

LTKAK2-L Series

Surface Mount – 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 ¹	I_{PP}	2	kA

Notes: 1. Rated min I_{PP} measured with 8/20 μs pulse.

Functional Diagram



Description

The LTKAK2-L series offers a clamping voltage lower than alternative technologies such as MOVs and GDTs. Rated to 2 kA (8/20 μs) 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 SMT0-218 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 granted package design
- Ideal for automated PCB assembly process, reducing manufacturing costs and improving soldering quality, as compared to axial leaded packages
- Bi-directional devices
- 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 2nd 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)

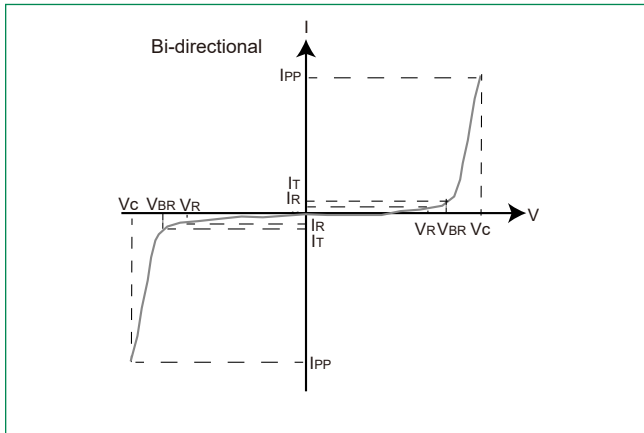
Part Number	Standoff Voltage (V_R) (V)	Max. Reverse Leakage (I_R) @ V_R μA	Reverse Breakdown Voltage (V_{BR}) @ I_T		Test Current I_T (mA)	Max. Clamping Voltage V_C @ I_{PP} Peak Pulse Current (I_{PP}) (Note 1)		Max. Temp Coefficient of V_{BR} (%/ $^\circ\text{C}$)	Max. Capacitance 0 Bias 10 kHz (nF)
			Min Volts	Max Volts		V_C 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 μs wave shape as defined in IEC 61000-4-5.

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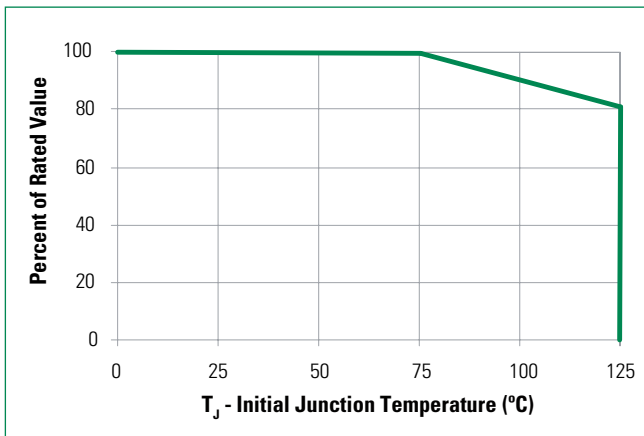
I-V Curve Characteristics



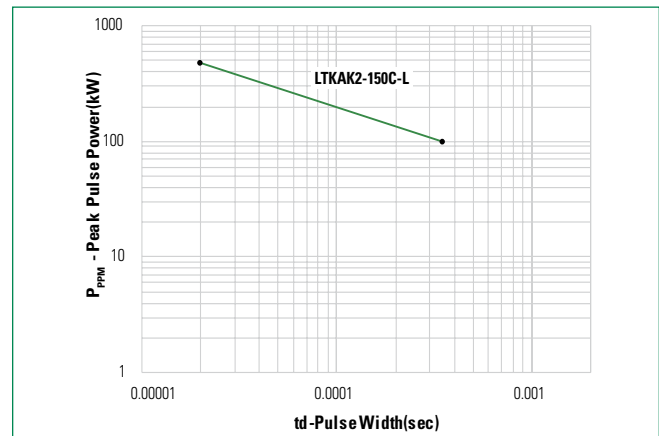
- P_{PPM} Peak Pulse Power Dissipation** – Max power dissipation
- V_R Stand-off Voltage** – Maximum voltage that can be applied to the TVS without operation
- V_{BR} Breakdown Voltage** – Maximum voltage that flows through the TVS at a specified test current (I_R)
- V_C Clamping Voltage** – Peak voltage 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

