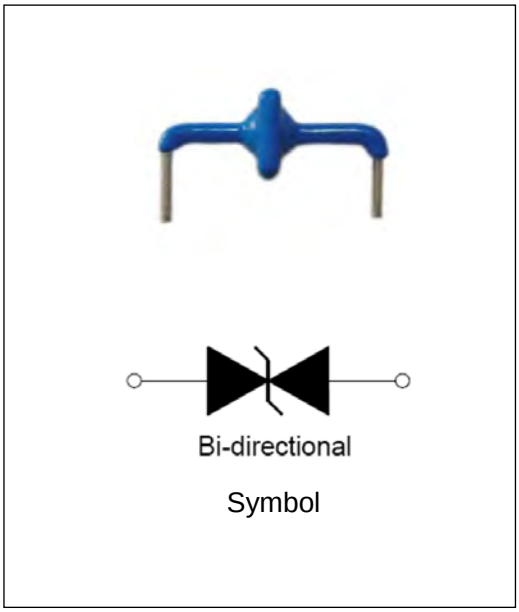
AK Series 1000A Transient Voltage Suppressor

Rev.1.0

DESCRIPTION:

The AK1 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.



Symbol

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℃/10s at terminals

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

Parameter	Symbol	Value	Unit
Peak Current Rating per 8/20 μs IEC 61000-4-5	I_{PP}	1	KA
Operating Junction Temperature Range	T_J	-55 to +150	℃
Operating Storage Temperature Range	T_S	-55 to +150	℃

ELECTRICAL CHARACTERISTICS (T_A=25℃)

Part Number	V_R	V_{BR}@I_T		I_T	I_R@V_R	Vc@Ipp	Ipp①
Bi-Polar	V	Min (V)	Max (V)	μA	μA	V	A
AK1-012C	12	14	15	10	20	24	1000
AK1-015C	15	17	19	10	20	28	1000
AK1-020C	20	22	24	10	20	50	1000
AK1-025C	25	28	30	10	20	60	1000
AK1-030C	30	33	37	10	20	80	1000
AK1-042C	42	47	51	10	20	105	1000
AK1-058C	58	64	70	10	20	110	1000
AK1-066C	66	72	80	10	20	120	1000
AK1-076C	76	85	95	10	20	140	1000
AK1-100C	100	110	122	10	20	165	1000
AK1-133C	133	147	162	10	20	220	1000
AK1-170C	170	180	205	10	20	260	1000
AK1-190C	190	200	245	10	20	290	1000
AK1-240C	240	250	285	10	20	340	1000
AK1-275C	275	300	335	10	20	435	1000
AK1-300C	300	330	366	10	20	470	1000
AK1-380C	380	401	443	10	20	520	1000
AK1-430C	430	440	490	10	20	625	1000

