LTKAK3 Series

Agency Recognitions

Agency	Agency File Number
	E128662

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Junction Temperature	T_J	-55 to 125	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Current Rating[1]	I_{PP}	3	kA
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	10	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	50	°C/W

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

Description

The LTKAK3 series offers 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. This LTKAK3 series can be combined in series or parallel solutions to offer various clamping levels and surge withstand options.

The LTKAK3 SMT package provides a more compact PCB layout than typical through-hole TO-218 AK TVS components.

Features

- Compact design having the Hi Power TVS in surface mount package
- Patent granted 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
- Meet MSL level1, per J-STD-020, LF maximun peak of 260°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
- Meets MSL level 1, per J-STD-020, lead frame maximum peak of 260°C
- UL Recognized as an Isolated Loop Circuit Protector to UL 497B

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

Part Numbers	Standoff Voltage (V_{SO}) Volts	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}	Max. Temp Coefficient OF V_{BR}	Max. Capacitance 0V bias 10kHz
			Min Volts	Max Volts	uA	V_{CL} Volts	(%/°C)	(nF)
LTKAK3-066C	66	10	75	83	40	120	0.1	6

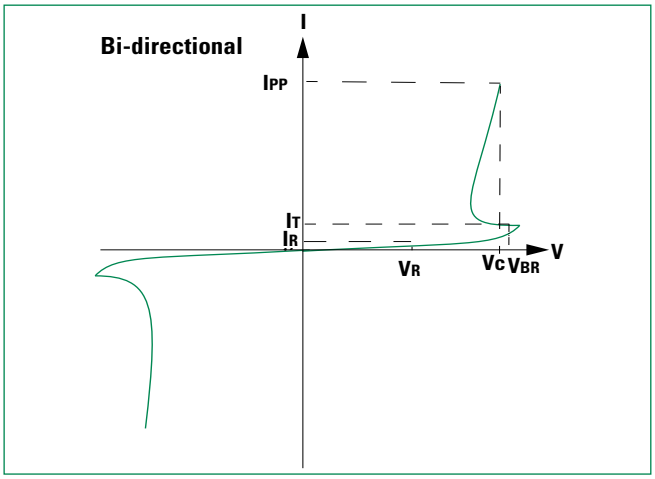
Note: Using 8/20µs wave shaped defined in IEC 61000-4-5.

Surge Ratings

Part Numbers	Max. Peak Pulse Current (I_{PP})		
	(8/20µs) (A)	(10/350µs) (A)	(10/1000µs) (A)
	min	min	min
LTKAK3-066C	3,000	800	500

Revision: 01/28/20

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

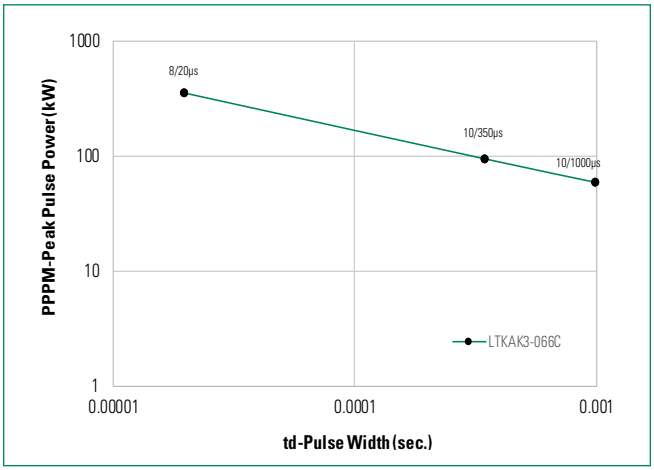
V_{BR} Breakdown Voltage --
Maximum voltage that flows though the TVS at a specified test current (I_T)

V_C Clamping Voltage --
Peak voltage measured across the TVS at a specified Ippm (peak impulse current)

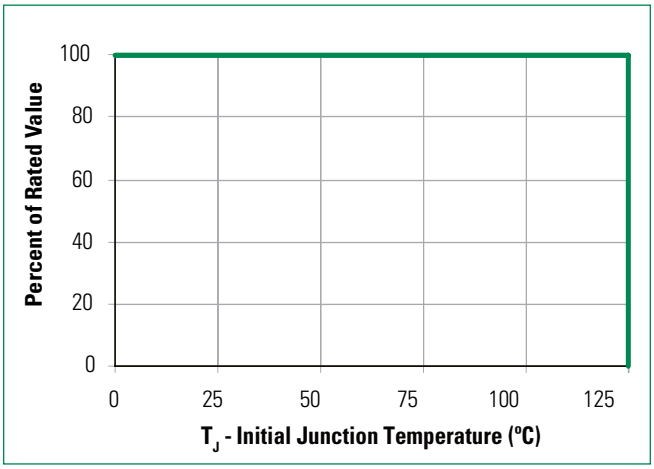
I_R Reverse Leakage Current --
Current measured at V_R

