Founded in 1927, Littelfuse has evolved to be the No. 1 circuit protection brand in the world with well-established and growing platforms in power control and sensing technologies. Today, we offer the industry’s most diverse and extensive portfolio of products – fuses, semiconductors, polymers, ceramics, relays, sensors and more – serving the electronics, automotive and industrial markets. Each is manufactured to exacting standards of quality and backed by an unwavering commitment to technical support and customer service.

We are a global, $1 billion company with more than 10,000 employees in over 40 locations throughout the Americas, Europe and Asia. Through design, engineering and technical expertise, we partner with you to solve complex problems and deliver business results wherever electrical energy is used.

Behind our long history of innovation and customer-first culture, we collaborate with you to make products:

- Safer
- More Reliable
- Energy Efficient
- More Comfortable and Convenient
- Compliant with Global Regulations

Wherever electrical energy is used, Littelfuse is there.

Our global vision, global team and global leadership are focused on three categories: **Protect, Control and Sense**. Collectively, they provide the strategic foundation to deliver innovations that help bolster your business and align with global megatrends.

- Safety
- Connectivity – Internet of Things (IoT)
- Energy Efficiency
Today’s complex, sophisticated, products – and the people who use them – require greater protection against electrostatic discharge, power surges, short circuits, voltage spikes, arc flash and other harmful occurrences. Our strategy to develop new products that handle more power in smaller packages provides innovative circuit protection solutions for you.

<table>
<thead>
<tr>
<th>APPLICATIONS</th>
<th>KEY PRODUCTS</th>
</tr>
</thead>
<tbody>
<tr>
<td> Smartphones</td>
<td> Varistors</td>
</tr>
<tr>
<td> Tablets/Notebooks/Desktops</td>
<td> SIDACtor® Protection Thyristors</td>
</tr>
<tr>
<td> High Definition A/V</td>
<td> Surge Protection Modules</td>
</tr>
<tr>
<td> Security Cameras, Surveillance Systems</td>
<td> High Speed Fuses</td>
</tr>
<tr>
<td> Wearable Devices</td>
<td> Solar Fuses</td>
</tr>
<tr>
<td> Medical Equipment</td>
<td> Power Fuses</td>
</tr>
<tr>
<td> Automotive Electronics &amp; Electrical Systems</td>
<td> Arc Flash Relays</td>
</tr>
<tr>
<td> Electric Vehicle &amp; Hybrid Electric Vehicle Battery Systems</td>
<td> Ground Fault Relays</td>
</tr>
<tr>
<td></td>
<td> Industrial Shock-Block™</td>
</tr>
<tr>
<td></td>
<td> TVS Diode Arrays (SPA® Diodes)</td>
</tr>
<tr>
<td></td>
<td> Through-hole and Surface Mount Fuses</td>
</tr>
<tr>
<td></td>
<td> Fuse Holders</td>
</tr>
<tr>
<td></td>
<td> TVS Diodes</td>
</tr>
<tr>
<td></td>
<td> Positive Temperature Coefficient Devices (PTCs)</td>
</tr>
<tr>
<td></td>
<td> Polymer ESD Suppressors</td>
</tr>
<tr>
<td></td>
<td> Gas Discharge Tubes (GDTs)</td>
</tr>
</tbody>
</table>

PROTECT
To safely and efficiently control power in a wide range of applications, we offer dependable products that mitigate equipment damage, minimize electrical hazards and improve productivity, consolidate inventory, and reduce footprint. Our control products help reduce costs resulting from fault damage, miscalibration and compliance citations.

**APPLICATIONS**
- Automotive Electronics
- Home/Building Automation
- HVAC Systems
- Manufacturing Controls
- Switches
- Motors and Pumps

**KEY PRODUCTS**
- Ignition Systems
- Power Distribution Blocks
- Protection Relays
- Timers
- Pump Controllers
- Power Distribution Centers
- Alarm Panels/Coordination Panels
- Electronic Controls
- Switching Thyristors
- IGBT & Rectifier Diode Modules
- Schottky & SiC Schottky Diodes
- Ultrafast Recovery Rectifiers
Around the world, sensing technologies are increasingly used to support complex electronic systems. We have developed a broad platform of technologies that sense proximity, flow, speed and fluid level to help improve product performance, comfort, convenience and safety.

