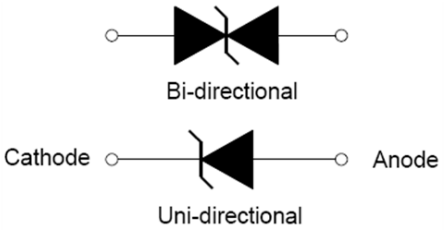
P8S Series 8000W Transient Voltage Suppressor

Rev.2.3

DESCRIPTION:

The P8S series of high current uni/bi-directional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer uni/bi-directional port protection from 20 volts to 43 volts. They provide a clamping voltage lower than the avalanche voltage. Therefore, any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level. They can also be connected in series and/or parallel to create very high capacity protection solutions.

R-6/P-600



Symbol

FEATURES:

- ✧ Low incremental surge resistance.
- ✧ Excellent clamping capability.
- ✧ Typical I_R less than 5μA .
- ✧ Color band denoted cathode except bidirectional.
- ✧ High temperature wave soldering: 265℃/10s at terminals.
- ✧ Plastic package has under writers laboratory flammability 94V-0.
- ✧ 8000W peak pulse power capability at 10/1000μs waveform.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260℃.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ UL 497B item recognized. (File No.:E480698).
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

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

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T_J,T_{STG}	-55 to +175	℃
Peak pulse power dissipation at 10/1000μs waveform	P_{PP}	8000	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	8	W
Maximum instantaneous forward voltage at 100A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine-wave for unidirectional only	I_{FSM}	400	A

ABSOLUTE MAXIMUM RATINGS(T_A=25℃, RH=45%-75%, unless otherwise noted, continued)

Parameter	Symbol	Value	Unit
Typical thermal resistance junction to lead	$R_{\theta JL}$	8.0	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	40	℃/W

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	max(μA)	min(V)	max(V)	mA	max(V)	A
P8S20A	P8S20CA	20	5	22.2	24.5	5	32.4	246.9
P8S22A	P8S22CA	22	5	24.4	26.9	5	35.5	225.3
P8S24A	P8S24CA	24	5	26.7	29.5	5	38.9	205.6
P8S26A	P8S26CA	26	5	28.9	31.9	5	42.1	190.1
P8S28A	P8S28CA	28	5	31.1	34.4	5	45.4	176.2
P8S30A	P8S30CA	30	5	33.3	36.8	5	48.4	165.3
P8S33A	P8S33CA	33	5	36.7	40.6	5	53.3	150.1
P8S36A	P8S36CA	36	5	40.0	44.2	5	58.1	137.7
P8S40A	P8S40CA	40	5	44.4	49.1	5	64.5	124.1
P8S43A	P8S43CA	43	5	47.8	52.8	5	69.4	115.3

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

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

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

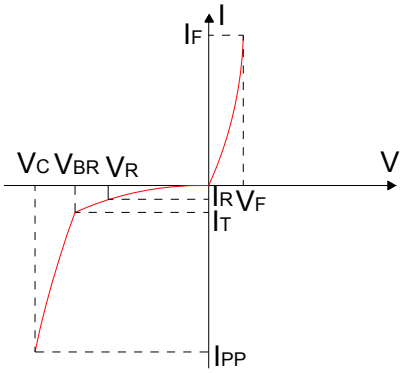


FIG.2:V- I curve characteristics (Bi-directional)

