

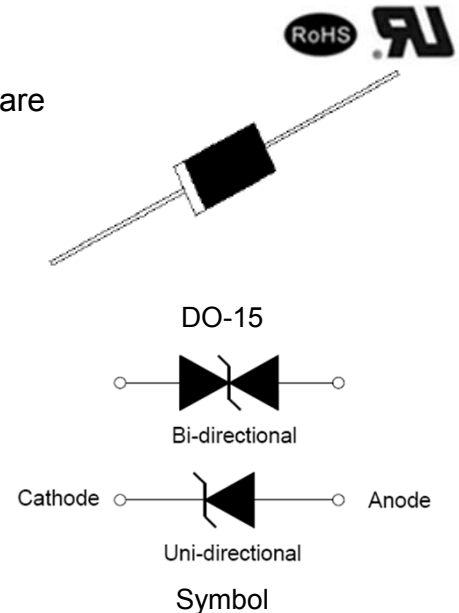


## P6KExx(C)AS Series 600W Transient Voltage Suppressor

Rev.1.1

### DESCRIPTION

The P6KExx(C)AS series of high current 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 6.8 volts to 120 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.
- ✧ Color band denoted cathode except bidirectional.
- ✧ Typical  $I_R$  less than  $1\mu A$  above 12V.
- ✧ High temperature wave soldering:  $265^\circ C/10s$  at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ 600W peak pulse power capability at 10/1000 $\mu s$  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
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	$^\circ C$
Steady state power dissipation at $T_L=75^\circ C$	$P_{M(AV)}$	5.0	W
Peak pulse power dissipation at 10/1000 $\mu s$ waveform	$P_{PP}$	600	W
Maximum instantaneous forward voltage at 50A for unidirectional	$V_F$	5.0	V
Peak forward surge current, 8.3ms single half sine-wave for unidirectional only (NOTE 1)	$I_{FSM}$	100	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	$R_{\theta JL}$	20	$^{\circ}\text{C}/\text{W}$
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}\text{C}/\text{W}$

**Notes:**

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

**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( $\mu\text{A}$ )	min(V)	max(V)	mA	max(V)	A
P6KE6.8AS	P6KE6.8CAS	5.8	150	6.45	7.14	10	10.5	58.1
P6KE7.5AS	P6KE7.5CAS	6.4	120	7.13	7.88	10	11.3	54.0
P6KE8.2AS	P6KE8.2CAS	7.02	50	7.79	8.61	10	12.1	50.4
P6KE9.1AS	P6KE9.1CAS	7.78	20	8.65	9.55	1	13.4	45.5
P6KE10AS	P6KE10CAS	8.55	10	9.50	10.50	1	14.5	42.1
P6KE11AS	P6KE11CAS	9.4	5	10.50	11.60	1	15.6	39.1
P6KE12AS	P6KE12CAS	10.2	2	11.40	12.60	1	16.7	36.5
P6KE13AS	P6KE13CAS	11.1	1	12.40	13.70	1	18.2	33.5
P6KE15AS	P6KE15CAS	12.8	1	14.30	15.80	1	21.2	28.8
P6KE16AS	P6KE16CAS	13.6	1	15.20	16.80	1	22.5	27.1
P6KE18AS	P6KE18CAS	15.3	1	17.10	18.90	1	25.2	24.2
P6KE20AS	P6KE20CAS	17.1	1	19.00	21.00	1	27.7	22.0
P6KE22AS	P6KE22CAS	18.8	1	20.90	23.10	1	30.6	19.9
P6KE24AS	P6KE24CAS	20.5	1	22.80	25.20	1	33.2	18.4
P6KE27AS	P6KE27CAS	23.1	1	25.70	28.40	1	37.5	16.3
P6KE30AS	P6KE30CAS	25.6	1	28.50	31.50	1	41.4	14.7
P6KE33AS	P6KE33CAS	28.2	1	31.40	34.70	1	45.7	13.3
P6KE36AS	P6KE36CAS	30.8	1	34.20	37.80	1	49.9	12.2
P6KE39AS	P6KE39CAS	33.3	1	37.10	41.00	1	53.9	11.3
P6KE43AS	P6KE43CAS	36.8	1	40.90	45.20	1	59.3	10.3
P6KE47AS	P6KE47CAS	40.2	1	44.70	49.40	1	64.8	9.4
P6KE51AS	P6KE51CAS	43.6	1	48.50	53.60	1	70.1	8.7