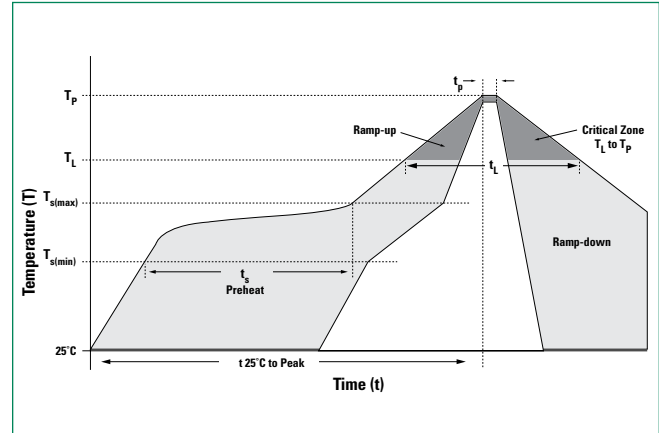


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Soldering Parameters

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



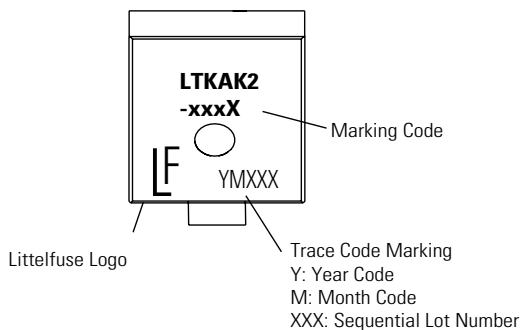
Physical Specifications

Weight	0.153 ounce, 4.34 gram
Case	Epoxy encapsulated
Terminal	Tin plated lead, solderable per MIL-STD-202 Method 208

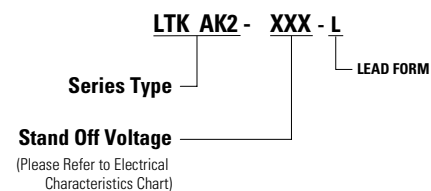
Environmental Specifications

High Temp Voltage Blocking (HTRB)	100 % DC reverse voltage rated 125 °C, 1008 hours JEDEC, JESD22-A-108
Biased Temp & Humidity (H3TRB)	80 % breakdown voltage (+85 °C) 85 %RH, 1008 hours JEDEC, JESD22-A-101
Unbiased Highly Accelerated Stress Test (UHAST)	96 hours at TA = 130 °C/85 %RH. JEDEC, JESD22-A-118
Temp Cycling (TC)	-40 °C to +125 °C, 15 min. dwell, 1000 cycles. JEDEC, JESD22-A104
Moisture Sensitivity Level (MSL)	85 %RH, +85 °C, 168 hours, 3 reflow cycles (+245 °C Peak). JEDEC, JEDEC-J-STD-020, Level 1
Resistance to Solder Heat (RSH)	+245 °C, 30 seconds JEDEC, JEDEC JESD22-A-111

Part Marking System



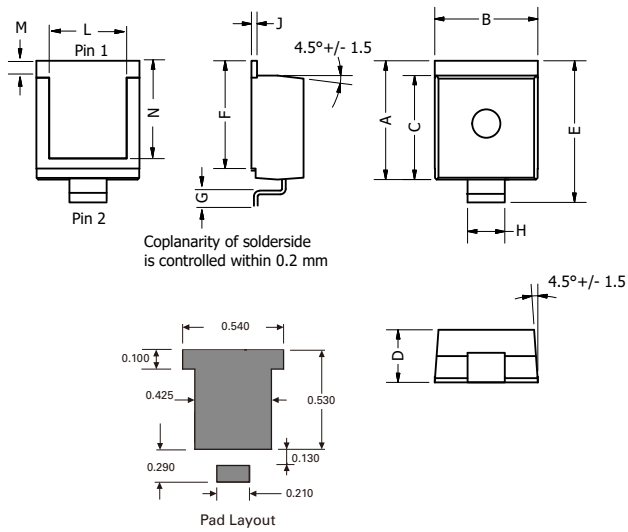
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Dimensions



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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