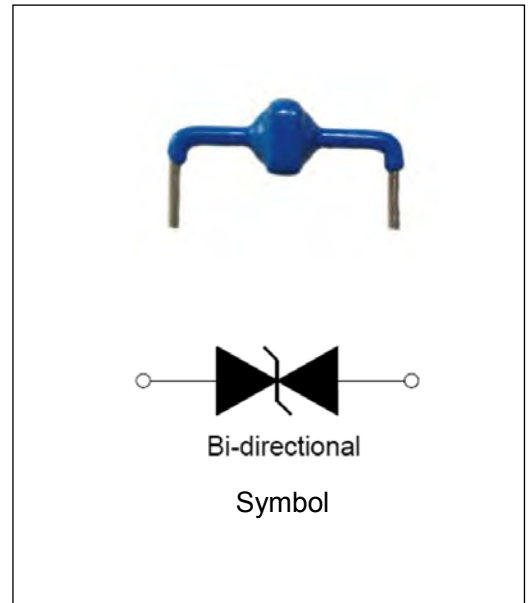


## AK Series 3000A Transient Voltage Suppressor

Rev.1.0

### DESCRIPTION:

The AK3 series of high current bidirectional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer bidirectional port protection from 12 volts to 430 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:

- ✧ Halogen-free
- ✧ Bi-directional
- ✧ RoHS compliant
- ✧ Low slope resistance
- ✧ Very low clamping voltage
- ✧ Sharp breakdown voltage
- ✧ Glass Passivated Junction for reliability
- ✧ Foldback technology for superior clamping factor
- ✧ High temperature soldering: 260°C/10s at terminals

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Current Rating per 8/20 μs IEC 61000-4-5	I <sub>PP</sub>	3	KA
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Operating Storage Temperature Range	T <sub>S</sub>	-55 to +150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)**

Part Number	V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	I <sub>R</sub> @V <sub>R</sub>	V <sub>c</sub> @I <sub>pp</sub>	I <sub>pp</sub> <sup>①</sup>
		Min (V)	Max (V)				
Bi-Polar	V			μA	μA	V	A
AK3-012C	12	14	15	10	20	24	3000
AK3-015C	15	17	19	10	20	28	3000
AK3-020C	20	22	24	10	20	50	3000
AK3-025C	25	28	30	10	20	60	3000
AK3-030C	30	33	37	10	20	80	3000
AK3-042C	42	47	51	10	20	105	3000
AK3-058C	58	64	70	10	20	110	3000
AK3-066C	66	72	80	10	20	120	3000
AK3-076C	76	85	95	10	20	140	3000
AK3-100C	100	110	122	10	20	165	3000
AK3-133C	133	147	162	10	20	220	3000
AK3-170C	170	180	205	10	20	260	3000
AK3-190C	190	200	245	10	20	290	3000
AK3-240C	240	250	285	10	20	340	3000
AK3-275C	275	300	335	10	20	435	3000
AK3-300C	300	330	366	10	20	470	3000
AK3-380C	380	401	443	10	20	520	3000
AK3-430C	430	440	490	10	20	625	3000

① Surge waveform: 8/20μs

V<sub>R</sub> : Stand-off Voltage -- Maximum voltage that can be applied

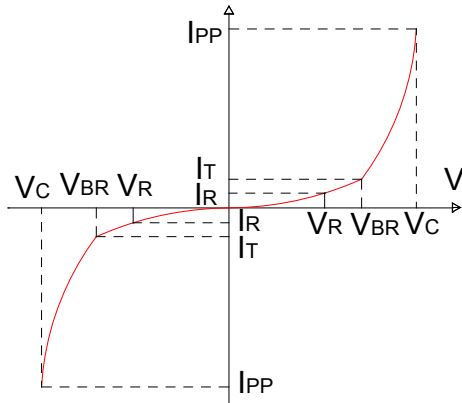
V<sub>BR</sub>: Breakdown Voltage

V<sub>c</sub>: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I<sub>pp</sub>

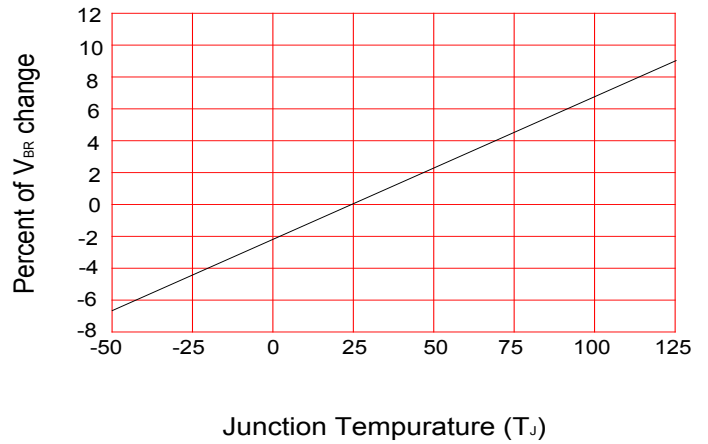
I<sub>R</sub>: Reverse Leakage Current

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

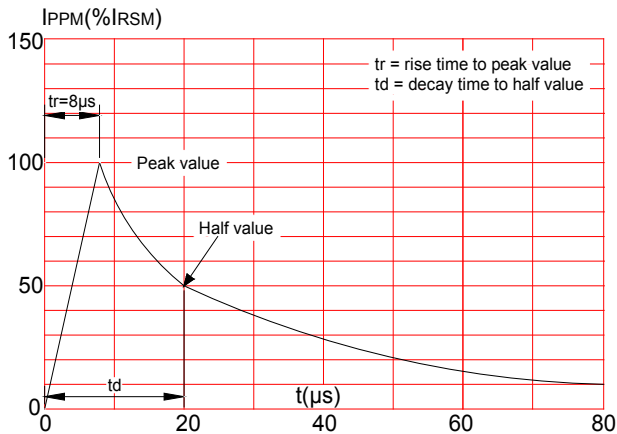
**FIG.1: V- I Curve Characteristics (Bi-directional)**



