

## Transient Voltage Suppression Diodes AxialLeaded-20kA

### Description

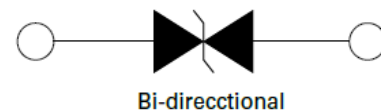
The AK20 series of high power TVS diode is specially designed for meeting severe surge test environment of both AC and DC line protection applications. It features a very fast response and ultra low clamping characteristics over traditional metal oxide ( MOV ) solutions. They can be connected in series 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-61000-4-2ESD 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



### Functional Diagram



### Maximum Ratings and Thermal Characteristics

(TA=25°C unless otherwise noted)

Parameter	Symbols	Value	Unit
Operating Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +125	°C
Current Rating <sup>1</sup>	I <sub>PP</sub>	20	kA

Note:1) Rated IPP measured with 8/20µS pulse.

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### Electrical Characteristics

Part Numbers	Part Marking	Standoff Voltage (VSO) Volts	Max. Reverse Leakage (IR)@VSO ( $\mu$ A)	Typical IR@85°C ( $\mu$ A)	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 %/°C	Max. Capacitance 0 Bias 10KHZ nF
					Min Volts	Max Volts		VCL Volts	IPP (8/20 $\mu$ S) A		
AK20-016C	20-016C	16	5	15	17.5	19.3	10	30	20,000	0.1	32.0
AK20-058C	20-058C	58	5	15	64.0	70.0	10	120	20,000	0.1	12.0
AK20-063C	20-063C	63	5	15	68.0	75.0	10	125	20,000	0.1	10.0
AK20-066C	20-066C	66	5	15	72.0	80.0	10	120	20,000	0.1	10.0
AK20-076C	20-076C	76	5	15	85.0	85.0	10	160	20,000	0.1	10.0

### 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

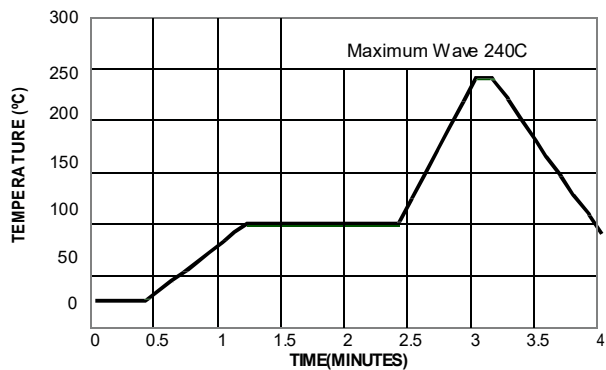
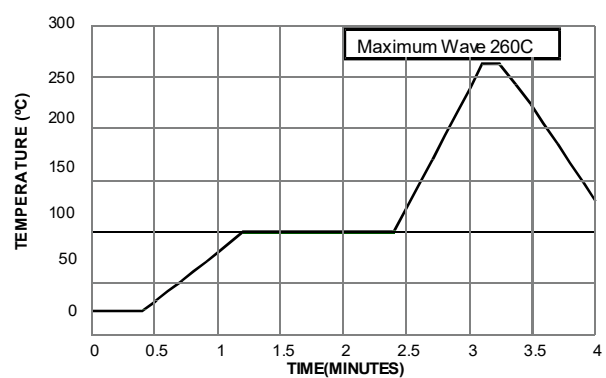


