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
	E128662

Features

- High Power TVS designed in a surface mount and compact SMTO-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 245°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

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	$R_{\theta JL}$	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.

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	Max. Clamping Voltage V_C @ (I_{PP})	Max. Temp Coefficient of V_{BR}	Max. Capacitance 0V Bias 10kHz
			Min Volts	Max Volts	(mA)	Volts	(%/°C)	(nF)
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.

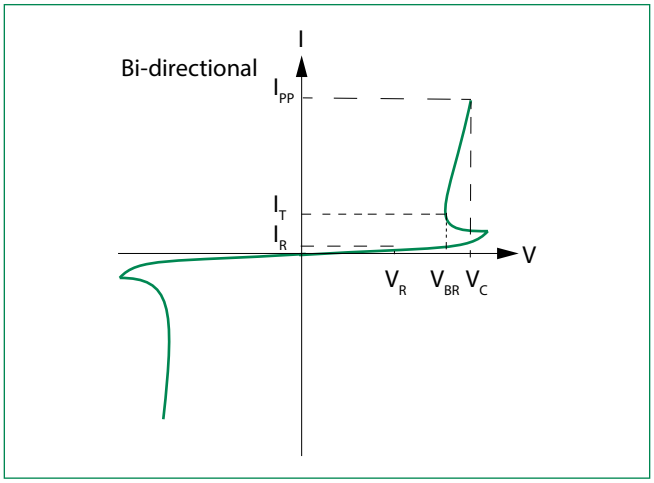
Surge Ratings

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

Revised: 11/04/19

Transient Voltage Suppression Diodes
SMTO-218 - 10KA > LTKAK10 series

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

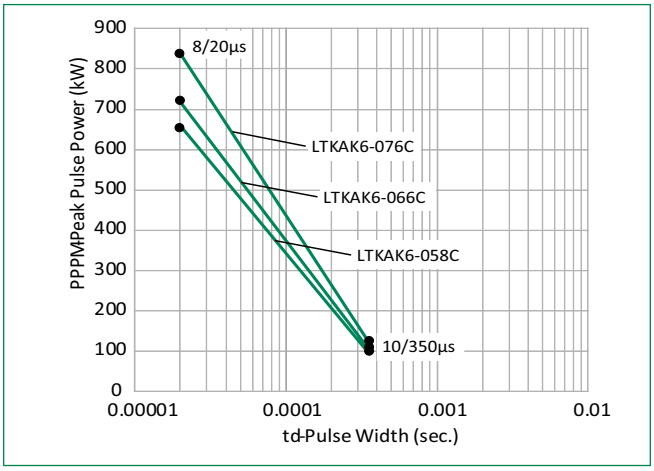
V_{BR} Breakdown Voltage --
Maximum voltage that flows though the TVS at a specified test current (I_T)

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

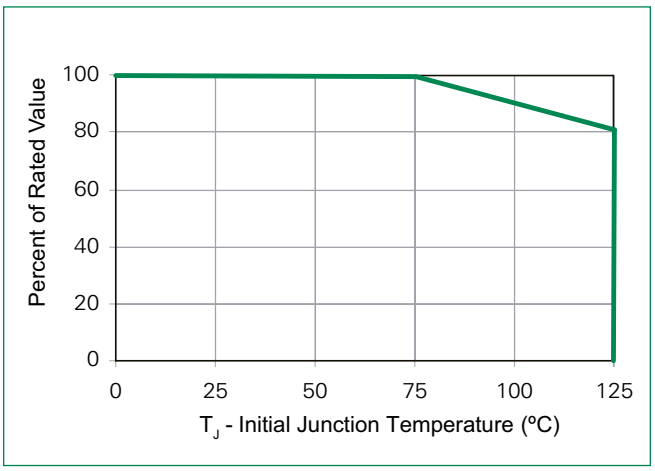
I_R Reverse Leakage Current --
Current measured at V_R

