

# BOURNS®



## PRODUCT PROFILE

Automotive Solutions  
Circuit Protection  
Semiconductors

Custom & Standard Magnetics  
Resistive Products  
Sensors & Controls

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# Custom Automotive Sensors

## FEATURES

- Contacting: resistive
- Non-contacting: VR, Hall effect, xMR, inductive
- Interfaces: analog, PWM, SENT, SPI, CAN, PSIS
- Extensive simulation tools
- Global engineering, testing, manufacturing, and sales support
- All sites are IATF 16949 and ISO 26262 compliant
- Innovative & cost-effective solutions

## Types Available

- Powertrain speed & position
- Wheel speed
- Chassis level
- Fuel level
- Brake wear
- Pedal position
- Steering torque & angle
- Throttle position
- Motor position & phase current sensors



## APPLICATIONS

- ABS wheel speed
- Accelerator pedal
- Electric power steering
- Brake pedal module
- Brake wear
- Chassis level
- Electric park brake
- Fuel tank level
- Steer-by-wire
- Throttle position
- Transmission position
- Transmission speed
- Transfer case position
- Motor position
- Disconnect unit position

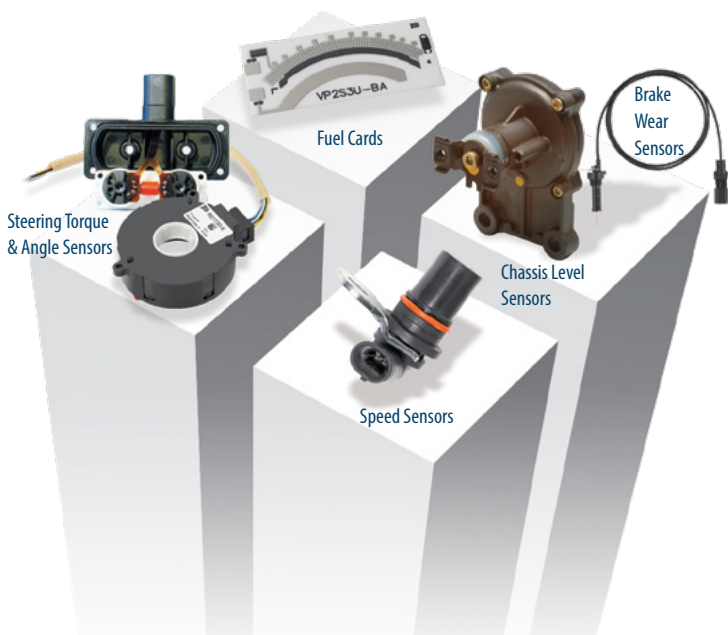
# Custom Commercial Vehicle Sensors

## FEATURES

- Contacting: resistive
- Non-contacting: VR, Hall effect, xMR, inductive
- Interfaces: analog, PWM, SENT, SPI, CAN, PSIS
- Extensive simulation tools
- Global engineering, testing, manufacturing, and sales support
- All sites are IATF 16949 and ISO 26262 compliant
- Innovative & cost-effective solutions

## Types Available

- Powertrain speed & position
- Brake wear
- Chassis level
- Ride height
- Steering torque & angle
- Fuel level
- Pedal position



## APPLICATIONS

- ABS wheel speed
- Accelerator pedal
- Electric power steering
- Brake pedal module
- Brake wear
- Chassis level
- Electric park brake
- Fuel tank level
- Steer-by-wire
- Throttle position
- Transmission position
- Transmission speed
- Transfer case position
- Motor position
- Disconnect unit position

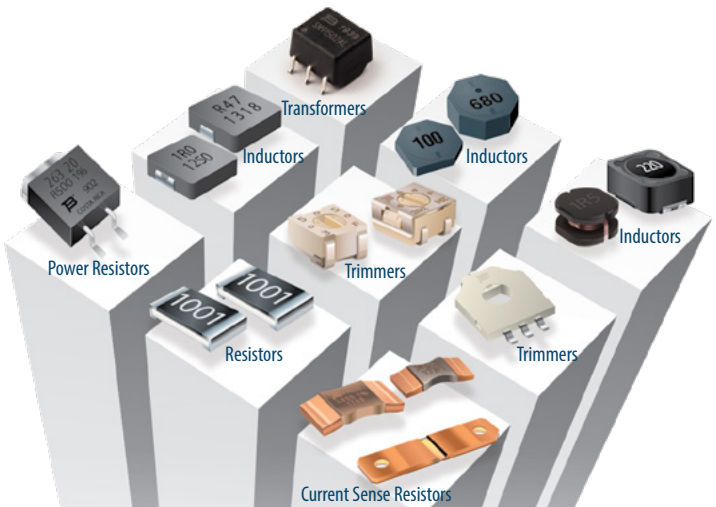
# Automotive Grade Passive Components

## FEATURES

- AEC-Q200 compliant
- IATF 16949 factory produced
- Automotive temperature capable
- High quality and reputation

## Types Available

- Inductors
- Transformers
- Power resistors
- Chip resistors
- Power resistors
- Current sense resistors
- EB-welded shunts
- Current sense resistors
- Trimpot® trimming potentiometers



## APPLICATIONS

- Battery management
- Cameras
- DC-DC & AC-DC power supplies
- Diagnostic tools
- Electronic Control Modules (ECU)
- Infotainment, telematics, navigation, connected cars
- Instrument clusters
- Lighting
- Networking
- OBCs (On Board Chargers)
- Start-stop

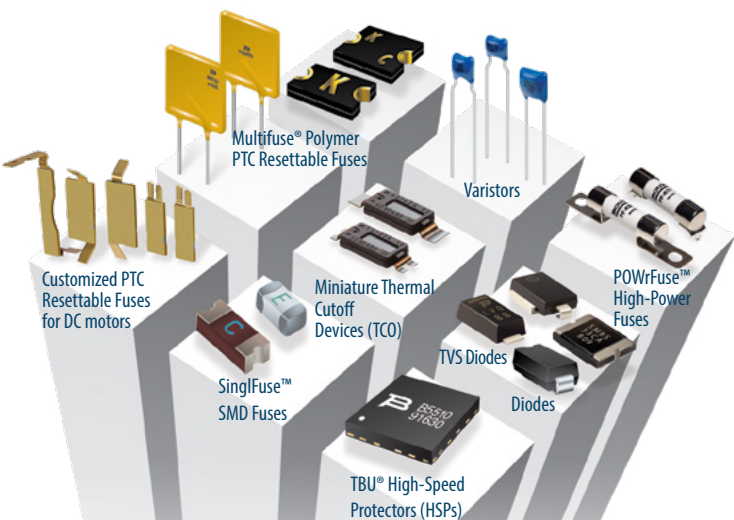
# Automotive Grade Circuit Protection

## FEATURES

- Overcurrent, overvoltage and overtemperature solutions for automotive and other applications
- IATF 16949 quality system
- Resettable PPTCs suitable for application temperatures up to 125 °C
- SinglFuse™ SMD fuses suitable for application temperatures up to 150 °C
- AEC-Q101 compliant diodes
- AEC-Q200 and ISO 8820 fuses
- Wide range of current ratings
- Dedicated automotive CP team
- Load dump and transient protection

## Types Available

- Multifuse® PPTC resettable fuses
- SinglFuse™ SMD fuses
- POWrFuse™ high-power fuses
- TBU® high-speed protectors
- Metal Oxide Varistors (MOVs)
- ChipGuard® MLVs
- Diodes
- LED shunt protectors
- Miniature Thermal Cutoff Devices (TCO)



## APPLICATIONS

- BMS (Battery Management Systems)
- Car alarm systems
- Cooling & HVAC systems
- Electronic Control Unit (ECU) input/output protection
- GPS shark fin antennas
- Infotainment, telematics and navigation input/output protection
- Load dump and other transient voltage protection
- Other DC motor applications
- Powerbus (mode protection) applications
- Power steering motors
- Seat adjustment motors
- Sunroof activation motors
- Window regulators
- Heaters (seat & steering)
- EV chargers (adapter, connector, inlet)
- Lighting (head, rear, interior)



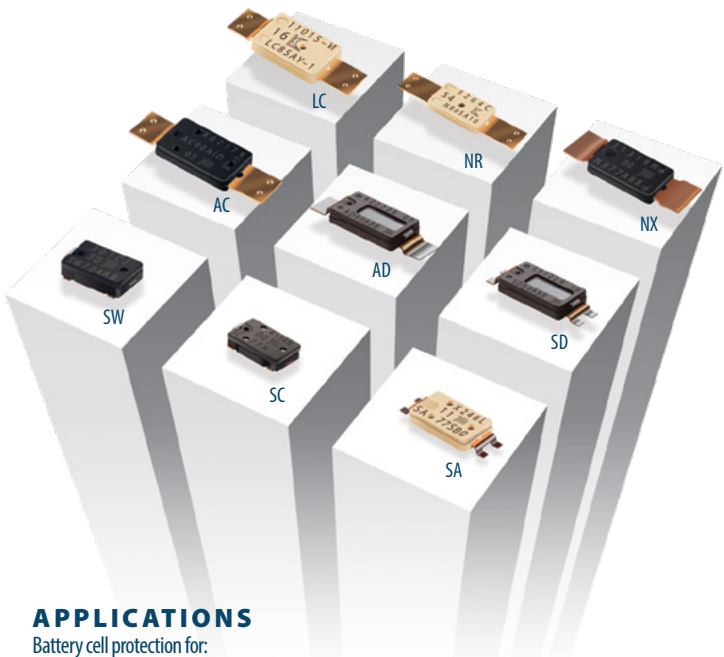
# Mini-Breaker Thermal Cutoff Devices (TCOs)

## FEATURES

- Overtemperature and overcurrent protection in a single device
- Resettable protection
- Wide range of temperature options: 55 °C ~ 150 °C
- Low resistance
- Small & thin size for compact package design
- High corrosion resistance
- Surface mount & weldable axial leads
- AEC-Q200-equivalent compliant\* models available
- RoHS compliant\*\*

## Types Available

- Weldable axial series (LC, HC, NR, NX, AC, AD)
- Surface mount series (SA, SC, SW, SE, SD)
- Automotive grade series (AD, SD)



## APPLICATIONS

Battery cell protection for:

- Notebook PC battery cells
- Tablet & smartphone battery cells
- Wearable & VR/AR battery cells
- USB-C cables
- Automotive (Heaters, EV Charger, PDU, ECU, BLDC)
- TWS wireless charging coils
- E-cigs
- Lighting
- Home thermostats
- Power supply units
- 12 - 48 VDC circuits
- Small appliances

\*Meets Bourns internal AEC-Q200 equivalent test plan.

\*\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.



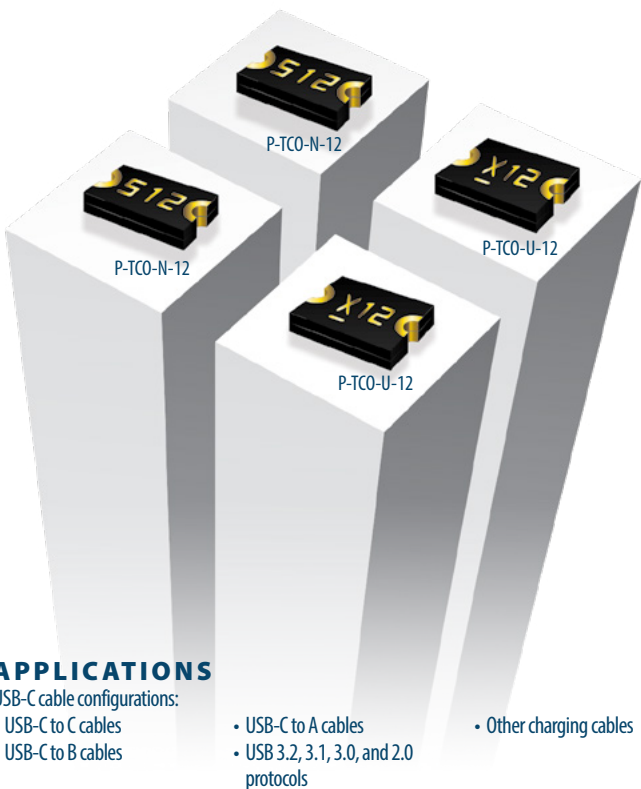
# Polymeric Thermal Cutoff Devices (P-TCO)

## FEATURES

- Resettable thermal sensor for overheating and overcurrent protection
- Effective overtemperature protection from heat generated in charging cable connectors
- Compact, space-saving 1206 & 1210 footprints
- Low profile and symmetrical design
- Small sizes enable fast response time to thermal runaway events
- Ultra-low resistance
- RoHS compliant\*

## Types Available

- Surface mount (1206, 1210)



