

# AK1 Series

## Axial Leaded – 1kA



### Additional Information



Resources



Accessories



Samples

### Maximum Ratings and Thermal Characteristics

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Storage Temperature Range	$T_{STG}$	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to 125	$^\circ\text{C}$
Current Rating <sup>1</sup>	$I_{PP}$	1	kA

**Note:**

1. Rated  $I_{PP}$  measured with 8/20 $\mu\text{s}$  pulse.

### Description

The AK1 series of high power TVS diode is specially designed for meeting severe surge test environment of both AC and DC line protection applications. It features a very fast response and ultra low clamping characteristics over traditional metal oxide varistor (MOV) solutions. They can be connected in series and / or parallel to create a very high surge current protection solution.

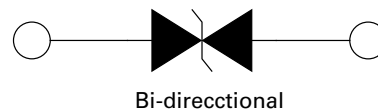
### Features

- Very low clamping voltage
- Ultra compact: less than one-tenth the size of traditional discrete solutions
- Sharp breakdown voltage
- Low slope resistance
- Bi-directional
- IEC 61000-4-2 ESD 15kV(Air), 8kV (Contact)
- Symmetric in leads width for easier soldering during assembly.
- ESD protection of data lines in accordance with IEC 61000-4-2
- EFT protection of data lines in accordance with IEC 61000-4-4
- Halogen-free
- RoHS compliant
- Glass passivated junction
- Pb-free E4 means 2nd level interconnect is Pb-free and the terminal finish material is Silver

### Agency Approvals

Agency	Agency File/Certificate Number
	E128662

### Functional Diagram



### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Part Numbers	Part Marking	Standoff Voltage ( $V_{SO}$ ) Volts	Max. Reverse Leakage ( $I_R$ ) @ $V_{SO}$ $\mu\text{A}$	Typical $I_R$ @ $85^\circ\text{C}$ ( $\mu\text{A}$ )	Reverse Breakdown Voltage ( $V_{BR}$ ) @ $I_T$		Test Current $I_T$ (mA)	Max. Clamping Voltage $V_{CL}$ @ $I_{PP}$ Peak Pulse Current ( $I_{PP}$ ) (Note 1)		Max. Temp Coefficient OF $V_{BR}$ (%/ $^\circ\text{C}$ )	Max. Capacitance 0 Bias 10kHz (nF)	Agency Approval
					Min Volts	Max Volts		$V_{CL}$ Volts	$I_{PP}$ Amps			
AK1 - 076C	1-076C	76	10	15	85	95	10	140	1,000	0.1	8.5	X

**Note:** Using 8/20 $\mu\text{s}$  wave shape as defined in IEC 61000-4-5.

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### Physical Specifications

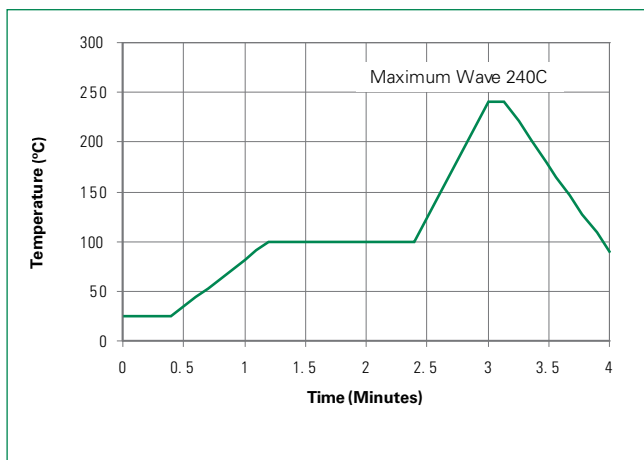
<b>Weight</b>	Contact manufacturer
<b>Case</b>	Epoxy encapsulated
<b>Terminal</b>	Silver plated leads, solderable per MIL-STD-750 Method 2026

