

LTKAK6 Series




Description

The LTKAK6 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 LTKAK6 series can be combined in series or parallel solutions to offer various clamping levels and surge withstand options.

The LTKAK6 SMT package provides a more compact PCB layout than typical through-hole AK TVS components.

Agency Approvals

AGENCY	AGENCY FILE NUMBER
	E129662

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}	6	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.

Features

- High Power TVS designed in a surface mount and compact SMT0-218 package
- Patent pending package design
- Foldbak Technology for superior clamping characteristics
- 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
- Low clamping and slope resistance.
- Sharp breakdown voltage.
- Meet MSL level1, per J-STD-020, LF maximum peak of 260°C
- 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 (T_A=25°C unless otherwise noted)

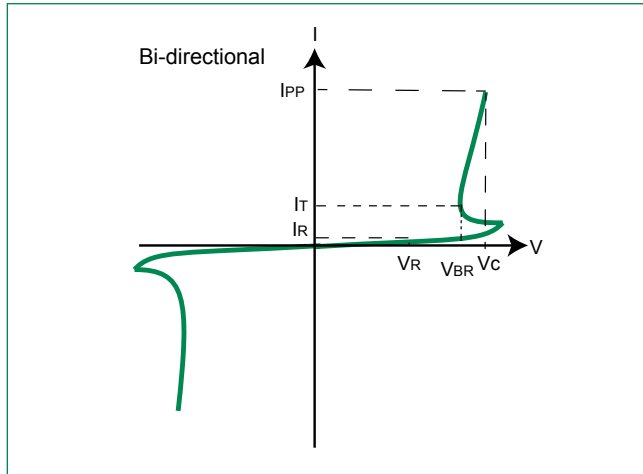
Part Numbers	Standoff Voltage (V _{SO}) (V)	Max. Reverse Leakage (I _R) @ V _{SO} (μA)	Reverse Breakdown Voltage (V _{BR}) @ I _T		Test Current I _T (mA)	Max. Clamping Voltage V _C @ (I _{PP}) (Volts)	Max. Temp Coefficient of V _{BR} (%/°C)	Max. Capacitance 0V Bias 10kHz (nF)
			Min Volts	Max Volts				
LTKAK6-058C	58	10	64	70	10	110	0.1	6.5
LTKAK6-066C	66	10	72	80	10	120	0.1	5.5
LTKAK6-076C	76	10	85	95	10	140	0.1	4.5

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

Surge Ratings

Part Numbers	Max Peak Pulse Current (I _{PP})			
	(80/20μS) (A)	(10/350μS) (A)		(10/1000μS) (A)
	Min	Min	Typ	Min
LTKAK6-058C	6,000	900	1,100	430
LTKAK6-066C	6,000	900	1,100	430
LTKAK6-076C	6,000	900	1,100	430

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 –

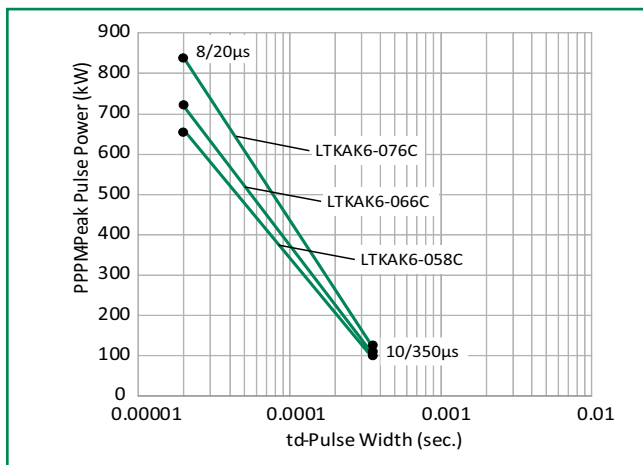
Peak voltage measured across the TVS at a specified I_{ppm} (peak impulse current)