## APPLICATIONS

USB-C cable configurations:

- USB-C to C cables
- USB-C to A cables
- USB 3.2, 3.1, 3.0, and 2.0 protocols
- Other charging cables

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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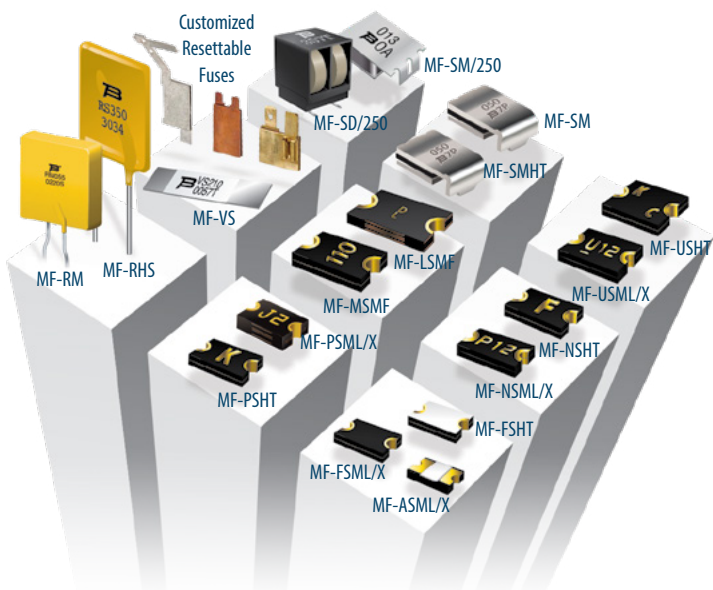
# MultiFuse® PPTC Resettable Fuses

## FEATURES

- Agency recognition - UL, CSA & TÜV
- Operating voltages from 6 to 72 VDC
- Hold currents from 50 mA to 13 A
- Low resistance model minimizes power loss
- High temperature model operates up to +125 °C
- Telecom model assists in GR-1089 and ITU-T lightning and power fault testings
- Model MF-RM is tailored for AC lines up to 265 V<sub>rms</sub>
- AEC-Q200 compliant models available
- RoHS compliant\* & halogen free\*\*

## Types Available

- Radial-leaded through-hole
- Surface mount (0402, 0603, 0805, 1206, 1210, 1812, 2018, 2920 & 3425)
- Axial-leaded battery strap
- Unencapsulated chip/disc
- Customized solutions for DC motors



## APPLICATIONS

- Batteries
- Charging ports
- Computers
- DC motors
- Game consoles and toys
- Industrial controls
- Medical devices\*\*\*  
(excluding critical life support)
- Point of Sale equipment
- Portable electronics
- Security systems
- Telecommunications

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

\*\*\*Bourns® products have not been designed for and are not intended for use in "lifesaving," "life-critical" or "life-sustaining" applications nor any other applications where failure or malfunction of the Bourns® product may result in personal injury or death. See Legal Disclaimer Notice [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf)

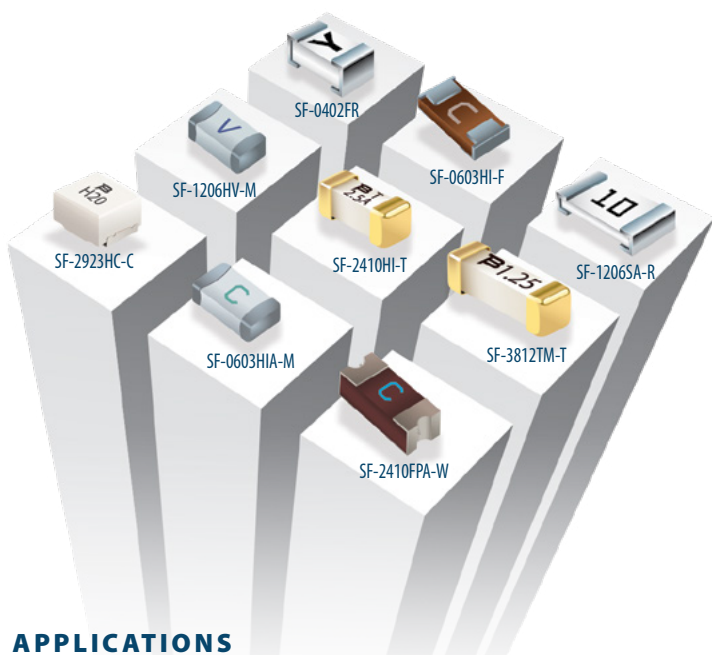
# SinglFuse™ SMD Fuses

## FEATURES

- UL recognized & IEC compliant
- Seven technologies offer wide range of fusing speeds, current ratings, voltage ratings, interrupt ratings and footprint sizes
- SF-3812TM-T aids compliance with ITU-T, IEC 61000-4-5, and GR 1089
- AEC-Q200 compliant models available
- RoHS compliant\* and halogen free\*\*

## Types Available

- Fast-acting
- Slow blow/time lag
- High inrush
- 6 available footprints:  
0402 (1005 metric)  
0603 (1608 metric)  
1206 (3216 metric)  
2410 (6125 metric)  
2923 (7358 metric)  
3812 (10030 metric)



## APPLICATIONS

- Automotive\*\*\*
- Battery chargers
- Battery Management Systems (BMS)
- Wireless headsets
- Cellphones
- Digital cameras
- Disk drives
- DVD players
- LCD monitors
- Industrial controllers
- Portable memory
- PDAs
- Rechargeable battery packs
- Set-top boxes
- Telecommunication requiring surge protection

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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\*\*\*Meets Bourns internal AEC-Q200 equivalent test plan.

# Ceramic PTC Protectors

## FEATURES

- Aids compliance with:
  - ITU-T K.20/21/45
  - Telcordia GR-1089-CORE
  - UL 60950, 3rd Edition
- UL recognized
- Matching available with narrow resistance tolerance
- Alternative tolerances and resistances upon request
- Overload inrush-current limiting
- RoHS compliant\*

## Types Available

- Radial-leaded through-hole
- Surface mount
- Dual-packaged surface mount
- Unencapsulated disk or chip



## APPLICATIONS

Overcurrent protection for telecom applications:

- Access equipment (POTS)
- Central Office (CO)
- Customer Premises Equipment (CPE)
- PABX protection
- Set-top boxes
- VOIP protection
- xDSL and integrated linecards

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

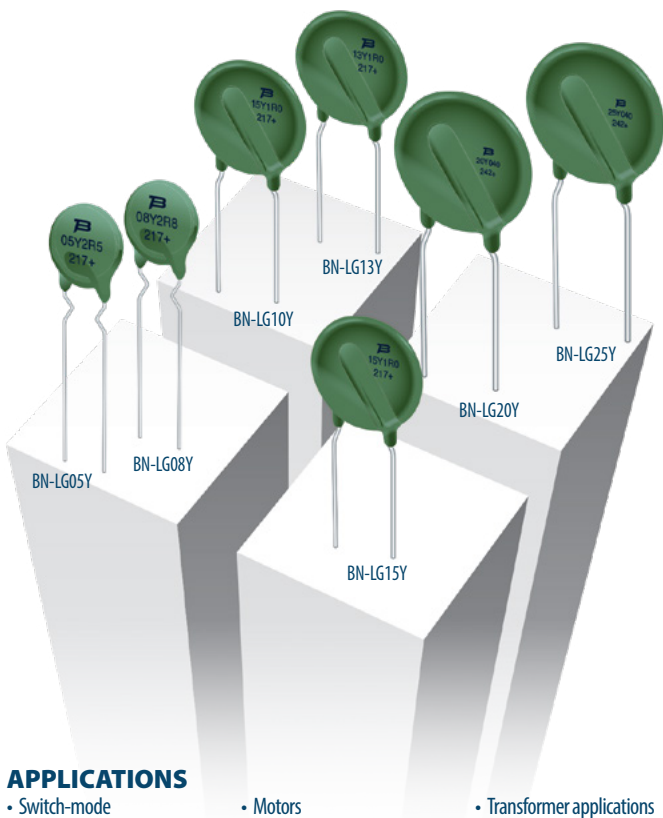
# POWrTherm™ NTC Thermistors

## FEATURES

- Disk diameter: 5~25 mm (7 series)
- $R_{25}$ : 0.7 ~ 220  $\Omega$
- Lead type: kinked and straight
- Flame retardant coating material to UL 94V-0
- Agency recognition: cUL and TÜV
- RoHS compliant\* and halogen free\*\*

## Types Available

- Through-hole



## APPLICATIONS

- Switch-mode power supplies
- Motors
- Amplifiers
- Transformer applications

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

# POW'rFuse™ High-Power Fuses

## FEATURES

- UL 248 & IEC 60269 standards compliant
- ISO 8820 automotive grade models available
- Wide range of current, voltage, and interrupting ratings and fusing characteristics
- Voltage rating up to 1000 VDC
- Current rating up to 400 A
- Interrupting rating up to 150 kA
- Four mounting options:  
Axial lead, ferrule, bolt and PCB mounting
- Fusing speeds comply with specific  
UL 248, IEC 60269-6 & ISO 8820-8 definitions
- RoHS compliant\* and halogen free\*\*

## Types Available

- Electric vehicle
- Industrial
- Photovoltaic
- Semiconductor
- Telecom
- Data center



## APPLICATIONS

- Battery systems
- Electric vehicles  
(certain models)
- DC-DC converters
- Power supplies
- Solar power
- EV chargers
- Industrial controls
- Telecom systems
- Power inverters
- Data centers
- Semiconductor equipment

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

# Fuse Blocks

## FEATURES

- Formerly Riedon™ products
- RoHS compliant\*

### FB/CFB Series:

- Designed for 300 VAC UL 248-15 listed
- Class T fuses (up to 400 amps) included with select models
- Touch-safe translucent acrylic shield
- 750 VDC dielectric strength (terminal block to base)
- Bare wire or ring/spade termination options

### NFB/NFB2 Series:

- Designed for ANL (forklift) type fuses up to 500 A
- Touch-safe translucent acrylic shield
- 750 VDC dielectric strength (terminal block to base)
- Ring/spade termination option available

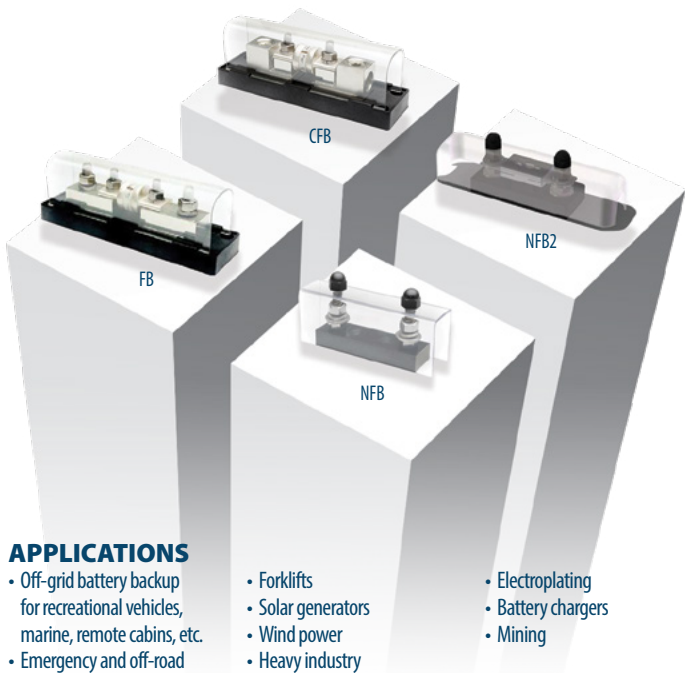
## Types Available

### Class T Fuse Blocks

- CFB
- FB

### ANL Fuse Blocks

- NFB
- NFB2



## APPLICATIONS

- Off-grid battery backup for recreational vehicles, marine, remote cabins, etc.
- Emergency and off-road vehicle accessories (winches, lighting, etc.)
- Forklifts
- Solar generators
- Wind power
- Heavy industry
- Electroplating
- Battery chargers
- Mining

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.