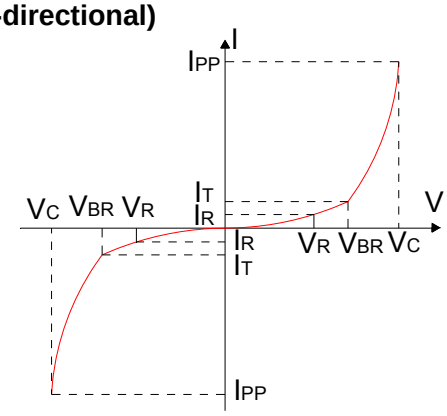


FIG.3: Pulse waveform

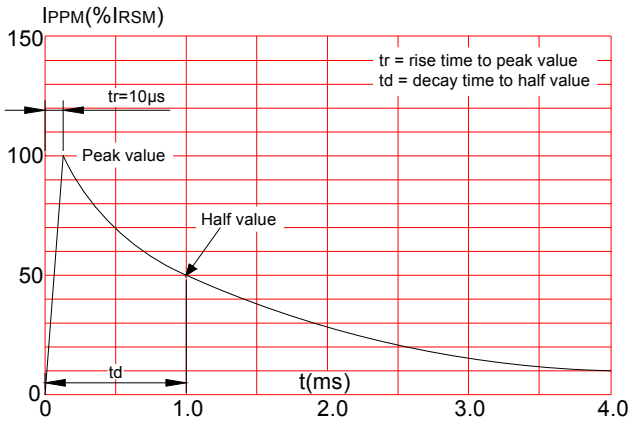
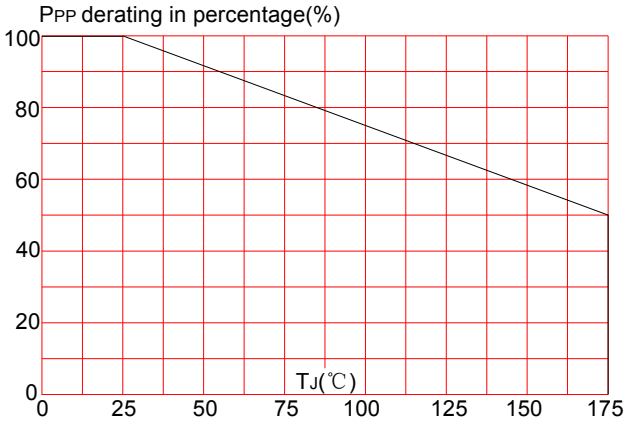
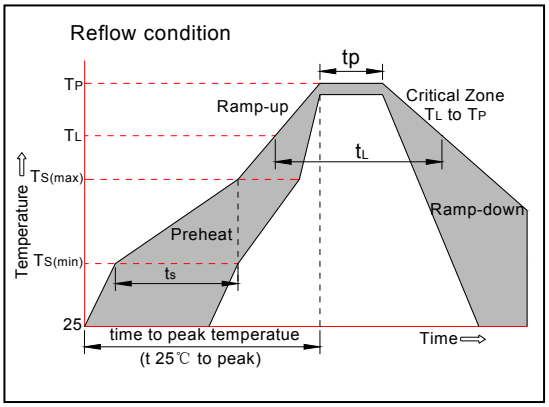


FIG.4: Pulse derating curve



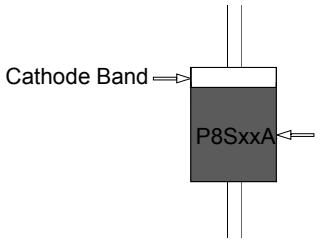
SOLDERING PARAMETERS

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

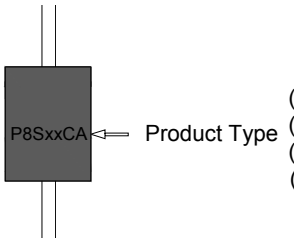


Flow/Wave Soldering(Solder Dipping)	
Peak temperature	265℃
Dipping time	10 sec.
Soldering	1 time

MARKING & ORDERING INFORMATION

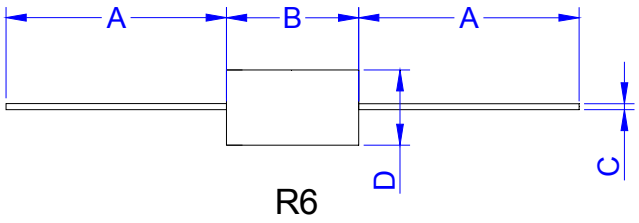


P8S xx A
(1) (2) (3)
(1)Series:8000 watts series
(2)Reverse stand-off voltage
(3)5% V_{BR} voltage tolerance



P8S xx C A
(1) (2) (3) (4)
(1)Series:8000 watts series
(2)Reverse stand-off voltage
(3)Bi-directional
(4)5% V_{BR} voltage tolerance

PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	8.60	9.40	0.339	0.370
C	1.20	1.40	0.047	0.055
D	8.60	9.10	0.339	0.358

PART No.	UNIT WEIGHT (g/PCS) typ.	PER BOX (PCS)	PER CARTON (PCS)	DESCRIPTION
P8SxxA/CA	2.5	300	3,000	Box