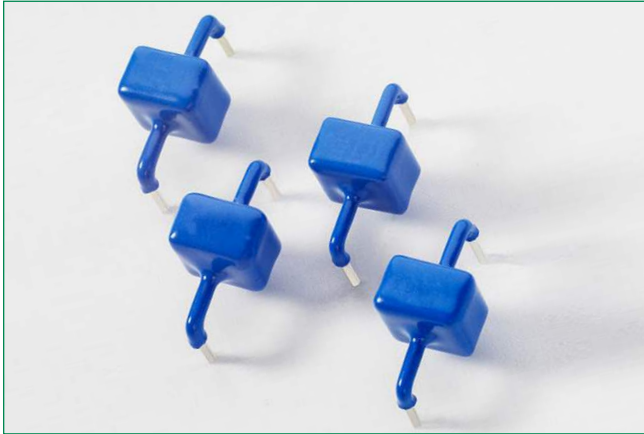


AK10 Series

Axial Leaded – 10kA



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 ¹	I_{PP}	10	kA

Note:

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

Description

The AK10 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
- Foldbak™ technology for superior clamping factor
- Symmetric in leads width for easier soldering during assembly.
- IEC 61000-4-2 ESD 15kV(Air), 8kV (Contact)
- 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 Number
	E128662

Functional Diagram



Bi-directional

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} μA	Typical I_R @ 85°C (μA)	Reverse Breakdown Voltage (V_{BR}) @ I_T		Test Current I_T (mA)	Max. Clamping Voltage V_{CL} @ 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			
AK10 - 015C	10 - 015C	15	10	15	16	19	10	28	10,000	0.1	40.0	-
AK10 - 030C	10 - 030C	30	10	15	32	37	10	58	10,000	0.1	20.0	X
AK10 - 033C	10 - 033C	33	10	15	36	40	10	53	10,000	0.1	20.0	X
AK10 - 058C	10 - 058C	58	10	15	64	70	10	110	10,000	0.1	10.0	X
AK10 - 066C	10 - 066C	66	10	15	72	80	10	120	10,000	0.1	10.0	X
AK10 - 076C	10 - 076C	76	10	15	85	95	10	140	10,000	0.1	6.5	X
AK10 - 170C	10 - 170C	170	10	15	180	220	10	260	10,000	0.1	4.0	X
AK10 - 190C	10 - 190C	190	10	15	200	245	10	290	10,000	0.1	3.0	X
AK10 - 220C	10 - 220C	220	10	15	230	270	10	330	10,000	0.1	2.5	X
AK10 - 240C	10 - 240C	240	10	15	250	285	10	340	10,000	0.1	2.2	X
AK10 - 270C	10 - 270C	270	10	15	282	315	10	401	10,000	0.1	2.3	X
AK10 - 380C	10 - 380C	380	10	15	401	443	10	520	10,000	0.1	2.0	X
AK10 - 430C	10 - 430C	430	10	15	440	490	10	625	10,000	0.1	1.4	X
AK10 - 530C	10 - 530C	530	10	15	560	619	10	750	10,000	0.1	1.0	X

