

LTKAK10 Series





Description

The LTKAK10 series offer superior clamping characteristics over standard S.A.D. technologies by virtue of the Littelfuse Foldbak technology, which provides a clamping voltage 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 various capability and flexible protection solutions.

The LTKAK10 SMT package provides a more compact PCB layout than typical through-hole AKTVS components.

Agency Approvals

| Agency | Agncy File Number |
|-----------|-------------------|
| 71 | E128662 |

Maximum Ratings and Thermal Characteristics $(T_a=25^{\circ}C \text{ unless otherwise noted})$

| Parameter | Symbol | Value | Unit |
|--|------------------|------------|------|
| Operating Junction | T | -55 to 125 | °C. |
| Storage Temperature Range | T _{STG} | -55 to 150 | |
| Current Rating ¹ | I _{PP} | 10 | kA |
| Typical Thermal Resistance Junction to Lead | R _{eJL} | 10 | °C/W |
| Typical Thermal Resistance Junction to Ambient | R _{eJA} | 50 | °C/W |

Note:

1. Rated min $I_{\mbox{\tiny pp}}$ measured with 8/20µs pulse.

Functional Diagram



Features

- High Power TVS designed in a surface mount compact SMTO-218 package
- Patent pending package design
- Foldbak technology for superior clamping factor
- Tube or tape and reel pack options available
- Ideal for automatic pick and place assembly and reflow process to reduce the manufacturing cost and increase the soldering quality as compared to axial leaded packages
- Bi-directional

- Meet MSL level 1, per J-STD-020, LF maximun peak of 245°C
- Halogen free and RoHS compliant
- Pb-free E3 means 2nd level interconnect is
 Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)
- UL Recognized compound meeting flammability rating V-0

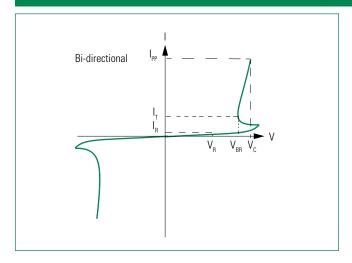
Electrical Characteristics

| Part | Standoff Voltage | Max. Reverse | Reverse B Voltage | reakdown Current I _T Max. Clamping Voltage V _{CL} @ Peak Pulse Current (I _{pp}) | | | Max.Temp Coefficient of V _{BR} | Max. Capacitance 0V Bias 10kHz | Agency Approval | | | |
|--------------|---------------------------|---|----------------------|---|------|--------------------------|---|---|--------------------|--------|------|-------------|
| Numbers | (V _{so}) (V) | Leakage (I _R) @V _{so} (µA) | Min Volts | Max Volts | (mA) | V _{CL} Volts | Ι _{ΡΡ} (8/20μs) (A) | (10/3 } | - 50μs) \ | (%/°C) | (nF) | <i>7</i> .2 |
| | | | | | | | min | min | typ | | | |
| LTKAK10-058C | 58 | 10 | 64 | 70 | 10 | 110 | 10,000 | 1,400 | 1,700 | 0.1 | 8.5 | Х |
| LTKAK10-066C | 66 | 10 | 72 | 80 | 10 | 120 | 10,000 | 1,400 | 1,700 | 0.1 | 7.5 | Х |
| LTKAK10-076C | 76 | 10 | 85 | 95 | 10 | 140 | 10,000 | 1,400 | 1,700 | 0.1 | 6.5 | Х |
| LTKAK10-086C | 86 | 10 | 95 | 105 | 10 | 157 | 10,000 | 1,000 | 1,200 | 0.1 | 6.5 | Х |

Note: Using 8/20 waveshape as defined in IEC 61000-4-5 2nd edition.



I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation --

Max power dissipation

Stand-off Voltage --

Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage —
Maximum voltage that flows though the TVS at a specified test current (I₇)

V_c Clamping Voltage —

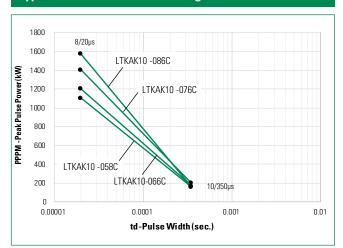
Peak voltage measured across the TVS at a specified lppm (peak impulse current)

Reverse Leakage Current --

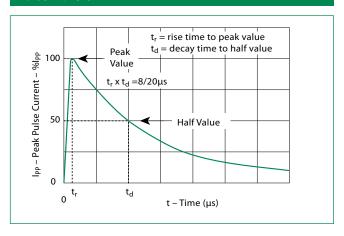
Current measured at $V_{\scriptscriptstyle R}$

