



AK3 Series 3000A Transient Voltage Suppressor

Rev.2.3

DESCRIPTION

The AK3 series of high current bi-directional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer bi-directional port protection from 15 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.



Bi-directional

Symbol

FEATURES

- ✧ Halogen-free.
- ✧ Bi-directional.
- ✧ RoHS compliant.
- ✧ Low slope resistance.
- ✧ Very low clamping voltage.
- ✧ Sharp breakdown voltage.
- ✧ Glass passivated junction.
- ✧ Snapback technology for superior clamping factor.
- ✧ High temperature wave soldering: 265°C/10s at terminals.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

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

Parameter	Symbol	Value	Unit
Peak current rating per 8/20μs IEC 61000-4-5	I _{PP}	3	kA
Operating temperature range	T _J	-55 to +125	°C
Storage temperature range	T _{STG}	-55 to +150	°C

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

Part Number	V_R	$V_{BR}@I_T$		I_T	$I_R@V_R$	$V_C@I_{PP}$	$I_{PP}^{①}$
		Min(V)	Max(V)				
AK3-015C	15	16	19	10	10	28	3000
☆AK3-020C	20	22	24	10	10	50	3000
☆AK3-025C	25	28	30	10	10	60	3000
AK3-030C	30	32	37	10	10	80	3000
☆AK3-042C	42	47	51	10	10	105	3000
☆AK3-058C	58	64	70	10	10	110	3000
☆AK3-066C	66	72	80	10	10	120	3000
☆AK3-076C	76	85	95	10	10	140	3000
☆AK3-100C	100	110	122	10	10	165	3000
☆AK3-133C	133	147	162	10	10	220	3000
☆AK3-150C	150	158	194	10	10	230	3000
☆AK3-170C	170	179	220	10	10	260	3000
☆AK3-190C	190	200	245	10	10	290	3000
☆AK3-208C	208	223	246	10	10	305	3000
☆AK3-240C	240	250	285	10	10	340	3000
☆AK3-275C	275	300	335	10	10	435	3000
☆AK3-300C	300	330	366	10	10	470	3000
☆AK3-380C	380	401	443	10	10	520	3000
☆AK3-430C	430	440	490	10	10	625	3000

① Surge waveform: 8/20 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

☆: Products with negative resistance

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

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

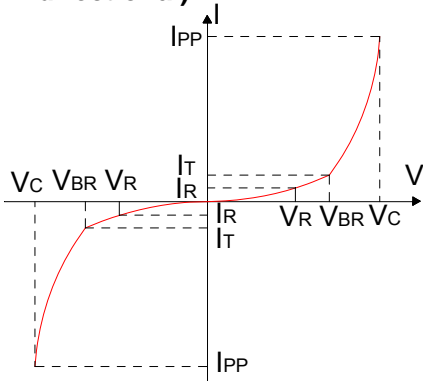


FIG.2: V- I curve characteristics (Bi-directional with negative resistance)

