

LTKAK10 Series

SMT0-218 - 10 kA



Web Resources



Download ECAD models, order samples, and find technical resources at www.littelfuse.com

Agency Approvals

Agency	Agency File Number
	E128662

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

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

Note:

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

Description

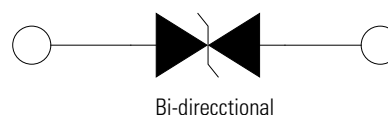
The LTKAK10 series offer superior clamping characteristics over standard S.A.D. technologies by virtue of the Littelfuse Foldback technology, which provides a clamping voltage lower than the avalanche voltage (but above the rated working voltage). Therefore, any voltage rise due to increased current 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 AK TVS components.

Features & Benefits

- High Power TVS designed in a surface mount compact SMT0-218 package
- Patent granted package design
- Foldback 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 maximum 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

Functional Diagram



Bi-directional

Electrical Characteristics

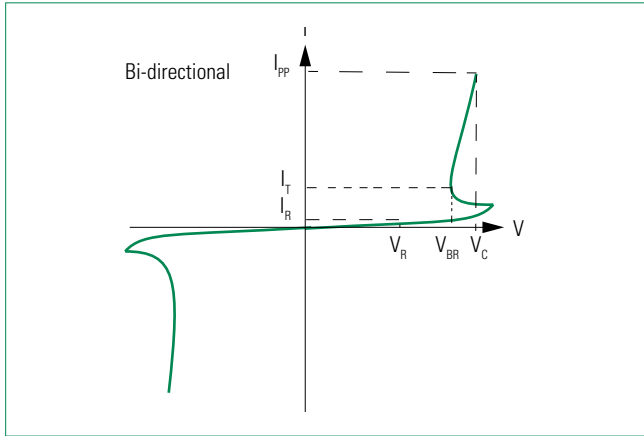
Part Numbers	Standoff Voltage (V _R) (V)	Max. Reverse Leakage (I _R) @V _R (μA)	Reverse Breakdown Voltage (V _{BR}) @ I _T		Test Current I _T (mA)	Max. Clamping Voltage V _C @ Peak Pulse Current (I _{PP})				Max. Temp Coefficient of V _{BR} (%/°C)	Max. Capacitance 0V Bias 10kHz (nF)	Agency Approval 	
			Min Volts	Max Volts		V _C Volts	I _{PP} (8/20μs) (A)		I _{PP} (10/350μs) (A)				
							min	typ	min				typ
LTKAK10-058C	58	10	64	70	10	110	10,000	1,400	1,700	0.1	8.5	x	
LTKAK10-066C	66	10	72	80	10	120	10,000	1,400	1,700	0.1	7.5	x	
LTKAK10-076C	76	10	85	95	10	140	10,000	1,400	1,700	0.1	6.5	x	
LTKAK10-086C	86	10	95	105	10	157	10,000	1,000	1,200	0.1	6.5	x	

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

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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_T)

V_C Clamping Voltage –

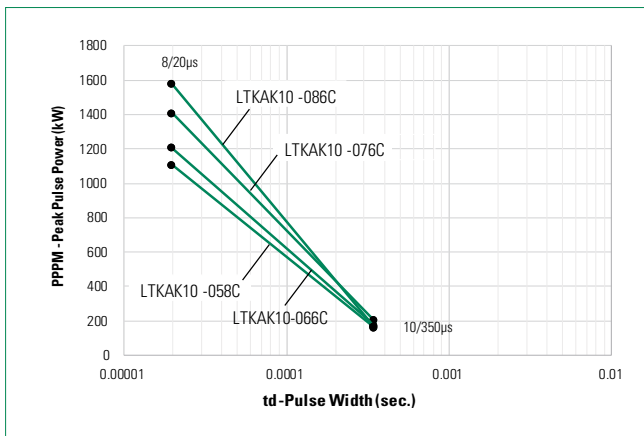
Peak voltage measured across the TVS at a specified I_{ppm} (peak impulse current)

