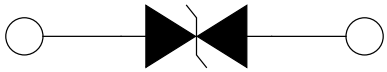
AK6 Series

Axial Leaded – 6kA

Functional Diagram



Bi-directional

Description

The AK6 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

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}	6	kA

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

Physical Specifications

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

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
					Min Volts	Max Volts	(mA)	V_{CL} Volts	I_{PP} Amps	(%/°C)	(nF)
AK6 - 030C	6 - 030C	30	10	15	32	37	10	90	6,000	0.1	11.0
AK6 - 058C	6 - 058C	58	10	15	64	70	10	110	6,000	0.1	8.0
AK6 - 066C	6 - 066C	66	10	15	72	80	10	120	6,000	0.1	6.0
AK6 - 076C	6 - 076C	76	10	15	85	95	10	140	6,000	0.1	6.5
AK6 - 170C	6 - 170C	170	10	15	180	220	10	260	6,000	0.1	2.8
AK6 - 190C	6 - 190C	190	10	15	200	245	10	290	6,000	0.1	2.5
AK6 - 240C	6 - 240C	240	10	15	250	285	10	340	6,000	0.1	2.0
AK6 - 380C	6 - 380C	380	10	15	401	443	10	520	6,000	0.1	1.4
AK6 - 430C	6 - 430C	430	10	15	440	490	10	625	6,000	0.1	1.0

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

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

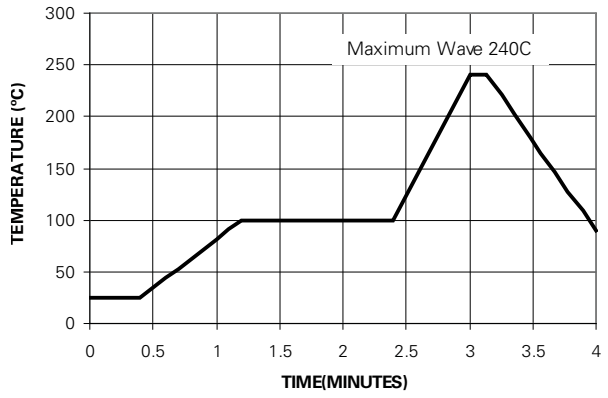
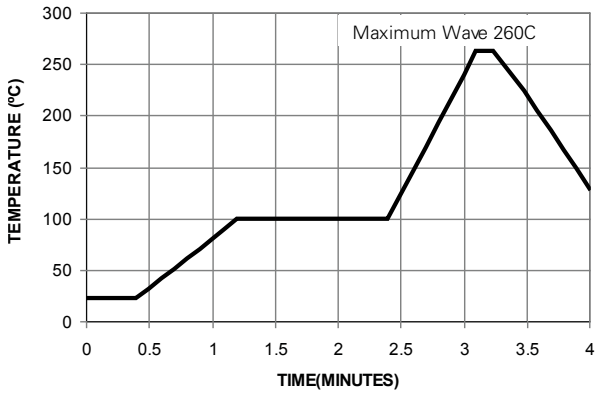


Figure 2 - Lead-free Profile



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

Figure 3 - Peak Power Derating

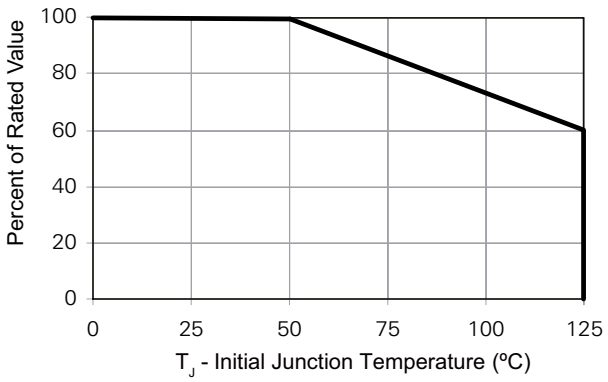
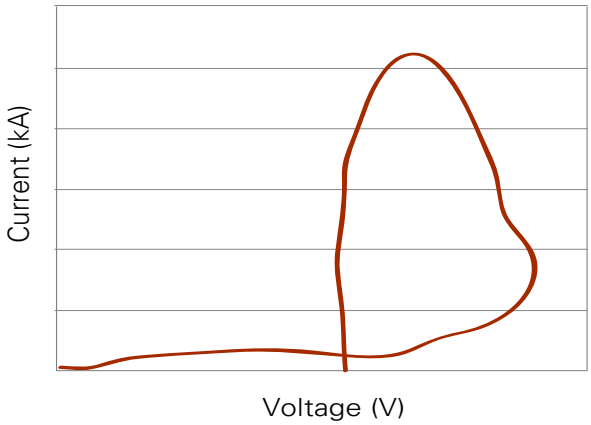


