

LTKAK10 Series



Description

The LTKAK10 series offer 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. 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.

Agency Approvals

Agency	Agency File Number
	E128662

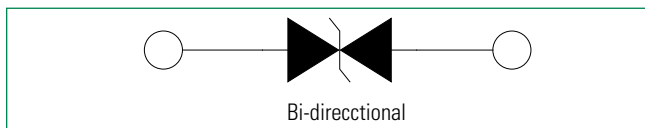
Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Junction	T _J	-55 to 125	°C
Storage Temperature Range	T _{STG}	-55 to 150	
Current Rating ¹	I _{PP}	10	kA
Typical Thermal Resistance Junction to Lead	R _{θJL}	10	°C/W
Typical Thermal Resistance Junction to Ambient	R _{θJA}	50	°C/W

Note:

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

Functional Diagram



Features

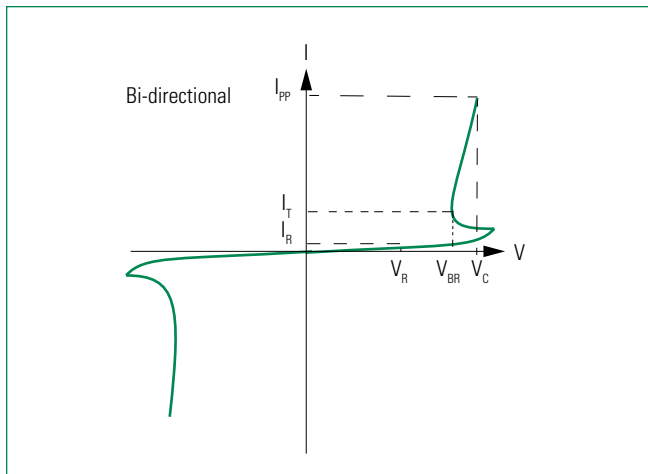
- High Power TVS designed in a surface mount compact SMT0-218 package
- Patent pending package design
- Foldbak technology for superior clamping factor
- Tube or tape and reel pack options available
- Ideal for automatic pick and place assembly and reflow process to reduce the manufacturing cost and increase the soldering quality as compared to axial leaded packages
- 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

Electrical Characteristics

Part Numbers	Standoff Voltage (V _{SO}) (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} @ 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 _{CL} Volts	I _{PP} (8/20μs) (A)	I _{PP} (10/350μs) (A)				
							min	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.

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 –

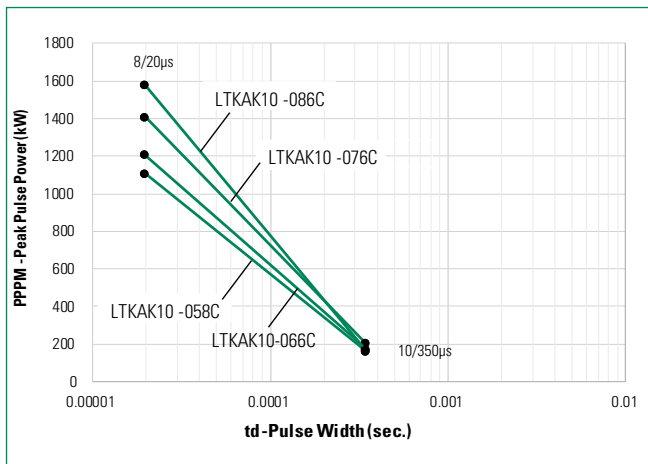
Peak voltage measured across the TVS at a specified I_{ppm} (peak impulse current)