### Flow/Wave Soldering (Solder Dipping)

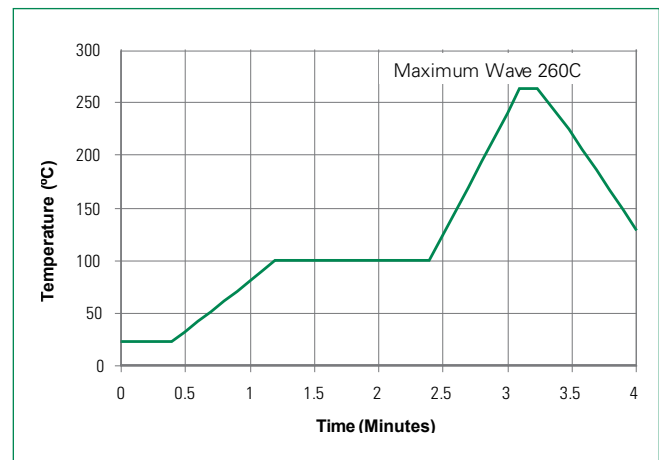
<b>Peak Temperature :</b>	265°C
<b>Dipping Time :</b>	10 seconds
<b>Soldering :</b>	1 time

### Wave Solder Profile

**Figure 1 -**  
Non Lead-free Profile

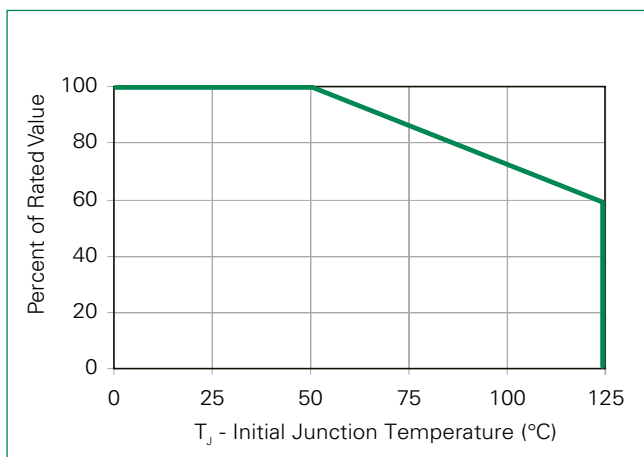


**Figure 2 -**  
Lead-free Profile

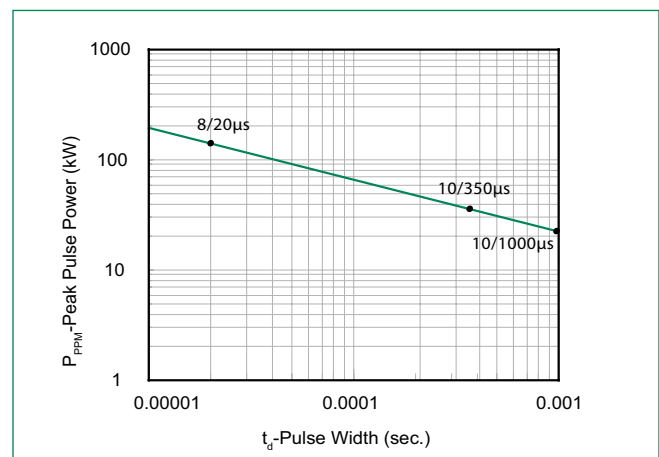


### Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted)

**Figure 3 -**  
Peak Power Derating



**Figure 4 -**  
Typical Peak Pulse Power Rating Curve



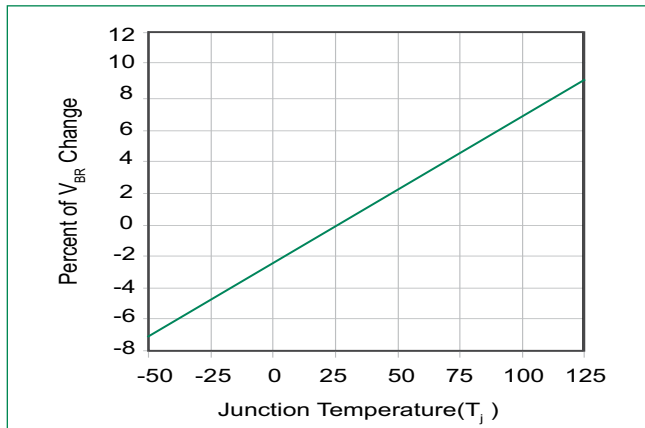
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# AK1 Series