# Central Office & Outside Plant Products

## FEATURES

- Surge protection
- Modular units
- UL listed
- RUS and Telcordia compliant

## Types Available

- Protection – 5-pin modules:
  - 3-type overvoltage only
  - 4-type overvoltage and sneak current
- Station protection
- Digital Subscriber Line (DSL) products
- Protection connector blocks
- Terminal blocks



## APPLICATIONS

- Building entrances
- Central Office (CO)
- Customer premises
- Industrial process control
- Outside Plant (OSP)
- Military premises
- Telecommunications
- Telephony
- Transportation
- Voice, data, network lines

# Surge Protective Devices

## FEATURES

### AC Surge Protective Devices

- Pluggable
- DIN rail type
- 50 kA - 100 kA rated

### DC Surge Protective Devices

- 12 V, 24 V, 48 V, 75 V or 110 VDC power

### Signal & Data Line Protective Devices

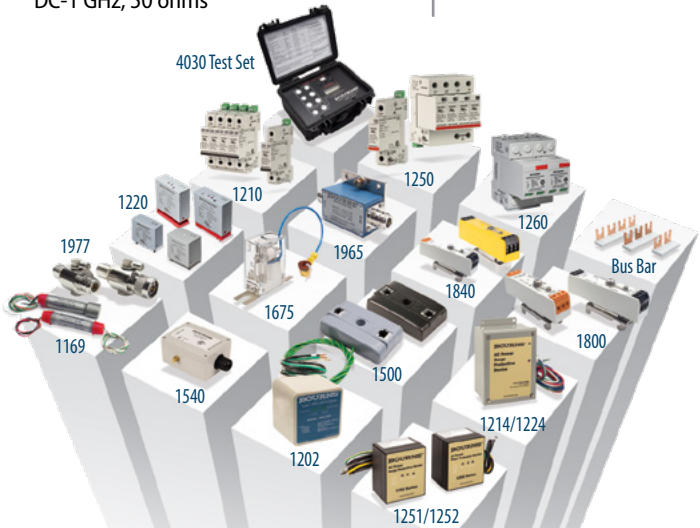
- Gigabit Ethernet
- T1/E1 applications
- RS-232, RS-422, RS-423, RS-485, 20 mA and 50 mA instrument loops

### Coaxial Surge Protective Devices

- RF applications from DC-1 GHz, 50 ohms

## Types Available

- 1-, 2-, 3- & 4-pole
- DIN rail mountable
- N-type connector
- F-type connector
- Residential enclosure
- Commercial enclosure



## APPLICATIONS

- 2-way base stations
- Antennas
- Broadband
- CATV
- Cellular
- Commercial enclosures
- Ethernet
- GPS
- Microwave RF systems
- Residential enclosures
- Satellite video
- Transceivers
- UHF, VHF transmitters

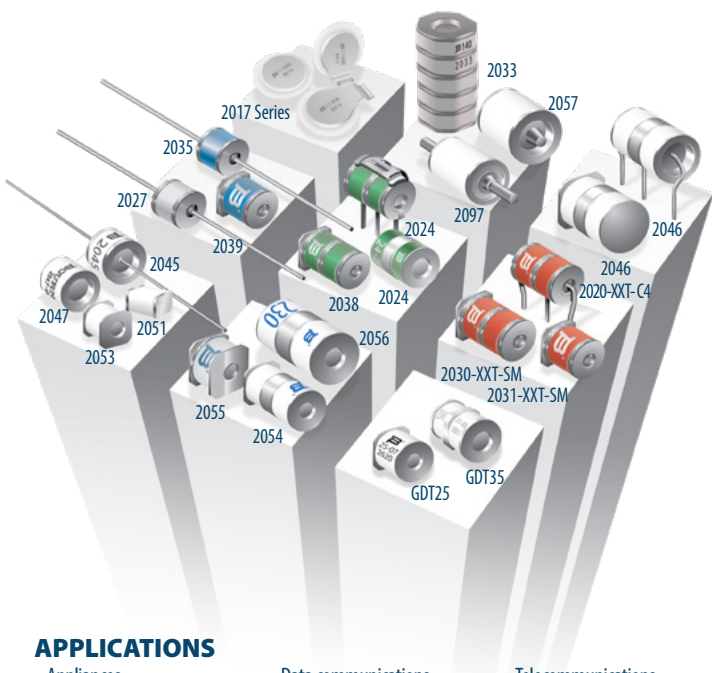
# Gas Discharge Tube (GDT) Surge Arrestors

## FEATURES

- 75 - 7200 V operating voltages
- 8/20  $\mu$ s surge current ratings of 2 kA - 100 kA
- Low capacitance
- Through-hole & surface mount packages available
- Switch-grade fail-short options
- Fast GDT versions available
- Low overshoot hybrid designs
- UL, Telcordia, REA, IEEE, ITU-T, and IEC recognition
- AEC-Q200 compliant models available
- RoHS compliant\*

## Types Available

- Light duty
- Medium duty
- Heavy duty
- High voltage
- High current
- FLAT® technology
- Hybrid
- Powerline



## APPLICATIONS

- Appliances
- CATV/broadband
- Consumer electronics
- Data communications
- Industrial power ports
- Industrial and process controls
- Telecommunications
- Transportation signaling

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

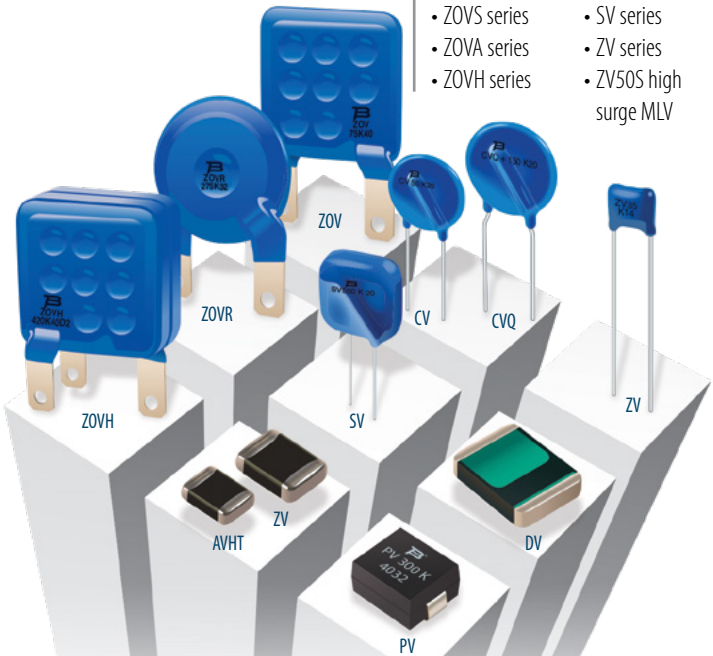
# Varistor Products

## FEATURES

- Metal oxide & multilayer designs
- Varistor sizes 5 - 60 mm
- Wide range of voltage ratings
- Wide range of current ratings
- UL recognized
- Temperature ratings up to +150 °C
- Wide range of customizable options
- AEC-Q200 compliant models available (AV, AVHT, ZV, ZVHT, MV, OV)
- RoHS compliant\*

## Types Available

- |                           |                        |
|---------------------------|------------------------|
| <b>Automotive Grade:</b>  | <b>Low Voltage:</b>    |
| • AV/AVHT series          | • ZV/ZVHT series       |
| • MV dual function series | • ZVE series           |
| • OV dual function series | • ZVX series           |
| • ZV/ZVHT series          |                        |
| <b>High Energy:</b>       | <b>Medium Voltage:</b> |
| • ZOV series              | • DV series            |
| • ZOVR series             | • PV series            |
| • ZOVS series             | • CV series            |
| • ZOVA series             | • CVQ series           |
| • ZOVH series             | • EV series            |
|                           | • SV series            |
|                           | • ZV series            |
|                           | • ZV50S high surge MLV |



## APPLICATIONS

AC line protection:

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Surge protective devices</li> <li>• LED lighting</li> <li>• Solar inverters</li> </ul> | <ul style="list-style-type: none"> <li>• Power supplies</li> <li>• Industrial electronics</li> <li>• Remote Radio Units (RRU), 5G applications</li> </ul> | <ul style="list-style-type: none"> <li>• Power over Ethernet (PoE)</li> <li>• High-value consumer goods</li> </ul> |
|---|---|--|

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

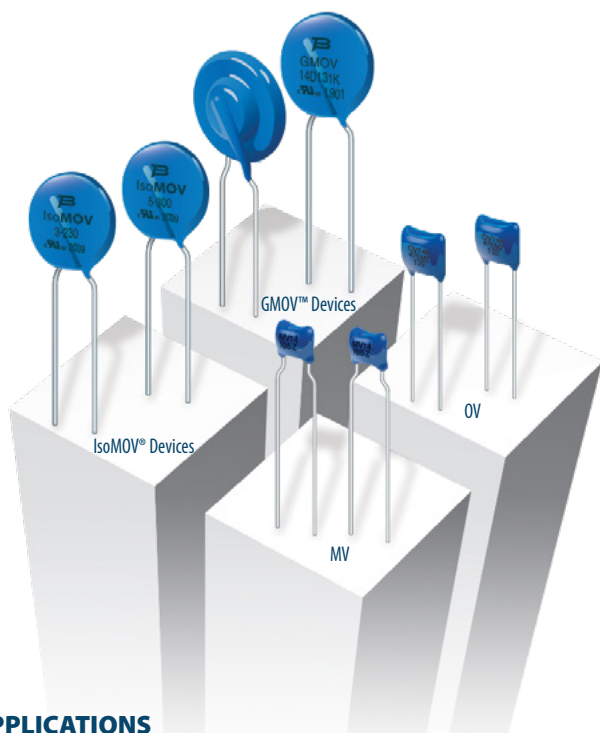
# Hybrid Protectors

## FEATURES

- Hybrid designs using Bourns' patented FLAT® technology
- Standard 14 mm & 20 mm sizes
- Matched GDT-MOV pairings
- Low leakage
- Bidirectional protection
- Low capacitance
- UL 1449 4th Edition Type 5 recognized
- RoHS compliant\*

## Types Available

- 14 mm through-hole
- 20 mm through-hole



## APPLICATIONS

### AC Line Protection:

- White goods
- Power line communications

- Smoke alarm systems
- High-value consumer goods

### DC Line Protection:

- Solar inverters
- Power supplies
- Distribution systems

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

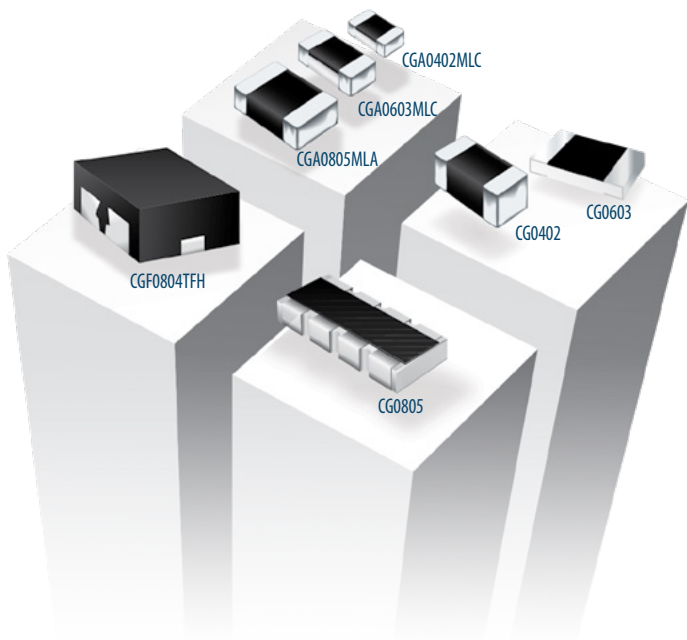
# ChipGuard® ESD Suppressors

## FEATURES

- ESD protection to industry specification IEC 61000-4-2
- Minimum 8 kV contact and 15 kV air discharge ESD withstand
- SMD packages (0201, 0402, 0603, 0805, 1206)
- AEC-Q200 compliant models available
- RoHS compliant\*

## Types Available

- Multilayer varistor
- Polymer technologies
- Air-gap technologies



## APPLICATIONS

- HDMI 1.4
- CANbus
- Ethernet
- Digital Visual Interface (DVI)
- USB 3.0 / USB OT
- MIPI
- MHL
- Memory protection
- SIM card ports
- Camera links
- Sensors
- Touchscreen interfaces
- GPS
- Antennas
- High-speed communication buses
- Circuits sensitive to ESD

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

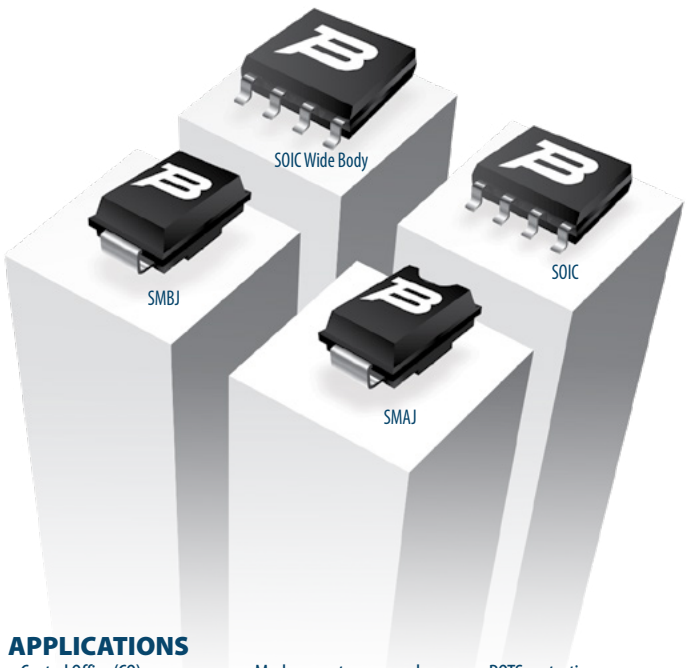
# TISP® Thyristor Surge Protectors

## FEATURES

- Protection voltages from 15 - 700 V
- Dedicated SLIC protection
- Telephone port protection
- xDSL (including G.fast) protection
- UL recognized
- Assists with Telcordia GR-1089, UL 60950, FCC (TIA), ITU-T, IEC & YD/T compliance
- Offline AC power supply protection
- Specified in chipset reference designs for 15 years
- RoHS compliant\*

## Types Available

- Unidirectional
- Bidirectional
- Programmable
- ACTP - AC Transient Protectors



## APPLICATIONS

- Central Office (CO), access network and customer premises equipment
- FTTx equipment
- ISDN and NT protection
- Modems, gateways, and set-top boxes
- Offline Switch-Mode Power Supplies (SMPS)
- POTS protection
- VoIP protection
- xDSL protection

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.



