

# High Energy Power Line Surge Protection



## Improve System Reliability and Lower Maintenance Costs

Littelfuse high-power, high-energy TVS Diode Series (AK, LTKAK, SMTOAK2, and SMTAK3) offer superior clamping performance over standard Silicon Avalanche Diode (SAD) technologies, as well as a broad range portfolio from 1 kA to 20 kA surge protection capability for a more robust solution than conventional overvoltage protection methods.

Among all these high surge rating TVS diodes, the Littelfuse surface mount LTKAK and SMTOAK2 series achieve a compact mechanical design and are compatible with automated PCB assembly, providing robust circuit protection.



## Applications

- Designed to protect sensitive electronics from overvoltage surge transients, inductive load switching voltage transients, as well as AC/DC power line protection in systems, including:
- ICT, Medical, Industrial DC power supplies
- High power DC bus protection
- DC power supplies used in exposed and harsh environments
- Power over Ethernet (PoE) ports
- Small Cell, Micro Cell, Remote Radio Units (RRU), Baseband Units (BBU)
- High power density SiC and GAN-based DC/DC converters/power supplies
- Avionic power supplies

## Features & Benefits

- Precise clamping voltage
- No wear-out mechanism
- Lower leakage
- Faster response
- Compact design (LTKAK/SMTOAK2 series)
- True SMD package compatible with automated PCB assembly process (LTKAK/SMTOAK2 series)
- Improved lead inductance enabling lower clamping voltages
- Improved heat sink capability
- High power density, rated 2 kA 8/20 in a small footprint 10 mm x 15 mm x 5 mm (SMTOAK2 series)

Parts List Table

Series Name	Package Type	Package	Polarity	Reverse Standoff Voltage ( $V_R$ )	Peak Pulse Current ( $I_{PP}$ 8x20 $\mu$ s)	Halogen Free	RoHS Compliant	Photo
				(V)	(kA)			
<a href="#">AK1-Y</a>	Axial Leaded	AK	Bidirectional	76-430	1	Yes	Yes	
<a href="#">AK3-Y</a>	Axial Leaded	AK	Bidirectional	15-430	3	Yes	Yes	
<a href="#">AK6-Y</a>	Axial Leaded	AK	Bidirectional	30-430	6	Yes	Yes	
<a href="#">AK10-Y</a>	Axial Leaded	AK	Bidirectional	15-530	10	Yes	Yes	
<a href="#">AK15-Y</a>	Axial Leaded	AK	Bidirectional	58-190	15	Yes	Yes	
<a href="#">AK20-Y</a>	Axial Leaded	AK	Bidirectional	16-76	20	Yes	Yes	
<a href="#">LTKAK2-L</a>	SMD	Modified SMT0-218	Bidirectional	150-170	2	Yes	Yes	
<a href="#">LTKAK3</a>	SMD	SMT0-218	Bidirectional	66	3	Yes	Yes	
<a href="#">LTKAK6</a>	SMD	SMT0-218	Bidirectional	58-76	6	Yes	Yes	
<a href="#">LTKAK10</a>	SMD	SMT0-218	Bidirectional	58-86	10	Yes	Yes	
<a href="#">SMTAK3</a>	SMD	SMTAK	Bidirectional	15-76	3	Yes	Yes	
<a href="#">SMT0AK2</a>	SMD	SMT0-263	Bidirectional	70	2	Yes	Yes	

Low  $V_{CLAMP}$  Performance (SMD LTKAK vs. Axial Leaded AK)

