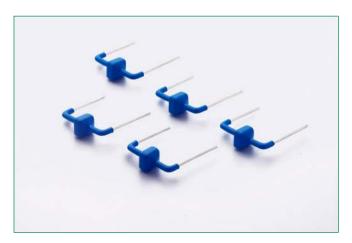
## **AK3 Series** Axial Leaded - 3kA











#### **Additional Information**



Resources





Accessories

**Samples** 

### **Description**

The AK3 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 & Benefits**

- Very low clamping voltage
- Ultra compact: less than onetenth the size of traditional discrete solutions
- Sharp breakdown voltage
- Low slope resistance
- Bi-directional
- FoldbakTM 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-
- 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<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	$T_{J}$	-55 to 125	°C
Current Rating <sup>1</sup>	I <sub>PP</sub>	3	kA

#### Note:

1. Rated I<sub>pp</sub> measured with 8/20µs pulse.

#### **Agency Approvals**

Agency	Agency File Number		
<b>71</b> °	E128662		

#### **Functional Diagram**



#### 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>	Typical I <sub>R</sub> @ 85°C (µA)		Breakdown (V <sub>BR</sub> ) @ I <sub>T</sub>	Test Current I <sub>T</sub>	V <sub>CL</sub> @ I <sub>pp</sub>	oing Voltage Peak Pulse <sub>p</sub> ) (Note 1)	Max. Temp Coefficient OF V <sub>BR</sub>	Max. Capacitance 0 Bias 10kHz	Agency Approval
			μΑ		Min Volts	Max Volts	(mA)	$\mathbf{V}_{CL}\mathbf{Volts}$	I <sub>PP</sub> Amps	(%/°C)	(nF)	
AK3 - 015C	3 - 015C	15	10	15	16	19	10	28	3,000	0.1	12.0	X
AK3 - 030C	3 - 030C	30	10	15	32	37	10	90	3,000	0.1	11.0	X
AK3 - 038C	3 - 038C	38	10	15	40	46	10	95	3,000	0.1	10.0	-
AK3 - 058C	3 - 058C	58	10	15	64	70	10	110	3,000	0.1	6.0	X
AK3 - 066C	3 - 066C	66	10	15	72	80	10	120	3,000	0.1	6.0	X
AK3 - 076C	3 - 076C	76	10	15	85	95	10	140	3,000	0.1	6.0	X
AK3 - 150C	3 - 150C	150	10	15	158	194	10	230	3,000	0.1	2.6	X
AK3 - 170C	3 - 170C	170	10	15	179	220	10	260	3,000	0.1	2.4	X
AK3 - 190C	3 - 190C	190	10	15	200	245	10	290	3,000	0.1	2.4	X
AK3 - 208C	3 - 208C	208	10	15	223	246	10	306	3,000	0.1	2.4	Χ
AK3 - 380C	3 - 380C	380	10	15	401	443	10	520	3,000	0.1	2.0	Χ
AK3 - 430C	3 - 430C	430	10	15	440	490	10	625	3,000	0.1	2.0	Χ

# AK3 Series Axial Leaded – 3kA

#### **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

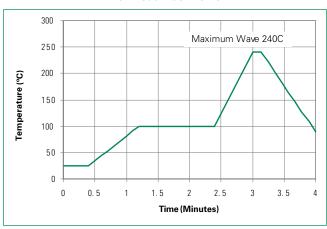
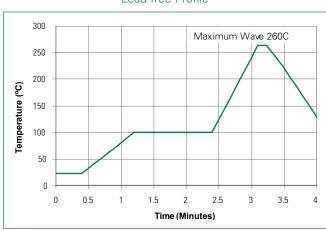


Figure 2: Lead-free Profile



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

**Figure 3:** Peak Power Derating

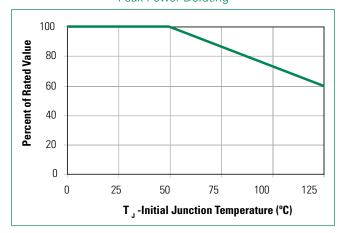
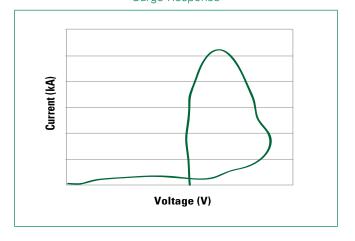