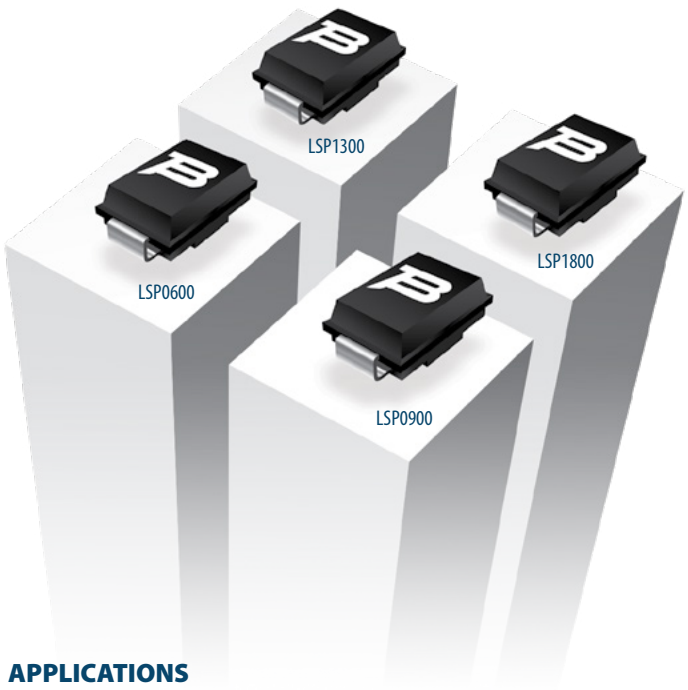
# LED Shunt Protectors (LSPs)

## FEATURES

- Fast switching
- Industry standard, small footprint
- Suitable for industrial lighting environments
- Improved uptime of the end application by shunting/bypassing open-circuit LEDs in a series string
- Can assist with ENERGY STAR® compliance
- RoHS compliant\*

## Types Available

- SMB package
- SMA package



## APPLICATIONS

- Vehicle lighting
- High-bay industrial lighting
- Intrinsically safe lighting
- LED streetlights
- Low maintenance lighting

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

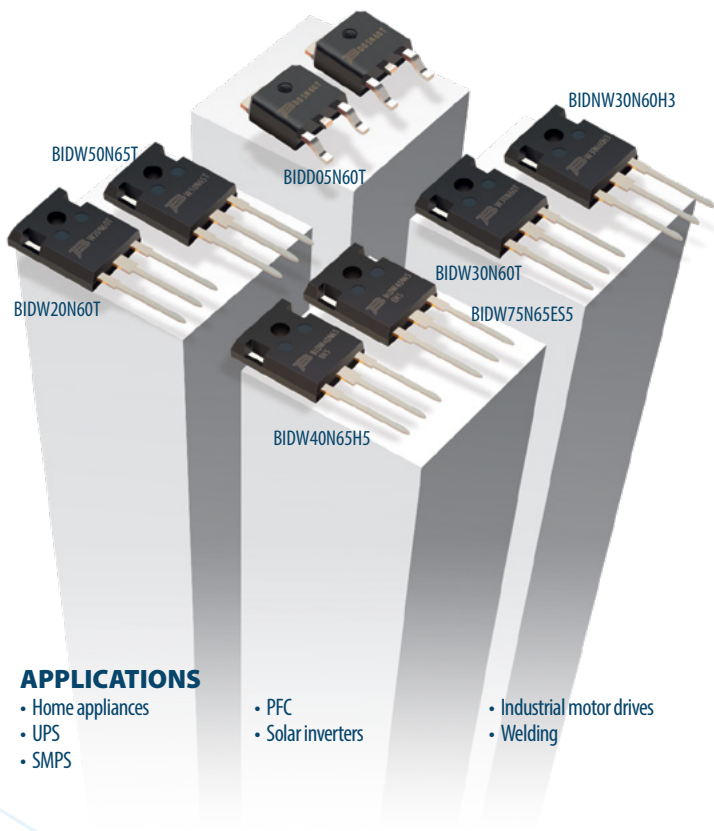
# Insulated Gate Bipolar Transistors (IGBTs)

## FEATURES

- Discrete IGBT co-packed with Fast Recovery Diode (FRD)
- Advanced Trench-Gate Field-Stop (TGFS) technology
- Low saturation voltage drop ( $V_{CE(sat)}$ )
- Low switching loss
- TO-252, TO-247, and TO-247N packages
- Qualified according to JEDEC standard for power switching products
- RoHS compliant\*

## Types Available

- Surface mount
- Through-hole packages



## APPLICATIONS

- Home appliances
- UPS
- SMPS
- PFC
- Solar inverters
- Industrial motor drives
- Welding

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

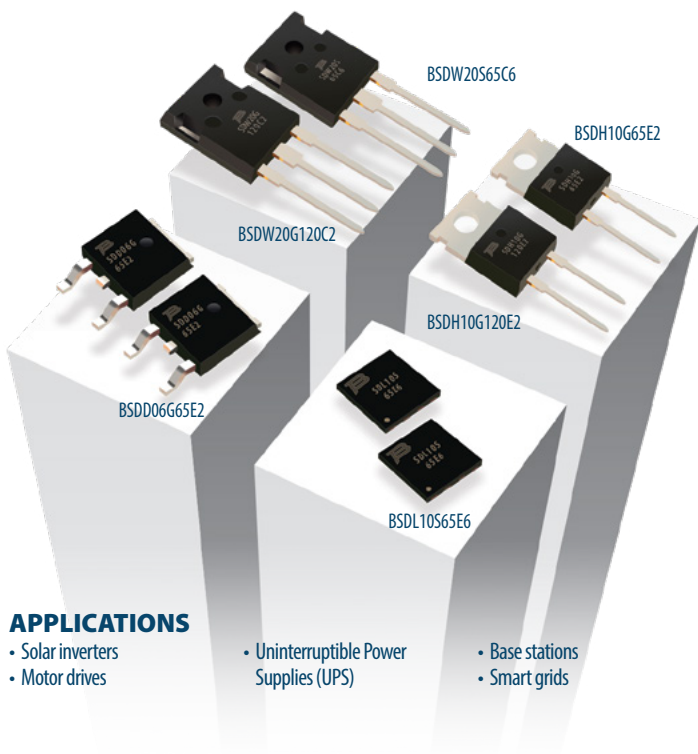
# Silicon Carbide (SiC) Schottky Barrier Diodes

## FEATURES

- High efficiency
- Low forward voltage drop
- Low reverse leakage current
- High peak forward surge current ( $I_{FSM}$ )
- Reduced EMI
- Maximum operating junction temperature ( $T_J$ ) up to 175 °C
- Epoxy compound is flame retardant to the UL 94V-0 standard
- High power integration with dual diodes that help reduce PCB form factor
- RoHS compliant\*, Pb free, and halogen free\*\*

## Types Available

- Surface mount
- Through-hole packages



## APPLICATIONS

- Solar inverters
- Motor drives
- Uninterruptible Power Supplies (UPS)
- Base stations
- Smart grids

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

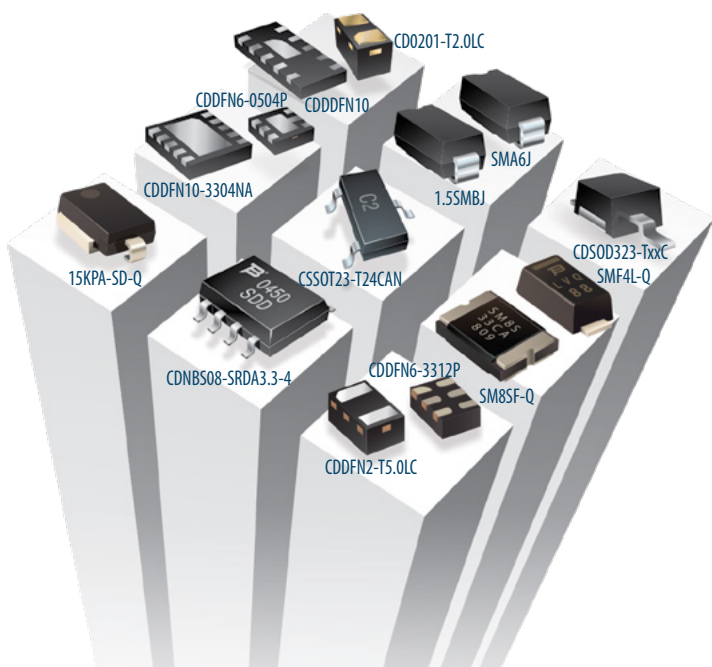
# Diodes & Diode Arrays

## FEATURES

- Excellent high-frequency response
- SMD packages (0201, DFN2, DFN6, DFN10, SOD323, SC70-6, SOT23, SOT23-6, SOT143A, NSOIC 8L, NSOIC 16L, SOD-123F, SMA, SMB, SMC, DO-218)
- AEC-Q101 compliant models available
- RoHS compliant\*

## Types Available

- Transient Voltage Suppressor (TVS) diodes
- Transient Voltage Suppressor (TVS) diode arrays
- Steering diode arrays



## APPLICATIONS

- Appliances
- Consumer electronics
- HMI, touch interfaces
- High-speed communication ports such as USB 3.0, IEEE1394, HDMI, Gb Ethernet
- Fast communication ports such as USB 1.1, 10/100b Ethernet ports
- RS232, RS422 & RS485 type applications

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

# Power TVS Products (PTVS)

## FEATURES

- Robust lightning protection
- 1, 2, 3, 6, 10, 15 & 20 kA peak current rating
- Rigid voltage clamp
- Voltages from 15 V to 430 V
- Simple design
- Axial lead and surface mount packages
- Common PCB footprint for all axial leaded devices
- UL recognized components
- RoHS compliant\*

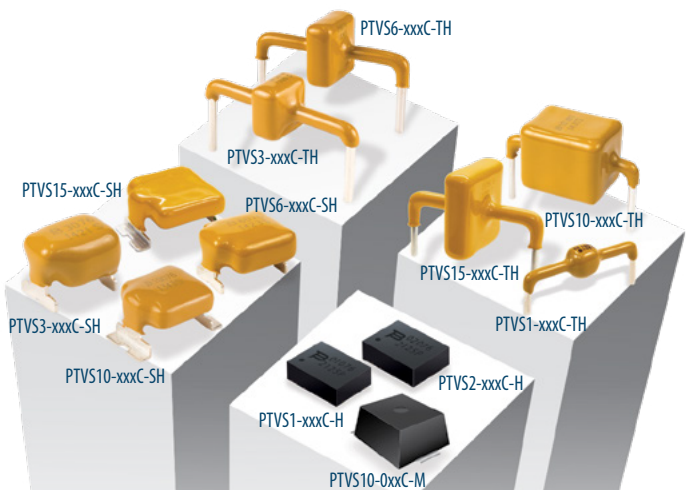
## Types Available

### Surface Mount

- Over-molded
- DFN

### Axial Lead

- Through-hole
- Gull-wing



## APPLICATIONS

- AC and DC input power line protection in certain harsh environments
- High-power DC bus protection
- High-reliability applications requiring high-energy surge protection and a rigid voltage clamp
- Industrial equipment
- Street lighting
- Solar inverters
- Telecom base station equipment