① Surge waveform: 8/20μs

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

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

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

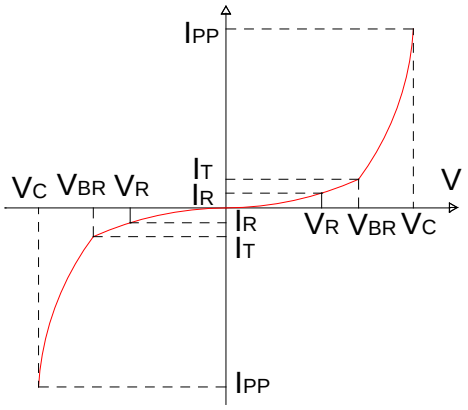


FIG.2: Typical V_{BR} Vs Junction Temperature

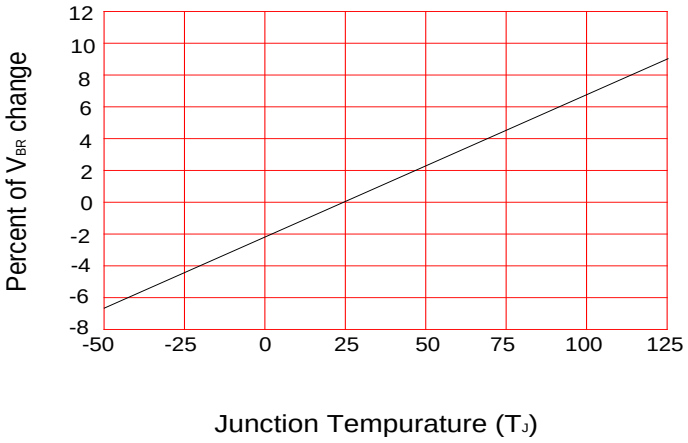


FIG.3: Pulse waveform

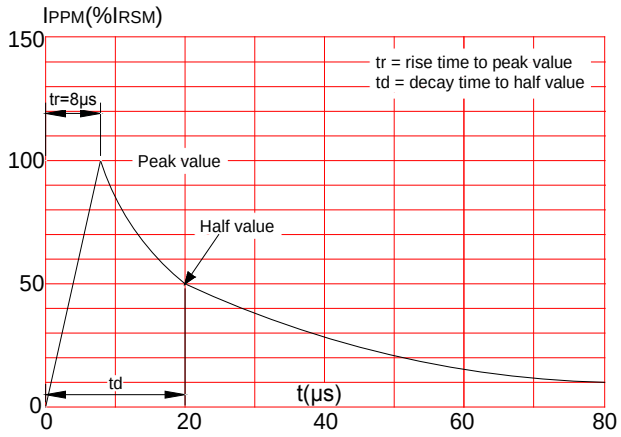
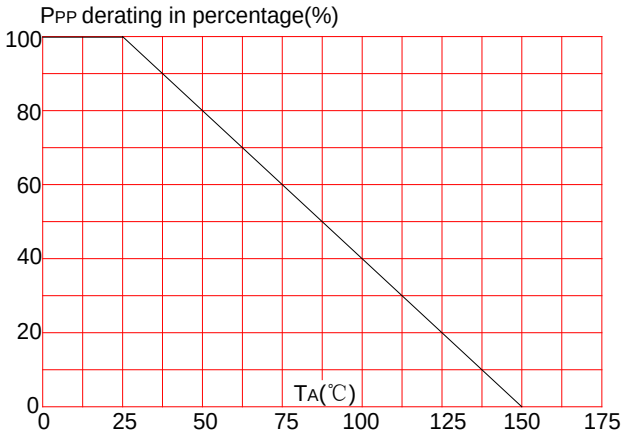


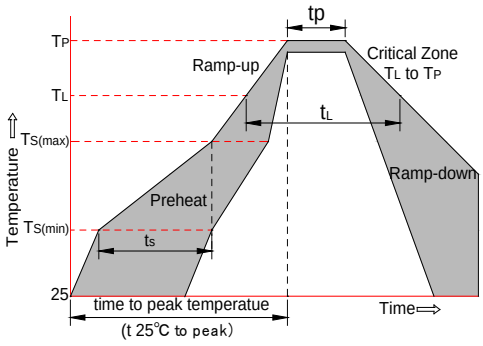
FIG.4: Pulse derating curve



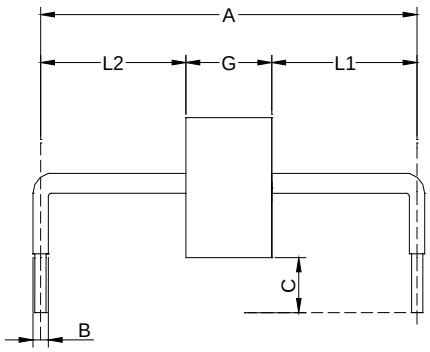
SOLDERING PARAMETERS

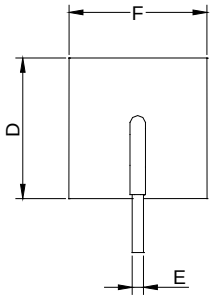
Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid 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℃

FIG.5: Reflow condition



PACKAGE MECHANICAL DATA



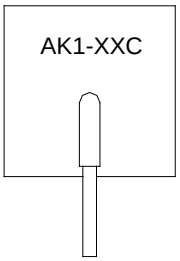


Size A			
Symbol		Inches	Millimeter
A		0.951±0.040	24.15±1.00
B		0.094±0.024	2.40±0.60
C		0.236±0.039	6.00±1.00
D		0.48 max	12.0max
E		0.050±0.002	1.27±0.05
F		0.48 max	12.0max
G	012C to 100C	0.20max	5.0max
	133C to 190C	0.32max	8.0max
	240C to 300C	0.40max	10.0max
	380C to 430C	0.48max	12.0max
L_1/L_2	$L_1=L_2$ 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		0.48 max	12.0max
E		0.050±0.002	1.27±0.05
F		0.48 max	12.0max
G	012C to 100C	0.20max	5.0max
	133C to 190C	0.32max	8.0max
	240C to 300C	0.40max	10.0max
	380C to 430C	None	None
L_1/L_2	$L_1=L_2$ tolerance ±0.047inch (±1.20 mm)		

Part Number	Case Type	Quantity	Packing Option
AK1-XXC	AKS	84pcs	Box

MARKING & ORDERING INFORMATION



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

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