**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( $\mu\text{A}$ )	min(V)	max(V)	mA	max(V)	A
P6KE56AS	P6KE56CAS	47.8	1	53.20	58.80	1	77.0	7.9
P6KE62AS	P6KE62CAS	53.0	1	58.90	65.10	1	85.0	7.9
P6KE68AS	P6KE68CAS	58.1	1	64.60	71.40	1	92.0	6.6
P6KE75AS	P6KE75CAS	64.1	1	71.30	78.80	1	103.0	5.9
P6KE82AS	P6KE82CAS	70.1	1	77.90	86.10	1	113.0	5.4
P6KE91AS	P6KE91CAS	77.8	1	86.50	95.50	1	125.0	4.9
P6KE100AS	P6KE100CAS	85.5	1	95.00	105.0	1	137.0	4.5
P6KE110AS	P6KE110CAS	94.0	1	105.0	116.0	1	152.0	4.0
P6KE120AS	P6KE120CAS	102.0	1	114.0	126.0	1	165.0	3.7

① Surge waveform: 10/1000 $\mu\text{s}$

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

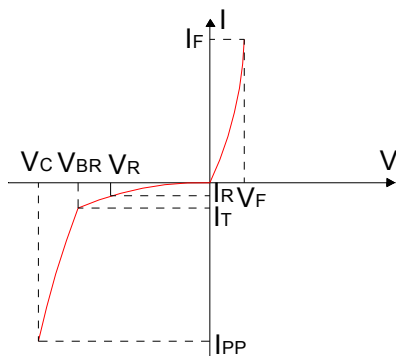
$V_{BR}$ : Breakdown voltage

$V_C$ : 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)**

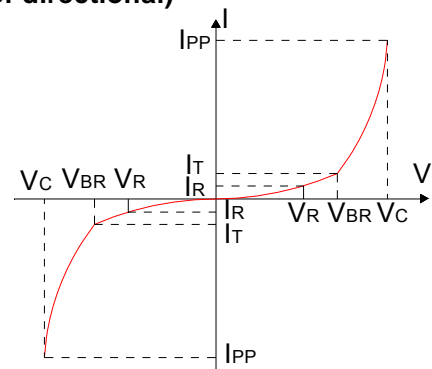


FIG.3: Pulse waveform

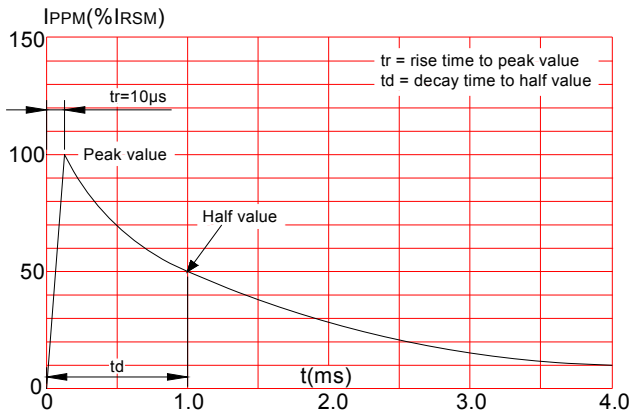
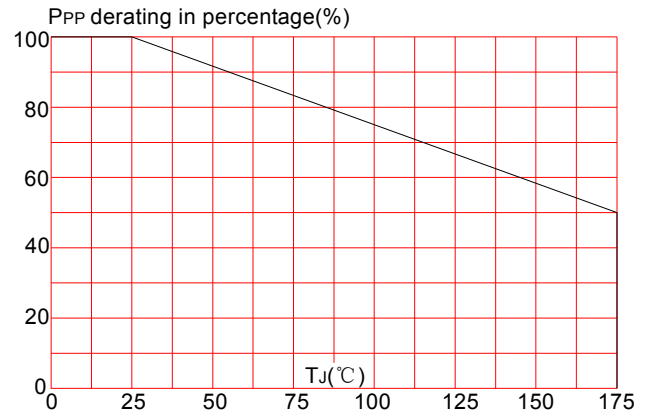
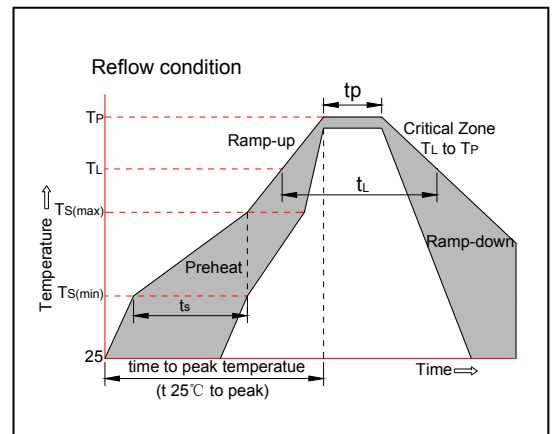