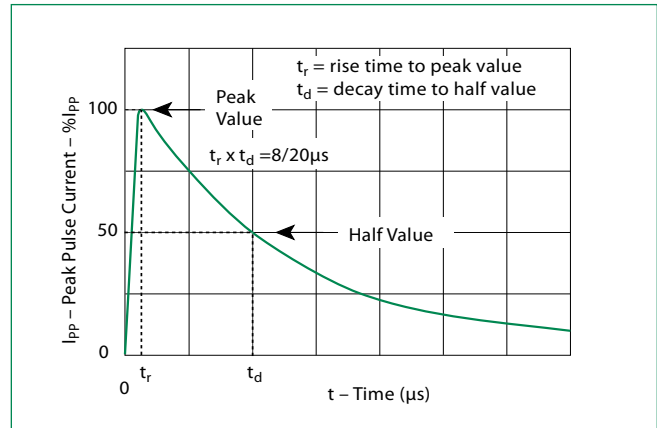
## Axial Leaded – 1kA

### Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted) (Continued)

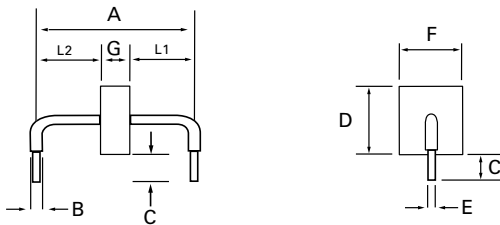
**Figure 5 -**  
Typical  $V_{BR}$  Vs Junction Temperature



**Figure 6 -**  
Pulse Waveform

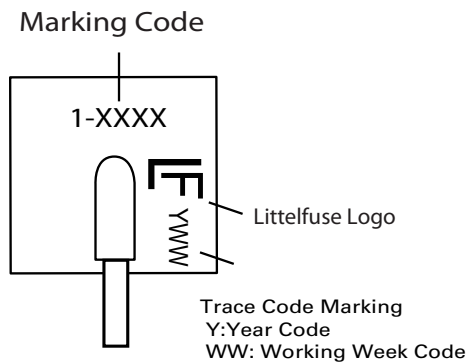


### Dimensions



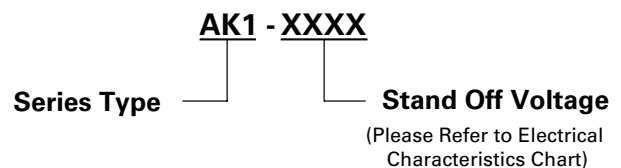
Dimensions	Inches	Millimeters
<b>A</b>	0.950 +/- 0.040	24.15 +/- 1.00
<b>B</b>	0.095 +/- 0.024	2.4 +/- 0.60
<b>C</b>	0.236 +/- 0.039	6.00 +/- 1.00
<b>D</b>	0.570 max.	14.48 max.
<b>E</b>	0.050 +/- 0.002	1.270 +/- 0.05
<b>F</b>	0.500 max.	12.70 max.
<b>G</b>	0.096 +/- 0.040	2.44 +/- 1.00
<b>L1/L2</b>	L1= L2 tolerance +/- 0.04 inch (1.0 mm)	

### Part Marking System



Side View

### Part Numbering System



### Packing Options

Part Number	Component Package	Quantity	Packaging Option
AK1-XXXX	AK Package	56pcs/Box	Bulk
AK1-XXXX-12	AK Package	12pcs/Box	Bulk

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