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

AK10 Series

Axial Leaded – 10kA

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

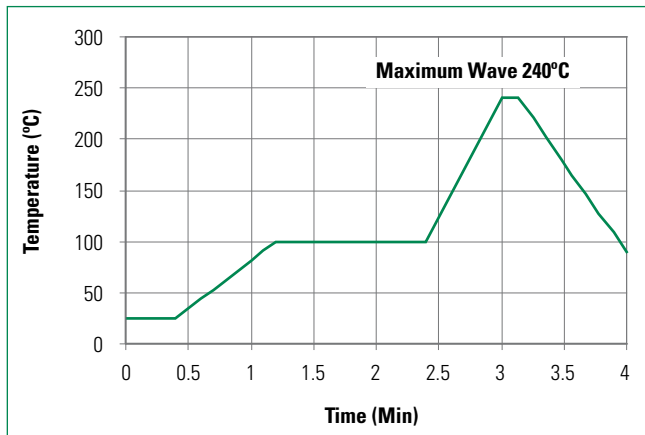
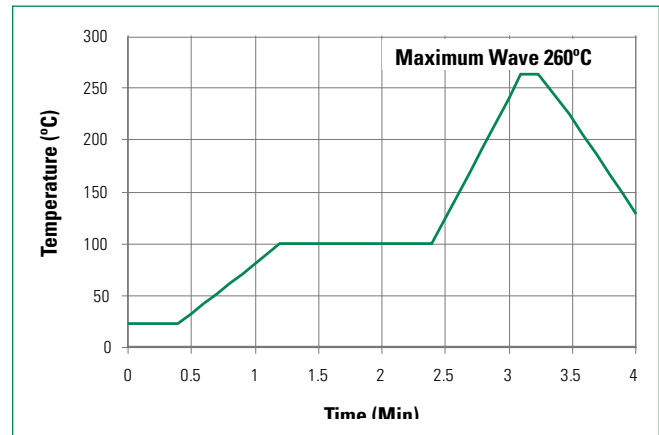


Figure 2
Lead-free Profile



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

Figure 3
Peak Power Derating

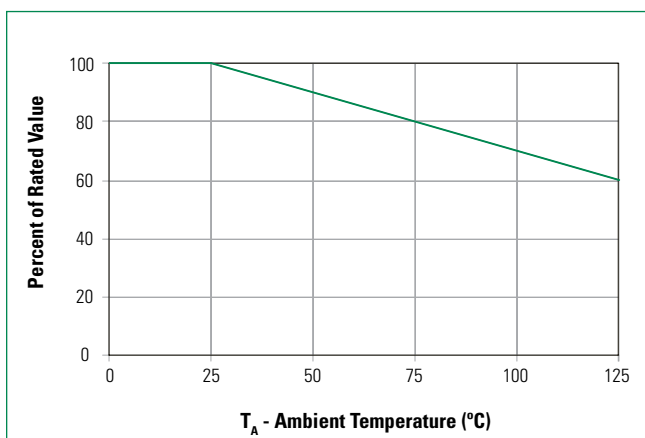
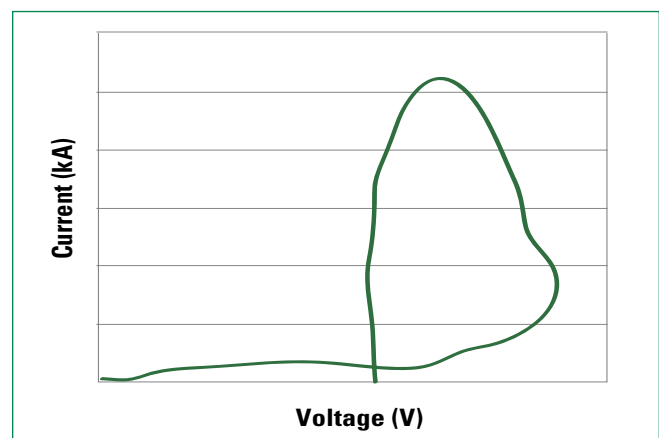


Figure 4
Surge Response



continues on next page.

