V.07/24

Electronics products and applications

Electronics Solutions

Capacitors, Circuit Protection, Magnetics, Terminal Blocks, and Sensors

EATON

Powering Business Worldwide

Alcom electronics

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Eaton's Electronics Components

Eaton offers a range of electronics components that include power and EMC magnetics solutions, circuit protection, capacitors, sensors and terminal block products. These components serve customers in computing, consumer, energy, industrial, medical and transportation markets.

Eaton's Electronics Components

Circuit Protection

- Fuses and fuse holders
- PPTC resettable fuses
- TVS diodes
- Varistors
- ESD suppressors

Capacitors

- Coin cell supercaps
- Cylindrical supercaps
- Supercapacitor modules
- Hybrid supercaps
- Film DC-link capacitors
- Film safety capacitors

Magnetics

- Power magnetics
- Transformers
- EMC (RF/EMI) filters
- DC-DC converters

Terminal Blocks

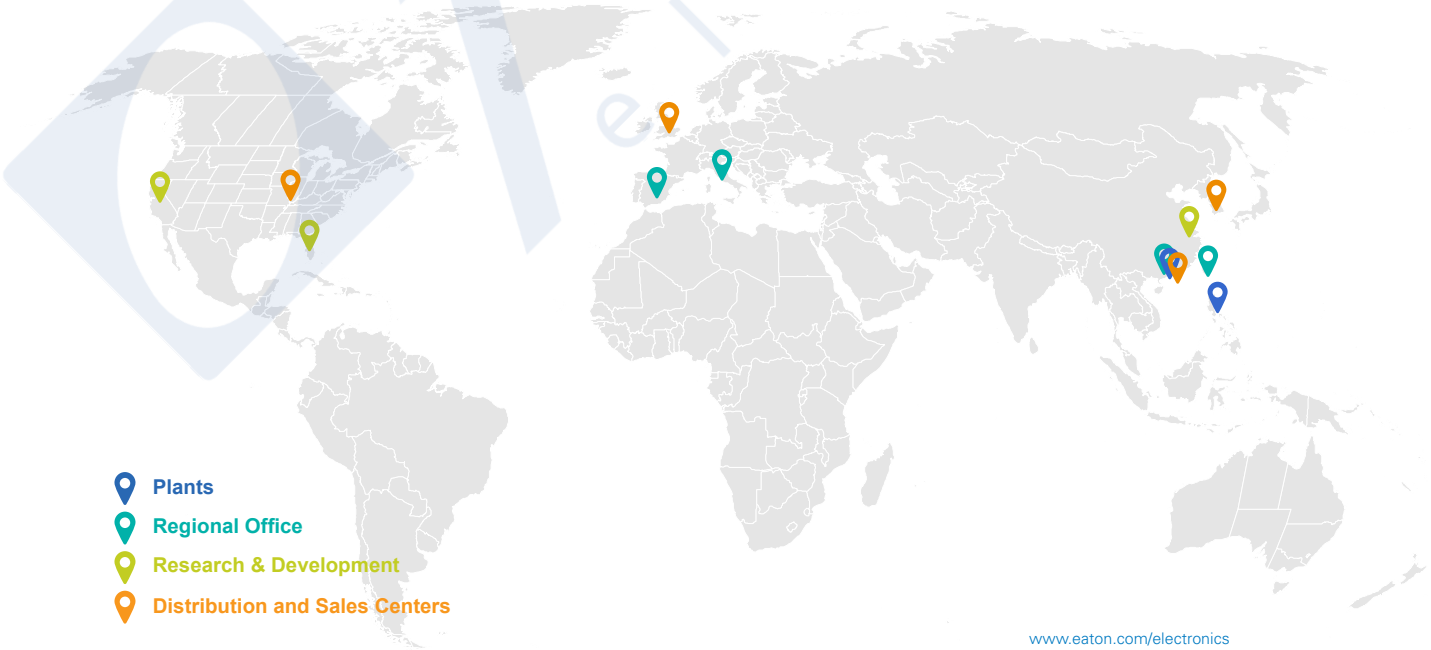
- Single row/barrier strip
- EuroMag/IEC style

Sensors

- Current sense resistors
- Current sense transformers
- Current sense shunts
- NTC thermistors surface mount
- NTC thermistors through hole

Worldwide Presence

Every day Eaton develops and delivers innovative new technologies and solutions that touch people at home, work and play. Technology makes it possible for all of us to accomplish things we once thought impossible. By engaging thought leaders in science, technology, innovation and engineering, we passionately pursue ideas and products that are changing how we live. For Eaton, innovation is more than just a process, it is the creative realization of the impact we can have on the lives of people around the world.