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

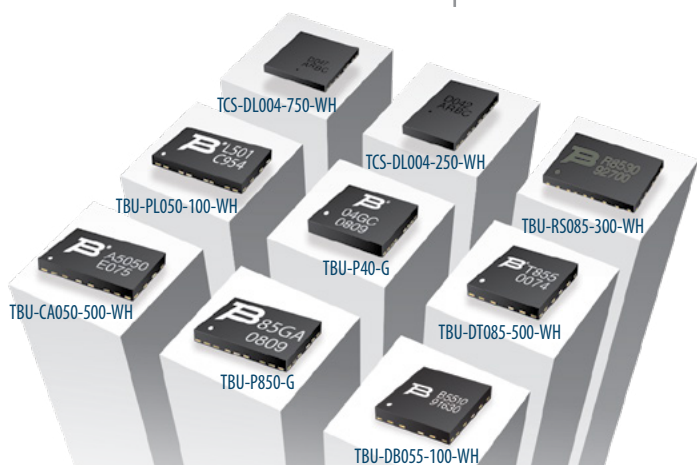
# TBU® & TCS™ High-Speed Protectors (HSPs)

## FEATURES

- Extremely high-speed performance ( $<1 \mu\text{s}$ )
- Blocks high voltages & currents up to rated limits
- Exceptionally low let-through energy
- Very high bandwidth, GHz compatible
- AEC-Q101 compliant models available
- UL recognized components
- Low insertion loss up to frequencies beyond GHz
- No capacitance to ground
- Programmable model available
- Compact DFN package
- RoHS compliant\*

## Types Available

- Single bidirectional
- Dual unidirectional
- Dual bidirectional



## APPLICATIONS

### Telecom

- AISG v2.0
- xDSL interfaces
- Smart grid
- ONUs & ONTs
- Gateways & modems

- VoIP equipment
- 10/100 & gigabit
- POTS linecards
- SLIC

### Industrial

- RS232, RS422, RS485, CANbus and LVDS
- Remote metering & surveillance
- Industrial automation
- Test equipment
- Avionics
- Rail and mass transit

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

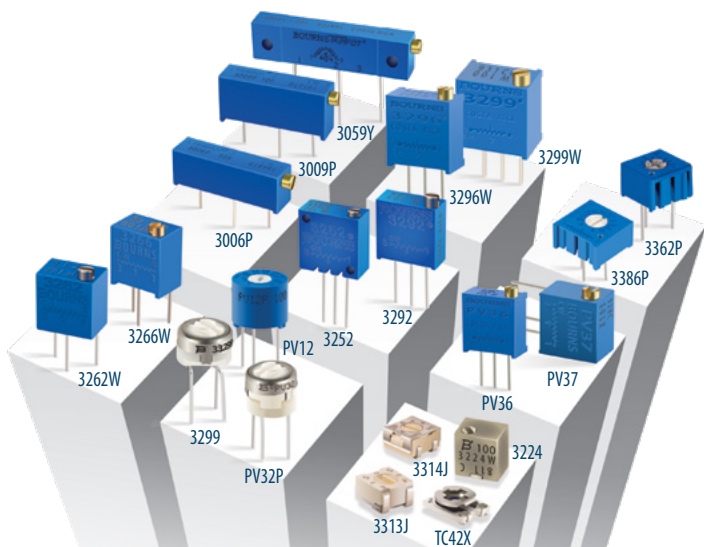
# Trimpot® Trimming Potentiometers

## FEATURES

- Top, bottom, side, front, and back adjust
- 2 mm to 31 mm size range
- Packaging: Tube, bulk, embossed tape, ammo pack, radial tape and reel
- Compatible with pick and place equipment
- Largest selection of sealed trimming potentiometers in the industry
- Custom designs available upon request
- Substrate, ink, rotor, epoxy, and shaft development and production

## Types Available

- Surface mount
- Through-hole
- Single-turn
- Multiturn
- Sealed
- Open frame
- Mil-spec
- AEC-Q200\*



## APPLICATIONS

- Analytical equipment
- Automated gates/doors
- Automation equipment
- Power supply
- Calibration equipment
- CCTV cameras
- Communication equipment
- Fire alarms
- Fluid measurements
- GPS navigation
- Industrial/graphic printers
- Laser altimeters
- Laser diode drivers
- Medical meters\*\*  
(excluding critical life support)
- Metal detectors
- Military radios
- Network analyzers
- Oscilloscopes
- Portable/handheld radios
- Proximity sensors
- Radar systems
- Radiation & X-ray testers
- Relays
- RFID systems
- Satellite systems
- Scanners
- Set-top boxes
- Smoke detectors
- Temperature & respiratory monitors\*\*  
(excluding critical life support)
- Transmission equipment

\*Meets Bourns internal AEC-Q200 equivalent test plan.

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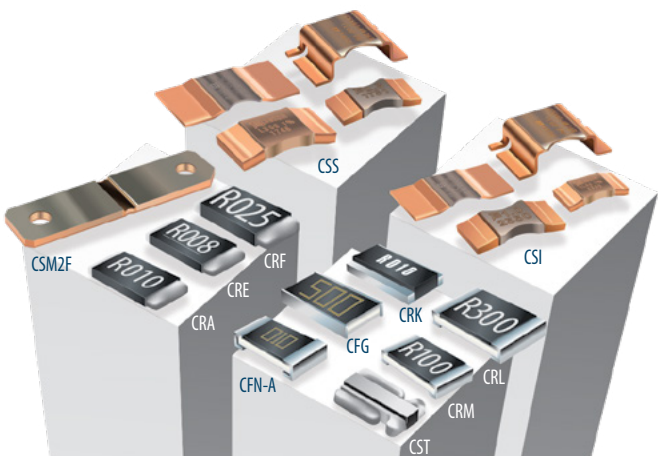
# Current Sense Resistors

## FEATURES

- Two and four terminal
- 25 microohms to 1 ohm
- 0.1 watts to 50 watts
- 0603 ~ 2512 sizes up to 3 watts
- Electron-beam-welded metal strip (2512 ~ 5930 sizes)
- High-power shunts (6918, 7036, 8518 sizes)
- Very low TCR, from 50 ppm/°C
- AEC-Q200 compliant models available (Electron-beam-welded shunts, thick film and metal strip chip packaged resistors)

## Types Available

- High-power thick film chip
- High-power metal strip chip
- Electron-beam-welded metal strip



## APPLICATIONS

- Automation equipment
- Battery Management Systems (BMS)
- Battery packs
- DC-DC converters
- OBCs (On Board Chargers)
- Charging stations
- Input amplifiers
- Navigation equipment
- Medical equipment\* (excluding critical life support)
- Precision circuits
- Printers
- Power supplies
- Smart meters
- Stepper motor drives
- White goods

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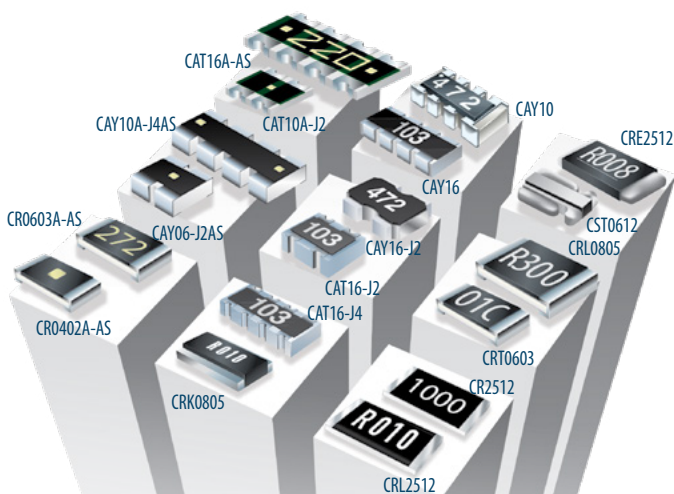
# Chip Resistors & Arrays

## FEATURES

- Standard resistance values from 0.0005 ohms to 20 megohms
- Standard resistance tolerances from 0.01 % (thin film only), 1.0 % & 5.0 %
- Chip resistors: 01005-size to 2512-size
- Chip arrays: 0201 x 2 to 0603 x 4-size
- High power up to 3 watts (thick film and metal strip)
- AEC-Q200 compliant models available (thick film and metal strip)
- UL 1676 listed high-voltage and high-surge withstand (thick film)
- Sulfur-resistant (thick and thin film)

## Types Available

- Thick film chip arrays
- Thick film chip resistors
- Thin film chip resistors
- Metal strip chip resistors
- Sulfur-resistant available
- Metal foil chip resistors
- Wide terminal chip resistors
- Four-terminal chip resistors



## APPLICATIONS

- Navigation
- Current sense
- Cellular and cordless phones
- Communications interface
- Flashlights
- High-voltage applications
- Infotainment
- Intercom systems
- Internet telephony
- Local area networks
- Measurement equipment
- Memory modules (incl. sulfur-resistant type)
- Portable digital assistants
- Portable tools
- Power supplies: DC-DC; AC-DC; DC-AC
- Pulse power applications
- Remote controllers
- Telecom switching devices
- Test equipment
- White goods

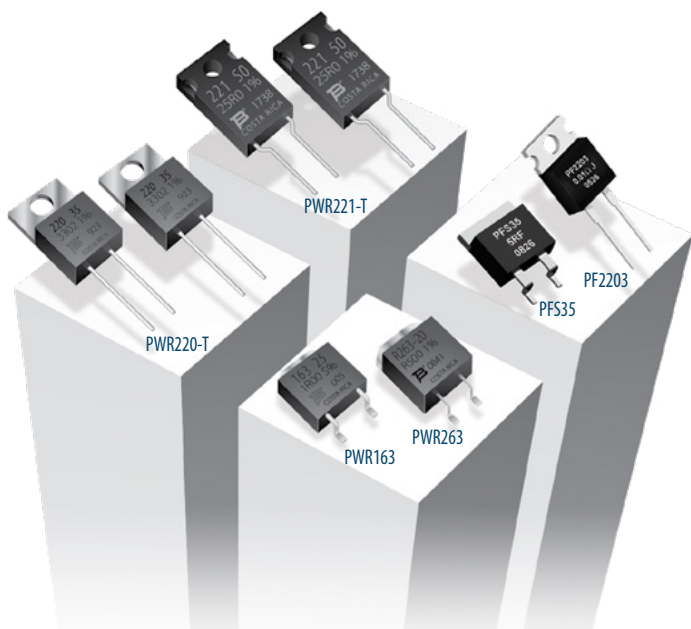
# High Power Resistors

## FEATURES

- Through-hole and surface mount
- 0.002 ohms to 130k ohms
- 0.5 watts to 100 watts
- 0.5 % to 5 % tolerances
- AEC-Q200 compliant models available (TO-220, DPAK and D2PAK packaged resistors)
- Excellent surge performance

## Types Available

- High surge withstand and UL 1412 listed safety fusible wirewound resistors
- Surface mount wirewound resistors
- High power thick film: DPAK, D2PAK, TO-220



## APPLICATIONS

- AC power supplies
- Audio equipment
- Base stations
- Battery controls
- Combiners
- Industrial equipment
- Isolators
- LED lighting
- Medical equipment\*  
(excluding critical life support)
- Motor controllers
- Renewable energy
- Smart meters
- Surge protection
- Telecommunications
- White goods
- Inrush current limiting
- Capacitor precharge/discharge
- Heaters
- Traction inverters
- High-frequency switching power supplies
- AC-DC, DC-DC & DC-AC converters
- Battery disconnecting unit

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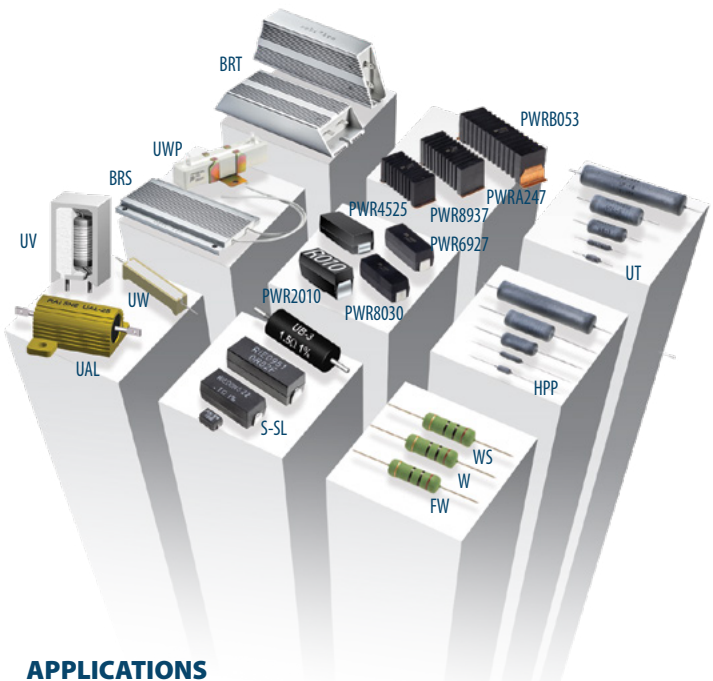
# Wirewound Resistors

