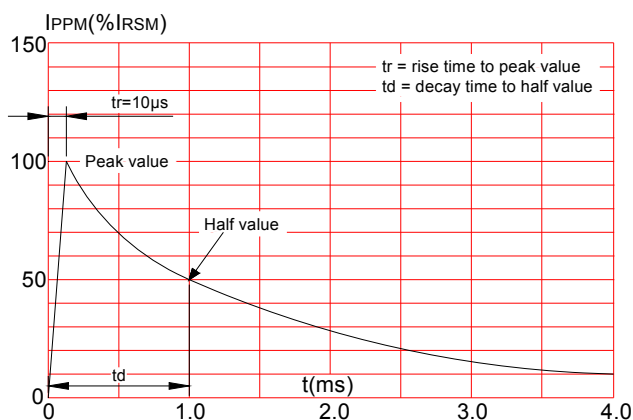
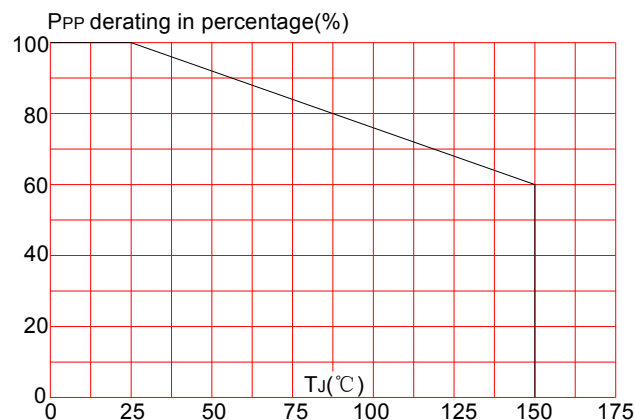
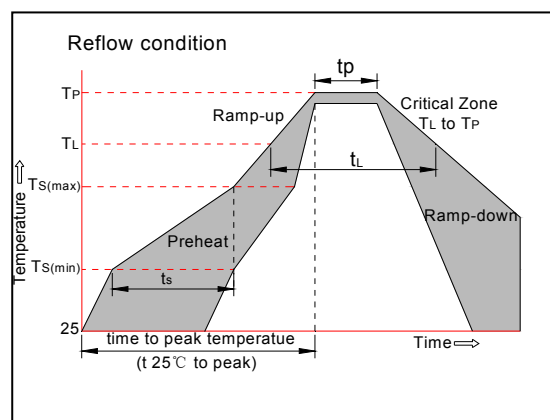


FIG.4: Pulse derating curve

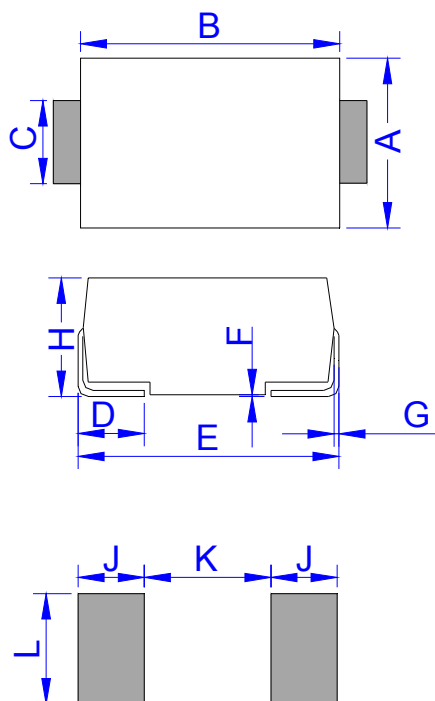


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max ($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature (T_L) (Liquidus)	+217°C
	-Temperature (t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_P)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



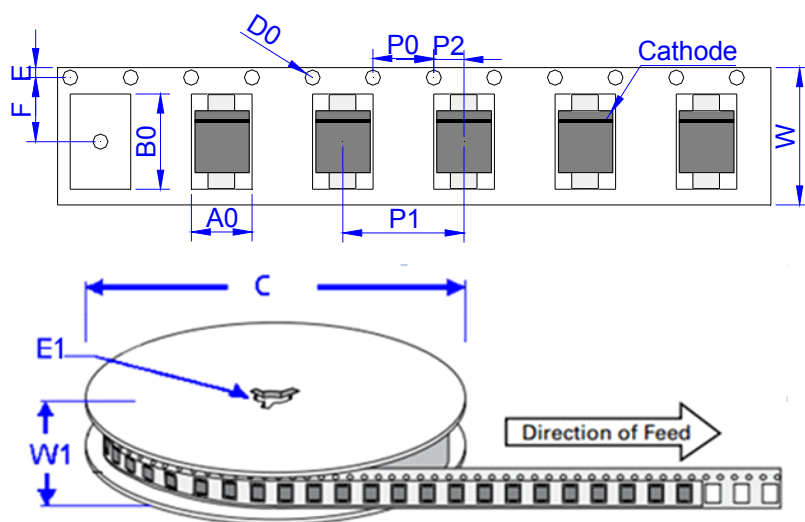
PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	4.15	4.65	0.163	0.183
C	1.25	1.65	0.049	0.065
D	0.95	1.52	0.037	0.060
E	4.90	5.30	0.193	0.209
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.00	2.44	0.079	0.096
J	2.00		0.079	
K		2.30		0.091
L	1.80		0.071	

TAPE AND REEL SPECIFICATION-SMA



Ref.	Dimensions	
	Millimeters	Inches
A0	2.79 ± 0.3	0.110 ± 0.012
B0	5.33 ± 0.3	0.210 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	4.00 ± 0.2	0.157 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
P4SMAxxAS/CAS	0.067	5,000	80,000	13 inch reel pack

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