Figure 2 - Lead-free Profile



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

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

Figure 3 - Peak Power Derating

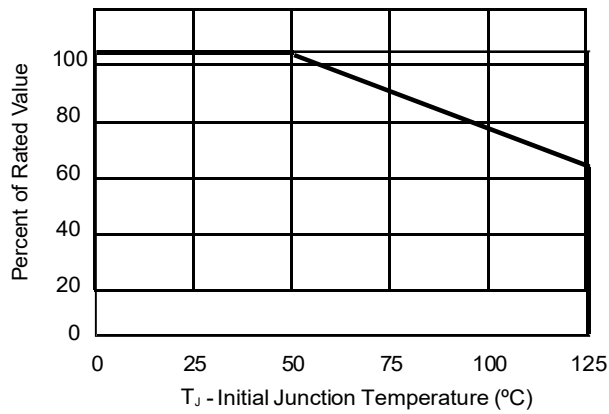


Figure 4 - Surge Response

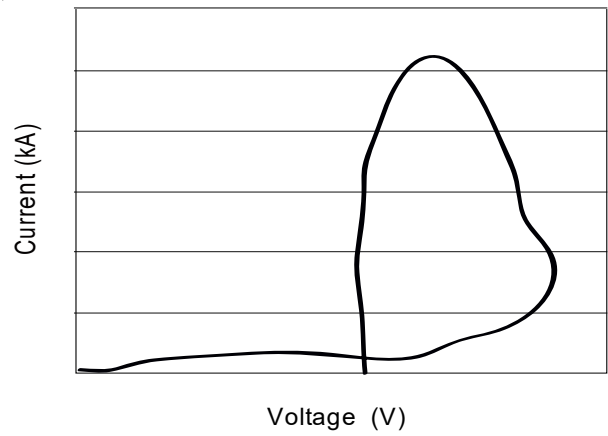


Figure 5 - Typical Peak Pulse Power Rating Curve

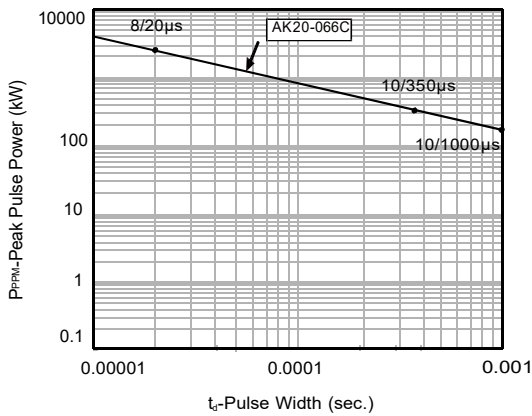


Figure 6 - Typical V<sub>BR</sub> Vs Junction Temperature

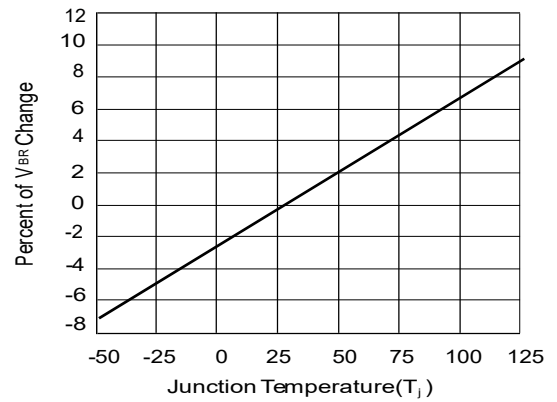


Figure 7 - Surge Response (8/20 Surge current waveform)

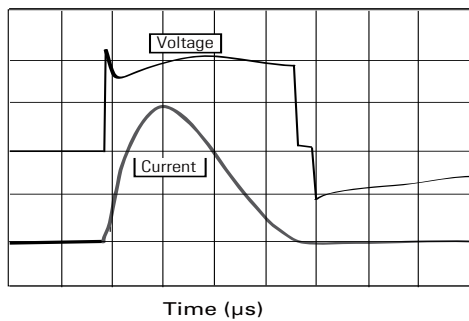
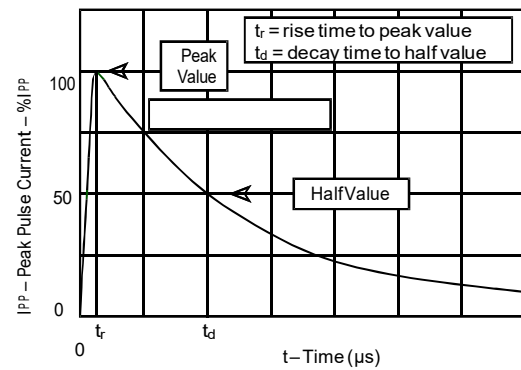


Figure 8 - Pulse Waveform

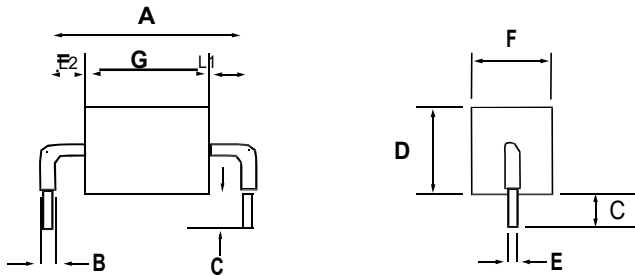


Note:

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.

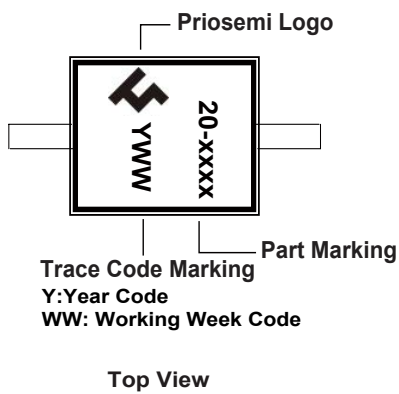
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### Dimensions

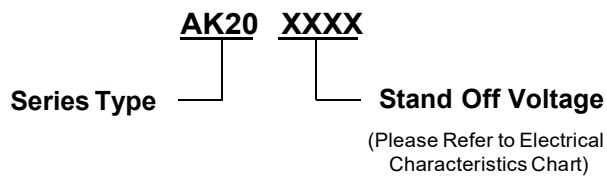


Dimensions	Inches	Millimeters
A	0.95±0.03	24.15±0.8
B	0.095±0.024	2.4±0.60
C	0.236±0.04	6.00±1.0
D	0.630±0.055	16.0±1.4
E	0.050±0.002	1.27±0.05
F	0.571±0.055	14.5±1.4
G - 058C	0.292±0.047	7.41±1.20
G - 066C/076C	0.351±0.047	8.91±1.20
L1/L2	L1= L2 tolerance +/- 0.04 inch (1.0 mm)	

### Part Marking System



### Part Marking System



### Packing Options

Part Number	Component Package	Quantity	Packaging Option
AK20-XXXX	AK Package	56pcs/Box	Bulk