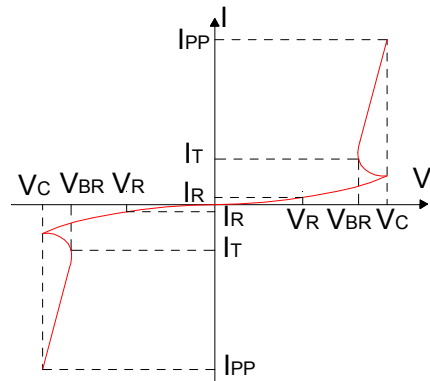


FIG.3: Typical V_{BR} vs junction temperature

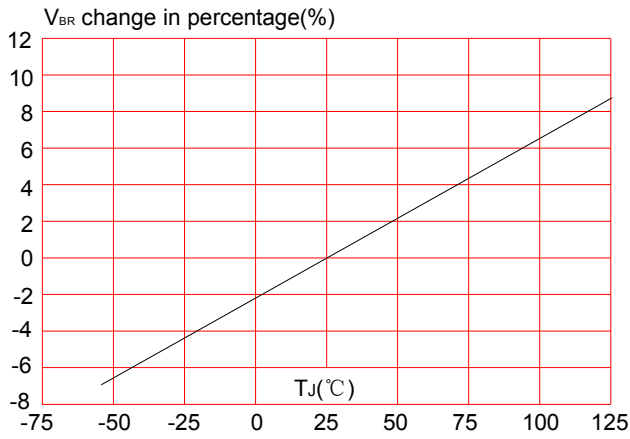


FIG.4: Pulse waveform

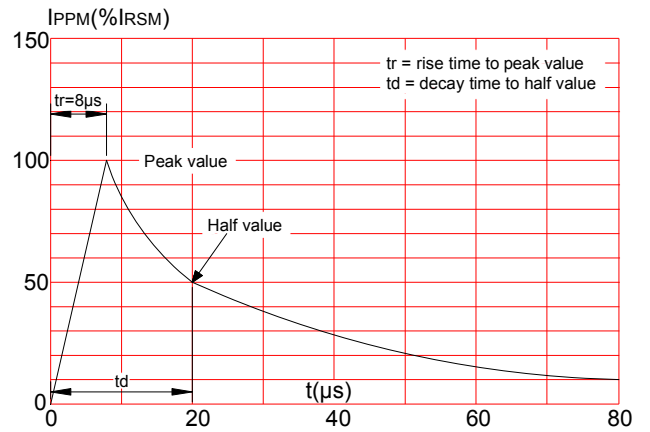
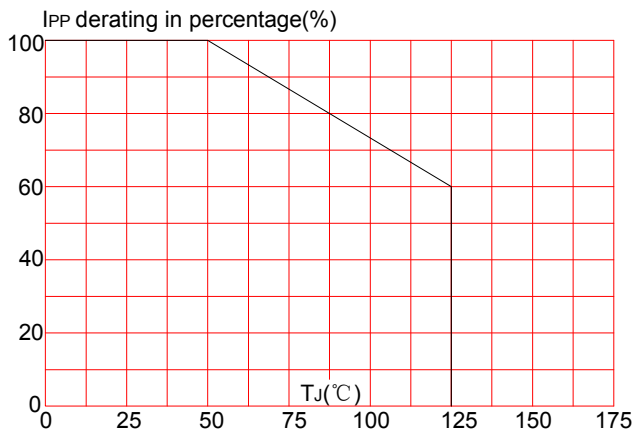
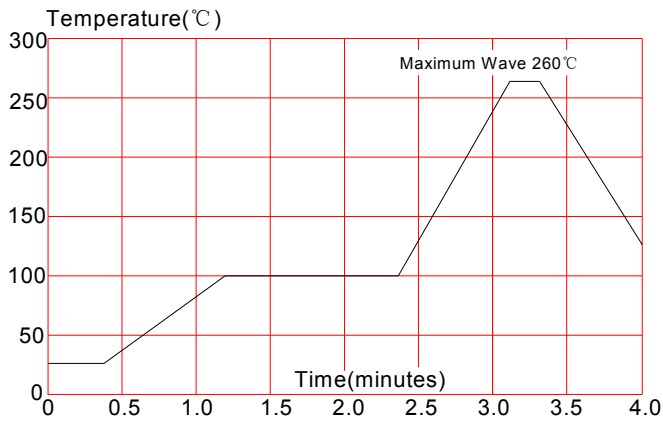


FIG.5: Pulse derating curve



SOLDERING PARAMETERS

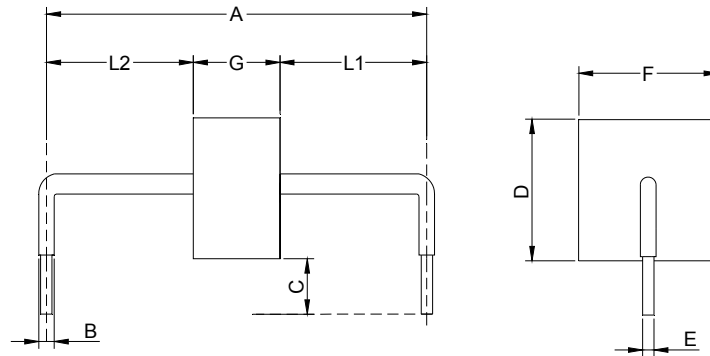
FIG.6: Lead-free profile



Tab1: Flow/Wave soldering

Peak temperature	265°C
Dipping time	10 seconds
Soldering	1 time

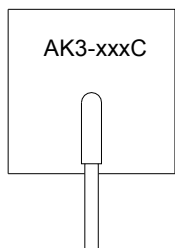
PACKAGE MECHANICAL DATA



Symbol		Dimensions	
		Inches	Millimeters
A		0.951±0.039	24.15±1.00
B		0.094±0.024	2.40±0.60
C		0.236±0.039	6.00±1.00
	208C	0.145±0.039	3.68±1.00
D		0.433max	11.00max
E		0.050±0.002	1.27±0.05
F		0.374max	9.50max
G	015C to 025C	0.157±0.047	4.00±1.20
	030C to 042C	0.189±0.047	4.80±1.20
	058C to 076C	0.217±0.047	5.50±1.20
	100C	0.248±0.047	6.30±1.20
	133C	0.283±0.047	7.20±1.20
	150C	0.323±0.047	8.20±1.20
	170C to 190C	0.374±0.047	9.50±1.20
	208C	0.394±0.047	10.00±1.20
	240C	0.445±0.047	11.30±1.20
	275C to 300C	0.551±0.047	14.00±1.20
	380C to 430C	0.610±0.047	15.50±1.20
L ₁	208C	0.296±0.047	7.52±1.20
		L ₁ =L ₂ tolerance±0.047inch(±1.20 mm)	
L ₂	208C	=A-(G+L ₁) tolerance±0.047inch(±1.20 mm)	
		L ₁ =L ₂ tolerance±0.047inch(±1.20 mm)	

PART No.	PER BOX (PCS)	PER CARTON (PCS)	DESCRIPTION
AK3-xxxC	56	1,400	Box

MARKING & ORDERING INFORMATION



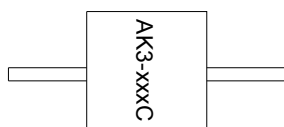
AK 3 - xxx C
 (1) (2) (3) (4)

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

Apply to P/N listed below:

AK3-015C; AK3-020C;
 AK3-025C; AK3-030C;
 AK3-042C; AK3-058C;
 AK3-066C; AK3-076C;
 AK3-100C; AK3-133C;

Type 1 - Side View



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

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

Apply to P/N listed below:

AK3-150C
 AK3-170C
 AK3-190C
 AK3-208C
 AK3-240C
 AK3-275C
 AK3-300C
 AK3-380C
 AK3-430C

Type 2 - Top View

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