

Axial Leaded – 10kA



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.

Maximum Ratings and Thermal Characteristics

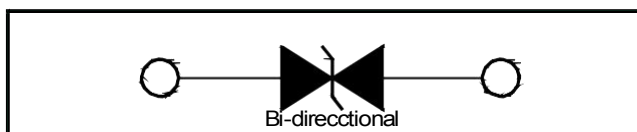
($T_A=25^{\circ}\text{C}$ unless otherwise noted)

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.

Functional Diagram



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.
- 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
- IEC-61000-4-2 ESD 15kV(Air), 8kV(Contact)

Electrical Characteristics

Part Numbers	Part Marking	Standoff Voltage (VSO) Volts	Max. Reverse Leakage (IR)@VSO μA	Typical IR@85 $^{\circ}\text{C}$ (μA)	Reverse Breakdown Voltage(VBR)@IT		Test Current IT mA	Max. clamping Voltage VCL@IPP Peak Pulse Current(IPP)(Note 1)		Max.Temp Coefficient OF VBR $\%/^{\circ}\text{C}$	Max. Capacitance 0 Bias 10KHZ nF
					Min Volts	Max Volts		VCL Volts	IPP Amps		
AK10-015C	10-015C	15	10	15	16	19	10	28	10,000	0.1	12.0
AK10-030C	10-030C	30	10	15	32	37	10	58	10,000	0.1	11.0
AK10-058C	10-058C	58	10	15	64	70	10	110	10,000	0.1	6.5
AK10-066C	10-066C	66	10	15	72	80	10	120	10,000	0.1	6.5
AK10-076C	10-076C	76	10	15	85	95	10	140	10,000	0.1	6.5
AK10-170C	10-170C	170	10	15	180	220	10	260	10,000	0.1	2.8
AK10-190C	10-190C	190	10	15	200	245	10	290	10,000	0.1	2.5
AK10-240C	10-240C	240	10	15	250	285	10	340	10,000	0.1	2.2
AK10-380C	10-380C	380	10	15	401	443	10	520	10,000	0.1	2.0
AK10-430C	10-430C	430	10	15	440	490	10	625	10,000	0.1	1.4
AK10-530C	10-530C	530	10	15	550	619	10	750	10,000	0.1	1.0

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

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

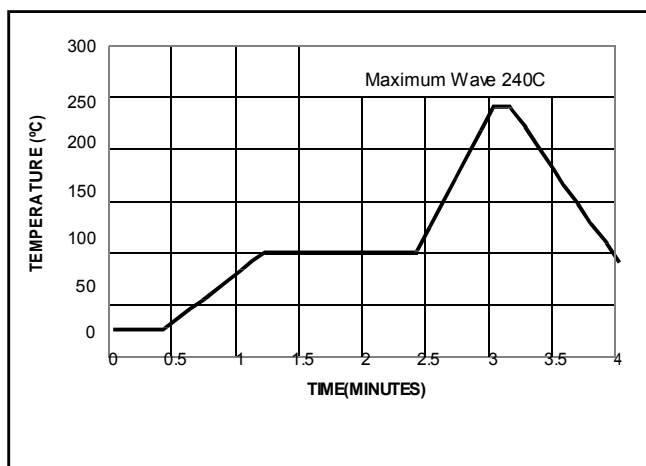
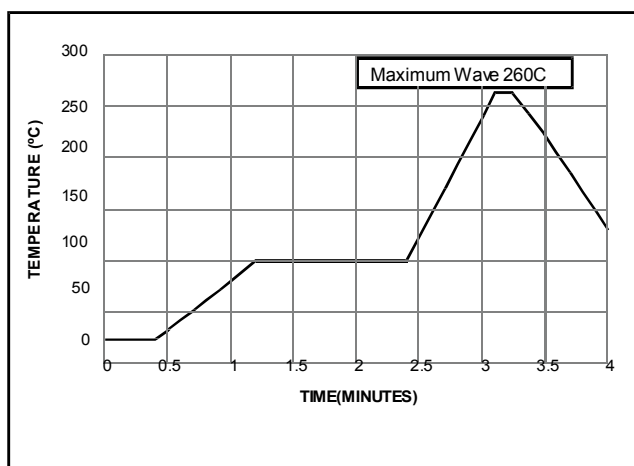


