

CIRCUIT PROTECTION SOLUTIONS







WE PROTECT

WE INNOVATE

WE PARTNER

WE ARE #1 IN CIRCUIT PROTECTION



### **Dear Customer**,

For all of us at Littelfuse, our mission is simple—develop innovative circuit protection solutions that meet the unique needs of our customers. This customer-focused philosophy has served us well, as we've grown from a small company with just one fuse product to become the number-one circuit protection brand in the world.

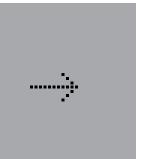
We've built the broadest circuit protection portfolio in the industry. Along the way, we've assembled unparalleled expertise in circuit protection and developed a global footprint that puts our facilities close to our customers and our markets. Together, these defining strengths make us uniquely qualified to objectively recommend the best circuit protection solution for each customer application and work side-by-side with our customers in developing the products of the future.

Ultimately, we help our customers protect their brand reputation—a responsibility that has been the foundation of our business for more than 85 years. I hope you will take a few minutes to learn more about our company and why customers across the globe trust us to apply our expertise and deliver answers for their circuit protection applications. That's the added value you can expect from the industry leader.

Sincerely,

Gordon Hunter

Chairman, President and Chief Executive Officer







# WE PROTECT VIRTUALLY EVERY PRODUCT THAT USES ELECTRICAL ENERGY

LITTELFUSE PRODUCTS ARE VITAL COMPONENTS IN A VARIETY OF APPLICATIONS, FROM CONSUMER ELECTRONICS AND TELECOM CIRCUITS, TO AUTOMOBILES AND INDUSTRIAL EQUIPMENT.

Our products protect devices and business assets against harm caused by short circuits, power surges, electrostatic discharge, lightning, electrical load switching and other electrically-harmful occurrences.



# Consumer Electronics | Telecom | White Goods | Medical Equipment | Lighting | TVSS and Power Supplies | General Electronics

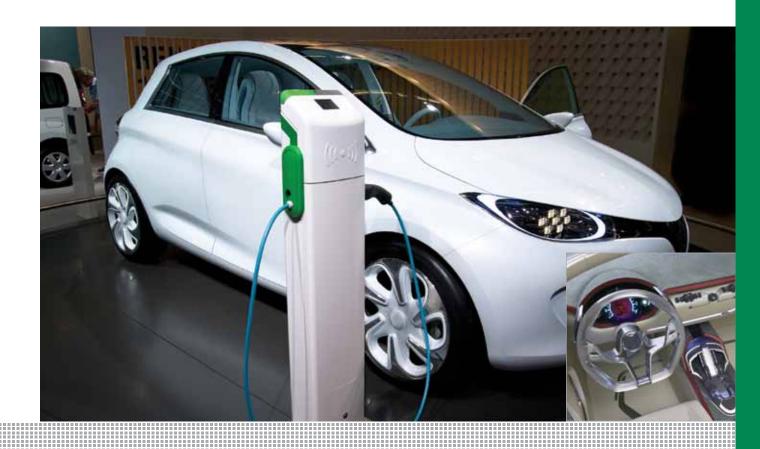
We offer the broadest and deepest portfolio of overvoltage and overcurrent circuit protection products for the electronics industry. From popular consumer electronic devices like LCD TVs, Tablets, smart phones and digital cameras, to home appliances, telecom infrastructure equipment and critical life saving medical equipment, Littelfuse has the right product and the right expertise for virtually any application.

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## **Electronics Key Products:**

Thyristors, TVS Diode Arrays (SPA™), Subminiature and Surface Mount Fuses, Positive Temperature Coefficient Devices (PTCs), Varistors, TVS Diodes, Gas Discharge Tubes (GDTs), PulseGuard® ESD Suppressors, SIDACtor® Devices





# Passenger Automobiles | Agriculture & Construction Equipment | Commercial & Recreational Vehicles | Marine | Aftermarket

Littelfuse has been protecting circuits in automobiles for more than half a century. In fact, many of our products, like blade fuses and bolt fuses, are the industry standard. Across the globe, automakers rely on Littelfuse circuit protection solutions to enhance vehicle safety and reliability, protect sophisticated electronics and meet the growing need for high-current technology in vehicles. We support our products with replacement components in the retail aftermarket and are extending our automotive expertise into the commercial vehicle segment.

