

BROCHURE

Semiconductor machinery manufacturers

Specialized
power protection

The value of semiconductor chips continues to grow with many market segments using these chips in the automotive, industrial, IT, healthcare/medical, mobile devices, appliances and network infrastructure markets.

The semiconductor industry and processes are regularly evolving, increasing the need for new technology and reliability

Semiconductor fabrication consists of four general process categories:

Deposition is any process (oxide layer formation/thermal oxidation) that grows, coats or otherwise transfers a material onto the wafer, including:

- Physical vapor deposition (PVD)
- Chemical vapor deposition (CVD)
- Electrochemical deposition (ECD)
- Molecular beam epitaxy (MBE)
- Atomic layer deposition (ALD)

Patterning is the shaping or altering of deposited materials, generally referred to as lithography. In conventional lithography, the wafer is coated with a chemical called a photoresist.

Removal is any process that removes material from the wafer, including:

- Etching processes (either wet or dry)
- Chemical-mechanical planarization (CMP)

Modification of electrical properties is doping a semiconductor to modulate its electrical, optical and structural properties. Modification is achieved by oxidation, which can be carried out to create semiconductor-insulator junctions to fabricate metal oxide transistors.

In addition to the processes above, fabrication also includes testing, assembly and packaging. All functional electrical testing is completed at both wafer fabrication and packaging levels to ensure quality.



Typical semiconductor machine schematic — internal power components

Whether you are looking to reduce size, increase efficiency, increase reliability or decrease process interruption, ABB has the component options you need to optimize the power and control circuit to best fit your applications.