		CIRCUIT PROTECTION											TERMINAL BLOCKS		MAGNETICS								
		Bolt down fuses	Cartridge fuses and holders	Radial fuses	SMD fuses	PPTC resettable fuses	TVS diodes	Multilayer varistors	Metal oxide varistors	PolySurg™ ESD suppressors	xEv fuses	Inrush current limiters	EuroMag blocks & plugs	Single row terminal blocks	Automotive	Multi-phase & V-Core	High current ferrite & molded inductors	Shielded drum	Semi-shielded	Common mode inductors	Transformers	Chip inductors & ferrite beads	Thru-hole inductors
COMPUTING	Servers		●		●	●	●	●	●			●	●	●		●	●	●	●	●		●	●
	Storage	●					●		●			●					●	●	●			●	
	Wired communication		●		●		●	●	●			●	●	●				●	●			●	
	Wireless communication		●									●						●	●			●	
CONSUMER	Personal computing/ peripherals		●	●	●	●	●		●	●						●	●	●	●	●	●	●	●
	Personal communications			●		●	●		●	●								●	●			●	
	Wearable electronics						●		●	●								●	●			●	
	Set-top boxes		●	●	●	●	●	●	●	●							●	●	●	●	●	●	●
	TV/monitor/display		●	●	●	●	●	●	●	●		●				●	●	●	●	●	●	●	
	Toys		●	●	●		●	●	●	●								●	●			●	
	Appliances		●		●	●	●	●	●			●	●				●	●	●	●	●	●	●
ENERGY	Generation	●	●		●			●			●	●	●	●			●						
	Distribution	●	●		●			●			●	●	●	●			●				●		
	Metering		●		●			●				●	●				●	●	●			●	●
INDUSTRIAL	Manufacturing automation	●	●	●	●	●	●	●	●			●	●	●			●	●	●	●		●	
	Test & measurement	●	●	●	●	●	●	●	●			●	●	●			●	●	●	●	●	●	
	Building & home control		●		●	●	●	●	●	●		●	●	●			●				●	●	
	Lighting & security	●	●		●	●	●	●	●			●	●	●			●	●	●	●	●	●	
	Mission critical power	●	●		●	●	●	●			●	●		●				●	●				
	IoT			●	●	●	●	●	●	●		●										●	
MEDICAL	Personal		●	●	●	●	●	●	●	●							●	●	●		●	●	
	Consumable								●								●					●	
	Equipment		●		●	●	●	●	●				●	●			●					●	
	Hospital systems	●	●		●	●		●	●			●											
TRANSPORTATION	Under-the-hood						●				●	●		●	●		●						
	Safety systems	●					●					●			●		●					●	
	Lighting						●					●			●		●	●	●	●	●		
	Infotainment						●		●						●		●	●	●			●	
	Interior						●		●		●	●			●		●	●	●			●	
	Drive/traction	●										●			●		●				●		

		CAPACITORS						SENSORS				
		Coin cell supercaps	Cylindrical supercaps	Supercapacitor modules	Hybrid supercaps	Film DC-link capacitors	Film safety capacitors	Current sense resistors	Current sense transformers	Current sense shunts	NTC thermistors surface mount	NTC thermistors through hole
COMPUTING	Servers	●		●		●	●	●		●	●	
	Storage	●	●	●	●			●		●	●	●
	Wired communication							●		●	●	●
	Wireless communication	●	●					●		●	●	●
CONSUMER	Personal computing/ peripherals						●	●		●	●	
	Personal communications										●	
	Wearable electronics											
	Set-top boxes	●					●	●			●	
	TV/monitor/display						●					
	Toys											
	Appliances	●				●	●	●	●	●	●	●
ENERGY	Generation	●	●	●				●		●	●	●
	Distribution			●				●		●	●	●
	Metering	●	●		●							
INDUSTRIAL	Manufacturing automation	●	●	●	●	●	●	●	●	●	●	●
	Test & measurement	●	●				●	●		●	●	●
	Building & home control	●	●		●		●	●			●	
	Lighting & security	●	●		●		●	●			●	●
	Mission critical power			●		●	●	●		●		●
	IoT	●	●		●		●					
MEDICAL	Personal		●		●		●					
	Consumable										●	
	Equipment	●	●	●	●	●	●	●	●	●	●	●
	Hospital systems			●			●	●				●
TRANSPORTATION	Under-the-hood											
	Safety systems		●					●		●	●	
	Lighting									●	●	
	Infotainment							●				
	Interior											
	Drive/traction			●		●	●			●		●