Figure 4 - Surge Response



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

Figure 5 - Typical Peak Pulse Power Rating Curve

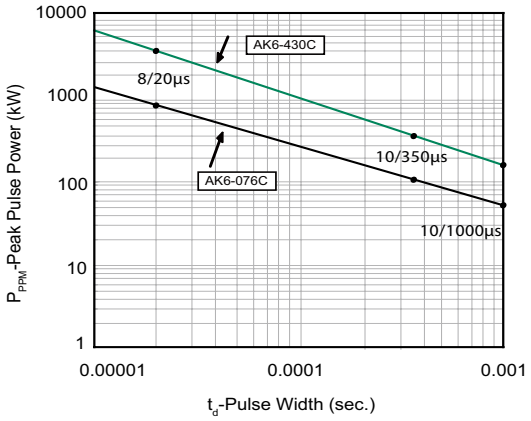


Figure 6 - Typical V_{BR} Vs Junction Temperature

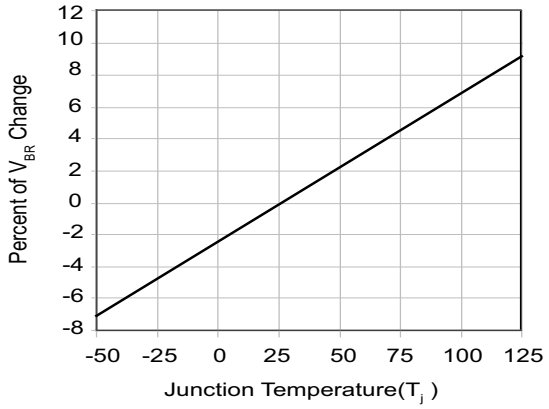
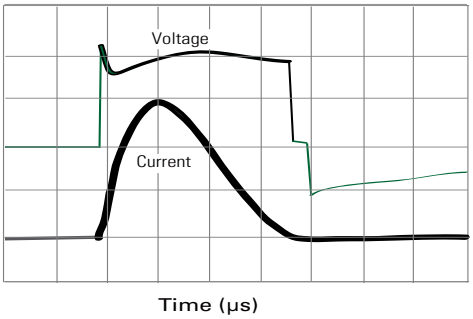


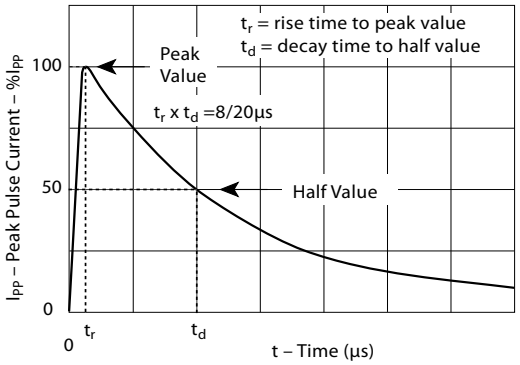
Figure 7 -Surge Response (8/20 Surge current waveform)



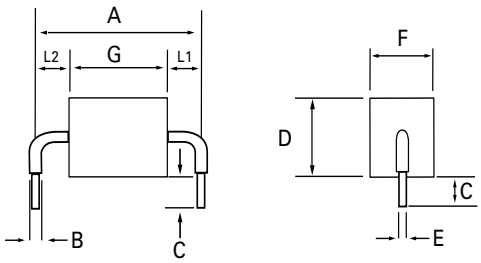
Note:

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 +/- 0.040	24.15 +/- 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 - 030C	0.161 +/- 0.040	4.10 +/- 1.00
G - 058C/066C 076C	0.189 +/- 0.040	4.8 +/- 1.00
G - 170C/190C	0.320 +/- 0.040	8.13 +/- 1.00
G - 240C	0.370 +/- 0.040	9.4 +/- 1.00
G - 380C/430C	0.543 +/- 0.040	13.8 +/- 1.00
L1/L2	L1= L2 tolerance +/- 0.04 inch (1.0 mm)	

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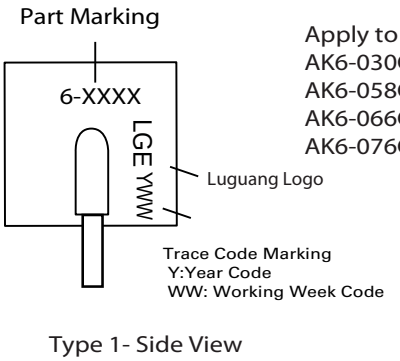
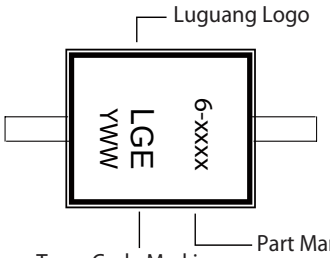
Part Marking System



Apply to P/N listed below:
AK6-030C
AK6-058C
AK6-066C
AK6-076C

Type 1- Side View



Apply to P/N listed below:
AK6-170C
AK6-190C
AK6-240C
AK6-380C
AK6-430C

Type 2 - Top View

Part Numbering System

AK6 - XXXX

Series Type

Stand Off Voltage
(Please Refer to Electrical Characteristics Chart)

Packing Options

Part Number	Component Package	Quantity	Packaging Option
AK6-XXXX	AK Package	56pcs/Box	Bulk
AK6-XXXX-12	AK Package	12pcs/Box	Bulk