

# Silicon Avalanche Diodes

## RoHS AK10 Series



The new AK10 series of high current transient suppressors have been specially designed for use in A.C. Line Protection and any demanding applications (AC or DC). They offer superior clamping characteristics over standard S.A.D. technologies by virtue of the Littelfuse Foldbak™ technology, which provides a clamping voltage which is lower than the avalanche voltage (but above the rated working voltage) therefore any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level. They can also be connected in series and/or parallel to create very high capacity protection solutions.

### Maximum Ratings

- Current Rating ( $I_{PP}$ ) 10KA (see note 1)
- Maximum Junction Temp. is 150°C
- Storage Temp. -55°C to 175°C
- Rated  $I_{PP}$  measured with 8 x 20  $\mu$ sec pulse

### Mechanical Characteristics

- Epoxy Encapsulated
- Axial lead terminals (solderable per MIL-STD-202 Method 208)
- Device code and logo marked on every device

### Features

- RoHS Compliant
- Foldbak™ technology for superior clamping factor.
- Glass Passivated Junction
- Bi-directional
- Ultra Compact: 12 times less volume than traditional discrete solutions.
- Very Low Clamping Voltage
- Sharp Breakdown Voltage
- Low Slope Resistance

**Agency Approvals:** Recognized under the Components Program of Underwriters Laboratories - UL497B.

**Agency File Numbers:** E128662

### ELECTRICAL SPECIFICATION @ Tamb 25°C

| Part Numbers | Standoff Voltage ( $V_{SO}$ ) Volts | Max. Reverse Leakage ( $I_R$ ) @ $V_{SO}$ $\mu$ A | 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 $V_{BR}$ (%/°C) | Max. Capacitance 0 Bias 10k Hz (nF) |
|--------------|-------------------------------------|---------------------------------------------------|------------------------------------------------|------------|---------------------------|-----------------------------------------------------------------------------|---------------|------------------------------------------|-------------------------------------|
|              |                                     |                                                   | Min. Volts                                     | Max. Volts |                           | $V_{CL}$ Volts                                                              | $I_{PP}$ Amps |                                          |                                     |
| AK10-058C    | 58                                  | 20                                                | 64                                             | 70         | 10                        | 110                                                                         | 10,000        | 0.1                                      | 8.0                                 |
| AK10-170C    | 170                                 | 20                                                | 180                                            | 220        | 10                        | 260                                                                         | 10,000        | 0.1                                      | 2.8                                 |
| AK10-190C    | 190                                 | 20                                                | 200                                            | 245        | 10                        | 290                                                                         | 10,000        | 0.1                                      | 2.5                                 |
| AK10-240C    | 240                                 | 20                                                | 250                                            | 285        | 10                        | 400                                                                         | 10,000        | 0.1                                      | 2.3                                 |
| AK10-380C    | 380                                 | 20                                                | 401                                            | 443        | 10                        | 520                                                                         | 10,000        | 0.1                                      | 1.4                                 |

**Note 1.** Using 8/20 $\mu$ S wave shape pulse as defined in IEC 61000.4.5

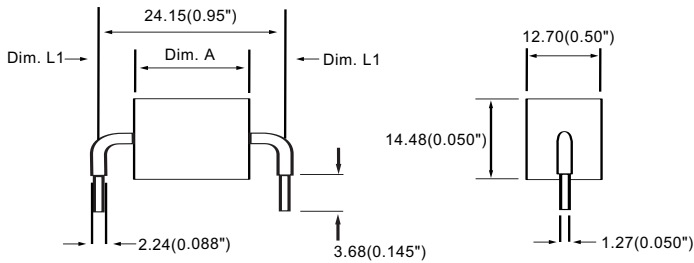


6

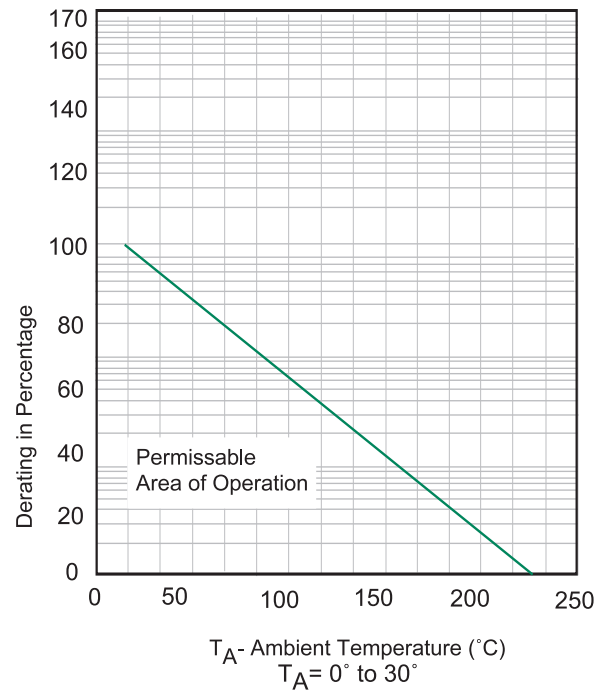
SILICON DIODE  
ARRAYS

# Silicon Avalanche Diodes

## RoHS AK10 Series



| Part Number | Dim. L1 |       | Dim. A |       |
|-------------|---------|-------|--------|-------|
|             | mm      | in.   | mm     | in.   |
| AK10-058C   | 7.87    | 0.310 | 8.13   | 0.320 |
| AK10-170C   | 7.87    | 0.310 | 8.13   | 0.320 |
| AK10-190C   | 7.87    | 0.310 | 8.13   | 0.320 |
| AK10-240C   | N/A     | N/A   | 11.4   | 0.645 |
| AK10-380C   | 3.81    | 0.150 | 16.5   | 0.650 |



**Figure 1 Peak Power Derating**

Peak Pulse Power in Percent of 25% Rating