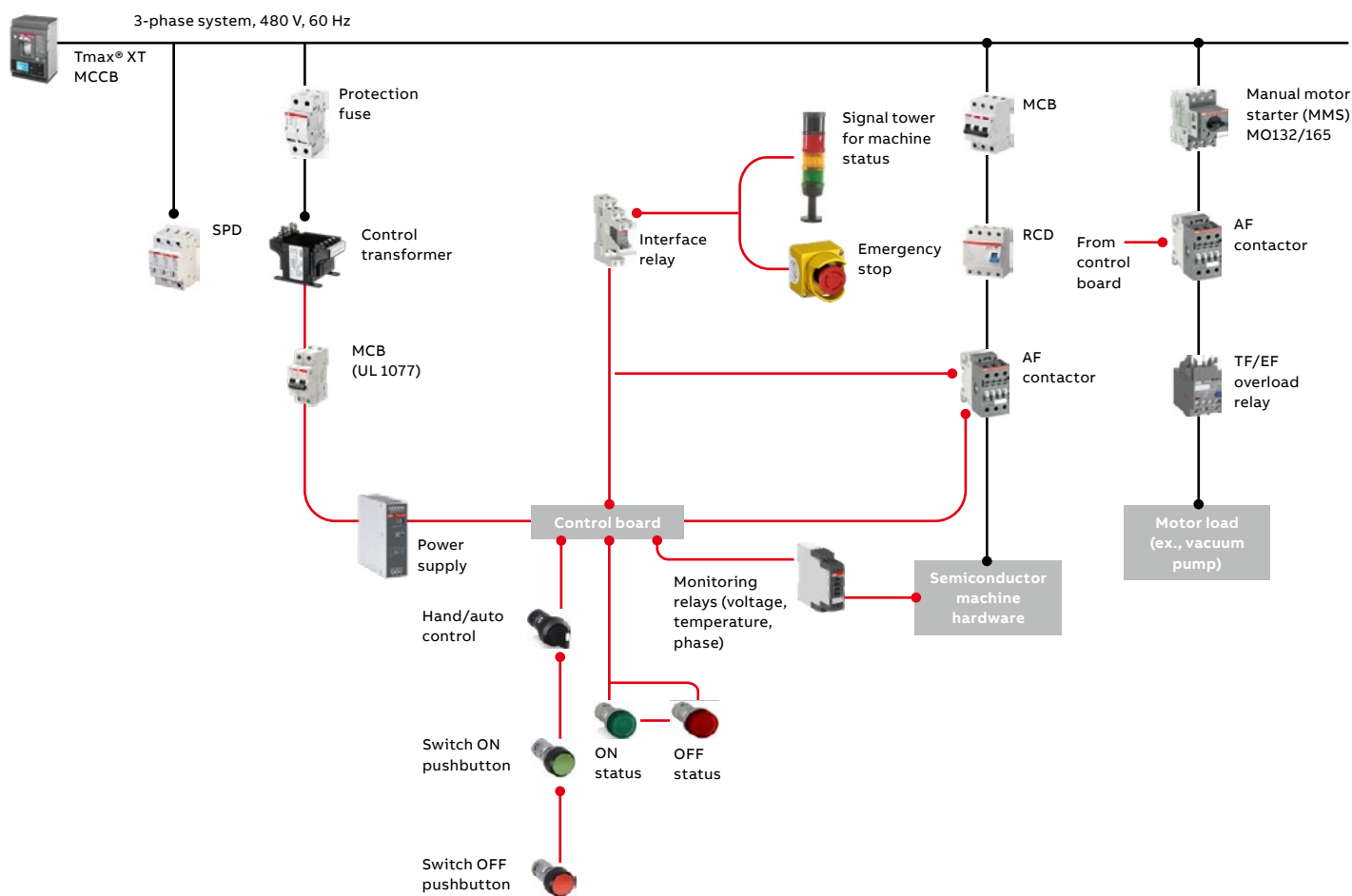


ABB engineered components



SACE® Tmax® XT molded case circuit breakers (MCCBs)

Tmax XT MCCBs provide an extremely high level of performance with limited overall dimensions and installation simplicity. The Tmax XT line is available in eight sizes, with a complete range of trip unit options and a wide variety of electrical and mechanical accessories.

- Thermal magnetic and electronic trip units
- Up to 1200 A with up to 200 kA of short circuit protection
- 240, 480 and 600 V optimized solutions
- Fixed, plug-in or draw-out configurations
- Accessories include motor operators, auxiliary and signal contacts, shunt trip, under-voltage release and bell alarms
- Option to include residual current device (RCD) as an accessory to the breaker ensures efficient protection against the risk of fire and explosions and protects people against indirect and direct contact



Residual current device (RCD)

A protection device that trips when the system leaks a significant current to ground. The contact position indicator (CPI) always indicates the status of the contacts (red = closed contacts; green = open contacts) independent of the toggle position.

- Up to 125 A, 120–277 V AC (2-pole) and 120–480Y V AC (4-pole)
- UL 1053 compliant



Disconnect switches

ABB has a wide portfolio of low voltage switches that includes fusible, non-fusible, change-over and enclosed switches with ratings between 16 and 2000 A for AC and 10 and 1000 A for DC applications. These disconnects are suitable for machinery, power distribution, switchboards, motor control centers and photovoltaic applications.

- UL 508 and UL 98 listed
- Compact size
- High performance
- Safe to use and easy to install
- One of the most complete offerings of disconnects on the market

ABB engineered components



Contactors and overloads

ABB's AF contactors signify a major advancement in motor control and power switching. They come standard with electronic coils and built-in surge suppression. The AF contactors, along with ABB's short circuit and overload protective devices, provide the user with fully tested, UL listed short circuit current rating (SCCR) motor combinations.

- UL general use and motor switching
- Rated up to 2850 A general use at 600 V
- 3-phase, 480 V motor rating up to 900 HP
- DC ratings up to 1500 V DC
- 3-pole and 4-pole versions
- SEMI F47 compliant
- Accessories include connection sets, auxiliary contact blocks, interlocking units, timers and electronic and thermal overload relays
- Available with push-in spring termination for faster, easier assembly

Electronic overload relays offer reliable and precise protection for motors in the event of overload or phase failure. The electronic overload relay can make up a compact starting solution together with contactors.



