



20KP Series 20000W Transient Voltage Suppressor

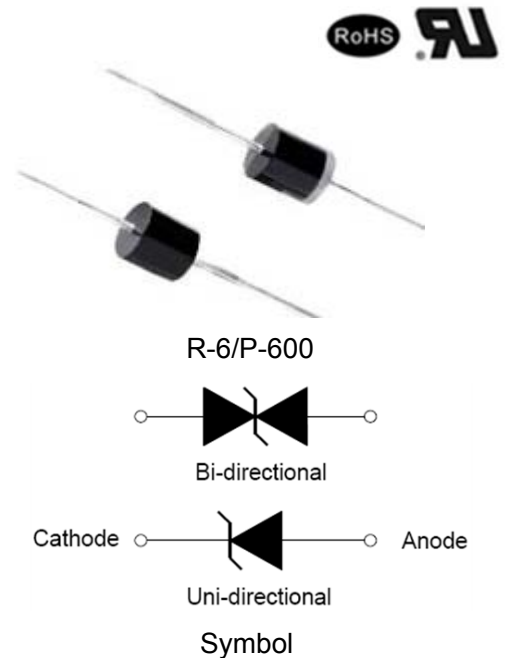
Rev.2.5

DESCRIPTION:

The 20KP 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 26 volts to 300 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.

FEATURES:

- ✧ Low incremental surge resistance.
- ✧ Excellent clamping capability.
- ✧ Typical I_R less than $2\mu A$ above 40V.
- ✧ Color band denoted cathode except bidirectional.
- ✧ High temperature soldering: $265^{\circ}C/10s$ at terminals.
- ✧ Plastic package has under writers laboratory flammability 94V-0.
- ✧ 20000W peak pulse power capability at 10/1000 μs waveform.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of $260^{\circ}C$.
- ✧ 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) $\pm 30kV$ (air), $\pm 30kV$ (contact).



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

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at 10/1000 μs waveform	P_{PP}	20000	W
Steady state power dissipation at $T_L=75^{\circ}C$	$P_{M(AV)}$	8.0	W
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^{\circ}C$
Peak forward surge current, 8.3ms single half sine-wave for unidirectional only	I_{FSM}	400	A

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

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

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

Part Number		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	$I_{PP}^{\text{①}}$
Uni-Polar	Bi-Polar	V	max(μA)	min(V)	max(V)	mA	max(V)	A
20KP26A	20KP26CA	26.0	2000	29.04	32.42	50	44.7	451.9
20KP28A	20KP28CA	28.0	1000	31.28	34.92	50	48.0	420.8
20KP30A	20KP30CA	30.0	250	33.51	37.41	5	51.5	392.2
20KP33A	20KP33CA	33.0	50	36.70	41.42	5	53.3	375.2
20KP36A	20KP36CA	36.0	20	40.20	44.88	5	61.5	328.5
20KP40A	20KP40CA	40.0	15	44.70	49.90	5	67.8	297.9
20KP44A	20KP44CA	44.0	2	49.10	54.81	5	72.7	277.9
20KP48A	20KP48CA	48.0	2	53.60	59.83	5	79.4	254.4
20KP52A	20KP52CA	52.0	2	58.10	64.86	5	85.8	235.4
20KP56A	20KP56CA	56.0	2	62.60	69.88	5	92.6	218.1
20KP60A	20KP60CA	60.0	2	67.00	74.79	5	97.6	207.0
20KP64A	20KP64CA	64.0	2	71.50	79.82	5	104.0	194.2
20KP68A	20KP68CA	68.0	2	76.00	84.84	5	110.0	183.6
20KP72A	20KP72CA	72.0	2	80.40	89.75	5	116.0	174.1
20KP80A	20KP80CA	80.0	2	89.40	99.80	5	130.0	155.4
20KP88A	20KP88CA	88.0	2	98.30	109.73	5	142.0	142.3
20KP96A	20KP96CA	96.0	2	107.20	119.67	5	155.0	130.3
20KP104A	20KP104CA	104.0	2	116.20	129.72	5	168.0	120.2
20KP112A	20KP112CA	112.0	2	125.10	139.65	5	182.0	111.0
20KP120A	20KP120CA	120.0	2	134.00	149.59	5	194.0	104.1
20KP132A	20KP132CA	132.0	2	147.40	164.54	5	213.0	94.8
20KP144A	20KP144CA	144.0	2	160.80	179.50	5	232.0	87.1
20KP160A	20KP160CA	160.0	2	178.70	199.49	5	258.0	78.3
20KP172A	20KP172CA	172.0	2	192.10	214.44	5	277.0	72.9

ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$, 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	max(μA)	min(V)	max(V)	mA	max(V)	A
20KP180A	20KP180CA	180.0	2	201.10	224.49	5	291.0	69.4
20KP192A	20KP192CA	192.0	2	214.50	239.45	5	309.0	65.4
20KP204A	20KP204CA	204.0	2	227.90	254.41	5	329.0	61.4
20KP216A	20KP216CA	216.0	2	241.30	269.37	5	348.0	58.0
20KP232A	20KP232CA	232.0	2	259.10	289.24	5	374.0	54.0
20KP240A	20KP240CA	240.0	2	268.10	299.28	5	387.0	52.2
20KP256A	20KP256CA	256.0	2	286.00	319.27	5	412.0	49.0
20KP280A	20KP280CA	280.0	2	312.80	349.18	5	451.0	44.8
20KP300A	20KP300CA	300.0	2	335.10	374.08	5	483.0	41.8

① Surge waveform: 10/1000 μs

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 ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

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

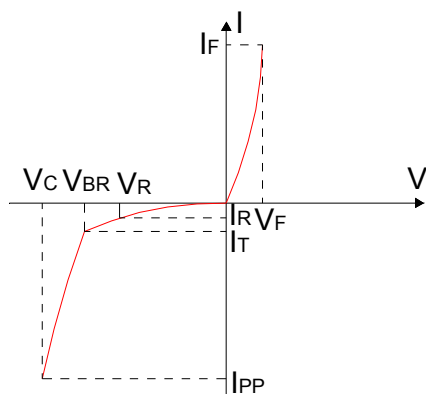


FIG.2:V- I curve characteristics (Bi-directional)