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

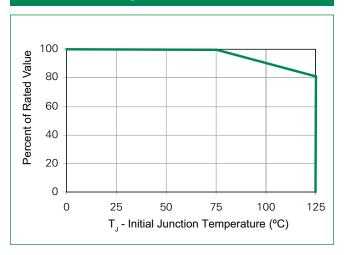
Typical Peak Pulse Power Rating Curve



Pulse Waveform



Peak Power Derating

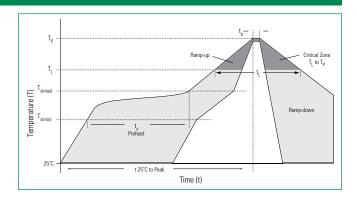


Please contact Littelfuse for reliability or FIT/MTBF data, the component's performance is dependent on the application's environmental conditions such as elevated ambient temperatures.



Soldering Parameters

| Reflow Cond | Lead-free assembly | | |
|---|--|------------------|--|
| | - Temperature Min (T _{s(min)}) | 150°C | |
| Pre Heat | -Temperature Max (T _{s(max)}) | 200°C | |
| | -Time (min to max) (t _s) | 60 – 180 secs | |
| Average ram | 3°C/second max | | |
| T _{S(max)} to T _A - | 3°C/second max | | |
| Reflow | - Temperature (T _A) (Liquidus) | 217°C | |
| | -Time (min to max) (t _s) | 60 - 150 seconds | |
| Peak Temper | Peak Temperature (T _p) | | |
| Time within | 5°C of actual peak Temperature (t _p) | 30 seconds | |
| Ramp-down | 6°C/second max | | |
| Time 25°C to | 8 minutes Max. | | |
| Do not exce | 245°C | | |



Flow/Wave Soldering (Solder Dipping)

| Peak Temperature : | 260°C |
|--------------------|------------|
| Dipping Time : | 10 seconds |
| Soldering : | 1 time |

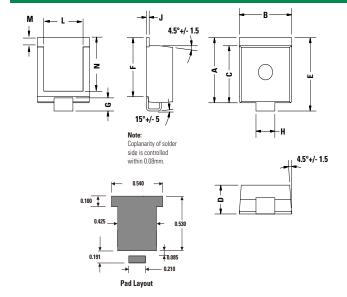
Physical Specifications

| Weight | Contact manufacturer | | | |
|----------|--|--|--|--|
| Case | Compound encapsulated | | | |
| Terminal | Tin plated lead, solderable per MIL-STD-202 Method 208 | | | |

Environmental Specifications

| High Temp. Storage | JESD22-A103 | | |
|--------------------|---------------------------|--|--|
| HTRB | JESD22-A108 | | |
| MSL | JESDEC-J-STD-020, Level 1 | | |
| H3TRB | JESD22-A101 | | |
| RSH | JESD22-B106 | | |

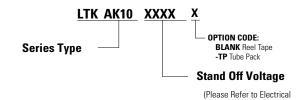
Dimensions — SMTO-218 Tab



| Dimension | Inc | hes | Millimeters | | |
|-------------|-------|-------|-------------|-------|--|
| Difficusion | Min | Max | Min | Max | |
| Α | 0.621 | 0.655 | 15.78 | 16.63 | |
| В | 0.529 | 0.594 | 13.43 | 15.09 | |
| С | 0.544 | 0.561 | 13.83 | 14.24 | |
| D | 0.273 | 0.285 | 6.94 | 7.24 | |
| E | 0.702 | 0.737 | 17.82 | 18.72 | |
| F | 0.567 | 0.587 | 14.40 | 14.90 | |
| G | 0.087 | 0.126 | 2.20 | 3.20 | |
| Н | 0.193 | 0.222 | 4.89 | 5.65 | |
| J | 0.028 | 0.033 | 0.72 | 0.85 | |
| L | 0.400 | 0.440 | 10.17 | 11.17 | |
| M | 0.073 | 0.112 | 1.85 | 2.85 | |
| N | 0.510 | 0.533 | 12.95 | 13.55 | |

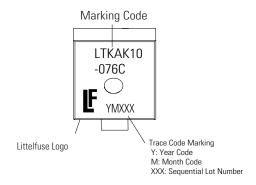


Part Numbering System



Characteristics Chart)

Part Marking System



Packaging

| Part Number | Weight | Packing Mode | Base Quantity |
|-----------------|--------|-----------------------------|---------------|
| LTKAK10-xxxC | 4.34g | Tape & Reel – 32mm/13" tape | 400 |
| LTKAK10-xxxC-TP | 4.34g | Tube Pack | 100(25/Tube) |

Tape and Reel Specification