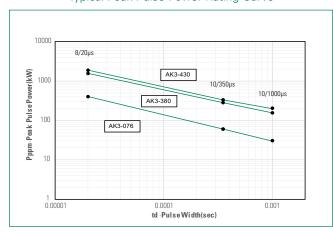
Figure 4: Surge Response





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

Figure 5: Typical Peak Pulse Power Rating Curve



Typical V<sub>BB</sub> Vs Junction Temperature

Figure 6:

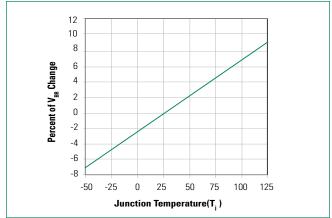


Figure 7: Surge Response (8/20 Surge current waveform)

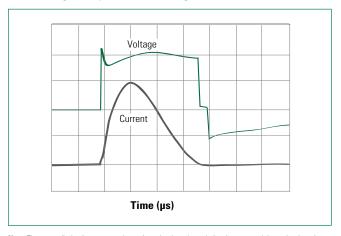
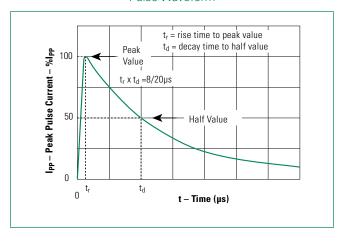


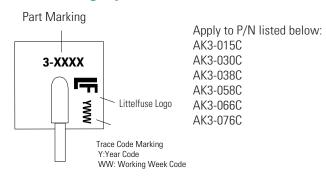
Figure 8: Pulse Waveform



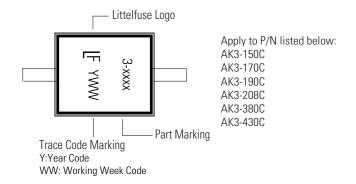
Note: The power dissipation causes a change in avalanche voltage during the surge and the avalanche voltage eventually returns to the original value when the transient has passed.

## AK3 Series Axial Leaded – 3kA

### **Part Marking System**

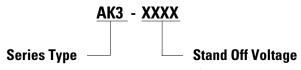


Type 1- Side View



Type 2 - Top View

#### **Part Numbering System**

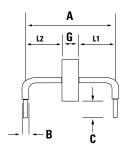


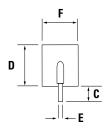
(Please Refer to Electrical Characteristics Chart)

#### **Packing Options**

Part Number	Component Package	Quantity	<b>Packaging Option</b>
AK3-XXXX	AK Package	56pcs/Box	Bulk
AK3-XXXX-12	AK Package	12pcs/Box	Bulk

#### **Dimensions**





Dimensions		Inches	Millimeters		
Α		0.951 +/- 0.040	24.15 +/- 1.00		
В		0.094 +/- 0.024	2.40 +/- 0.60		
С		0.236 +/- 0.039	6.00 +/- 1.00		
J	-208C	0.145 +/- 0.040	3.68 +/- 1.00		
D		0.433 max.	11.0 max.		
E		0.050 +/- 0.002	1.27 +/- 0.05		
F		0.374 max.	9.50 max.		
	-015C	0.093 +/- 0.039	2.36 +/- 1.00		
	-030C/-038C/-066C	0.130 +/- 0.047	3.30 +/- 1.20		
	-058C/-076C	0.168 +/- 0.047	4.27 +/- 1.20		
G	-150C	0.383 +/- 0.047	9.72 +/- 1.20		
	-170C/-190C	0.420 +/- 0.047	10.67 +/- 1.20		
	-208C	0.358 +/- 0.047	9.10 +/- 1.20		
	-380C	0.547 +/- 0.047	13.90 +/- 1.20		
	-430C	0.583 +/- 0.047	14.80 +/- 1.20		
	-208C	0.296 +/- 0.047	7.52 +/- 1.20		
L1	L1= L2 tolerance +/- 0.047 inch (+/- 1.20 mm)				
12	-208C	= A - (G+L1) tolerance +/- 0.047 inch (+/- 1.20 mm)			
L2		L1= L2 tolerance +/- 0.047 inch (+/- 1.20 mm)			

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