TLC Electronic	Transient Voltage Suppressors	DOC.NO.: P4SMA Series

INDIVIDUAL SPECIFICATION SHEET

Product Name: Transient Voltage Suppressors

Part Number:P4SMA Series

Revision: A

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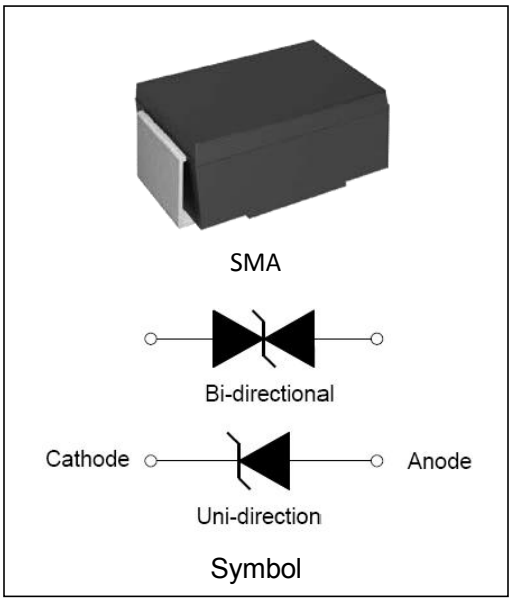
Rev.	Effective Date	Changed Contents
A	2018-11-29	New Release

PREPEARED BY	APPROVED BY

DESCRIPTION:

TVS diodes can be used in a wide range ofapplications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent controlsystems.



FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical I_R less than 1μA above 10V.
- ✧ Low profile package and low inductance
- ✧ 400W Peak Pulse power capability at 10×1000μs waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR}min.
- ✧ High temperature soldering: 260℃/10s at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space

ABSOLUTE MAXIMUM RATINGS (T_A=25ºC, RH=45%-75%, unless otherwisenoted)

Parameter	Symbol	Value	Unit
Storage temperaturerange	T_{stg}	-55 to +150	℃
Operating junction temperaturerange	T_j	-55 to +150	℃
Steady state power dissipation atT_L=75℃	$P_{M(AV)}$	3.3	W
Peak pulse power dissipation on10/1000μs waveform	P_{PP}	400	W
Maximum Instantaneous Forward Voltageat 30A forUnidirectional	V_F	5.0	V

ELECTRICAL CHARACTERISTICS(T_A=25℃)

Part Number		V_R	I_R@ V_R	V_{BR}@I_T		I_T	V_C@ I_{PP}	I_{PP}①
Uni-polar	Bi-polar	(V)	μA	min(V)	max(V)	mA	V	A
P4SMA6.8A	P4SMA6.8CA	5.8	100	6.45	7.14	10	10.5	39.0
P4SMA7.5A	P4SMA7.5CA	6.4	50	7.13	7.88	10	11.3	36.3
P4SMA8.2A	P4SMA8.2CA	7.02	20	7.79	8.61	10	12.1	33.9
P4SMA9.1A	P4SMA9.1CA	7.78	10	8.65	9.55	1	13.4	30.6
P4SMA10A	P4SMA10CA	8.55	5	9.50	10.50	1	14.5	28.3
P4SMA11A	P4SMA11CA	9.4	5	10.50	11.60	1	15.6	26.3
P4SMA12A	P4SMA12CA	10.2	2	11.40	12.60	1	16.7	24.6
P4SMA13A	P4SMA13CA	11.1	1	12.40	13.70	1	18.2	22.5
P4SMA15A	P4SMA15CA	12.8	1	14.30	15.80	1	21.2	19.3
P4SMA16A	P4SMA16CA	13.6	1	15.20	16.80	1	22.5	18.2
P4SMA18A	P4SMA18CA	15.3	1	17.10	18.90	1	25.2	16.1
P4SMA20A	P4SMA20CA	17.1	1	19.00	21.00	1	27.7	14.8
P4SMA22A	P4SMA22CA	18.8	1	20.90	23.10	1	30.6	13.4
P4SMA24A	P4SMA24CA	20.5	1	22.80	25.20	1	33.2	12.3
P4SMA27A	P4SMA27CA	23.1	1	25.70	28.40	1	37.5	10.9
P4SMA30A	P4SMA30CA	25.6	1	28.50	31.50	1	41.4	9.9
P4SMA33A	P4SMA33CA	28.2	1	31.40	34.70	1	45.7	9.0
P4SMA36A	P4SMA36CA	30.8	1	34.20	37.80	1	49.9	8.2
P4SMA39A	P4SMA39CA	33.3	1	37.10	41.00	1	53.9	7.6
P4SMA43A	P4SMA43CA	36.8	1	40.90	45.20	1	59.3	6.9
P4SMA47A	P4SMA47CA	40.2	1	44.70	49.40	1	64.8	6.3
P4SMA51A	P4SMA51CA	43.6	1	48.50	53.60	1	70.1	5.8
P4SMA56A	P4SMA56CA	47.8	1	53.20	58.80	1	77.0	5.2
P4SMA62A	P4SMA62CA	53.0	1	58.90	65.10	1	85.0	4.8
P4SMA68A	P4SMA68CA	58.1	1	64.60	71.40	1	92.0	4.4
P4SMA75A	P4SMA75CA	64.1	1	71.30	78.80	1	103.0	3.9
P4SMA82A	P4SMA82CA	70.1	1	77.90	86.10	1	113.0	3.6
P4SMA91A	P4SMA91CA	77.8	1	86.50	95.50	1	125.0	3.2
P4SMA100A	P4SMA100CA	85.5	1	95.00	105.0	1	137.0	3.0