### SENSE

#### APPLICATIONS
- Refrigerator & Garage Doors
- Dishwashers
- Coffee Makers
- Washing Machines
- Vacuum Cleaners
- Fitness Equipment
- Water Heaters
- Hot Tubs
- Vending Machines
- Smoke Alarms
- Smart Meters

#### KEY PRODUCTS
- Thermostats
- HVAC Controls
- Door & Window Locks & Alarms
- Server & Networking Equipment
- Seat Belts
- Suspension & Braking Systems
- Lift Gate & Door Open/Close Systems
- Selective Catalytic Reduction (SCR), fluid level & quality

- Magnetic Actuators
- Speed & Position Sensors
- Arc Detecting Point Sensors
- Fluid Level Sensors
- Solar & Ambient Light Sensors
- Mechanically Operated Position Sensors
- Reed Switches, Sensors & Relays
- Hall Effect Sensors
- Pulsed Waveguide Level Sensors (PWG™)
Our ever-expanding footprint includes a network of 15 global labs where we combine comprehensive testing capabilities with our consultative approach. We design next-generation products and solutions, while also providing application support and testing for you and your customers.

Littelfuse is a trusted partner to engineers worldwide who seek our technical expertise to accurately conduct and analyze test results. As part of our robust circuit protection testing, we simulate harsh environments and analyze sensing solutions to assure high performance, reliability, safety and regulatory compliance.

**PRIMARY TESTING CAPABILITIES**
- Overcurrent
- Overvoltage
- ESD
- High-Speed Datacom & Telecom
- Thyristor-Specific
- Temperature
- Vibration
- Humidity
- Failure Analysis
- Material Analysis
- Application Performance
- Regulatory Compliance

**LOCATION** | **TESTING CAPABILITIES**
--- | ---
Champaign, Illinois, USA | High Power Lab
Fremont, California, USA | Materials Lab, Product Evaluation, Reliability and Application Lab
Lake Mills, Wisconsin, USA | Product Evaluation, Reliability and Application Lab
Mount Prospect, Illinois, USA | Semiconductors Lab, Materials Lab, Application Lab
Matamoros, Mexico | Product Evaluation and Reliability Lab
Piedras Negras, Mexico | Materials Lab, Product Evaluation, Reliability and Application Lab
Bremen, Germany | Product Evaluation, Reliability and Application Lab
Legnago (Verona), Italy | Product Evaluation, Reliability and Application Lab
Kaunas, Lithuania | Product Evaluation, Reliability and Application Lab
Dongguan, China | Product Evaluation, Reliability, Application Lab and UL-Certified Testing Facility
Shanghai, China | High Power Lab Materials Lab, Product Evaluation, Reliability and Application Lab, Primarily for PPTC, UL and TUV Certified Testing Facility
Suzhou, China | Materials Lab, Product Evaluation, Reliability Lab
Wuxi, China | Semiconductor Lab, Materials Lab
Tsukuba, Japan | Materials Lab, Product Evaluation, Reliability and Application Lab, UL-Certified Testing Facility
Lipa City, Philippines | Materials Lab, Product Evaluation, Reliability and Application Lab
PARTNERS FOR SUCCESS

Working with Littelfuse, you have access to dedicated application engineers who partner with you to provide design consultation, schedule testing, and confidentially evaluate and present test results. Our experts deliver solutions to today’s challenges and anticipate tomorrow’s needs for your business.

- High Power Lab – Full-service lab primarily for products requiring short circuit tests up to 50kA; fully rated at direct current for various time constants.
- Product Evaluation, Reliability and Application Labs – Ideally suited for product reliability and evaluation tests; accommodates product development/operations support validations, high current DC testing, environmental testing, regulatory compliance and failure analysis.
- Semiconductor Application Lab – Ideally suited for semiconductor product testing; provides new product and process validations; customer application testing.
- Materials Lab – Ideally suited for material characterization and selection; incoming inspection; in-process evaluation; failure analysis.
Our extensive product portfolio is backed by decades of design and manufacturing expertise, along with industry leading technical support, making Littelfuse an unmatched single-source provider, whether your business is around the corner . . . or around the world.

**TVS DIODES**
Suppress overvoltage transients, such as Electrical Fast Transients (EFT), inductive load switching and lightning in a wide variety of applications for the computer, industrial, telecom and automotive markets.

**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.

**FUSES**
We have the broadest and most innovative selection of fuses to serve nearly any application. Our deep knowledge of circuit protection allows us to provide solutions for industrial power, automotive and electronic equipment. These technologies range from high speed fuses, cartridge fuses, medium voltage fuses, surface mount to military grade fuses.

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

**POLYMER ESD SUPPRESSORS**
Available in various surface mount and connector array form factors to protect high-speed digital lines without causing signal distortion.