Figure 2 - Lead-free Profile



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

Figure 3 - Peak Power Derating

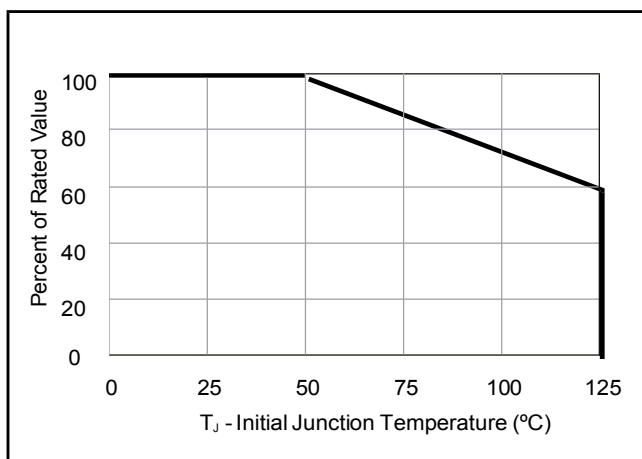
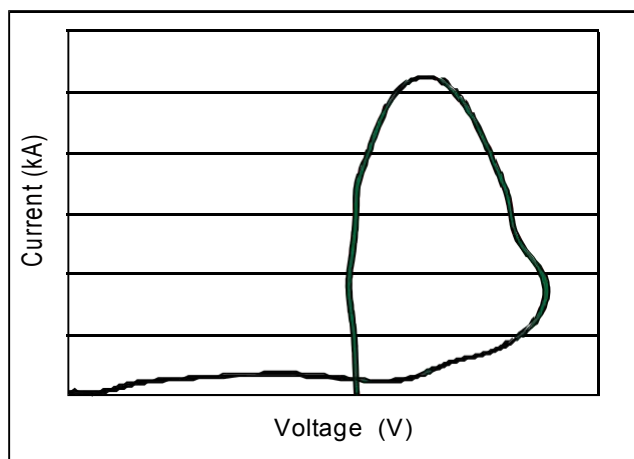


Figure 4 - Surge Response



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

Figure 5 - Typical Peak Pulse Power Rating Curve

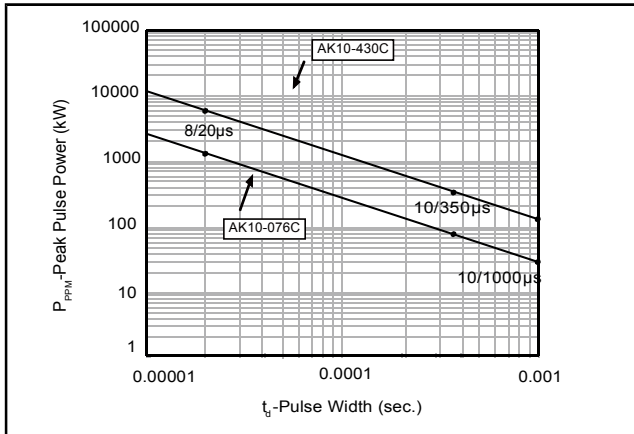


Figure 6 - Typical V_{BR} Vs Junction Temperature

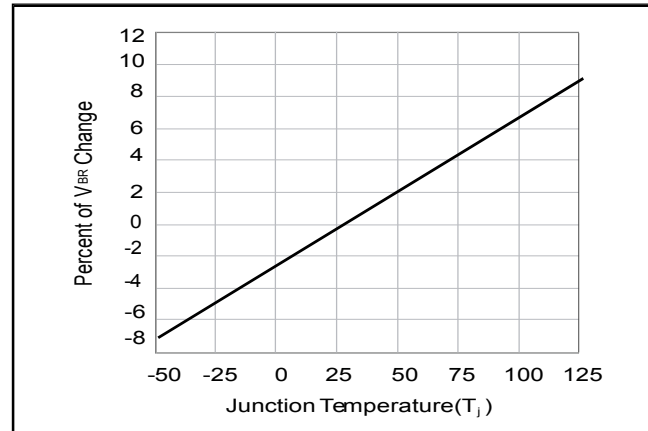


Figure 7 - Surge Response (8/20 Surge current)