Miniature circuit breakers (MCBs)

ABB, the inventor of miniature circuit breaker technology, offers an industry-leading selection of current-limiting, compact, DIN-rail mounted MCBs for AC and DC applications. Thermal and magnetic trips are provided to cover both over-current and short-circuit faults.

- UL 489, UL 1077 and IEC
- 0.2 to 100 A, up to 600 V DC
- The SUP200M and SU200ML have a 14 kA interrupting rating at 480/277 V AC, which supports SEMI S2 requirements
- Accessories: bus bars, auxiliary and signal contacts, shunt trip, under-voltage release and lock out/tag out



Surge protective devices (SPDs)

ABB SPDs help reduce costly downtime while protecting sensitive electronic equipment against the damaging effects of surges caused by lightning, load switching and more. They are suitable for use in hospitals, data centers, renewable energy, water/wastewater treatment and other power applications. Every control panel needs at least one SPD. Consult ABB to discover the best SPD plan.

- UL 1449 listed surge protection
- OVR series DIN-rail SPDs deliver reliable surge protection for 15 kA and 40 kA and options for replaceable MOV cartridges and modules
- OVRHMSU series wired SPD for sensitive loads, 120, 220 or 277 V, 1-phase or 3-phase versions — 24 amps
- OVRH Hi-SCCR UL Type 1 series SPDs help protect equipment from over-voltage events up to 400 kA per phase
- NEMA 4X enclosures, audible alarm, indicator lights, dry contacts, surge counter and filter options available on select models

ABB engineered components



CP-S.1 power supplies

CP-S.1 power supplies deliver high efficiency and reliability in a compact footprint. Designed for a wide variety of applications, including semiconductor manufacturing, this advanced range boasts an integrated 150% power reserve for five seconds and operates at an efficiency of up to 94%. With overheat protection, active power factor correction (120 W up to 960 W variant) and a broad certified input voltage range.

- Complete 24 V DC offering from 3–40 A in metal enclosure ideal for meeting OEM machine building requirements
- Saves valuable installation space in the control cabinet due to compact design and high efficiency
- Additional redundancy unit CP-C.1-A-RU available to establish true redundancy
- Space-saving design and small footprint
- Rated supply voltage range from 100–240 V AC and 100–250 V DC
- Rated output voltage of 24 V DC
- Rated output current of 3.0 A, 5.0 A, 10.0 A, 20.0 A and 40.0 A
- High efficiency of up to 94%
- SEMI F47 compliant



Signal towers and beacons

Trust is everything and in industrial environments, it is essential to have human-machine interfaces you can count on. ABB signaling devices include both optical and audible elements to alert personnel in any environment.

- Wide range of LED elements covering all signaling needs
- High mechanical durability and long life
- Fast and easy installation with bayonet fixing
- Fast and easy bulb changes with no tools required



Jokab Safety Products

ABB delivers machine safety solutions for single machines or entire production lines. Machine safety is used to help protect both man and machine from harm by using safety devices and controls. ABB's Jokab Safety offers an extensive range of innovative products and solutions for machine safety systems to help protect both man and machine

- Semiconductor machinery can be combined with a user-friendly Sentry safety relay to give you enhanced safety and protection
- Smile reset button is a small and easy to install device used to reset a local safety device or a global safety circuit

ABB engineered components



22 mm pilot devices

Trust is everything and in industrial environments, it is essential to have human-machine interfaces you can count on. Whenever you start or stop a process, the response must be assured. That's why ABB pilot devices are designed and engineered to deliver reliability.

