

# AK1E

## 1000 A Transient voltage suppressor



### Product features

- Bi-directional
- 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 /10 s at terminal

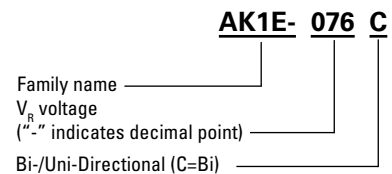
### Applications

- Consumer electronics
- Telecommunications
- Computing and servers
- Appliances
- Industrial automation
- Vac line protection

### Environmental compliance and general specifications



### Ordering part number



### PIN configuration

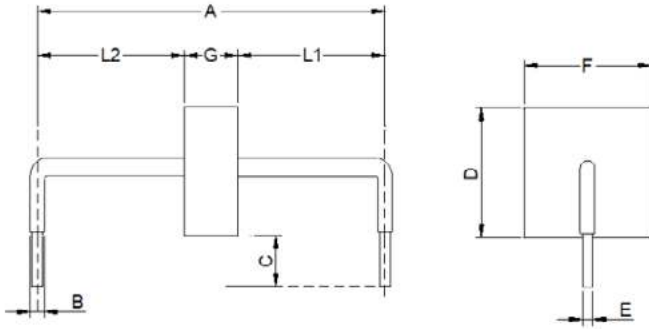


**Absolute maximum ratings**

(+25 °C, RH=45%-75%, unless otherwise noted)

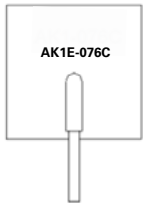
Parameter	Symbol	Value	Unit
Peak current rating per 8/20µs IEC 61000-4-5	$I_{PP}$	1	kA
Operating junction temperature range	$T_J$	-55 to +125	°C
Storage temperature range	$T_{STG}$	-55 to +150	°C

**Mechanical parameters- mm**



	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
D	0.570 max	14.48 max
E	0.050 ± 0.002	1.27 ± 0.05
F	0.500 max	12.70 max
G	076C	0.169 ± 0.047
	380C to 430C	0.287 ± 0.047
$L_1/L_2$	L1=L2 tolerance ± 0.047 inch (± 1.20 mm)	

**Part marking**



Side view

**Part number:**  
AK1E-076C



Top view

**Part number:**  
AK1E-380C  
AK1E-430C

**Packaging information (mm)**

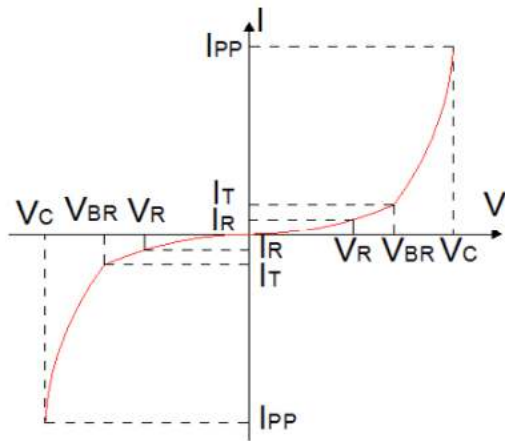
Bulk: 56 parts per box

**Electrical characteristics (+25 °C)**

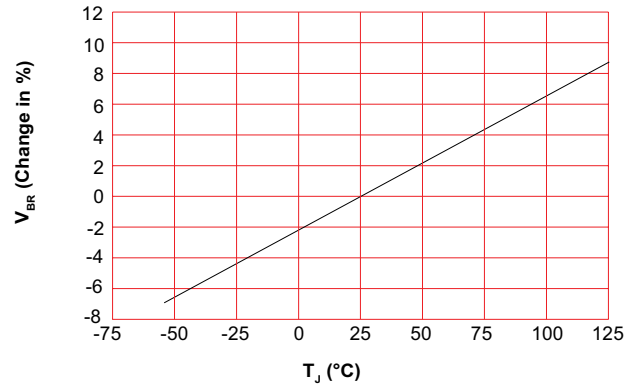
Part number	$V_R$ (V)	$V_{BR} @ I_T$ min (V)	max (V)	$I_T$ (mA)	$I_R @ V_R$ (µA)	$V_C @ I_{PP}$ (V)	$I_{PP}$ (A)
AK1E-076C	76	85	95	10	10	140	1000
AK1E-380C	380	401	443	10	10	520	1000
AK1E-430C	430	440	490	10	10	625	1000