## FEATURES

- High power rating
- Superior pulse capability
- Non-inductive version
- UL 1412 recognized fusible
- Customized parts (surge capability, lead form)
- Coating material meets UL 94V-0 requirements
- RoHS compliant\*

## Types Available

- Axial-leaded
- Through-hole
- Wraparound SMD



## APPLICATIONS

- Telecommunication base stations
- Audio equipment
- Medical equipment\*\*  
(excluding critical life support)
- Industrial equipment
- Smart meters
- Renewable energy
- Industrial
- Power supplies/chargers
- Lighting
- Instruments/gauges
- White goods

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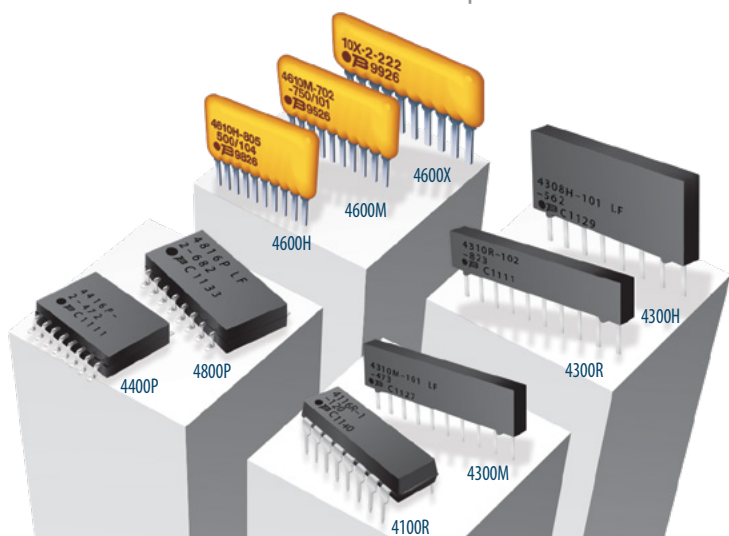
# Resistor Networks

## FEATURES

- Surface mount and through-hole mounting
- SIP and DIP packages
- Molded and conformal-coated packages
- Standard resistance values from 10 ohms to 10 megohms
- Custom networks for non-standard circuits and values
- SIP package height as low as 0.195 inches
- Operating temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

## Types Available

- Thick film resistor networks
- Tin-lead plating available on some models



## APPLICATIONS

- Access equipment
- Bar code scanners
- Cable boxes
- Computer peripherals
- Consumer electronics
- Data communication
- Fax equipment
- Modems
- Monitoring equipment
- Portable power generators
- Power supplies: DC-DC; AC-DC; DC-AC
- Satellite systems
- Telecom switching devices
- Test equipment

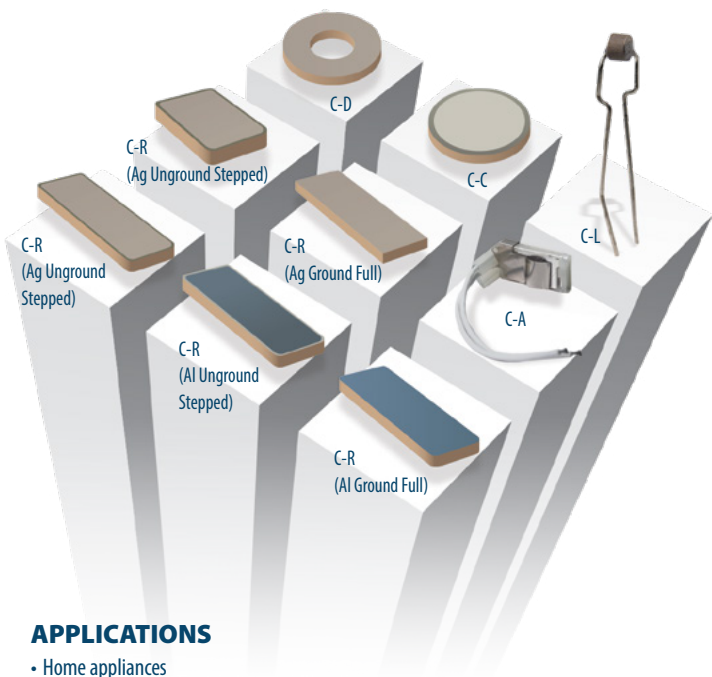
# Ceramic PTC Resistive Heaters

## FEATURES

- Self-regulated heating
- Simple circuit design
- Suitable for clamp-contact
- Long-life stability
- Silver (Ag) and aluminum (Al) electrode coating
- Stepped and full electrodes
- Ground and unground edges
- Variety of surface temperature, Curie temperature,  $R_{min}$ , and operating voltage ratings available
- AEC-Q200 compliant models available

## Types Available

- Radial-leaded through-hole
- Customized rectangular and circular designs
- Custom assemblies with housing & wiring



## APPLICATIONS

- Home appliances
- HVAC systems

# EMC & RF Components

## FEATURES

- Wide current handling up to 2.7 A
- Broad inductance range from 1.0 nH to 100 mH
- Impedance performance optimized up to 300 MHz
- Low DC resistance and compact, low-profile designs
- 170+ SMD power inductor models and 50+ through-hole options
- Wide range of standard inductance values
- High saturation currents up to 118 A
- Operating temperatures up to +200 °C
- AEC-Q200 compliant models available

## Types Available

### Common Mode Chokes:

- For mains power lines
- For lower voltage

### Signal Line Components

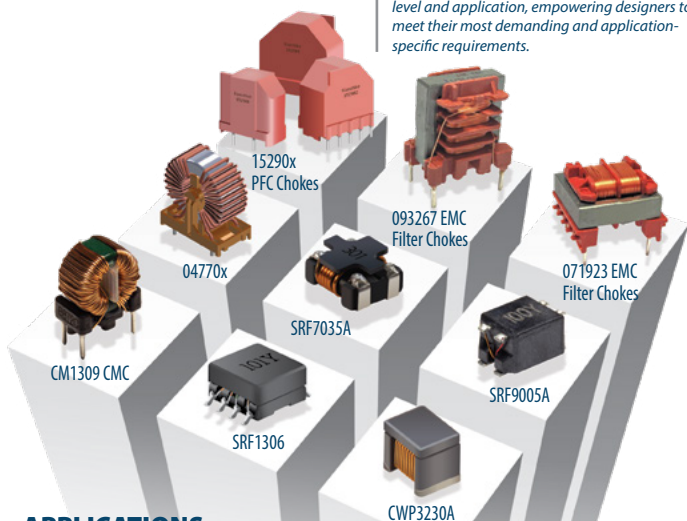
#### Chip Beads:

- High current
- High impedance

#### RF Inductors:

- Surface mount (SMD) common mode chokes – signal line & power line
- SMD air core inductors – round type, square type
- SMD chip inductors – multilayer & wirewound
- Through-hole (Th) common mode inductors
- Through-hole (Th) toroid inductors
- Through-hole (Th) RF chokes – radial lead, axial lead, high current chokes, CMCs & ferrite beads

*Beyond our extensive standard portfolio, Bourns' dedicated Custom Magnetics team offers specialized design and manufacturing services for magnetic components. We can create tailored solutions for almost any power level and application, empowering designers to meet their most demanding and application-specific requirements.*



## APPLICATIONS

- Battery chargers
- Battery Management Systems
- Data communication
- Monitoring equipment
- PMIC
- SSDs (Solid State Drives)
- Solar power conversion
- Test equipment
- Medical Devices\* (excluding critical life support)
- Industrial equipment
- Telecommunications
- Wearables



# Signal Transformers

## FEATURES

- Designed to comply with, but not restricted to: Insulation class: B, F H
- 10/100/1000 Base-T
- Operating temperature up to +125 °C
- High working and isolation voltage
- PoE+
- Compliant with IEEE 802.3
- Compliant with IEC 60950
- Global manufacturing capabilities, including North America
- AEC-Q200 compliant models available
- RoHS compliant\*

## Types Available

### Signal Isolation Transformers:

- Signal BMS planar series
- Signal BMS functional isolation series
- Signal BMS basic isolation series
- Signal BMS reinforced isolation series

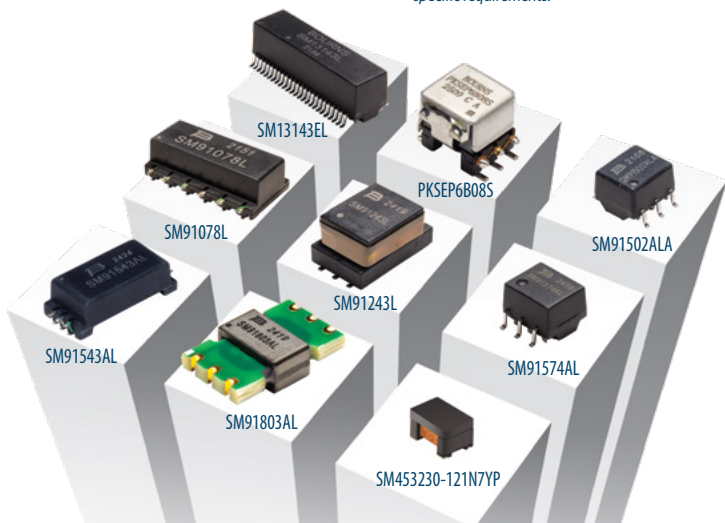
### LAN Transformers:

- LAN-10/100/1000 Base-T transformers
- Chip LAN transformers
- LAN modules

### Line Matching Transformers:

- Surface mount and G.fast transformers

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## APPLICATIONS

- Battery management
- LAN
- Ethernet
- xDSL
- Power over Ethernet
- PoE+
- Laptop computers
- Telecommunications
- Instrumentation
- AC-DC power supplies
- Home metering
- Home automation
- Appliances
- White goods
- LED drivers
- Data centers
- AI/enterprise power

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# Inductors

## FEATURES

- Standard inductance values from 1.0 nH to 100 mH
- More than 170 surface mount power inductor models
- More than 50 through-hole power inductor models
- Available in a wide range of sizes
- Operating temperature as high as +200 °C
- Saturation current up to 118 A
- AEC-Q200 compliant models available

## Types Available

### Power Inductors:

#### Surface Mount (SMD) Power Inductors:

- Non-shielded
- Semi-shielded
- Shielded- high-current shielded, dual-winding shielded

#### Power Factors Correction Chokes

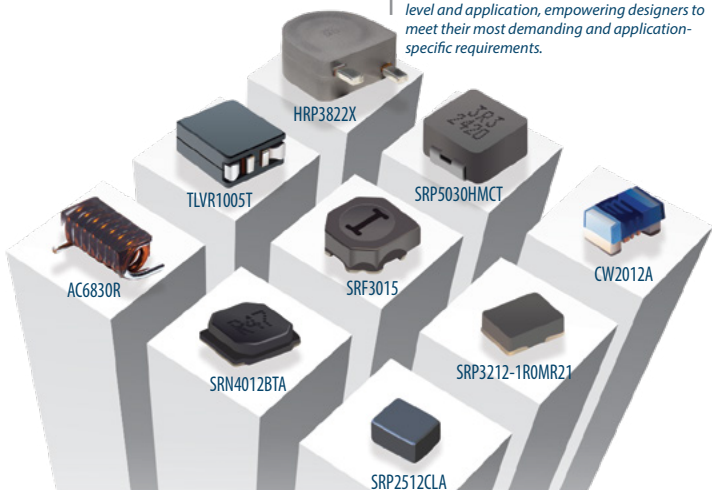
#### Through-Hole (TH) Power Inductors:

- Standard- axial and radial
- High-current- axial, flat wire and very high-current

### RF Inductors:

- Surface mount (SMD) RF inductors
  - CMCs, chip beads, air core inductors & chip inductors
- Through-hole (TH) RF inductors
  - toroid inductors, common mode inductors and RF chokes

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## APPLICATIONS

- Battery chargers
- BMS
- CD players
- Data communication
- DC-DC converters
- Global positioning systems
- Internet equipment
- LED drivers
- Local area networks
- Monitoring equipment
- PMIC
- Portable radios
- Portable tools
- SSDs (Solid State Drives)
- Switch-mode power supplies
- Solar power conversion
- Test equipment
- Televisions
- Video conferencing equipment
- Telecommunications
- Wearables