AK10 Series

Axial Leaded – 10kA

Figure 5
Typical Peak Pulse Power Rating Curve

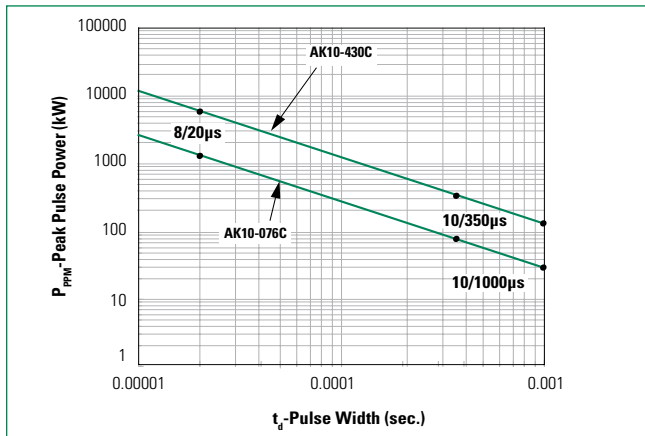


Figure 6
Typical V_{BR} Vs Junction Temperature

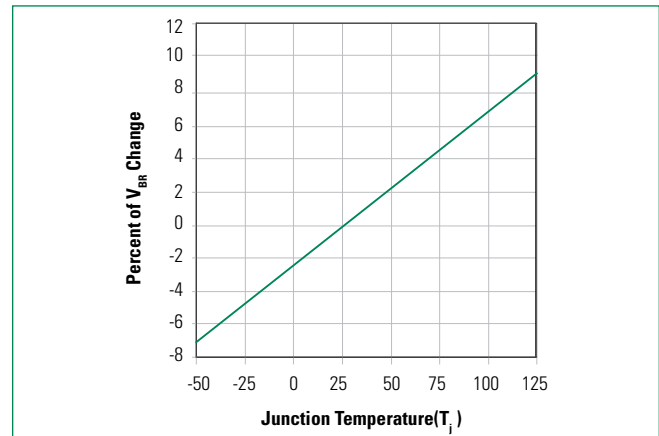
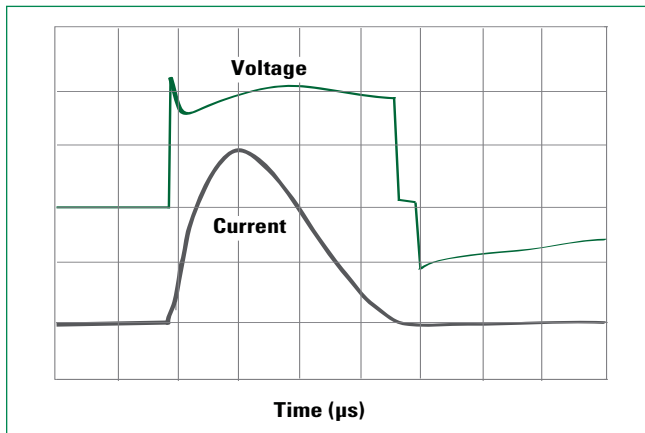
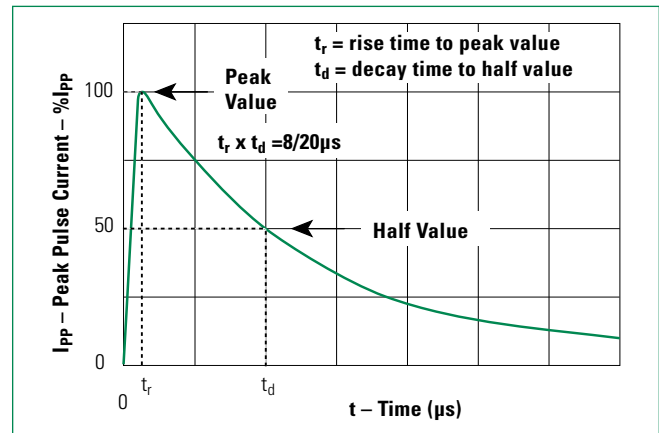


Figure 7
Surge Response (8/20 Surge current waveform)

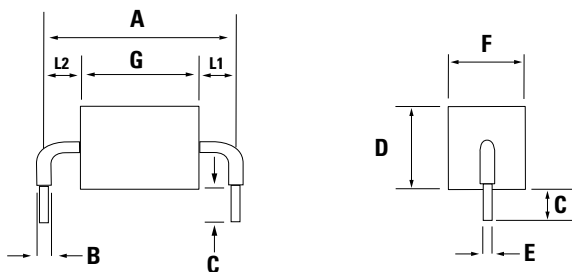


Note:
The power dissipation causes a change in avalanche voltage during the surge and the avalanche voltage eventually returns to the original value when the transient has passed.

