

# LTKAK2-L Series

## Modified SMT0-218 - 2 kA



### Maximum Ratings & Thermal Characteristics

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-40 to 125	$^\circ\text{C}$
Current Rating <sup>1</sup>	$I_{PP}$	2	kA

Notes: 1. Rated min  $I_{PP}$  measured with 8/20  $\mu\text{s}$  pulse.

### Functional Diagram



### Description

The LTKAK2-L series offers a clamping voltage lower than alternative technologies such as MOVs and GDTs. Rated to 2KA (8/20us) surge current, LTKAK2-L series offers a high level of protection for mission critical and high reliability applications. It aids compliance to surge requirements such as IEC 61000-4-5 (Level 4).

The compact surface mount SMT0218 package is compatible with automated PCBA processes and enables high power density designs

### Features & Benefits

- High Power TVS in a compact, surface mount, package
- Patent pending package design
- Ideal for automated PCB assembly process, reducing manufacturing costs and improving soldering quality, as compared to axial leaded packages
- Bi-directional devices
- Low clamping resistance enabling a low clamping voltage
- Meet MSL level 1, per J-STD-020, LF maximum peak of  $245^\circ\text{C}$
- Halogen free and RoHS compliant
- Pb-free E3 means 2<sup>nd</sup> level interconnect is Pb-free and the terminal finish material is tin (Sn) (IPC/JEDEC J-STD-609A.01)
- UL Recognized epoxy meeting flammability rating V-0

### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

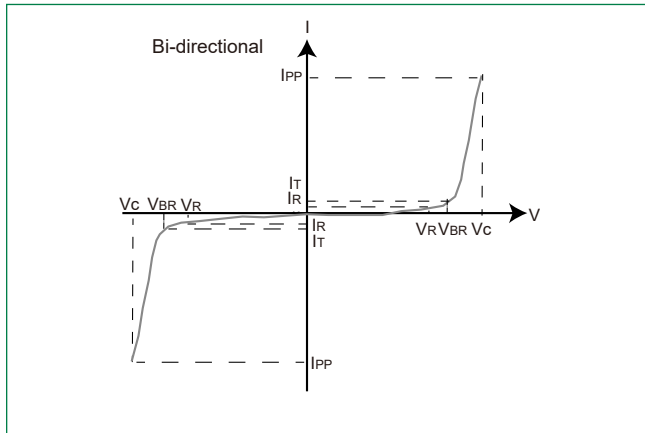
Part Number (Uni)	Standoff Voltage (VSO) (V)	Max. Reverse Leakage ( $I_R$ ) @ $V_{SO}$ $\mu\text{A}$	Reverse Breakdown Voltage ( $V_{BR}$ ) @ $I_T$		Test Current $I_T$ (mA)	Max. Clamping Voltage $V_{CL}$ @ $I_{PP}$ Peak Pulse Current ( $I_{PP}$ ) (Note 1)		Max. Temp Coefficient of $V_{BR}$ (%/ $^\circ\text{C}$ )	Max. Capacitance 0 Bias 10 kHz (nF)
			Min Volts	Max Volts		$V_{CL}$ Volts	$I_{PP}$ Amps		
LTKAK2-150C-L	150	10	167.0	185.0	5	243	2,000	0.1	7.0
LTKAK2-160C-L	160	10	178.0	197.0	5	259	2,000	0.1	6.5
LTKAK2-170C-L	170	10	189.9	208.9	5	275	2,000	0.1	6.5

Note: Using 8/20  $\mu\text{s}$  wave shape as defined in IEC 61000-4-5.

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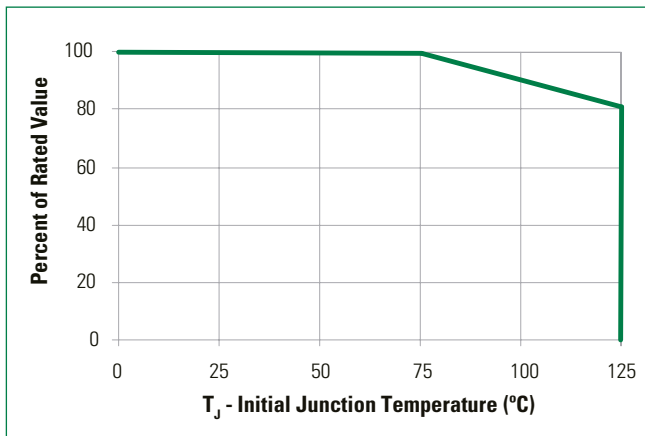
### I-V Curve Characteristics



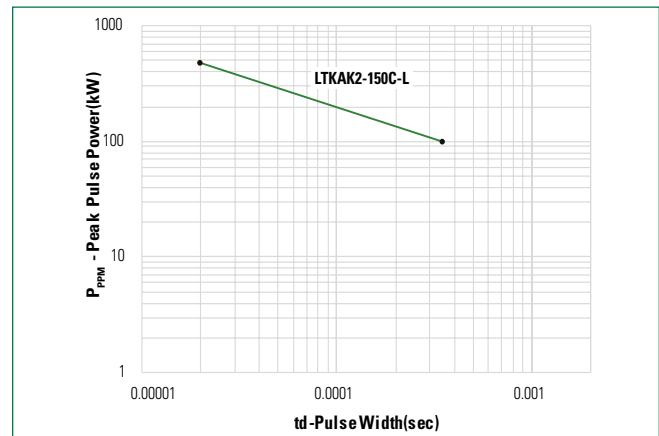
- $P_{PPM}$  Peak Pulse Power Dissipation** -- Max power dissipation
- $V_R$  Stand-off Voltage** -- Maximum voltage that can be applied to the TVS without operation
- $V_{BR}$  Breakdown Voltage** -- Maximum voltage that flows through the TVS at a specified test current ( $I_R$ )
- $V_C$  Clamping Voltage** -- Peak voltage measured across the TVS at a specified  $I_{ppm}$  (peak impulse current)
- $I_R$  Reverse Leakage Current** -- Current measured at  $V_R$
- $V_F$  Forward Voltage Drop for Uni-directional**

### Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

#### Peak Power Derating



#### Typical Peak Pulse Power Rating Curve

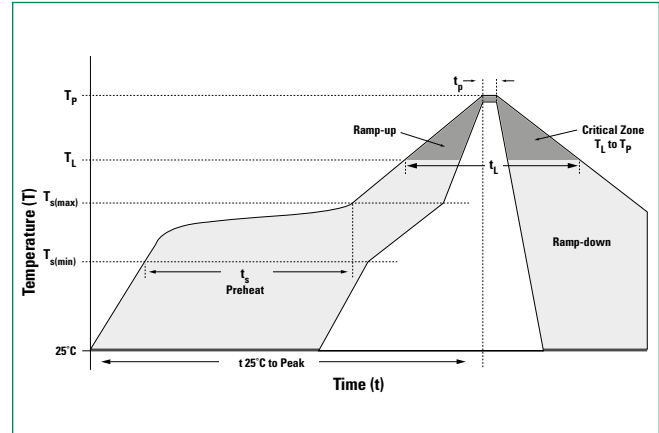


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### Soldering Parameters

<b>Reflow Condition</b>		Lead-free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150 °C
	- Temperature Max ( $T_{s(max)}$ )	200 °C
	- Time (min to max) ( $t_s$ )	60 – 120 secs
<b>Average ramp up rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		3 °C/second max
<b><math>T_{s(max)}</math> to <math>T_A</math> - Ramp-up Rate</b>		3 °C/second max
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217 °C
	- Time (min to max) ( $T_s$ )	60 – 150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		245 <sup>+0/-5</sup> °C
<b>Time within 5 °C of actual peak Temperature (<math>t_p</math>)</b>		30 seconds
<b>Ramp-down Rate</b>		6 °C/second max
<b>Time 25 °C to peak Temperature (<math>T_p</math>)</b>		8 minutes Max.
<b>Do not exceed</b>		245 °C



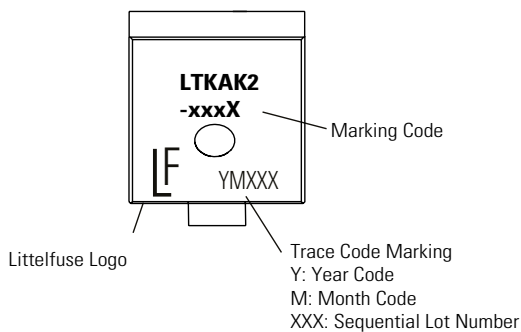
### Physical Specifications

<b>Weight</b>	Contact manufacturer
<b>Case</b>	Epoxy encapsulated
<b>Terminal</b>	Tin plated lead, solderable per MIL-STD-202 Method 208

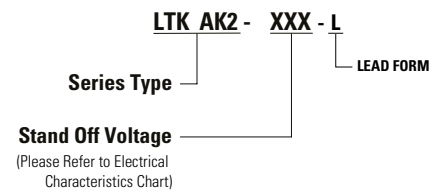
### Environmental Specifications

<b>High Temp. Storage</b>	JESD22-A103
<b>HTRB</b>	JESD22-A108
<b>MSL</b>	J-STD-020, Level 1
<b>H3TRB</b>	JESD22-A101
<b>RSH</b>	JESD22-B106

### Part Marking System



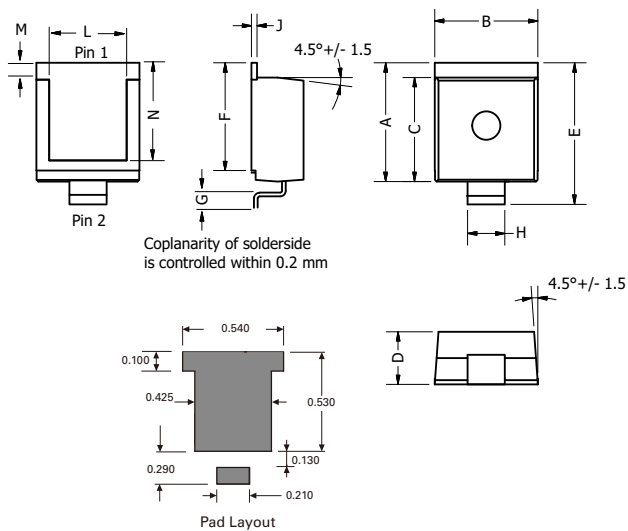
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### Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.621	0.655	15.78	16.63
B	0.529	0.594	13.43	15.09
C	0.544	0.561	13.83	14.24
D	0.273	0.285	6.94	7.24
E	0.768	0.843	19.52	21.42
F	0.567	0.587	14.40	14.90
G	0.087	0.126	2.20	3.20
H	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

### Packaging

Part number	Weight	Packing Mode	Base Quantity
LTKAK2-xxxC-L	4.34g	Tube pack	100 (25/Tube)

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