# Power Transformers

## FEATURES

- Standard and custom designs
- Industry standards:  
UL 508, EN 61558-1, EN 60950,  
EN 62368-1
- Quality:
- VDA 6.3, factory IATF 16949 certified
- High-volume, high-automation  
production capabilities
- High-frequency power topologies:  
Buck, boost, SEPIC, CUK, half & full  
bridge LLC, push-pull, forward, flyback
- Global manufacturing capabilities,  
including North America

## Types Available

### DC to DC Power Converter Transformers:

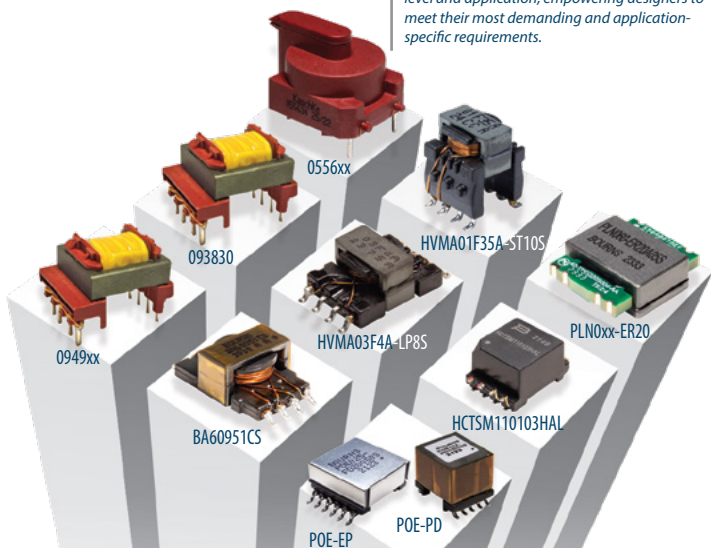
- General transformers- flyback and  
high-voltage series
- Gate drive transformers  
- high-voltage series
- Power over Ethernet (PoE)  
transformers
- Push-pull transformers for low power
- Push-pull transformers for  
high-voltage isolation
- High-creepage transformers

### AC to DC Power Converter Transformers:

- Series flyback transformers
- Safety extra-low-voltage transformers

### Current Sense Transformers

*Beyond our extensive standard portfolio, Bourns' dedicated Custom Magnetics team offers specialized design and manufacturing services for magnetic components. We can create tailored solutions for almost any power level and application, empowering designers to meet their most demanding and application-specific requirements.*



## APPLICATIONS

- High-frequency switching  
power supplies
- AC-DC, DC-DC & DC-AC  
converters
- OBCs (On Board Chargers)
- Charging stations
- Battery management
- Renewable energy
- Consumer electronics
- Communications
- Instrumentation
- Industrial
- Medical\*  
(low/medium risk)
- Data centers
- AI/enterprise power

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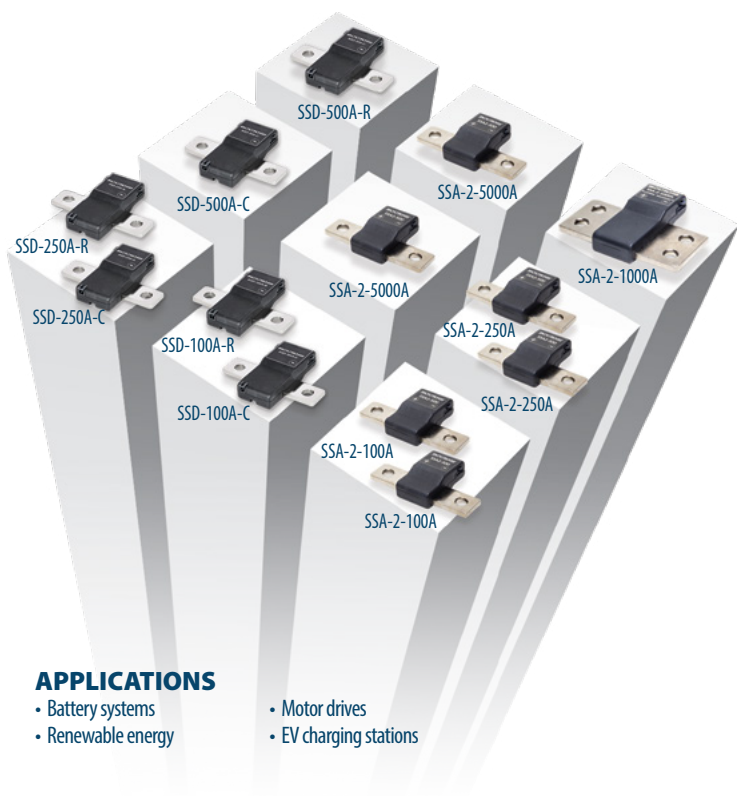
# Digital and Analog Current Sensors

## FEATURES

- 16-bit +150 °C microcontroller
- 24-bit isolated current sensor with CANbus or RS-485/MODBUS interface
- ECC flash memory with autocorrect single-bit errors
- Internal & external CRC data error detection
- Advanced non-linear temperature compensation
- Optional internal 120 ohm termination resistor

## Types Available

- Digital
- Analog



## APPLICATIONS

- Battery systems
- Renewable energy
- Motor drives
- EV charging stations

# Precision Controls

## FEATURES

### Output

- Linear
- Audio taper
- Custom taper
- Reverse audio

### Sizes (vary by model)

- 13 to 51 mm diameter

### Options

- Clutch
- Rotary switch option<sup>†</sup>
- Multi-cup option<sup>†</sup>
- Boardwash seal option<sup>†</sup>
- Sideload capability<sup>†</sup>

## Types Available

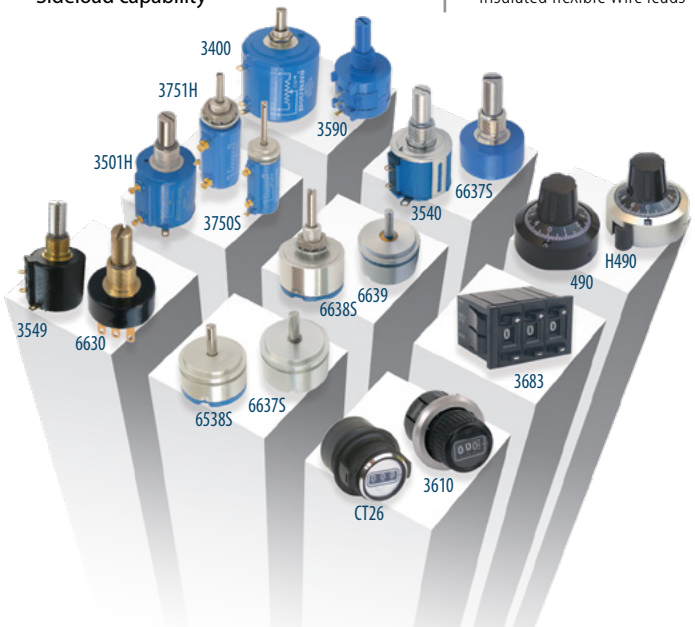
- Rotary
- Digital push-button
- Single and multiturn

## Mounting options

- Bushing    • PC mount
- Snap-in    • Servo mount

## Terminal Styles

- PC pins
- Solder eyelets
- Turret terminals
- Insulated flexible wire leads



## APPLICATIONS

- Actuators
- Amplifiers
- Avionics
- HMI & MMI (Human-Machine & Machine-Machine Interface)
- Communications equipment
- Environmental test equipment
- Industrial equipment controls
- Medical instrumentation and equipment\* (excluding critical life support)
- Military
- Test and measurement instrumentation

<sup>†</sup> available on some models

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# Commercial Panel Controls

## FEATURES

- Sizes (vary by model)
- 9 to 24 mm (rotary panel controls)
- 12 and 16 mm square (encoders)

### Options

- Panel controls:
  - Several taper options
  - Rotary switch option†
  - Multi-cup option†
  - Push/pull switch option†
- Encoders:
  - Momentary push switch
  - Detents available on some resolutions

## Types Available

### Panel Controls

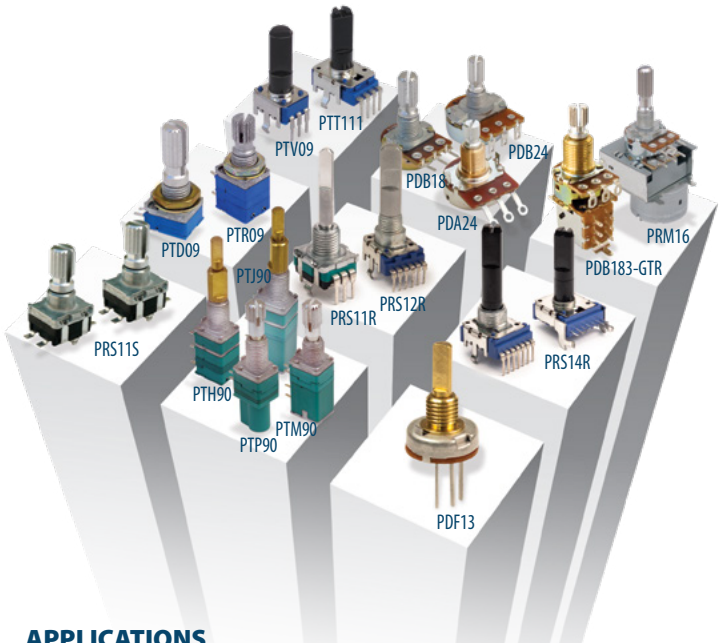
- Rotary
- Motorized rotary

### Encoders

- Incremental contacting

### Mounting Options

- Bushing • Bushingless
- PC mount • Solder lug



## APPLICATIONS

- Communications equipment
- Kitchen appliances
- Irrigation controls
- Medical equipment\* (excluding critical life support)
- Portable electronics
- Power tools
- Test and measurement instrumentation

† available on some models

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# Industrial Panel Controls

## FEATURES

### Output

- Linear taper
- Audio taper
- Custom taper
  - Sizes (vary by model)
  - 9 to 23 mm

### Options

- Flexible lead-wires
- Rotary switch option<sup>†</sup>
- Multi-cup option<sup>†</sup>
- Boardwash seal option<sup>†</sup>

## Types Available

- Rotary

## Mounting options

- Bushing
- PC mount
- Snap-in
- Reverse audio

## Terminal Styles

- PC pins
- Solder lugs



## APPLICATIONS

- Avionics and aerospace
- Environmental test equipment
- HMI (Human-Machine Interface)
- Irrigation controls
- Industrial equipment controls
- Medical instrumentation and equipment\*  
(excluding critical life support)
- Military grade equipment
- Test and measurement instrumentation
- Video conferencing equipment

<sup>†</sup> available on some models

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# Non-Contacting Position Sensors & Rotary Controls

## FEATURES

- Non-contacting "Hall effect" technology
- Single & multiturn models available
- Seal option available on some models

### Output

- Analog
- Pulse-Width Modulation (PWM)\*
- Serial Peripheral Interface (SPI)\*
- Synchronous Serial Interface (SSI)\*
- Sizes (vary by model)
- 20 mm and 22 mm diameter

## Types Available

- Rotary

### Mounting options

- Bushing
- Servo mount

### Terminal Styles

- PC pins
- Solder lugs
- Solder eyelets
- Insulated flexible wire leads\*



## APPLICATIONS

- Automated packaging and processing equipment
- Construction & agricultural vehicles
- Clean energy equipment
- Factory automation & assembly equipment
- HMI & MMI (Human-Machine & Machine-Machine Interface)
- Material handling equipment
- Medical diagnostic & patient care equipment\*\* (excluding critical life support)
- Stage production & robotic lights

\*available as custom option

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# Rotary Encoders

## FEATURES

### Resolution

- Contacting – 6 PPR to 36 PPR options
- Optical – 25 PPR to 256 PPR options
- Magnetic – 32 PPR to 512 PPR and 1024 PPR states options
- Sizes (vary by model)
- 9, 16, 22 mm square & 16 mm x 22 mm

### Options

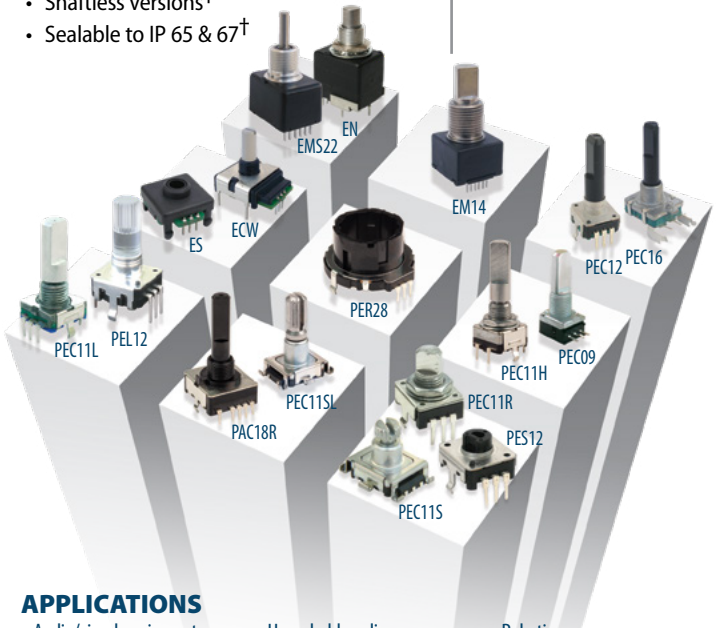
- Detents<sup>†</sup>
- Momentary push switch<sup>†</sup>
- Shaftless versions<sup>†</sup>
- Sealable to IP 65 & 67<sup>†</sup>

