LTKAK2-L Series

Modified SMTO-218 - 2 kA

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 SMTO218 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 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 epoxy meeting flammability rating V-0

Maximum Ratings & Thermal Characteristics

(T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-40 to 125	°C
Current Rating[1]	I_{PP}	2	kA

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

Functional Diagram

Bi-directional

Electrical Characteristics (T_A = 25 °C unless otherwise noted)

Part Number (Uni)	Standoff Voltage (VSO) (V)	Max. Reverse Leakage (I_R) @V_{SO} µA	Reverse Breakdown Voltage (V_{BR}) @ I_T		Test Current I_T	Max. Clamping Voltage V_{CL} @ I_{PP} Peak Pulse Current (I_{PP}) (Note 1)		Max. Temp Coefficient of V_{BR}	Max. Capacitance 0 Bias 10 kHz
			Min Volts	Max Volts	(mA)	V_{CL} Volts	I_{PP} Amps	(%/°C)	(nF)
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.

Revised: GD. 09/26/23

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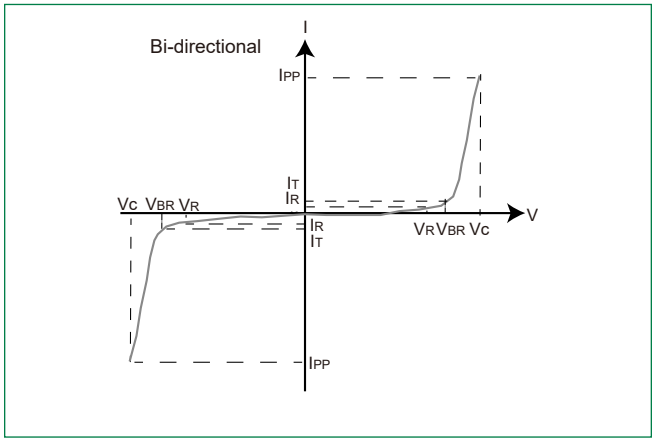
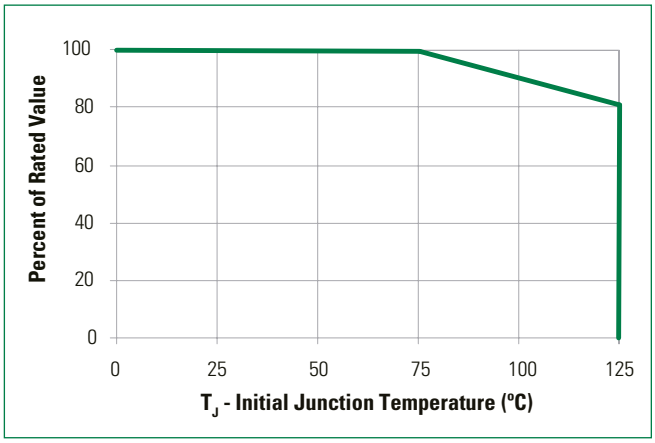
I-V Curve Characteristics



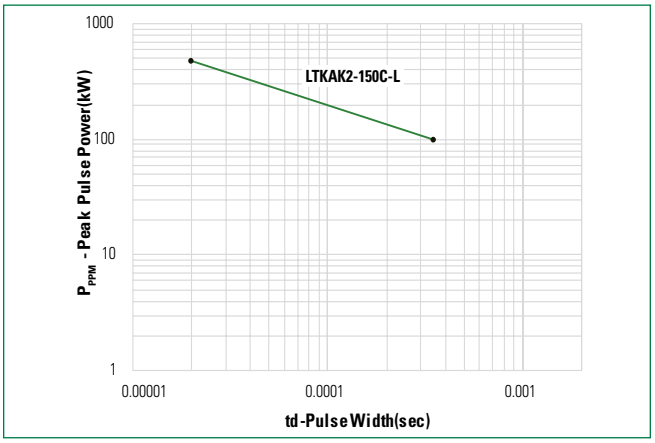
P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation
V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation
V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)
V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified Ippm (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 °C unless otherwise noted)

Peak Power Derating



Typical Peak Pulse Power Rating Curve



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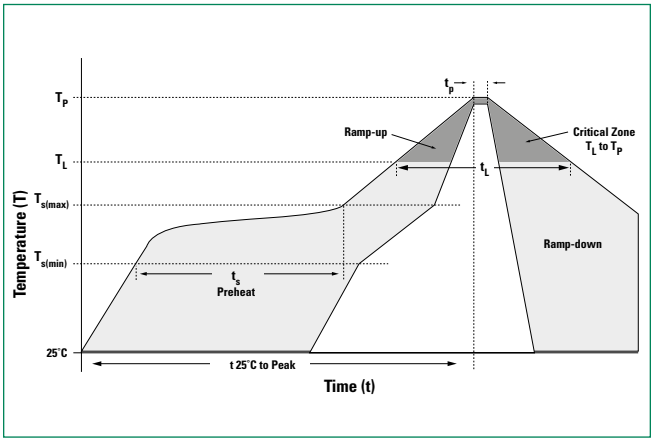
Soldering Parameters

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



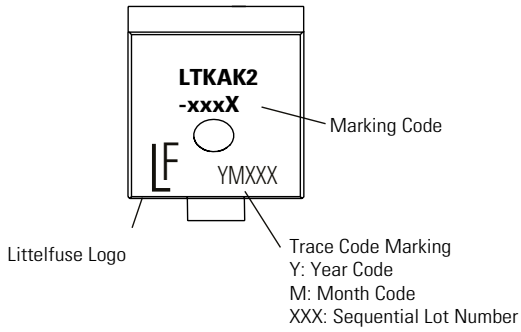
Physical Specifications

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

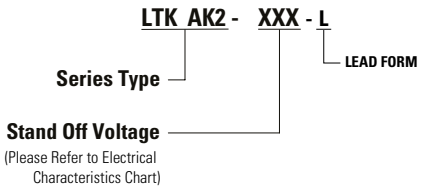
Environmental Specifications

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

Part Marking System



Part Marking System



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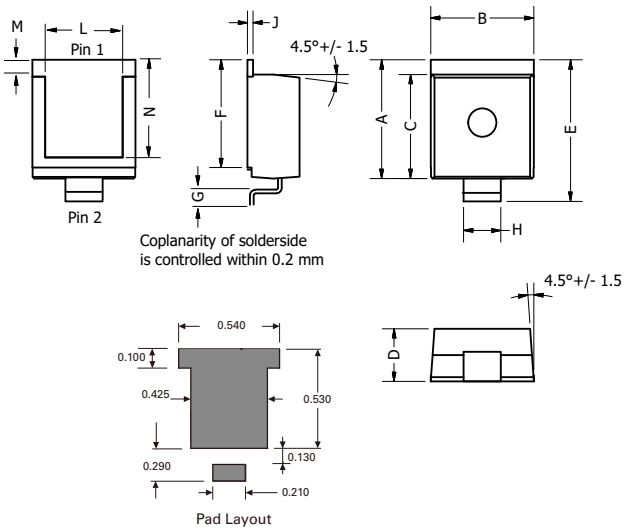
Dimensions



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)