### **Automotive Key Products:**

Blade Fuses, Bolt Fuses, MasterFuse, TVS Diodes, Varistors, Hybrid Electric Vehicle Fuses, Cable Fuses, Heavy Duty Electromechanical and Solid-State Switches



# Contractor | MRO | Power Generation | Solar | Industrial Equipment | Marine | Mining

Today's electrical systems require multiple technologies to safeguard equipment and protect critical business assets. Our comprehensive portfolio of electrical circuit protection and control products are used in many applications, including switches, motors, power distribution centers, machine control equipment, marine and land-based generators, heating and cooling systems and solar panels. Our products help customers safely control and distribute power and improve the safety of people and equipment.

### **Electrical Key products:**

Power Fuses, Fuseholders, Varistors, Protection Relays, Generator Controls, Alarm Panels and Custom Power Centers

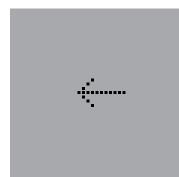




Revolutionary thinking drives our business. We create innovative solutions for the most complex circuit protection needs that frequently become the performance benchmark in the industries they impact.

# WE INNOVATE TO DEVELOP NEXT-GENERATION PRODUCTS

Our ability to innovate has transformed Littelfuse from a fuse manufacturer into the global leader in circuit protection. And with an eye to the future, we continue to invest in research and development, creating new circuit protection solutions that will meet the future needs of our customers in an ever-changing marketplace.



# portfolio of Littelfuse technologies switch and services **SWITCHING**

Our portfolio of products and services is backed by decades OF DESIGN AND MANUFACTURING EXPERTISE, ALONG WITH INDUSTRY LEADING TECHNICAL SUPPORT.

# **TECHNOLOGIES**

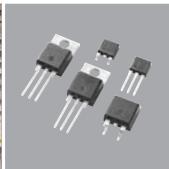
## Switching Thyristors—

Solid-state switches used to control the flow of electrical current in applications, capable of withstanding rated blocking/off-state voltage until triggered to on-state.

## **GLOBAL LAB SERVICES**

We are keeping our leading edge in research and development with our network of global labs. The unique capabilities of our labs include overcurrent, overvoltage, ESD and high-speed datacom and telecom testing, material analysis and specialized testing for new technologies, as well as application performance and regulatory compliance testing.





# **OVERVOLTAGE TECHNOLOGIES (1-6)**

- 1. TVS Diodes—Suppress overvoltage transients such as Electrical Fast Transients (EFT), inductive load switching and lightning in a wide variety of applications in the computer, industrial, telecom and automotive markets.
- 2. Varistors—Multiple forms, from Metal Oxide Varistors (MOVs) that suppress transient voltages to Multi-Layer Varistors (MLVs) designed for applications requiring protection from various transients in computers and handheld devices as well as industrial and automotive applications.

### 3. SIDACtor® Devices-

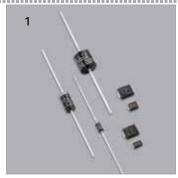
Complete line of protection thyristor products specifically designed to suppress overvoltage transients in a broad range of telecom and datacom applications.

4. Gas Plasma Arrestors (GDTs)—Available in small foot-print leaded and surface mount configurations, Littelfuse GDTs respond fast to transient overvoltage events, reducing the risk of equipment damage.

### 5. TVS Diode Arrays (SPA™)—

Designed specifically to protect analog and digital signal lines from electrostatic discharge (ESD) and other overvoltage transients.

6. PulseGuard® ESD Suppressors—Available in various surface mount and connector array form factors to protect high-speed digital lines without causing signal distortion.