**Ratings and V-I characteristic curves** (+25 °C unless otherwise noted)

**V- I curve characteristics (Bi-directional)**



**Typical  $V_{BR}$  vs junction temperature**



Surge waveform: 8/20  $\mu$ s

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

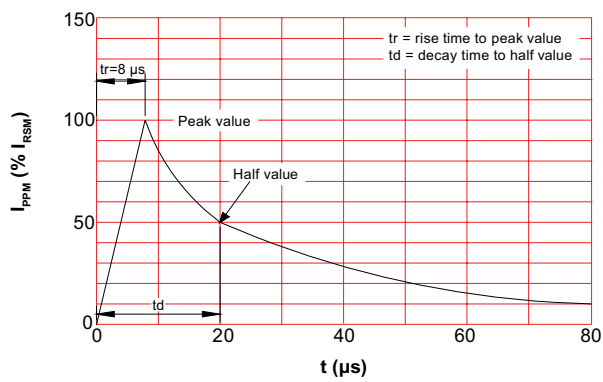
$V_{BR}$ : Breakdown voltage

$V_C$ : Clamping voltage – Peak voltage measured across the suppressor at a specified  $I_{PP}$

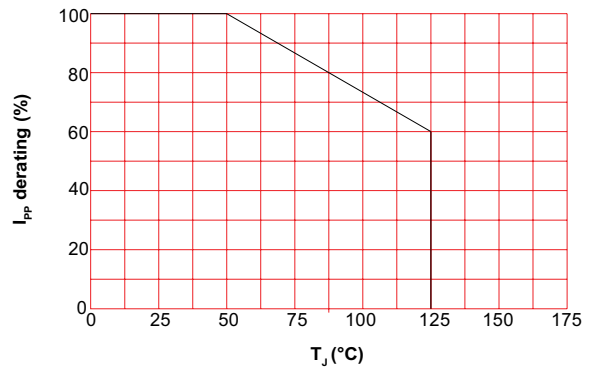
$I_R$ : Reverse leakage current

$I_T$ : Test current

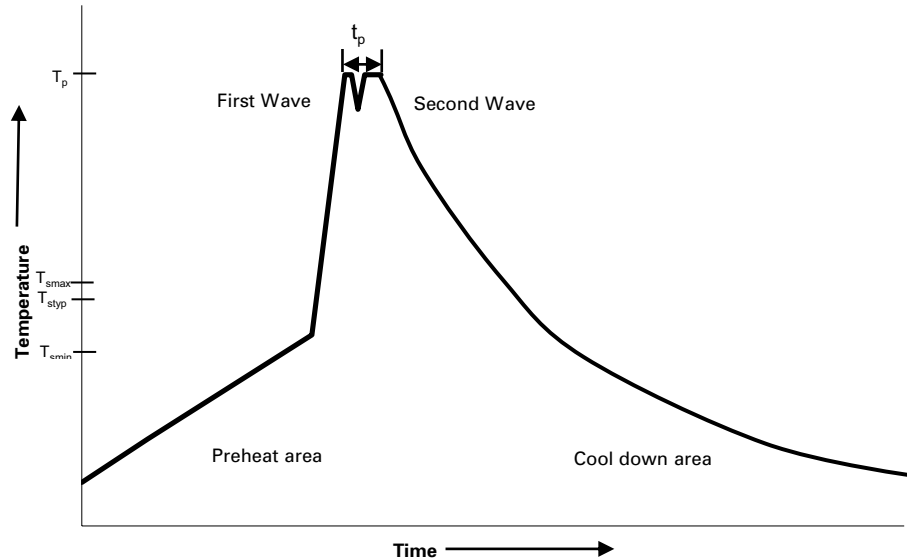
**Pulse waveform**



**Pulse derating curve**



### Wave solder profile



### Reference EN 61760-1:2006

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat		
• Temperature min. ( $T_{smin}$ )	100 °C	100 °C
• Temperature typ. ( $T_{styp}$ )	120 °C	120 °C
• Temperature max. ( $T_{smax}$ )	130 °C	130 °C
• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	70 seconds	70 seconds
$\Delta$ preheat to max Temperature	150 °C max.	150 °C max.
Peak temperature ( $T_p$ )*	235 °C – 260 °C	250 °C – 265 °C
Time at peak temperature ( $t_p$ )	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

### Manual solder

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended.

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Printed in USA  
Publication No. 11208 BU-MC20186  
November 2020

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