ELECTRICAL CHARACTERISTICS (T_A=25℃,continued)

Part Number		V_R	I_R@ V_R	V_{BR}@I_T		I_T	V_C@ I_{PP}	I_{PP} ①
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	V	A
P4SMA110A	P4SMA110CA	94.0	1	105.0	116.0	1	152.0	2.7
P4SMA120A	P4SMA120CA	102	1	114.0	126.0	1	165.0	2.5
P4SMA130A	P4SMA130CA	111	1	124.0	137.0	1	179.0	2.3
P4SMA150A	P4SMA150CA	128	1	143.0	158.0	1	207.0	2.0
P4SMA160A	P4SMA160CA	136	1	152.0	168.0	1	219.0	1.9
P4SMA170A	P4SMA170CA	145	1	162.0	179.0	1	234.0	1.8
P4SMA180A	P4SMA180CA	154	1	171.0	189.0	1	246.0	1.6
P4SMA200A	P4SMA200CA	171	1	190.0	210.0	1	274.0	1.5
P4SMA220A	P4SMA220CA	185	1	209.0	231.0	1	328.0	1.3
P4SMA250A	P4SMA250CA	214	1	237.0	263.0	1	344.0	1.2
P4SMA300A	P4SMA300CA	256	1	285.0	315.0	1	414.0	1.0
P4SMA350A	P4SMA350CA	300	1	332.0	368.0	1	482.0	0.9
P4SMA400A	P4SMA400CA	342	1	380.0	420.0	1	548.0	0.8
P4SMA440A	P4SMA440CA	376	1	418.0	462.0	1	602.0	0.7

①Surge 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 Ipp I_R: Reverse Leakage Current

ORDERING INFORMATION

P4SMA xx C A

- P4SMA: 400W SMA Series
- xx: V_{BR} Voltage
- C: Bi-directional
- A: 5% V_{BR} Voltage tolerance

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25ºC, unless otherwise noted)

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

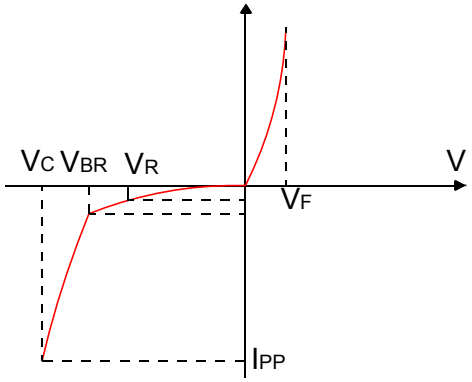


FIG.2:V- I curve characteristics (Bi-directional)