# CUSTOM POWER CENTERS

Our custom-built portable distribution panels and power centers are engineered to withstand the harshest conditions and are fully tested to ensure they meet the most stringent requirements.

# PROTECTION RELAYS, GENERATOR CONTROLS AND MONITORING

Our comprehensive line of electronic and microprocessor based protection relays safeguard equipment and personnel to prevent expensive damage, downtime or injury due to electrical faults.

# HEAVY DUTY SWITCHES

Our heavy duty electromechanical and solid-state switches and accessories for DC electrical systems are highly reliable products for the commercial vehicle industry.

# **ACCESSORIES**

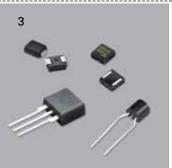
In addition to our broad portfolio of circuit protection technologies, we offer a wide array of accessories for automotive and industrial applications including fuseblocks, fuseholders, fuse pullers and more.

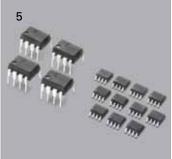


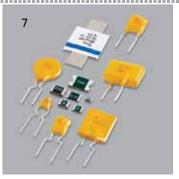


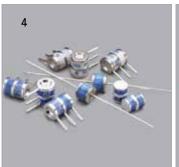


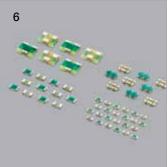














# OVERCURRENT TECHNOLOGIES (7-8)

7. Positive Temperature Coefficient Devices (PTCs)—

Provide resettable overcurrent protection for a wide range of applications.

8. Fuses—Full range including surface mount, axial, glass or ceramic, thin-film or Nano<sup>2®</sup> style, fast-acting or SloBlo®, MINI® and ATO® fuses.

# global application testing capabilities

We are keeping our leading edge in research and development with our network of Global Labs. Here, we design the products and solutions of the future and provide customer application support and testing.

The unique capabilities of our Global Labs include overcurrent, overvoltage, ESD and high-speed datacom and telecom testing, material analysis and specialized testing for new technologies, as well as UL approval, application performance and regulatory compliance testing. Our Global Labs help assure the high performance and reliability of our products, support product and process changes, develop new products and applications, and provide design support and testing as a service for our customers arround the world.

Our partnership-driven approach is why engineers around the world trust us to help them ensure that safety and reliability are designed-in into every product. And because we are not biased toward a particular technology, we answer questions impartially and help to identify the right solution for each application.









Many companies say they are customer focused, but at Littelfuse we live that commitment every day. Since 1927, partnering with Littelfuse has guaranteed our customers the most innovative technologies, industry-leading expertise and access to our global pool of resources.

# WE PARTNER WITH LEADING COMPANIES AROUND THE WORLD

Our team of advanced engineers applies our 85 years of circuit protection expertise to creating custom solutions for customers in the early stages of next-generation product development, helping customers update an existing product or improving the safety of a facility.

HELPING OUR CUSTOMERS DEVELOP THE PRODUCTS AND APPLICATIONS OF THE FUTURE—THAT'S THE VALUE ONLY LITTELFUSE CAN PROVIDE.



