

### AK1 Series



#### Agency Approvals

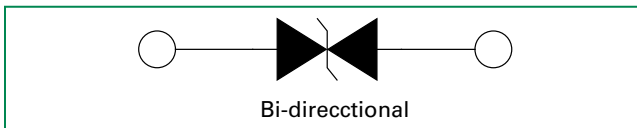
AGENCY	AGENCY FILE NUMBER
	E128662

#### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 125	°C
Current Rating <sup>1</sup>	I <sub>PP</sub>	1	kA

**Note:**  
1. Rated I<sub>PP</sub> measured with 8/20µs pulse.

#### Functional Diagram



#### 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 (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

#### Additional Information



Datasheet



Resources



Samples

#### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Part Numbers	Part Marking	Standoff Voltage (V <sub>SO</sub> ) Volts	Max. Reverse Leakage (I <sub>R</sub> ) @ V <sub>SO</sub> µA	Typical I <sub>R</sub> @ 85°C (µA)	Reverse Breakdown Voltage (V <sub>BR</sub> ) @ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Max. Clamping Voltage V <sub>CL</sub> @ I <sub>PP</sub> Peak Pulse Current (I <sub>PP</sub> ) (Note 1)		Max. Temp Coefficient OF V <sub>BR</sub> (%/°C)	Max. Capacitance 0 Bias 10kHz (nF)	Agency Approval
					Min Volts	Max Volts		V <sub>CL</sub> Volts	I <sub>PP</sub> Amps			
AK1 - 076C	1-076C	76	10	15	85	95	10	140	1,000	0.1	8.5	X

**Note:** Using 8/20µs wave shape as defined in IEC 61000-4-5.

### 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

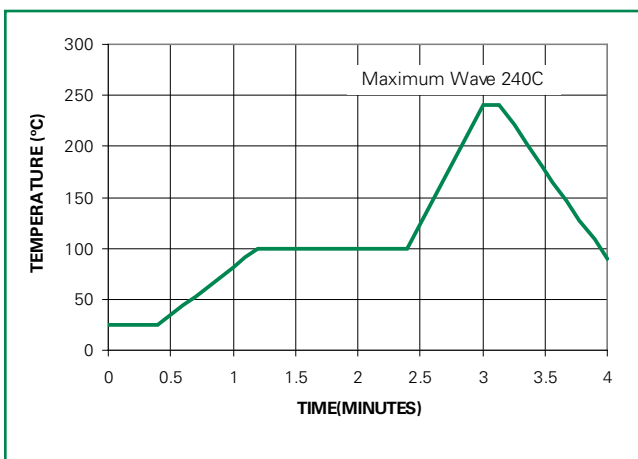
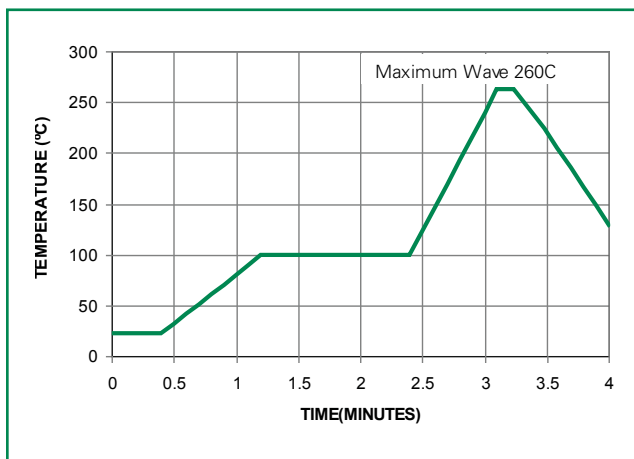


Figure 2 - Lead-free Profile



### Ratings and Characteristic Curves (T<sub>a</sub>=25°C unless otherwise noted)

Figure 3 - Peak Power Derating

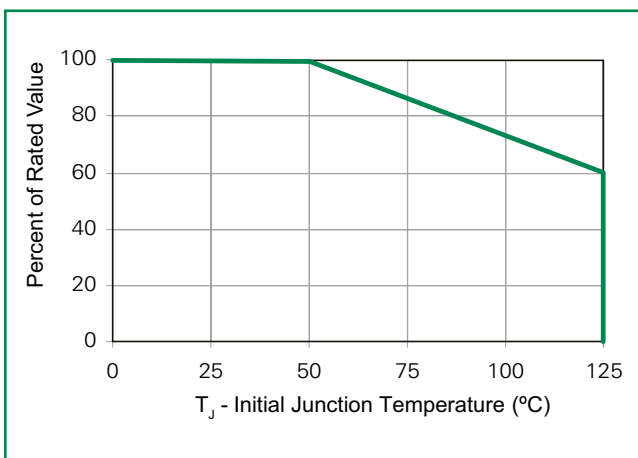
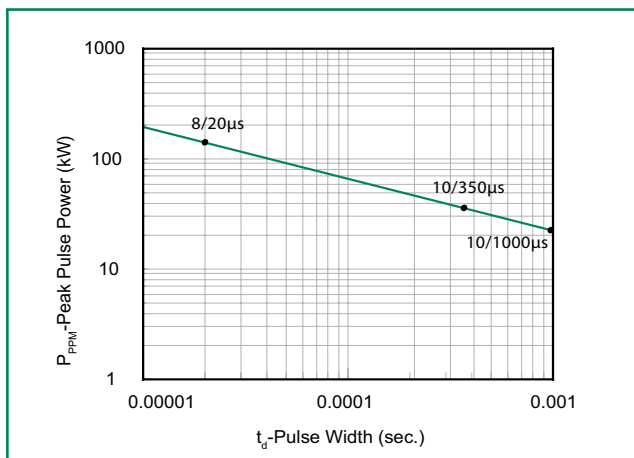