Figure 8
Pulse Waveform



Dimensions

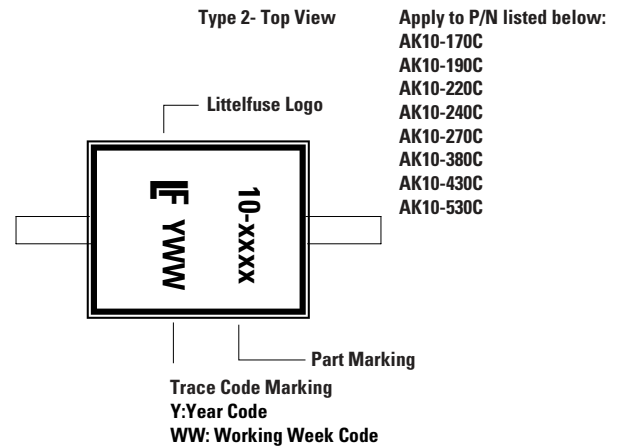
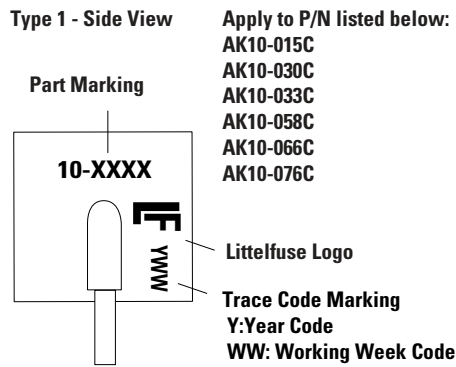


Dimensions	Inches	Millimeters
A	0.950 +/- 0.04	24.15 +/- 1.00
A - 530C	1.370 +/- 0.08	34.70 +/- 2.00
B	0.095 +/- 0.024	2.4 +/- 0.60
C	0.236 +/- 0.04	6.00 +/- 1.00
D	0.570 max.	14.48 max.
E	0.050 +/- 0.002	1.270 +/- 0.05
F	0.500 max.	12.70 max.
G - 015C	0.142 +/- 0.04	3.60 +/- 1.00
G-030C/033C	0.167 +/- 0.04	4.23 +/- 1.00
G - 058C/066C/076C	0.200 +/- 0.04	5.08 +/- 1.00
G - 170C/190C	0.362 +/- 0.04	9.2 +/- 1.00
G-220C	0.39 +/- 0.04	9.9 +/- 1.00
G-240C/270C	0.420 +/- 0.04	10.67 +/- 1.00
G - 380C/430C	0.650 +/- 0.04	16.50 +/- 1.00
G - 530C	1.060 +/- 0.06	27.00 +/- 1.50
L1/L2	L1 = L2 tolerance +/- 0.04 inch (1.0 mm)	

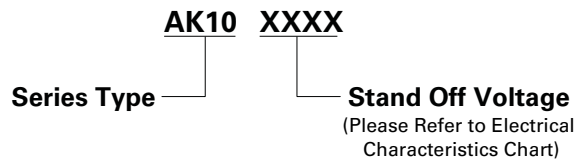
AK10 Series

Axial Leaded – 10kA

Part Marking System



Part Numbering System



Packing Options

Part Number	Component Package	Quantity	Packaging Option
AK10XXXX	AK Package	56pcs/Box	Bulk
AK10-XXXX-12	AK Package	12pcs/Box	Bulk

Disclaimer Notice - Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. "Littelfuse" includes Littelfuse, Inc., and all of its affiliate entities. www.littelfuse.com/disclaimer-electronics