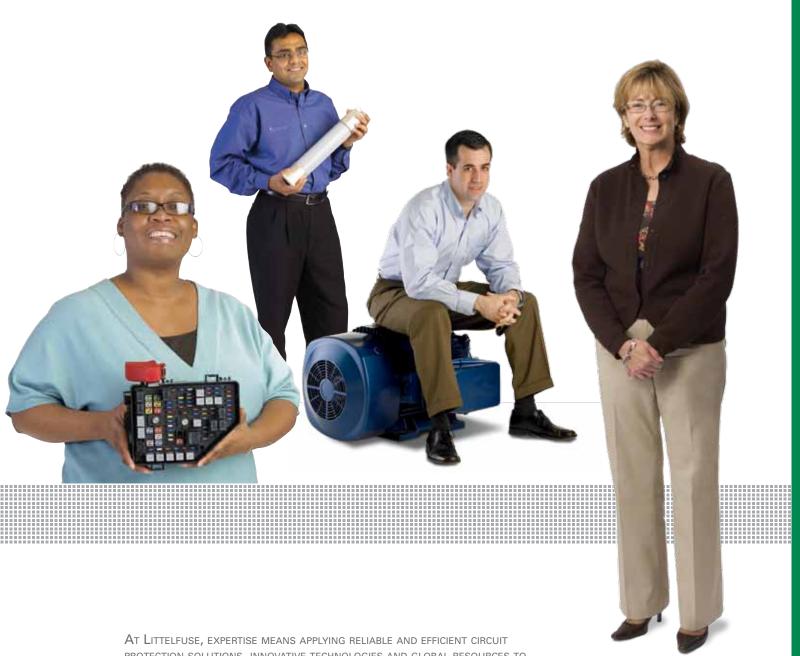




# global markets, global impact

At Littelfuse, brilliant ideas are sparked every day across the globe, from Boston to Bremen to Shanghai. We have expanded our global footprint throughout North America, Europe and the fast-growing Asia Pacific region to include locations that are close to our customers and their supply chains, increasing efficiency and providing localized resources.

Together, our excellent global reputation, expertise in circuit protection, ongoing innovation, broad product portfolio and partnership approach put us in an unmatched position to be a single-source circuit protection provider for customers around the corner...or around the world.

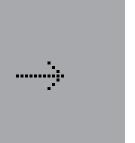


AT LITTELFUSE, EXPERTISE MEANS APPLYING RELIABLE AND EFFICIENT CIRCUIT PROTECTION SOLUTIONS, INNOVATIVE TECHNOLOGIES AND GLOBAL RESOURCES TO EVERY CIRCUIT PROTECTION CHALLENGE. IT MEANS A GLOBAL NETWORK OF RESEARCH TEAMS THAT FOCUS ON PRODUCT DEVELOPMENT AND SUPPORT, DESIGN-IN PROGRAMS AND APPLICATIONS TESTING IN OUR GLOBAL LABS LOCATED IN CHINA, GERMANY, JAPAN, MEXICO, PHILIPPINES AND THE USA.

# **WE APPLY EXPERTISE**

We also take our responsibility of protecting the world around us very seriously by developing products that are lead-free and RoHS (restriction of the use of hazardous substances) compliant. Our ISO 14000 certification is evidence of our dedication to preserving the environment and meeting stringent sustainability requirements.





CUSTOMERS LOOK TO LITTELFUSE FOR ANSWERS TO THEIR MOST COMPLEX CIRCUIT PROTECTION QUESTIONS. OUR INNOVATION, PROVEN TECHNICAL EXPERTISE, COMPREHENSIVE PORTFOLIO OF TECHNOLOGIES AND GLOBAL RESOURCES ARE THE TOOLS THAT ENABLE US TO PROVIDE OBJECTIVE, COMPREHENSIVE SOLUTIONS FOR EACH CUSTOMER'S UNIQUE APPLICATION.

# **WE DELIVER ANSWERS**

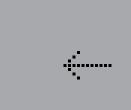
IT IS THIS PASSIONATE COMMITMENT TO PARTNERSHIP AND RESPONSIVENESS THAT WILL CONTINUE TO DRIVE OUR SUCCESS...AND YOURS.



Partnering, innovating and protecting—three key reasons leading companies around the world choose Littelfuse as their partner of choice in circuit protection.

# WE ARE THE #1 CIRCUIT PROTECTION BRAND IN THE WORLD

For more information or to contact a Littelfuse representative in your area, please visit **littelfuse.com** 



# **Littelfuse Worldwide Locations**

Brazil

Canada

China

Denmark

England

Germany

India

Japan

Mexico

Philippines

Singapore

South Korea

Taiwan

USA

# **Littelfuse Global Lab Locations**

China

Germany

Japan

Mexico

Philippines

USA



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