Eaton features a broad variety of Bussmann™ series circuit protection products spanning overcurrent protection (including one-time fuses, accompanying fuse accessories and PPTC resettable devices) and overvoltage protection components (ESD suppressors, varistors and TVS diodes). With over 100 years of circuit protection expertise, Eaton is committed to designing and manufacturing the most innovative portfolio of circuit protection products for numerous applications including industrial, automotive, energy management, computing, medical and consumer products.

Overcurrent

Cartridge fuses

- Available in ¼ inch, 5 mm and 3 mm
- Vast product offerings in UL and IEC designs
- Available with axial leads
- Fast-acting and time-delay performance options
- High voltage, 600 Vac/dc, ratings with high interrupting rating capability

Fuse holders, clips, blocks

- Printed Circuit Board (PCB) fuseclips
- In-line fuseholders
- Panel-mount fuseholders
- Fuse blocks for both ¼ inch & 5 mm
- High voltage options, up to 600 V
- Ingress protection options up to IP67

Surface mount (SMD) fuses

- Footprints from 1.6 mm x 0.8 mm to 13 mm x 5 mm
- High voltage options available up to 350 Vac / 600 Vdc
- Nominal current ratings up to 100 A
- Provides excellent cycling performance
- Both time delay and fast acting performance
- AEC-Q200 qualified families available

xEV fuses

- More compact footprints compared to other 10- and 14-mm cartridge fuse diameters
- High voltage ratings within the 6, 10, and 14-mm diameters; up to 1000 V
- Multiple termination styles with cartridge, bolt down, and PCB
- Allows ease of integrating fuses in customer applications

Radial fuses

- Rectangular and cylindrical body styles that offer industry standard landing patterns
- Protects in primary and secondary circuits
- Both UL and IEC performance characteristics both body styles
- Voltage ratings up to 350 Vac and 450 Vdc

PTC resettable fuses

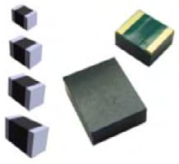
- Radial and surface mount product types
- Device "resets" after fault is cleared to offer protection against multiple overcurrent events
- High temperature capability offered (+125 °C)
- Low resistance technology improves energy efficiency

Inrush current limiters

- Epoxy sealed radial lead NTC thermistor
- High rated power, low power consumption
- 5 to 30 millimeter disk type
- Resistance range 0.5 Ω to 120 Ω
- Non-linear change in resistance vs temperature

Overvoltage

Surface mount (SMD) varistors - MLV & MOV



- Multiple footprints from 0402 to 4032 EIA
- Provides protection from ESD up to induced lightning
- Working voltages from 5.5 Vdc to 670 Vdc and 4 Vac to 510 Vac
- Peak surge current ratings up to 1200 A
- AEC-Q200 qualified MLVs available

Through-hole varistors - MOV

- Radial devices offer combined thermal
- element and MOV for integrated protection
- Broad operating voltage range
- Provides up to 10 kA Imax surge current rating
- Indication offered in both disc sizes
- UL 1449 certifications

Polysurg™ ESD suppressors

- Ultra-low capacitance (0.05 pF) ideal for latest high-speed data circuits
- Very fast response time, within 1 ns
- Single-line and array options
- Inherent bi-directional performance
- AEC-Q200 qualified families available

TVS diodes

- Operating voltage ratings up to 450 Vdc
- Industry common radial and SMD footprints
- Uni-direction and bi-directional options
- High power options available (up to 10 kA surge current protection)
- AEC-Q101 qualified families available with up to ISO 16750 5a & 5b load dump ratings

TVS diodes - ESD suppressors

- Discrete and multi-signal packages
- Ultra compact package sizes down to DFN0603 and 0201 EIA
- Ultra low capacitance, down to 0.15 pF
- Uni-directional and bi-directional protection
- Array configurations offered that are ideally suited for common I/O interfaces

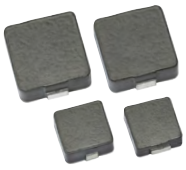
Eaton offers a wide range of power magnetics and EMC filtering components for a broad array of applications. Automotive solutions allow for a wide operating temperature range and are built for rugged environments.
Eaton's inductor and transformer families are offered in a wide variety of sizes, have high current capabilities and high power densities.

