AK1 Series
Axial Leaded – 1kA

NOT RECOMMENDED FOR NEW DESIGN PCN/ECN#: LFPCN41521 REPLACED BY: AK1-Y Series

Additional Information

Resources | Accessories | Samples

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

Maximum Ratings and Thermal Characteristics
(T_A=25°C unless otherwise noted)

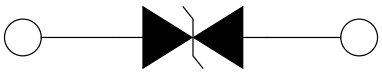
Parameter	Symbol	Value	Unit
Operating Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 125	°C
Current Rating[1]	I_{PP}	1	kA

Note:
1. Rated I_{PP} measured with 8/20µs pulse.

Agency Approvals

Agency	Agency File/Certificate Number
	E128662

Functional Diagram



Bi-direcctional

Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Numbers	Part Marking	Standoff Voltage (V_{SO}) Volts	Max. Reverse Leakage (I_R) @V_{SO} µA	Typical I_R @ 85°C (µA)	Reverse Breakdown Voltage (V_{BR}) @ I_T		Test Current I_T	Max. Clamping Voltage V_{CL} @ I_{PP} Peak Pulse Current (I_{PP}) (Note 1)		Max. Temp Coefficient OF V_{BR}	Max. Capacitance 0 Bias 10kHz	Agency Approval
					Min Volts	Max Volts	(mA)	V_{CL} Volts	I_{PP} Amps	(%/°C)	(nF)	
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.

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Physical Specifications

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

Flow/Wave Soldering (Solder Dipping)

Peak Temperature :	265°C
Dipping Time :	10 seconds
Soldering :	1 time

Wave Solder Profile

Figure 1 -
Non Lead-free Profile

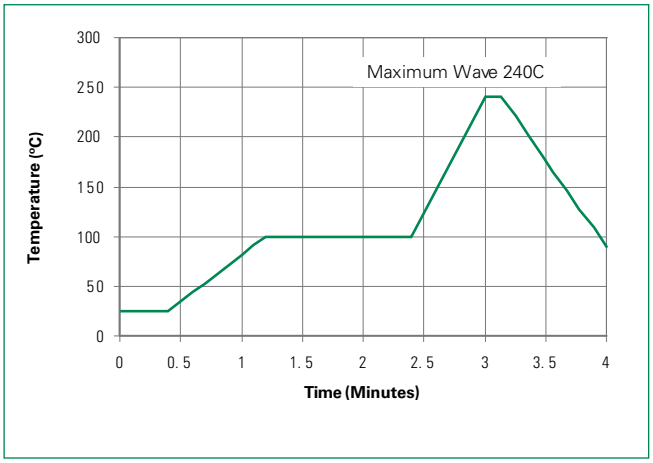
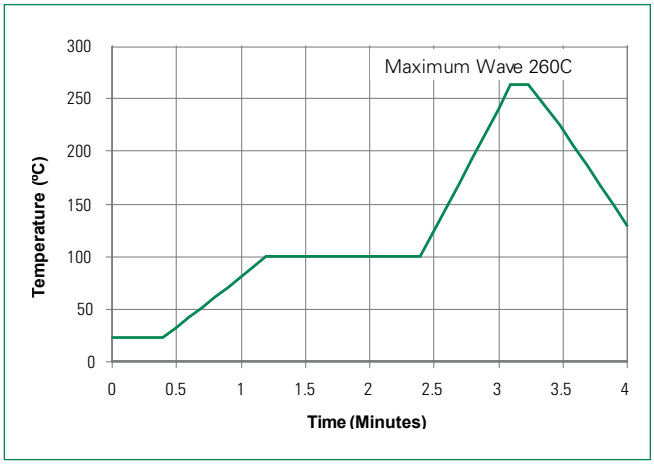


Figure 2 -
Lead-free Profile



Ratings and Characteristic Curves (T_A=25°C unless otherwise noted)