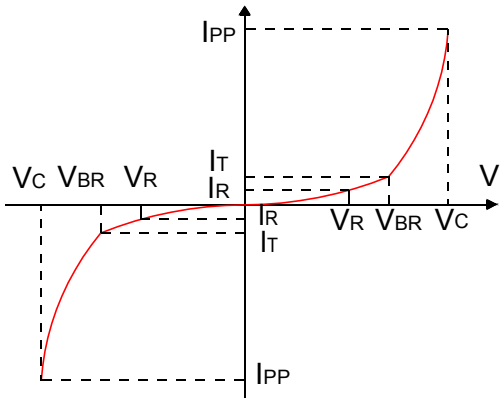


FIG.3: Pulse waveform

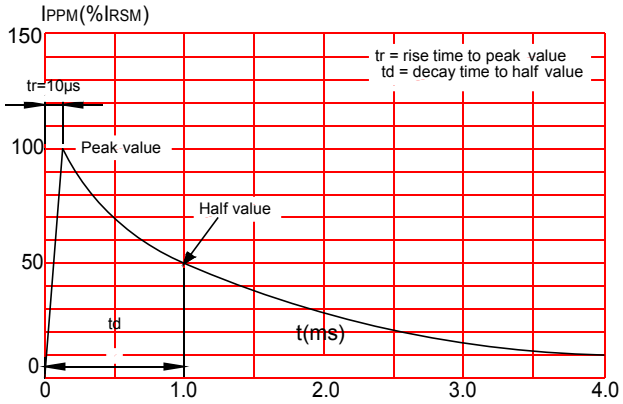
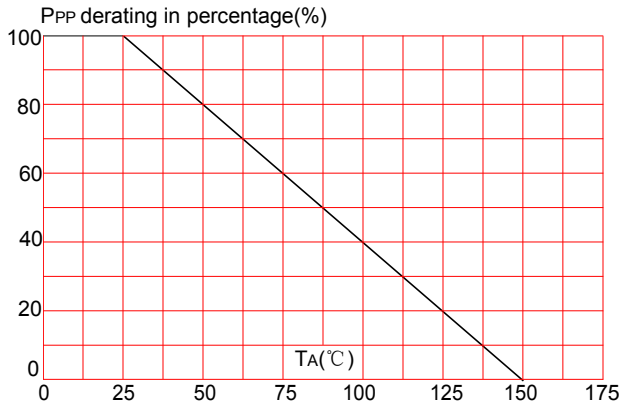
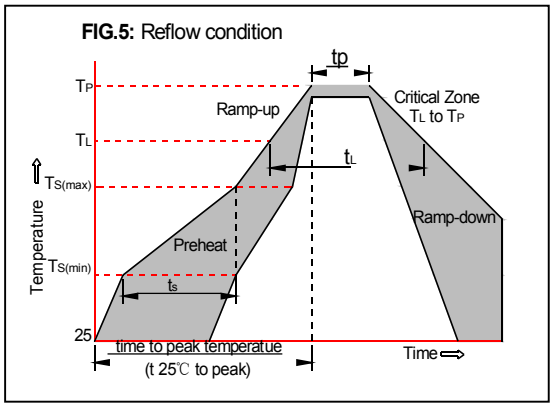


FIG.4: Pulse derating curve

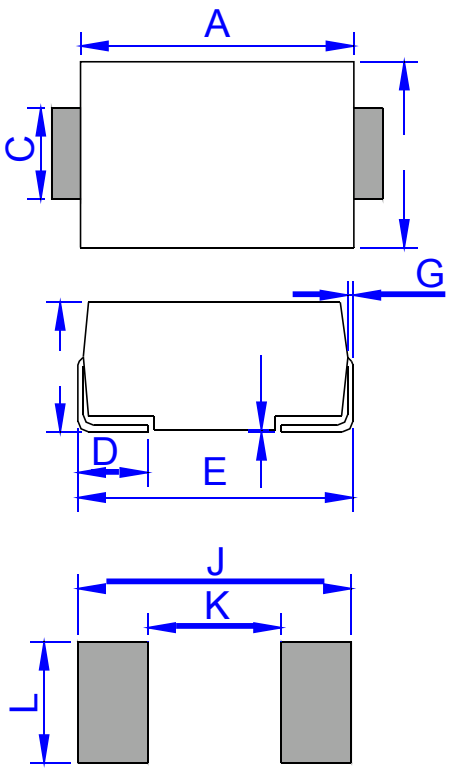


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp(t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.80		0.268	
K		2.60		0.102
L	2.40		0.094	