Magnetics

Toroid

- Wide variety of sizes
- Closed magnetic path, very good EMI shielding
- High inductance/current rating
- Dual winding options can be used in multiple configurations
- Multiple core materials available

High current



- High power density
- High operating temperature
- Ferrite, powder, and composite core options
- Pressed and two-piece construction options
- Magnetically shielded options
- Good EMI shielding

Multi-phase & Vcore

- High current
- Coupled and non-coupled
- Low tight tolerance DCR
- High efficiency
- Magnetically shielded for low EMI

Automotive-grade magnetics

- AEC-Q200 qualified
- Wide operating temperature
- Variety of shapes and sizes
- Power and RF/RMI filtering
- Robust construction up to 30 G
- Single and couple winding solutions
- Good EMI shielding
- High effeciency

Shielded drum

- Compact size
- Wide variety of shapes, sizes, inductance values, and current options
- Magnetically shielded - good EMI shielding
- Dual winding options can be used in multiple configurations
- Ferrite core (high efficiency)

Semi-shielded inductors

- Commercial and automotive grade
- High current carrying capacity
- Magnetic resin shielding technology
- Low loss magnetic material
- Inductance range from 0.33 µH to 1 mH
- Standard footprints from 2 mm to 8 mm

Unshielded drum

- High current capability vs. size
- Desirable for high ripple current applications
- Wide range of inductance options available

Transformers

Power over Ethernet (PoE)

- Input voltage up to 60 V
- Power ratings up to 156 W
- 1500 V isolation

Configurable

- 500 V isolation
- 500 Inductor and transformer configurations
- Wide range inductance and current ratings
- Power ratings up to 70 W

Common mode chokes

- THT and SMT Configurations
- Industry footprints from 7 to 29 mm
- Operating temperature (- 40 to + 125 °C)
- Current ratings up to 15 A
- Impedances up 3,000 Ω
- Wide inductance range
- High voltage isolation up to 1500 Vac

Chip inductors and ferrite beads

Chip inductors

- Commercial and automotive grade
- Multilayer and wirewound
- Standard sizes: 0201 to 1210 package
- High Q performance
- Tight tolerance inductance - up to 470 uH
- Operating temperature: - 40 °C to + 125 °C

Ferrite beads

- Multilayer monolithic construction
- Standard sizes: 0402 to 1206 package
- High impedance - up to 2,000 Ω
- Current ratings up to 6 A
- Operating temperature: - 40 °C to + 125 °C

DC-DC converters

- Switching regulator, non-isolated
- 3-pin SIP package (LM78x regulator compatible)
- Input voltages: up to 32 Vdc
- Output voltages: up to 15 V @ 1 A
- High efficiency

- DOSA SMT package
- Short circuit protection
- Remote ON/OFF function
- Programmable output from 0.9 to 5.5 Vdc @ 1A
- Input voltage: up to 14 Vdc
- Output voltage: up to 5.5 V, 1 A to 12 A

- Wide input voltage range: 5 Vdc, 12 Vdc, 24 Vdc, 48 Vdc
- Package Options: SIP4, SIP7 (4 and 5 pin)
- Lower power consumption
- High isolation voltages up to 4 kV
- Single and dual output configurations
- Power range option from 1 W to 60 W

Supercapacitors

Eaton supercapacitors are unique, ultra-high capacitance devices utilizing electric double layer capacitor (EDLC) construction combined with new, high performance materials. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to specific applications that range from a few microamps for several days to hundreds of amps for seconds.