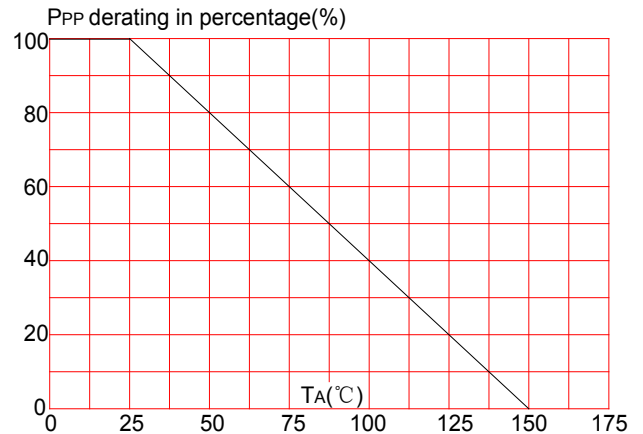
**FIG.2: Typical  $V_{BR}$  Vs Junction Temperature**



**FIG.3: Pulse waveform**

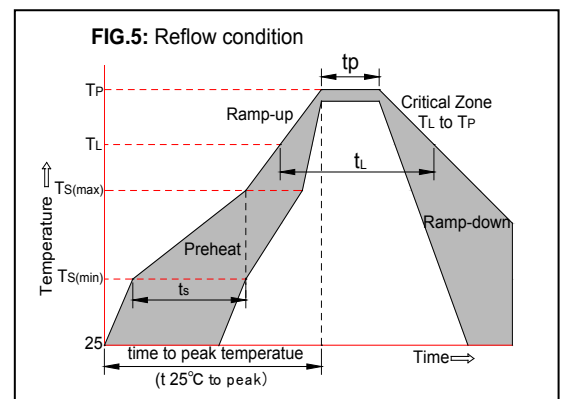


**FIG.4: Pulse derating curve**

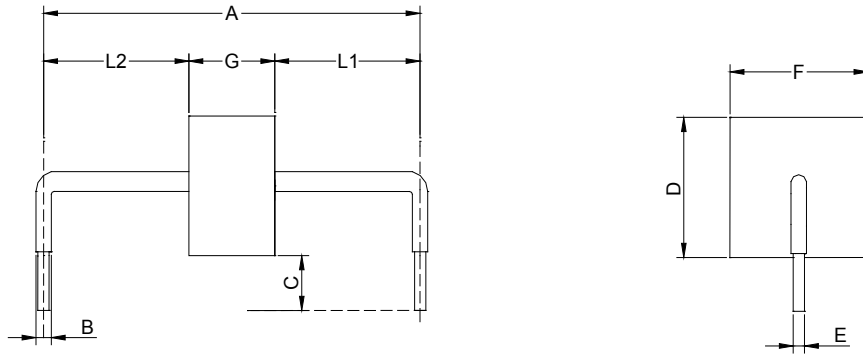


## SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max ( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature ( $T_L$ ) (Liquid us)	+217°C
	-Temperature ( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
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

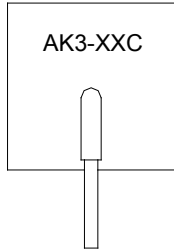


Size A		
Symbol	Inches	Millimeter
A	0.951±0.040	24.15±1.00
B	0.094±0.024	2.40±0.60
C	0.236±0.039	6.00±1.00
D	0.40 max	10.0max
E	0.050±0.002	1.27±0.05
F	0.40 max	10.0max
G	012C to 025C	0.20max 5.0max
	030C to 042C	0.24max 6.0max
	058C to 076C	0.32max 8.0max
	100C to 133C	0.40max 10.0max
	170C to 190C	0.48max 12.0max
	240C to 300C	0.64max 16.0max
	380C to 430C	0.80max 20.0max
L <sub>1</sub> /L <sub>2</sub>	L <sub>1</sub> =L <sub>2</sub> tolerance ±0.047inch (±1.20 mm)	

Size B		
Symbol	Inches	Millimeter
A	0.630±0.020	16.00±0.50
B	0.094±0.024	2.40±0.60
C	0.236±0.039	6.00±1.00
D	0.40 max	10.0max
E	0.050±0.002	1.27±0.05
F	0.40 max	10.0max
G	012C to 025C	0.20max 5.0max
	030C to 042C	0.24max 6.0max
	058C to 076C	0.32max 8.0max
	100C to 133C	0.40max 10.0max
	170C to 190C	None None
	240C to 300C	None None
	380C to 430C	None None
L <sub>1</sub> /L <sub>2</sub>	L <sub>1</sub> =L <sub>2</sub> tolerance ±0.047inch (±1.20 mm)	

Part Number	Case Type	Quantity	Packing Option
AK3-XXC	AKS	84pcs	Box

## MARKING & ORDERING INFORMATION



AK 3 - XX C  
(1) (2) (3) (4)

- (1) AK series
- (2)  $I_{PP}=3KA$
- (3) Reverse stand-off voltage
- (4) Bi-directional