FIG.4: Pulse derating curve



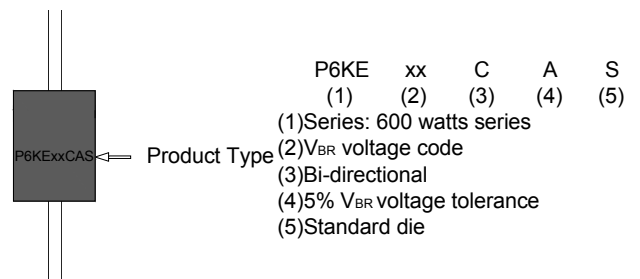
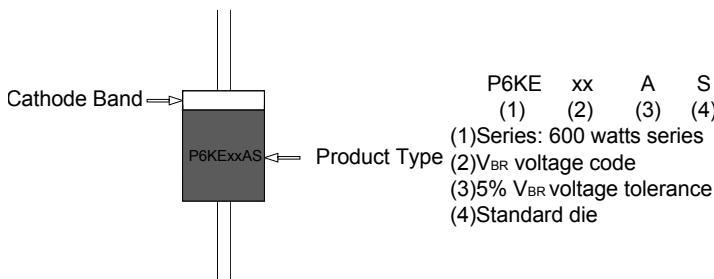
SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min (T <sub>s(min)</sub> )	+150°C
	-Temperature Max(T <sub>s(max)</sub> )	+200°C
	-Time (Min to Max) (t <sub>s</sub> )	60-180 secs.
Average ramp up rate (Liquidus Temp (T <sub>L</sub> )to peak)		3°C/sec. Max
T <sub>s(max)</sub> to T <sub>L</sub> - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T <sub>L</sub> )(Liquidus)	+217°C
	-Temperature(t <sub>L</sub> )	60-150 secs.
Peak Temp (T <sub>p</sub> )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t <sub>p</sub> )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T <sub>p</sub> )		8 min. Max
Do not exceed		+260°C

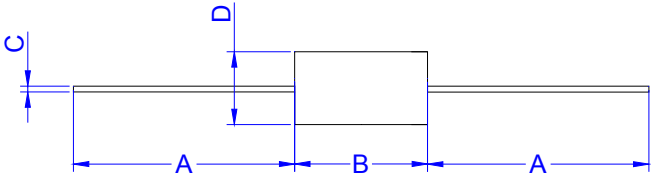


Flow/Wave Soldering(Solder Dipping)	
Peak temperature	265°C
Dipping time	10 sec.
Soldering	1 time

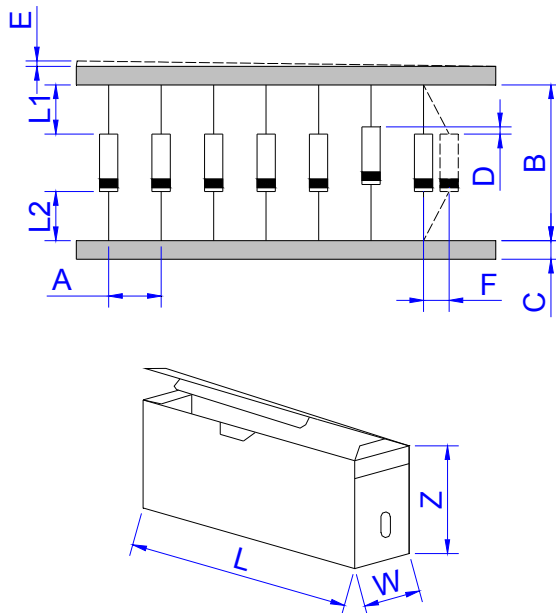
MARKING & ORDERING INFORMATION



PACKAGE MECHANICAL DATA

 <p style="text-align: center;">DO-15</p>	Ref.	Dimensions			
		Millimeters		Inches	
		Min.	Max.	Min.	Max.
	A	25.40	-	1.000	-
B	5.80	7.62	0.228	0.300	
C	0.71	0.86	0.028	0.034	
D	2.60	3.60	0.102	0.142	

TAPE AND BOX SPECIFICATION-DO-15



Ref.	Dimensions	
	Millimeters	Inches
A	5.0±0.5	0.197±0.020
B	53.0±1.5	2.087±0.059
C	6.0±0.5	0.236±0.020
D	1.2(MAX)	0.047(MAX)
E	0.8(MAX)	0.031(MAX)
F	1.5(MAX)	0.059(MAX)
L1-L2	1.0(MAX)	0.039(MAX)
W	80±5.0	3.150±0.197
L	250±5.0	9.843±0.197
Z	115±5.0	4.528±0.197

PART No.	UNIT WEIGHT (g/PCS) typ.	PER BOX (PCS)	PER CARTON (PCS)	DESCRIPTION
P6KExxAS/CAS	0.42	2,000	20,000	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 1.1st 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.