Coin cells

- 0.1 F to 1.5 F with operation up to 5.5 V
- Industrial temperature range up to + 85 °C
- Ideal for real time clock backup and battery swap ride-through
- Available in horizontal, vertical and cylindrical mounting configurations
- REACH, RoHS, SVHC compliant

Small cylindrical

- 0.22 F to 110 F and operating voltages up to 3.0 V designed for mounting on PCBs
- Industrial temperature range - 40 °C to + 85 °C with voltage derating
- Product families are optimized for low DC resistance (HV, TV) and high temperature life time (HB)
- Operating life up to 20 years (depending upon voltage and temperature)
- REACH, RoHS, SVHC compliant, UL recognized

Large cells

- 275 F to 3400 F and operating voltages up to 3.0 V
- Industrial temperature range - 40 °C to + 85 °C with voltage derating
- Ultra low DC ESR for highest efficiency and power
- Optimized integration into modules for a wide variety of applications
- REACH, RoHS, SVHC compliant, UL recognized.

Modules

- Multi-cell modules for easy integration into large high voltage and high energy systems.
- Meet application requirements for rack mounting or harsh environments.
- 16 V to 144 V operating voltages with integrated cell balancing, temperature monitoring, and overvoltage monitoring.
- REACH, RoHS, SVHC compliant, UL recognized, and UN ECE certified.

Hybrid cells

- Ultra-high capacitance for up to 10 times energy density
- Small footprints for space-saving (8 mm x 14 mm to 16 mm x 25 mm package sizes)
- Wide range of operating temperatures (- 25 °C to + 70 °C)
- Low ESR and ultra low leakage current to maximize efficiency
- Lead and halogen-free, RoHS and REACH compliant, UL recognized

Eaton's film safety (also known as film EMI suppression) capacitors are constructed using metalized polypropylene film encapsulated with a self-extinguishing resin in a case using material meeting UL94V-0 requirements. Class X1/X2 product series are offered in many sizes, lead lengths, and terminal configurations, with standard families available for each class. Eaton also offers automotive-grade film safety capacitors of the same construction.

Eaton film DC-link capacitors are constructed using metalized polypropylene film encapsulated with epoxy resin in a plastic case with 2 or 4 pin tinned copper terminals. This standard family is suitable for high-performance DC filtering applications. Eaton also offers automotive-grade film safety capacitors of the same construction.

Film DC-link capacitors

- Capacitance range: 1 uF to 200 uF
- Operating temperature rating: - 55 °C to + 105 °C
- Voltage rating: 450 Vdc to 1200 Vdc
- High ripple current
- Low loss and low ESL
- THB Grade IIIB and AEC-Q200 qualified for the automotive grade series
- Flame-retardant plastic case and resin

Film safety capacitors

- High stability capacitance
- Operating temperature rating: - 40° C to + 110 °C
- Self-healing property
- Overvoltage stress withstanding
- Voltage rating: 305 Vac to 480 Vac
- Flame-retardant plastic case and resin
- THB Grade IIIB and AEC-Q200 qualified for the automotive grade series
- Approvals: UL/cUL, VDE/ENEC, CQC, KC

Single Row/Barrier Strips

Eaton features a family of North American style, single row terminal blocks that support a broad range of electronic and electrical OEM applications. These highly configurable terminal blocks allow users to create the right product for their application using a wide variety of terminal types, mounting options, base types, fastener options, quick connects, jumpers, markings, covers, and more.

Features:

- Power ratings up to 50 A to 600 V
- Multiple wire and board terminations in the same footprint
- High configurability fits a majority of applications
- Can build to specific, per pole customer requirements

A0 & CB0

A1 & CB11

A2, LP2 & CB2

A3, LP3 & CB3

A38 & B38

A/B4

EuroMag/IEC Style

Euromag PCB terminal blocks come in a variety of terminal options to make connections easy with different wire-entry orientations to solve wire routing issues. With straight-to-board, plug and header, screwless, 2-tiered and 3-tiered configurations, the vast majority of wire-to-board applications can be easily met with the Eaton's EuroMag terminal block product portfolio.

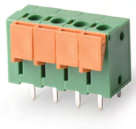
Features:

- Modular and mold-to-length designs
- Pitch range from 2.54 mm to 15.00 mm
- Wire ratings from 2-24 AWG
- Accommodates applications up to 600 V

Headers & Plugs

High Current

Screwless



Cage & Screw

Spring & Screw

Tiered

Sensors are designed to detect or measure physical phenomena such as light, pressure, or temperature. Electronic sensors convert (or "transduce") physical stimuli from the environment into electrical signals and trigger an actuating device that performs a specific function like switching on a motor or turning on the lights in your home.