## Types Available

- Incremental contacting
- Incremental magnetic
- Absolute contacting
- Absolute/PWM magnetic
- Incremental optical

## Mounting options

- Bushing
- PC board
- Snap-in
- Servo



## APPLICATIONS

- Audio/visual equipment
- Communications equipment
- Forklifts and material handling
- Household appliances
- Industrial heavy equipment
- Medical equipment\*  
(excluding critical life support)
- Robotics
- Scanners and copiers
- Test and measurement instrumentation

<sup>†</sup> available on some models

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# Pro Audio & Lighting

## FEATURES

- Flatted, knurled or plain shafts
- Metal and plastic shafts
- Splash seal (available on some models)
- Various standard resistance codes
- Various standard tapers
- PC pin and solder lug options (available on some models)
- Dual concentric shafts (Model PTJ90)

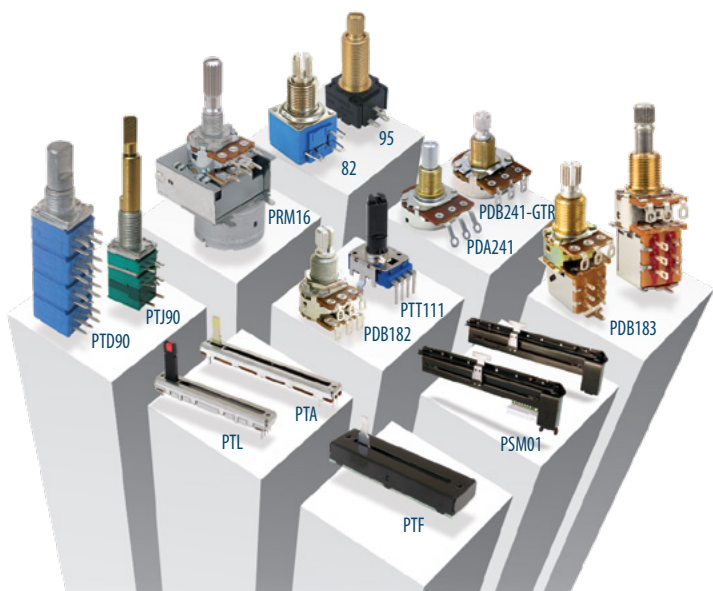
## Types Available

### Rotary Potentiometers

- Rotary

### Slide Potentiometers

- Manual
- Motorized
- Open frame & metal housing



## APPLICATIONS

- Audio mixing consoles
- Bass guitars
- Broadcast consoles
- Electric guitars
- Instrument amplifiers
- Video mixing boards

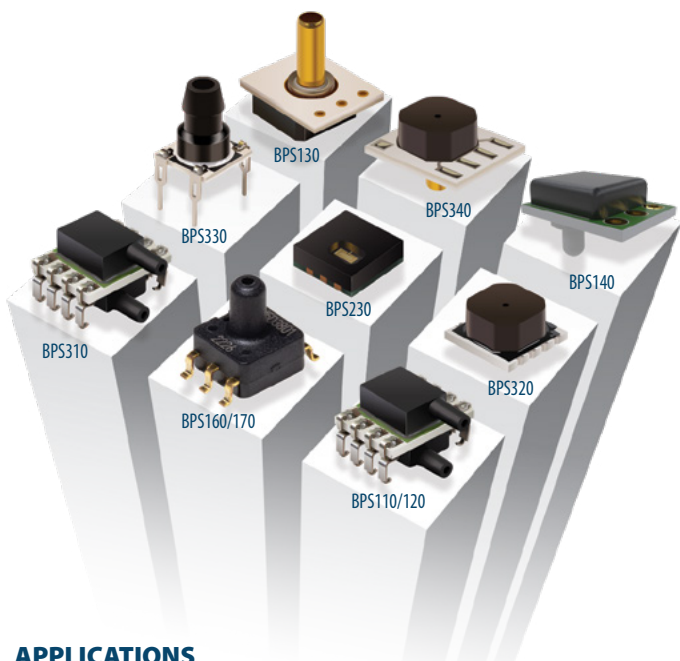
# Environmental Sensors

## FEATURES

- Ultra-low sensing: 250 Pa to 1.0 PSI
- High pressure sensing: 15 PSI to 500 PSI
- Extreme sensitivity and stability
- Certain harsh media compatibility: (air, liquid, gas)
- Analog and digital output options
- Differential and gauge options
- Active temperature compensation
- Highly accurate humidity sensing with digital output
- RoHS and REACH compliant\*

## Types Available

- Pressure sensors
- Humidity sensors



## APPLICATIONS

### Medical Devices

(low/medium risk)\*\*

- Portable oxygen generators
- Nebulizers
- CPAP equipment
- Diagnostic spirometers

### Industrial

- HVAC
- Process control
- Food processing
- Packaging automation
- Pneumatic control
- Gas flow instrumentation

### Consumer

- Home appliances
- White goods
- Office automation

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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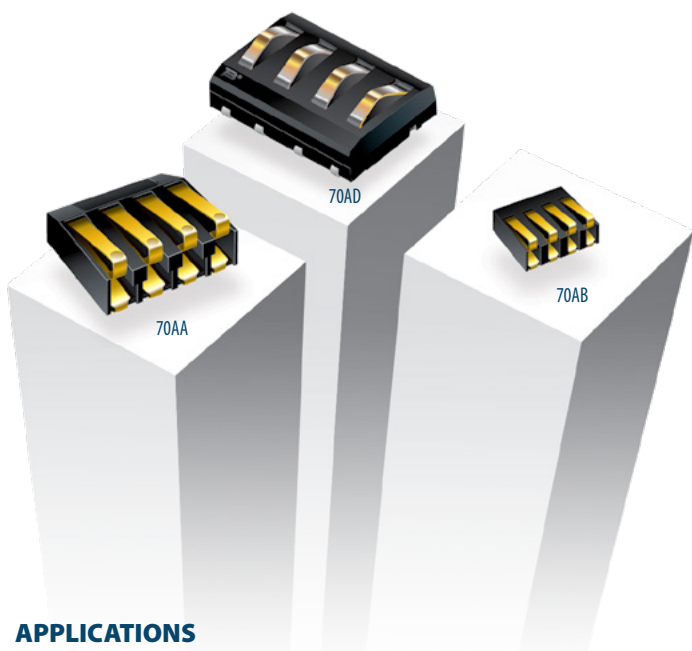
# Modular Contacts

## FEATURES

- Precious metal contacts
- Available in 2-6 contacts
- Available in 3 pitch sizes:  
1.27 mm, 2.54 mm, 4.0 mm
- Up to 50,000 cycles
- Contact resistance < 0.030 ohms
- Packaging: tube and embossed tape (7-inch and 13-inch)
- RoHS compliant\*
- Halogen free\*\*

## Types Available

- Male
- Female
- SMT
- Through-hole



## APPLICATIONS

- Battery packs
- Wireless speakers
- Docking stations
- E-readers
- Laptop computers
- Medical devices
- PDAs
- Portable chargers
- Rechargeable smart phones
- Tablets

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

# Custom Connectors

## FEATURES

- Used to connect wiring between devices
- Narrow pitch connectors (small precision connectors)
- Advanced metal mold and forming technologies allow the manufacture of precision plastic parts with a pitch of only 0.25 mm between terminals

## Types Available

- Narrow pitch
- Metal mold
- Plastic mold



## APPLICATIONS

- Instrumentation
- Industrial applications
- Consumer electronics
- Telecommunications
- Transportation
- Internet of Things (IoT)

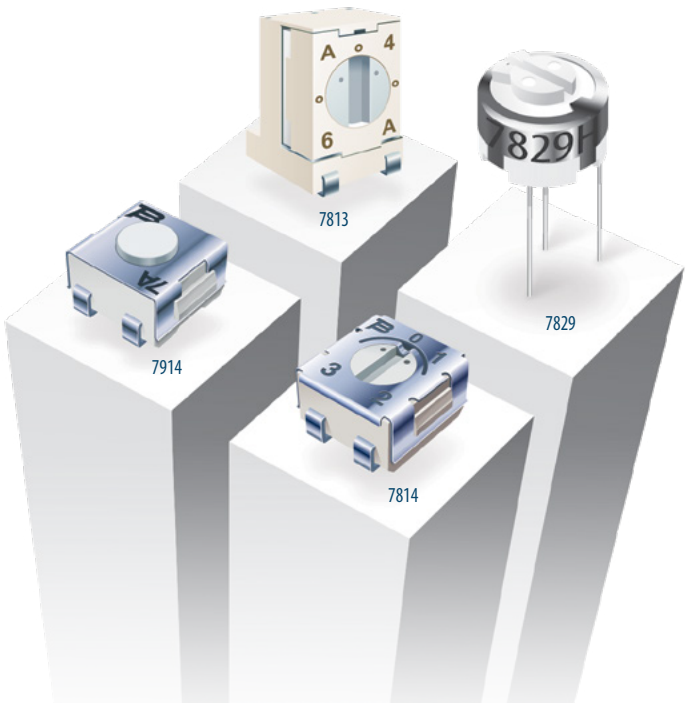
# Switches

## FEATURES

- Available in surface mount and through-hole configurations
- PC pins, gull wing, and J-hook terminal styles
- Sealed for PCB processing
- 3, 4, and 6 mm sizes
- Tube and embossed tape carrier packaging

## Types Available

- Rotary
- Tactile



## APPLICATIONS

- Appliances
- Audio/visual
- Computers
- Communications equipment
- GPS
- Industrial controls
- Instrumentation
- Proximity sensors
- Security systems
- Sensors
- Telecommunications
- Test equipment
- Temperature sensors



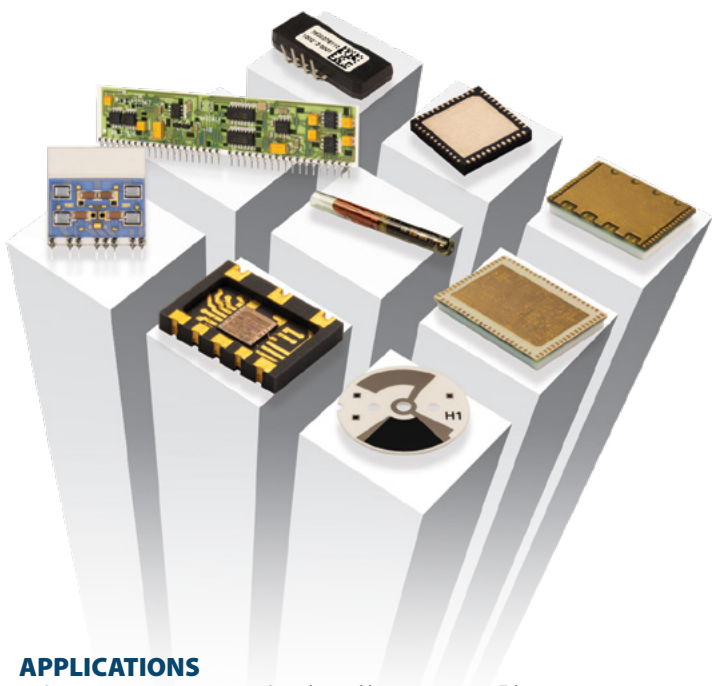
# Specialty Engineering & Manufacturing Services

## FEATURES

- Technology integration
- IC packaging technology
- Product launch control
- Fast time to market
- PCBA
- Thick film
- Engineering
- Customization
- Manufacturing
- High-mix low/medium volume
- Built-to-print service

## Types Available

- Single in-line
- Dual in-line
- COB (Chip-On-Board)
- Interposer
- System In Package (SIP)
- QFN
- QFP (Quad Flat Pack)
- Mini-DIL
- TO-Cans
- Butterfly
- Custom hermetic seal



## APPLICATIONS

- 5G
- Instrumentation
- Industrial sensors & controls
- Optical assemblies
- Medical equipment (low/medium risk)\*
- RF/wireless
- Telecommunications
- Transportation
- Internet of Things (IoT)

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