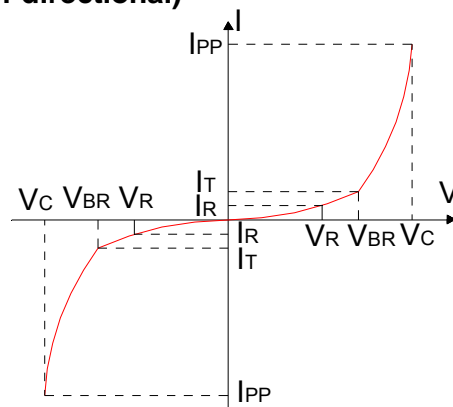


FIG.3: Pulse waveform

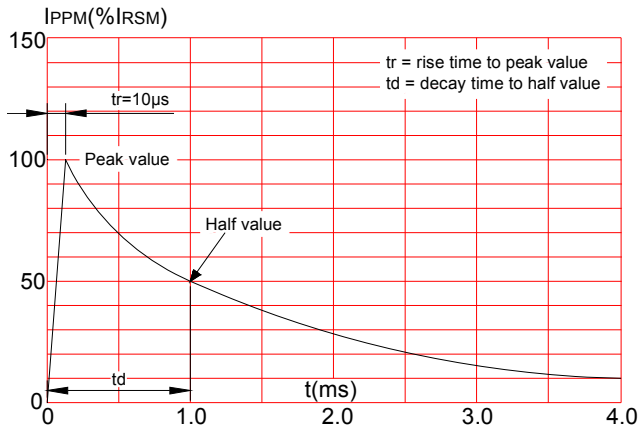
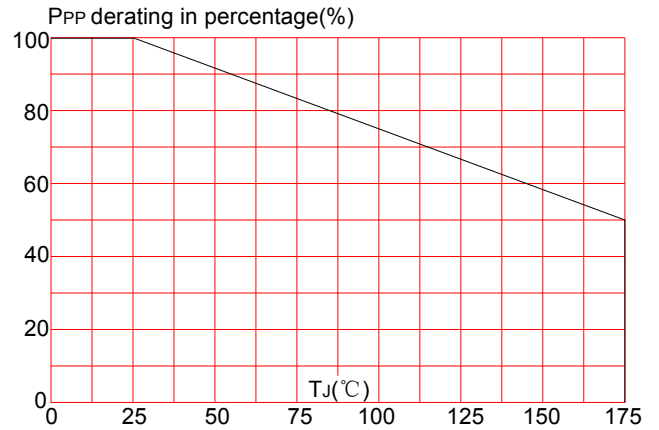
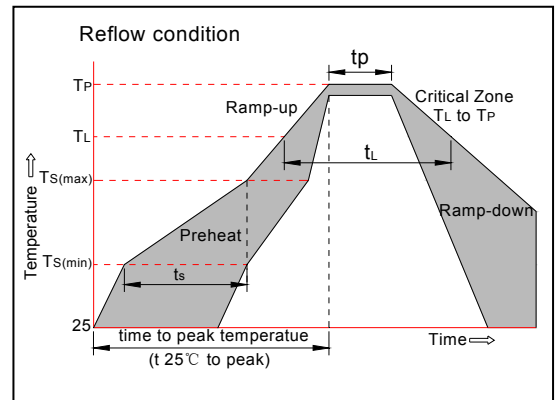


FIG.4: Pulse derating curve



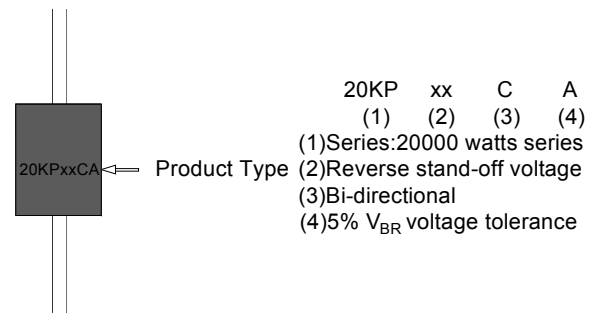
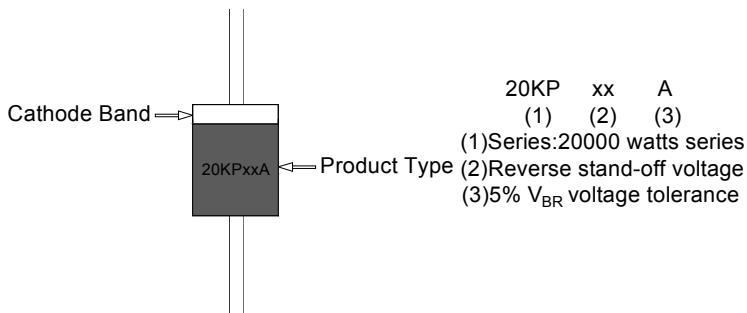
SOLDERING PARAMETERS

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

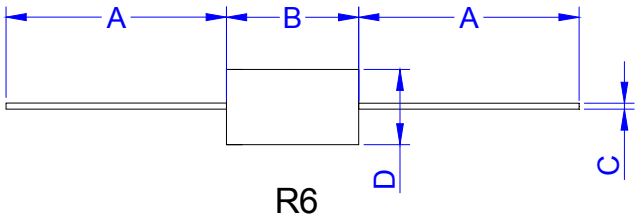


Flow/Wave Soldering(Solder Dipping)	
Peak temperature	265°C
Dipping time	10 sec.
Soldering	1 time

MARKING & ORDERING INFORMATION



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
20KPxxA/CA	3.58	300	3,000	Box

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.

Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.

Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.

This document is the 2.5th version which is made in 2-Aug.-2021. This document supersedes and replaces all information previously supplied.

 is a registered trademark of Jiangsu JieJie Microelectronics Co.,Ltd.

Copyright©2021 Jiangsu JieJie Microelectronics Co.,Ltd. Printed All rights reserved.