Specialized sensors such as NTC (negative temperature coefficient) thermistors and PTC (Positive temperature coefficient) thermistors, are used to measure ambient temperature using temperature-sensitive resistive elements. These devices can be implemented in IoT, HVAC systems, industrial process control, and more.

Current sense resistors

- Low sensing resistance
- 0402 (1005 metric) to 1210 (3225 metric)
- High power dissipation
- Moisture sensitivity level (MSL): 1

Current sense transformers

- EE4.4 to EE 8.3 SMT package (4.8 x 3.65 x 3.55 mm to 13 x 11 x 7.8 mm)
- Very low DC resistance
- Wide selection of turns ratios
- Sensed current – primary rated up to 15 A
- Frequency range: 50 kHz to 1 MHz
- Moisture sensitivity level (MSL): 1

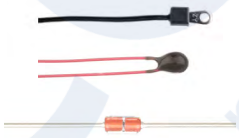
Current sense shunts

- Ultra low and stable resistance
- 2512 (6432 metric) to 5930 (15076 metric) package
- High power ratings, up to 15 W
- AEC-Q200 compliant
- Moisture sensitivity level (MSL): 1

NTC and PTC thermistors surface mount

- Highly reliable monolithic structure
- Ideal for temperature compensation and sensing applications
- 0402 (1005 metric), 0603 (1608 metric), and 0805 (2012 metric) surface mount package
- Superior heat resistance to reflow soldering and excellent solderability
- Excellent thermal dissipation factor and temperature coefficient
- Moisture sensitivity level (MSL): 1

NTC thermistors through hole



- Faster thermal response
- Temperature sensing, quick response time
- Radial, axial, and ring lug options available
- Epoxy sealed and glass sealed options available
- Non-linear change in resistance vs temperature
- Wide resistance range: 1 kΩ to 470 kΩ

Diodes and Rectifiers

Fast Recovery Diodes

- Plastic package meets UL 94V-0 flammability standard
- Low reverse leakage current
- Hyperfast recovery time and soft recovery characteristics
- Low recovery loss

TVS Diodes

- AEC-Q101
- Single-line, bi-directional device for placement flexibility
- Low capacitance to meet the needs for high speed single transient voltage protection
- Lead free, halogen free and RoHS compliant for global applications
- Provides ESD protection with fast response time (<1ns) allowing equipment to pass IEC 61000-4-2 level 4 test
- Solid-state silicon-avalanche technology

Tools

Eaton's Electronics Product Selection Tools

PARAMETRIC SEARCH
Drill down into the Eaton Electronics product database to find the right part for your application.

IC MATCHING
Find the Eaton Electronics parts called out on IC manufacturers' demo and evaluation boards.

CROSS REFERENCE
Find a cross to a competitor's product or to an alternate Eaton Electronics part number.

SUPERCAPACITOR CALCULATOR
Determine your calculated requirements and design capability.

CONNECTOR SELECTOR
Find the right terminal block for any application.

AUTOMOTIVE ELECTRONICS SOLUTIONS
Find electronics components for automotive solutions.

WEBSITE
Visit our website to find more about Eaton Electronics.

www.eaton.com/electronics

CIRCUIT PROTECTION 3D DISPLAY BOARD
A digital tool to access our circuit protection product resource center.

SUPERCAPACITOR 3D DISPLAY BOARD
Supercapacitor product resource in one stop.

MAGNETIC 3D DISPLAY BOARD (COMING SOON)
Find all magnetic product resource by interacting with our 3D display board.

100+ Years of History

1911
Eaton was founded producing axels for vehicles

1914
Bussmann
Bussmann brothers founded Bussmann Manufacturing

1929
Bussmann Manufacturing purchased by Max McGraw

1985
Purchased by Cooper Industries

1987
Cooper Industries acquired USD/Magnum for terminal blocks and fuse accessories

1997
COILTRONICS
Coiltronics, Inc acquired for magnetics product

1999
PowerStor
Powerstor Supercapacitor product line acquired

2012
Eaton formed the Electronics Division through its acquisition of Cooper Industries

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Powering Business Worldwide

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