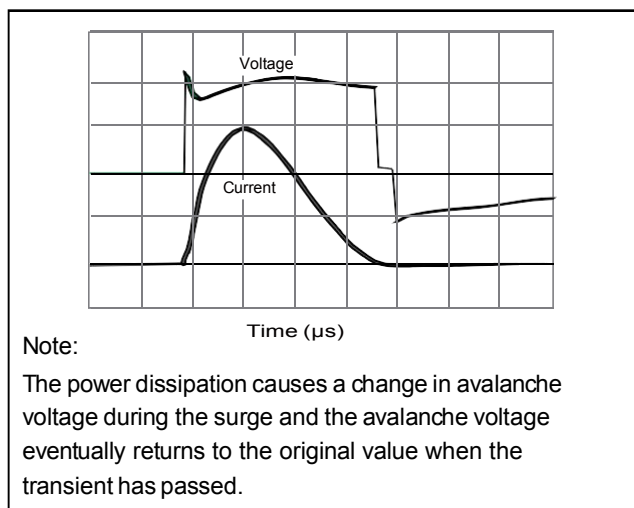
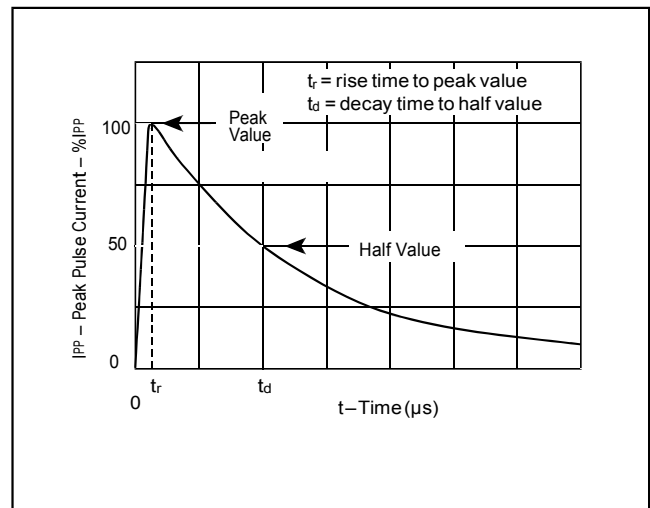
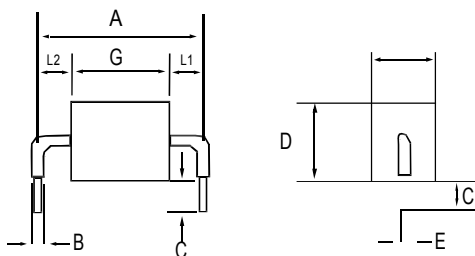


Figure 8 - Pulse Waveform

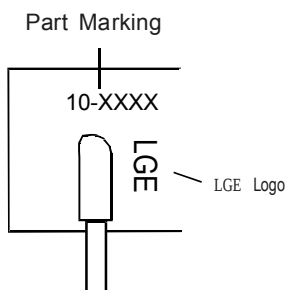


Dimension



Dimensions	Inches	Millimeters
A	0.950 +/- 0.040	24.15 +/- 1.00
A-530C	1.370 +/- 0.080	34.70 +/- 1.00
B	0.095 +/- 0.024	2.4 +/- 0.60
C	0.236 +/- 0.040	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 +/- 0.040	3.60 +/- 1.00
G-030C	0.167 +/- 0.040	4.23 +/- 1.00
G-058C/066C 076C	0.200 +/- 0.040	5.08 +/- 1.00
G-170C/190C	0.362 +/- 0.040	9.2 +/- 1.00
G-240C	0.420 +/- 0.040	10.67 +/- 1.00
G-380C/430C	0.650 +/- 0.040	16.5 +/- 1.00
L1/L2	L1= L2 tolerance +/- 0.04 inch (1.0 mm)	

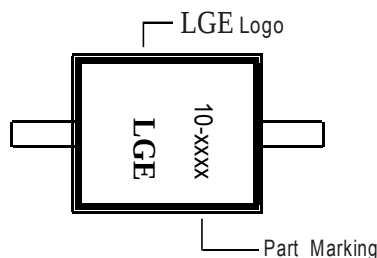
Part Marking System



Type 1- Side View

Apply to P/N listed below:

AK10-015C
AK10-030C
AK10-058C
AK10-066C
AK10-076C

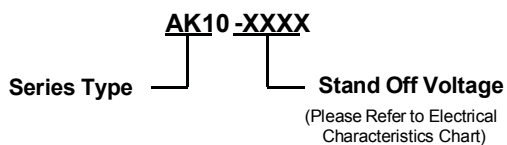


Type 2 - Top View

Apply to P/N listed below:

AK10-170C
AK10-190C
AK10-240C
AK10-380C
AK10-430C
AK10-530C

Part Numbering System



Packing Options

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