Figure 3 -
Peak Power Derating

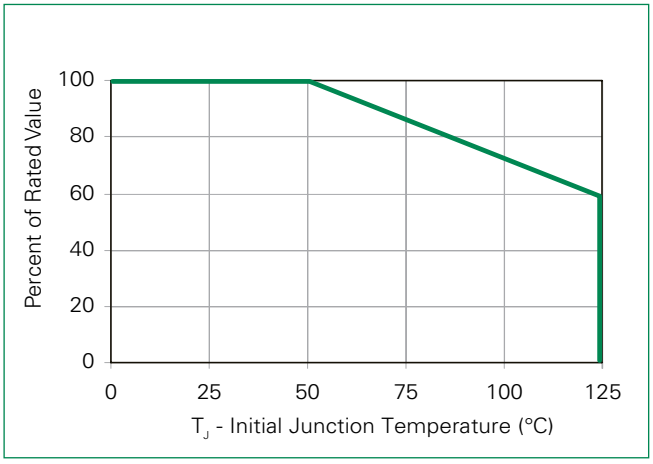
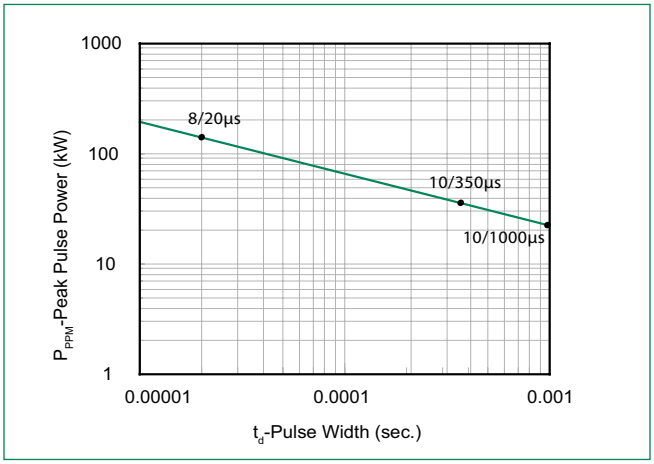


Figure 4 -
Typical Peak Pulse Power Rating Curve



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Revised: GD. 10/07/25

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Ratings and Characteristic Curves (T_A=25°C unless otherwise noted) (Continued)

Figure 5 -
Typical VBR Vs Junction Temperature

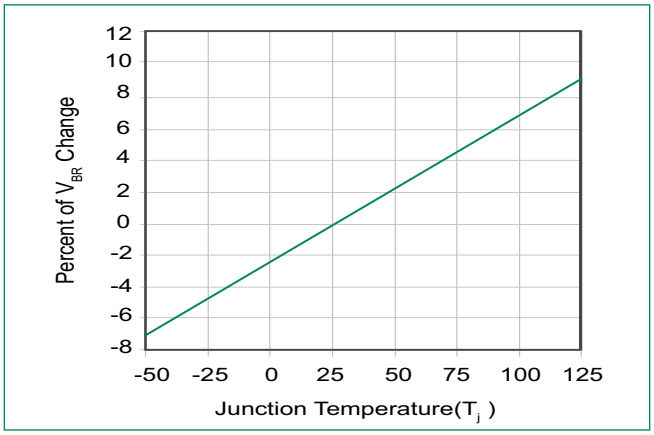
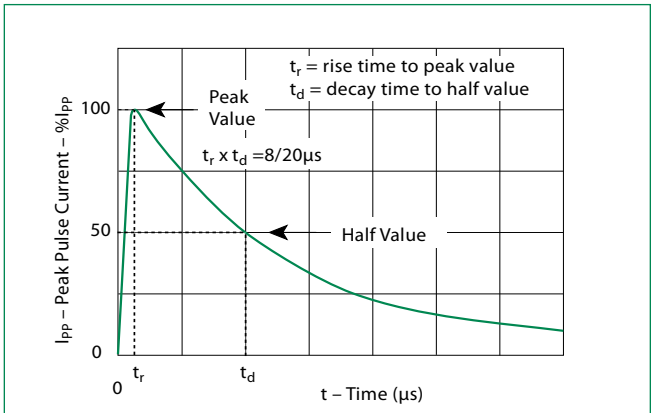
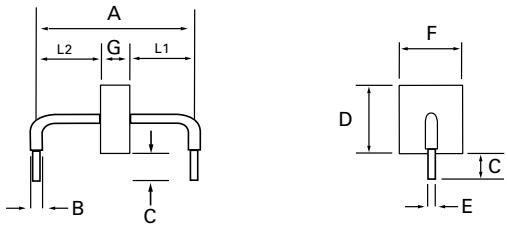


Figure 6 -
Pulse Waveform

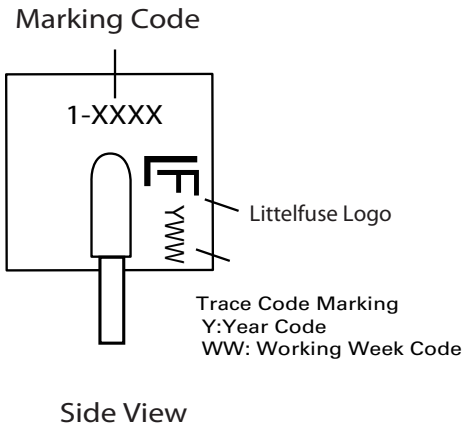


Dimensions



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

Part Marking System



Part Numbering System

AK1 - XXXX

Series Type

Stand Off Voltage
(Please Refer to Electrical Characteristics Chart)

Packing Options

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