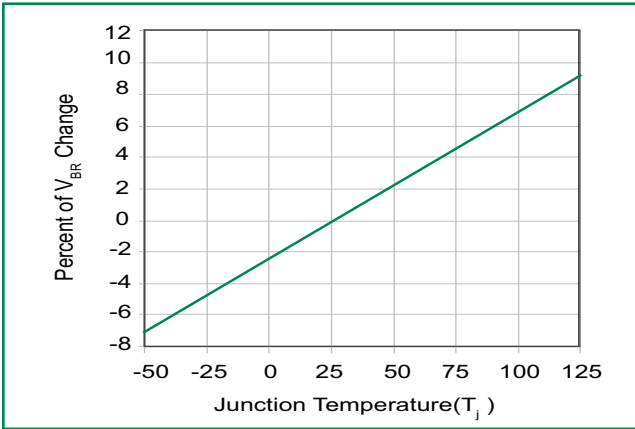
Figure 4 - Typical Peak Pulse Power Rating Curve



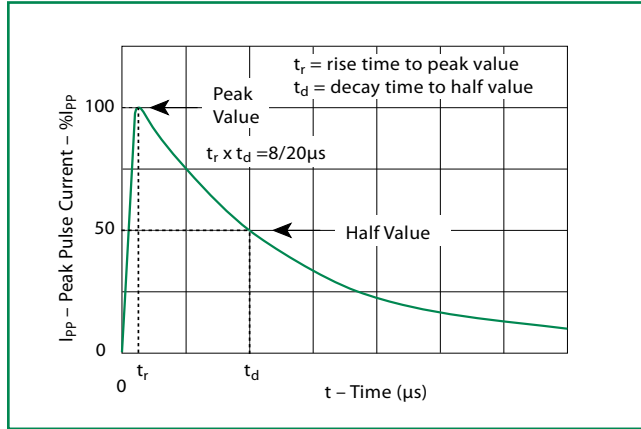
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### Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted) (Continued)

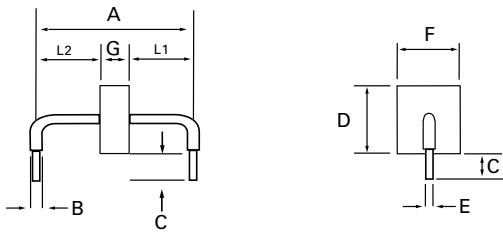
**Figure 5 - Typical  $V_{BR}$  Vs Junction Temperature**



**Figure 6 - Pulse Waveform**

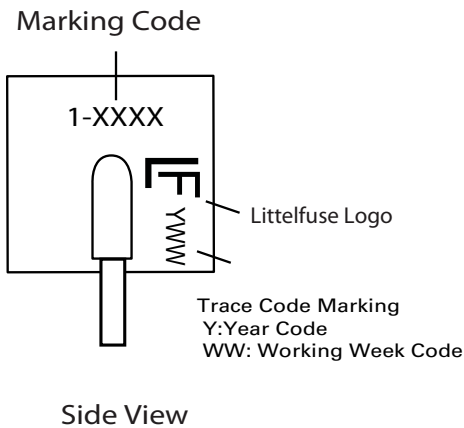


### Dimensions

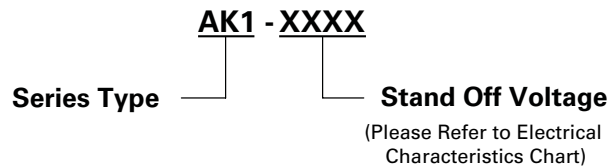


Dimensions	Inches	Millimeters
<b>A</b>	0.950 +/- 0.040	24.15 +/- 1.00
<b>B</b>	0.095 +/- 0.024	2.4 +/- 0.60
<b>C</b>	0.236 +/- 0.039	6.00 +/- 1.00
<b>D</b>	0.570 max.	14.48 max.
<b>E</b>	0.050 +/- 0.002	1.270 +/- 0.05
<b>F</b>	0.500 max.	12.70 max.
<b>G</b>	0.096 +/- 0.040	2.44 +/- 1.00
<b>L1/L2</b>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

### Part Marking System



### 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