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

Typical Peak Pulse Power Rating Curve

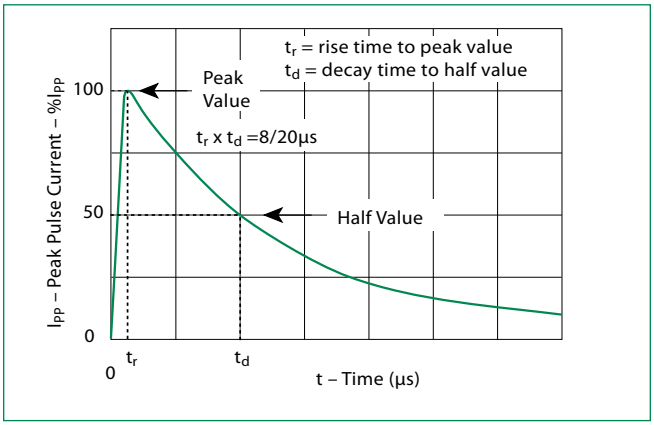


Peak Power Derating



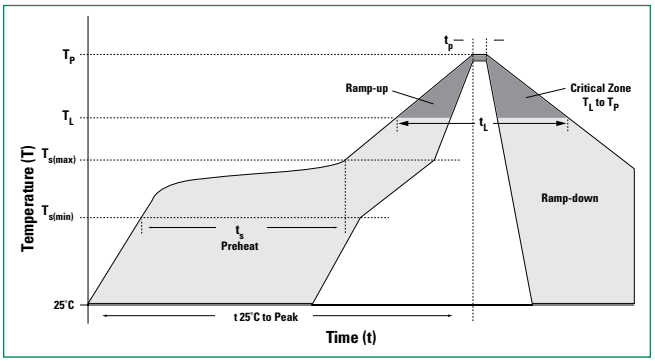
Please contact Littelfuse for reliability or FIT/MTBF data , the performance is subject to vary and depends on the end customers' application condition.

Pulse Waveform



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 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	**-Temperature (T_A) (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 Max
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		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
Temperature cycling	JESD22-A104

Part Numbering System

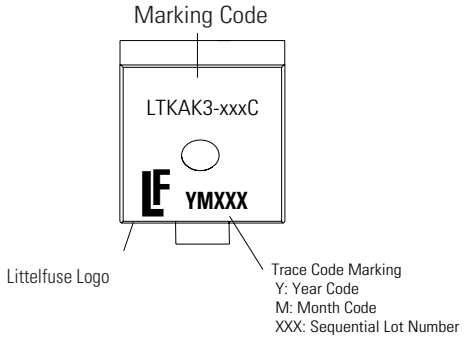
LTK AK3 - XXXX X

Series Type

Option Code
Blank Reel Tape
-TP Tube Pack

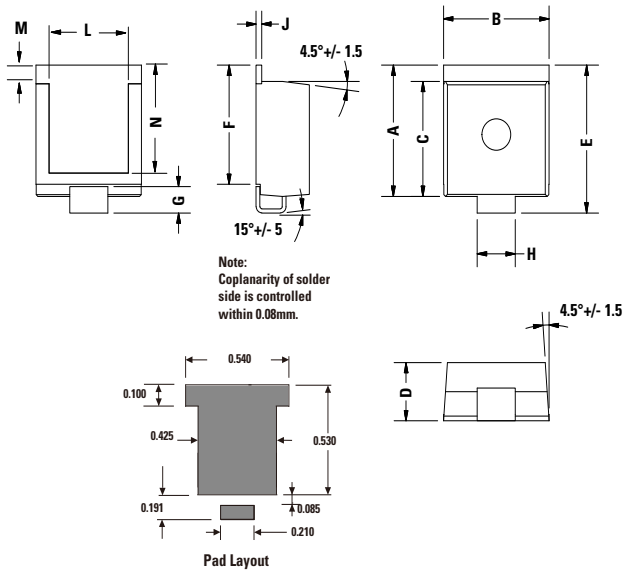
Stand Off Voltage
(Please Refer to Electrical Characteristics Chart)

Part Marking System



TVS Diodes
SMTO-218 - 3kA > LTKAK3 series

Dimensions — SMTO-218



Dimension	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	0.702	0.737	17.82	18.72
F	0.567	0.587	14.40	14.90
G	0.087	0.126	2.20	3.20
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
LTKAK3-xxxC	4.215g	Tape & Reel – 32mm/13" tape	400
LTKAK3-xxxC-TP	4.215g	Tube Pack	100(25/Tube)

Tape and Reel Specification