I_R Reverse Leakage Current –

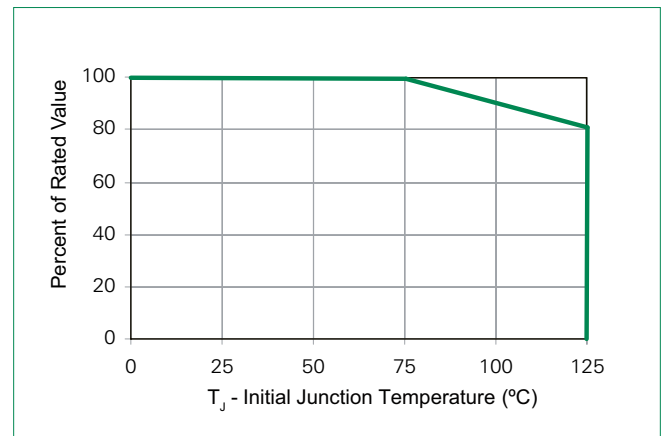
Current measured at V_R

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

Typical Peak Pulse Power Rating Curve

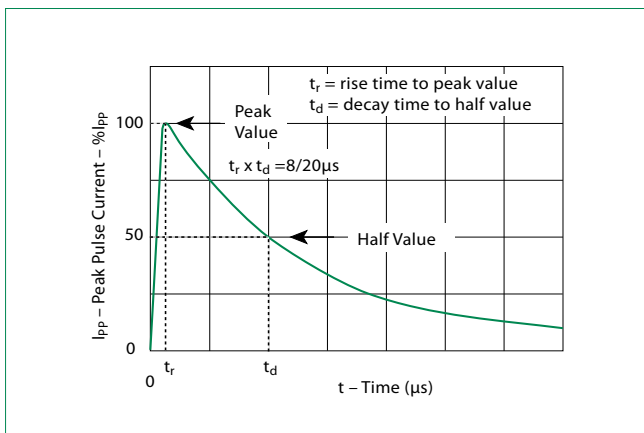


Peak Power Derating



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.

Pulse Waveform

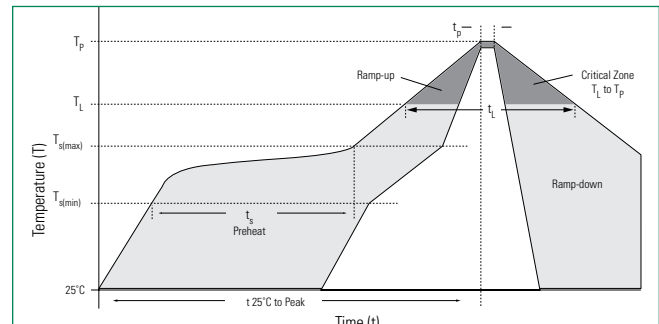


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Soldering Parameters

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 – 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
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	Compound encapsulated
Terminal	Tin plated lead, solderable per MIL-STD-202 Method 208

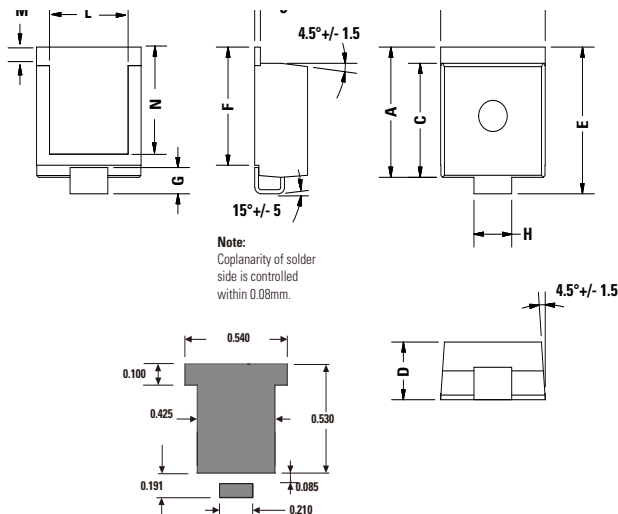
Flow/Wave Soldering (Solder Dipping)

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

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 $T_A = 130$ °C/85 %RH. JEDEC, JESD22-A-118
Temp Cycling (TC)	-55 °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

Dimensions — SMT0-218Tab

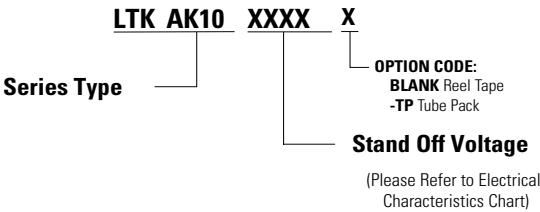


Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.621	0.655	15.78	16.63
B	0.529	0.594	13.43	15.09
C	0.544	0.561	13.83	14.24
D	0.273	0.285	6.94	7.24
E	0.702	0.737	17.82	18.72
F	0.567	0.587	14.40	14.90
G	0.087	0.126	2.20	3.20
H	0.193	0.222	4.89	5.65
J	0.028	0.033	0.72	0.85
L	0.400	0.440	10.17	11.17
M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

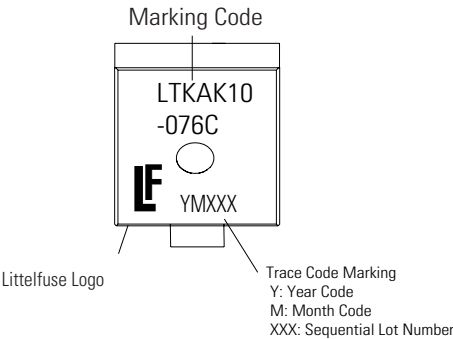
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Part Numbering System



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