**GAS DISCHARGE TUBES (GDTs)**
Available in small foot-print, leaded and surface mount configurations, Littelfuse GDTs respond fast to transient overvoltage events. They feature high insulation resistance plus low capacitance and leakage, reducing the risk of equipment damage.

**TVS DIODE ARRAYS (SPA®)**
Designed specifically to protect analog and digital signal lines from electrostatic discharge (ESD) and other overvoltage transients.

**POSITIVE TEMPERATURE COEFFICIENT (PTC) DEVICES**
Littelfuse PolySwitch® and POLY-FUSE® devices are Polymeric Positive Temperature Coefficient (PPTC) devices which offer a resettable overcurrent protection alternative, thereby reducing warranty, service and repair costs. Ideal for situations where frequent overcurrent conditions occur or constant uptime is required.

**MAGNETIC SENSORS AND REED SWITCHES**
Littelfuse is a global leader in providing magnetic sensing solutions. Our selection of magnetic sensors includes reed switches, reed sensors, Hall effect sensors, and reed relays, as well as bare and packaged magnetic actuators.
PROTECTION RELAYS & CONTROLS
Our comprehensive line of electronic- and microprocessor-based protection relays and controls safeguard equipment and personnel to prevent expensive damage, downtime or injury due to electrical faults.

AUTOMOTIVE SENSORS
With sensing capabilities for proximity, flow, speed, direction, rotation and fluid level, we offer a range of sensors to help improve product safety, reliability and performance. We also provide custom sensing solutions to meet evolving industry needs across a variety of markets.

TIME DELAY RELAYS
Our offering is the broadest in the industry. Our electromechanical and solid-state time delay relays are robust products used in applications from HVAC, tower and lighting, vending and other OEM applications.

POWER DISTRIBUTION AND SWITCHING
Our heavy duty power distribution modules, electromechanical and solid-state switches and relays for DC electrical systems are highly reliable products for the commercial vehicle industry.

POWER SEMICONDUCTORS
Power semiconductors are discrete or multi-chip switching devices including IGBTs, Ignition IGBTs, and Thyristor technology – intended for high current or high voltage power conversion applications. Our innovative Silicon Carbide-based power semiconductors enable breakthrough advances in thermal and electrical efficiency.

FUSE HOLDERS AND ACCESSORIES
In addition to our broad portfolio of technologies, we offer a wide array of accessories for automotive and industrial applications, including fuse blocks, holders, fuse pullers and more.
At Littelfuse, decades of creating highly reliable, innovative products is just the beginning. Every day, it’s our 10,000+ employees who make the difference for your business. They listen to your needs and understand your challenges. They use their knowledge and expertise to develop the best solutions and solve your problems. This customer-first approach is at the heart of our company-wide culture that drives us to build long-lasting relationships and exceed expectations.

QUALITY AND SERVICE
Littelfuse is firmly committed to manufacturing quality products at a competitive price and providing you with exceptional customer service and technical support. We strive to exceed your expectations every day. In support of this commitment, we:

- Build quality into our products and services, striving for zero defects in everything we do, thereby reducing cost and increasing your total satisfaction.
- Encourage quality awareness and quality performance in all associates through management leadership.
- Promote the participation of all associates in making individual contributions to the quality improvement process.
- Partner with you from design through development to deliver solutions that help you overcome challenges and meet your needs.
- Develop relationships with suppliers who consistently demonstrate their ability to fulfill quality, price and delivery objectives that are mutually beneficial.

To further support your needs, Littelfuse offers a wealth of technical information online at littelfuse.com. Visit our Technical Resources section to:

- Download datasheets, product manuals, CAD drawings, and more from our vast library of technical documents.
- Access online design tools, tutorials, demos, videos, catalogs, mobile apps, and other helpful information.
- Browse our Technical Centers with the latest on Ceramic, Polymers and Fuses; Commercial Vehicle Products; POWR-GARD® fuses; Relays and Controls; Semiconductors; and Sensors.
- Reference a wealth of application knowledge and experience in our Application Design Center.
Critical to our sustained growth and success, we are committed to continuous improvement in our products, processes and people. We have embraced award-winning lean enterprise initiatives as the foundation of our operating structure and these principles are core to our culture. Through continuous organizational improvements, we add more value to your business. Our ongoing investments in lean initiatives help to improve productivity, product quality and equipment performance, as well as reduce lead times and inventory. It is our mission to continuously increase value for you and earn your trust as your global supplier of choice.