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

Typical Peak Pulse Power Rating Curve

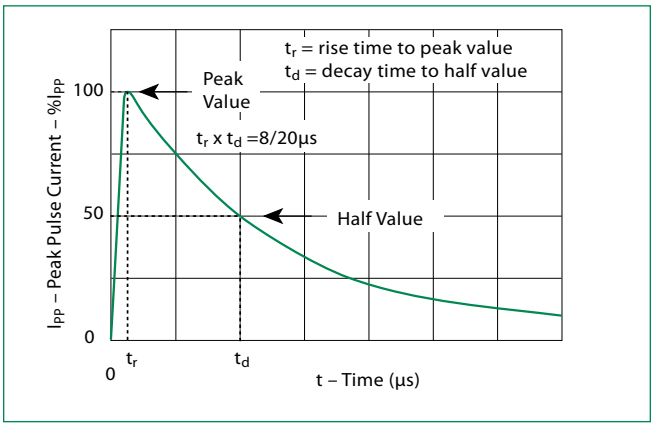


Peak Power Derating



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



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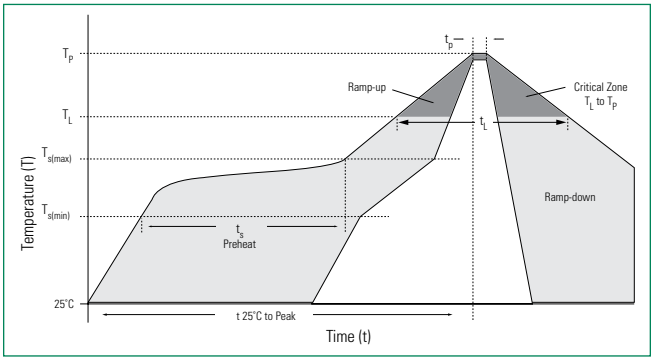
Transient Voltage Suppression Diodes

SMTO-218 - 10KA > LTKAK10 series

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

Part Numbering System

LTK AK6 XXXX X

Series Type

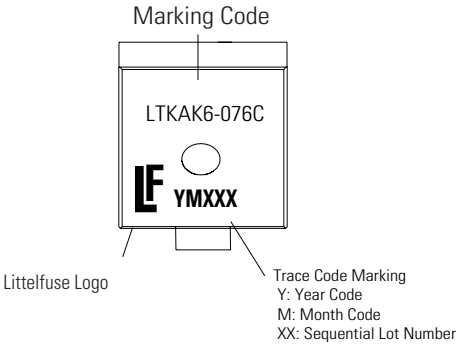
OPTION CODE:
BLANK Reel Tape
-TP Tube Pack

Stand Off Voltage
(Please Refer to Electrical Characteristics Chart)

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



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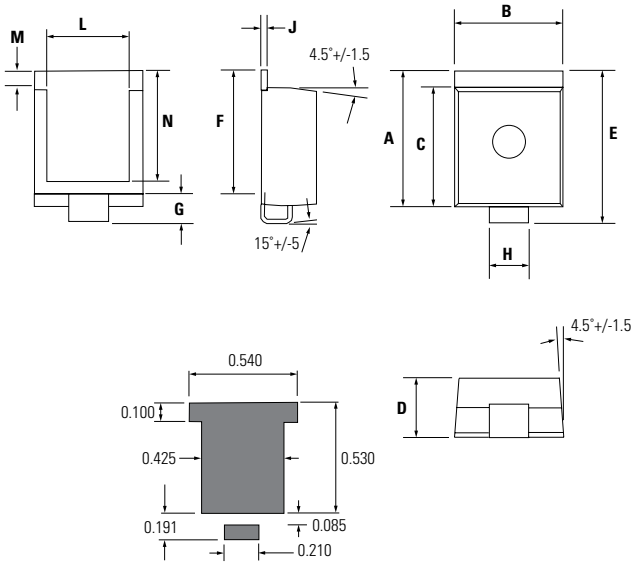
Transient Voltage Suppression Diodes

SMTO-218 - 10KA > LTKAK10 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

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

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