I_R Reverse Leakage Current –

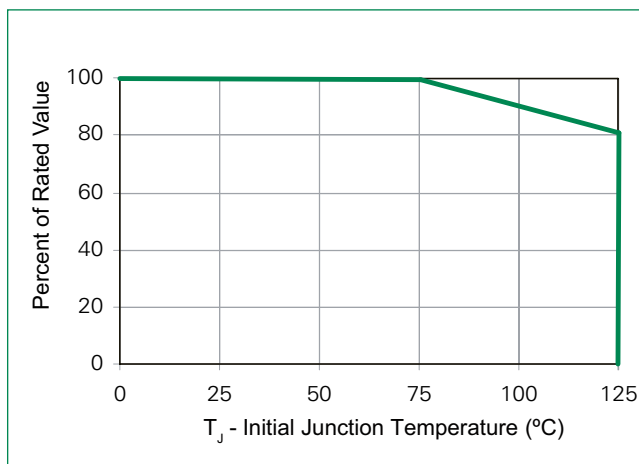
Current measured at V_R

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

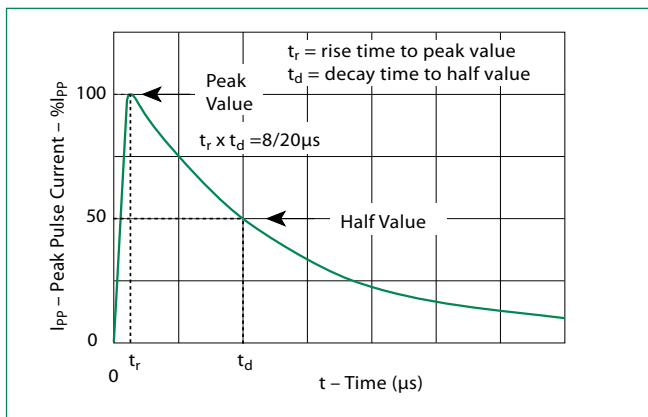
Typical Peak Pulse Power Rating Curve



Peak Power Derating



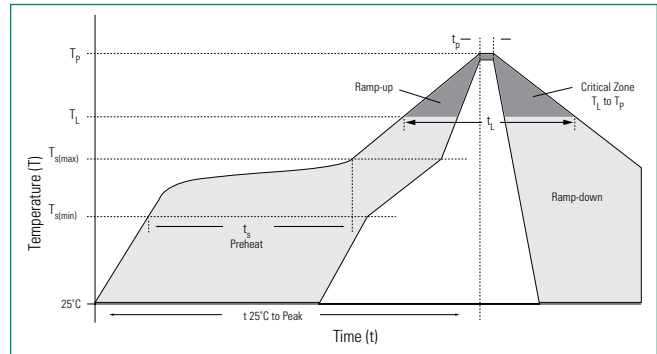
Pulse Waveform



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.

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



Flow/Wave Soldering (Solder Dipping)

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

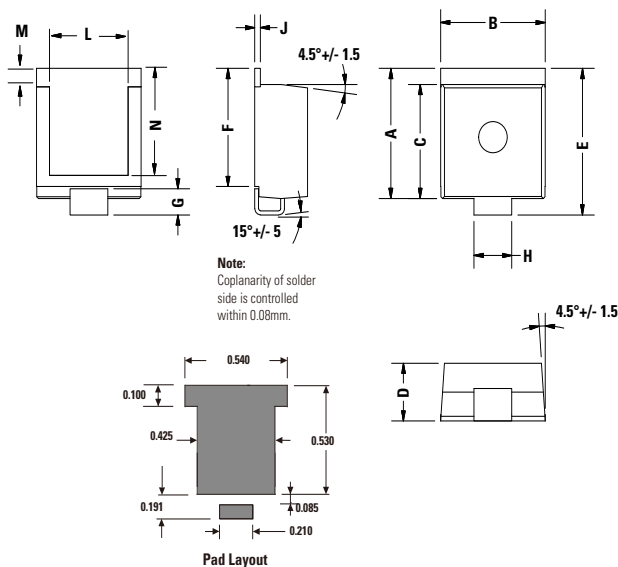
Physical Specifications

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

Environmental Specifications

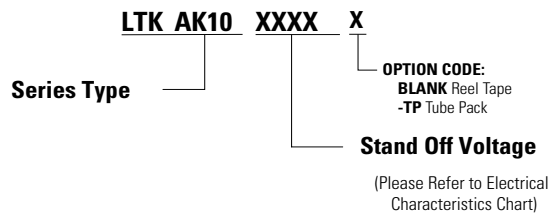
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
MSL	JESDEC-J-STD-020, Level 1
H3TRB	JESD22-A101
RSH	JESD22-B106

Dimensions — SMT0-218 Tab

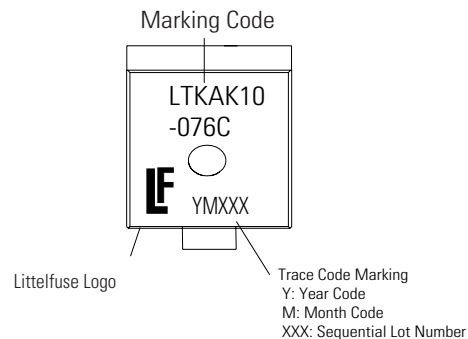


Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.621	0.655	15.78	16.63
B	0.529	0.594	13.43	15.09
C	0.544	0.561	13.83	14.24
D	0.273	0.285	6.94	7.24
E	0.702	0.737	17.82	18.72
F	0.567	0.587	14.40	14.90
G	0.087	0.126	2.20	3.20
H	0.193	0.222	4.89	5.65
J	0.028	0.033	0.72	0.85
L	0.400	0.440	10.17	11.17
M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

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