I_R Reverse Leakage Current –

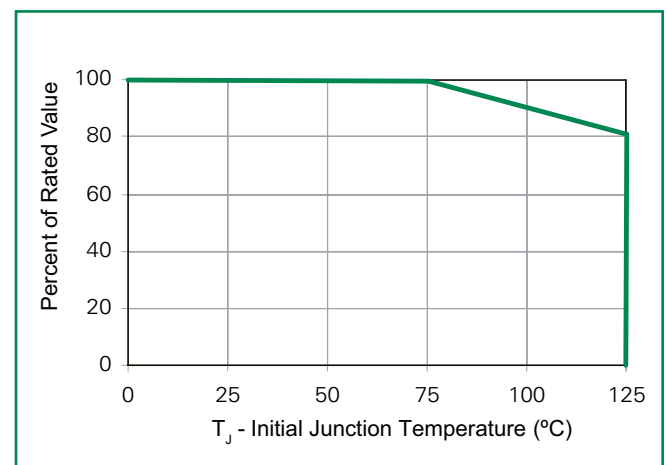
Current measured at V_R

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

Typical Peak Pulse Power Rating Curve

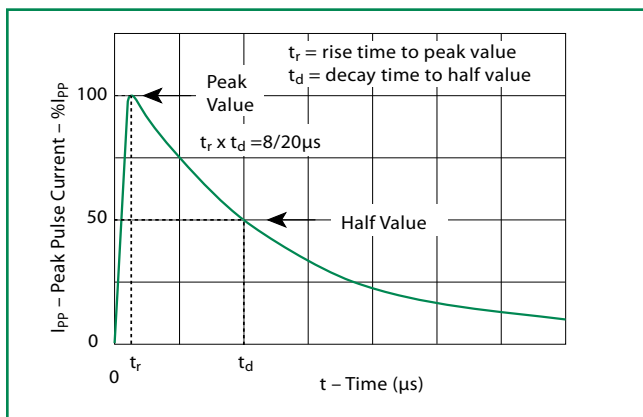


Peak Power Derating



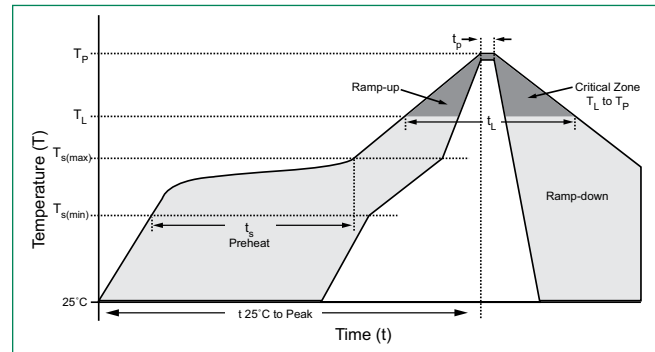
Please contact Littelfuse for reliability or FIT/MTBF data, the performance is subject to vary and depends on the end customers' application condition.

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)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C



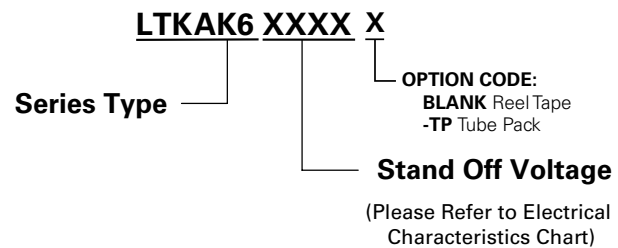
Flow/Wave Soldering (Solder Dipping)

Peak Temperature :	265°C
Dipping Time :	10 seconds
Soldering :	1 time

Physical Specifications

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

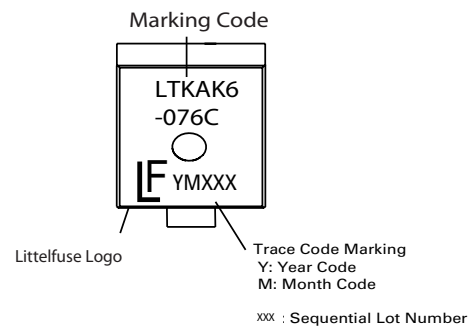
Part Numbering System



Physical Specifications

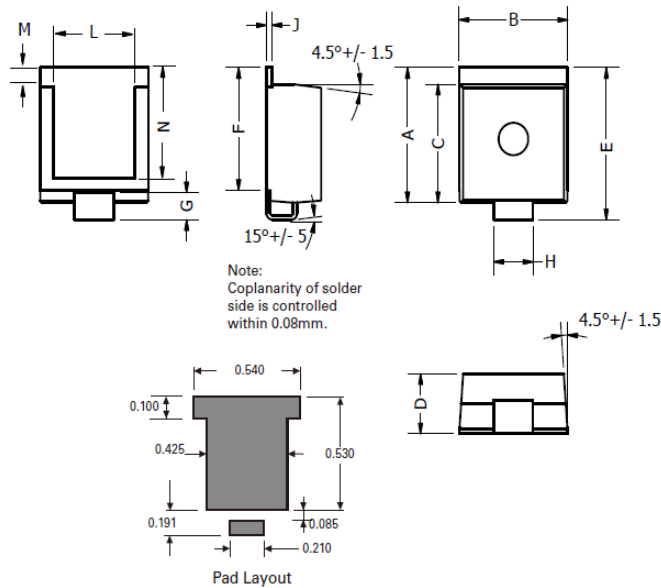
High Temp Storage	JESD22-A103
HTRB	JESD22-A108
MSL	JESDEC-J-STD020, Level 1
H3TRB	JESD22-A101
RSH	JESD22-B106

Part Marking System



Dimensions — SMT0-218

Note: Coplanarity of solder side is controlled within 0.08mm.



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
LTKAK6-xxxC	4.34g	Tape & Reel – 32mm/13" tape	400
LTKAK6-xxxC-TP	4.34g	Tube Pack	100(25/Tube)

Tape and Reel Specification