- Increase uptime with products designed and engineered to deliver total reliability
- Modular plastic and metal ranges include flexible and adjustable products to meet your exact needs
- Save up to 30% installation time with unique, tool-free, snap-on components in the modular range
- Reduce your installation size with the compact range



NEMA 30 mm heavy-duty oil-tight pilot devices

No longer sacrifice durability for design. ABB's new line of 30 mm pilot devices features updated aesthetics while maintaining high performance standards. Oil-tight operators with octagonal locking rings provide a robust and secure installation. From textile mills to motor control centers, NEMA types 1, 3, 3R, 4, 4X, 12 and 13 have you covered.

- New look and feel — positive touch response, functionality and performance you can count on
- Ease of assembly — one screw contact block mounting
- Greater torque — due to octagonal locking nut design, greater torque can be applied during assembly and installation to provide a water- and oil-tight fit



Voltage and current measuring relays

ABB's CM range offers a wide selection of powerful, compact devices for the monitoring of currents and voltages in single-phase AC/DC systems. All come in a housing that is just 22.5 mm wide. This product range includes current and voltage monitoring relays for over- and undercurrent protection, over- and undervoltage protection and phase loss monitoring — from 3 mA to 15 A and from 3 V to 600 V.

- Over/undercurrent monitoring
- Over/undervoltage monitoring
- AC/DC signal measurements
- Easy connect technology with push-in terminals

ABB engineered components



Temperature monitoring relays

ABB's well-established CM-TCS relay range monitors and measures the temperatures of solids, liquids and gaseous media using a variety of different sensors. Over-temperature and under-temperature monitoring as well as open- or closed-circuit principal monitoring can be configured for any device quickly and easily. When the temperature falls below or exceeds the set threshold value, output relays change position according to your configured functionality and the front-face LEDs show the current status. Discover how CM-TCS temperature monitoring relays can help protect your application.

- Reduced downtime and commissioning time
- Selection time reduction
- Engineering time savings



Thermistor motor protection relays

Protect motors against overheating. ABB's CM-MSx.xx range of thermistor motor protection relays monitor the winding temperature of motors. PTC sensors integrated in the motor windings directly measure the motor heat. This direct temperature measurement enables the thermistor motor protection relays to evaluate various motor conditions such as overheating, overload and insufficient cooling. ATEX approval is also available for products used in hazardous areas.

- Reliable motor operation
- Operation in hazardous areas possible
- Easy status indication and troubleshooting



Manual motor starters

Manual motor starters, also known as motor protection circuit breakers (MPCBs) or manual motor protectors (MMPs), are electromechanical protection devices for the main circuit that are designed to provide a complete motor protection concept. They are mainly used to switch motors ON/OFF manually and to provide fuseless protection against short-circuit, overload and phase failures. Fuseless protection saves cost and space and ensures a quick reaction under short-circuit condition by switching the motor off within milliseconds. Starter combinations are set up together with contactors and are available with screw or push-in spring terminals.

- Compact design
- Efficient planning and installation, perfectly matching the ABB contactor family
- Simple connecting links ensure electrical and mechanical connection
- Less machine downtime by protecting motors and reduced troubleshooting
- ABB's push-in spring terminals offer unique, fast, easy and reliable connections
- Harmonized main accessory range (auxiliary contacts, signal contacts, shunt trips and undervoltage releases) across family

ABB engineered components



SACE® Formula circuit breakers

The SACE Formula range consists of two frames, A1 and A2, which reach up to 100 A and 250 A respectively. Both frames are available in a fixed configuration with front terminals.

- Fixed configuration
- Polarity: 1-pole, 2-pole and 3-pole
- Maximum breaking capacity of 25 kA at 240 V AC
- DIN-rail mounting
- Fixed thermal-magnetic trip unit (TMF) for protection of networks in alternating current
- Single depth of 2.36"
- Standard front terminals



Electronic relays and timers

ABB offers a complete range of electronic relays and timers for increased flexibility and choice. This portfolio includes pluggable relays for easy interchangeability and solid state for an extended electrical life. Interface relays with gold-plated contacts suitable for sensitive applications are also available. This wide selection of relays adheres to the highest global standards and satisfies the requirements for a diverse number of applications and needs.



Limit switches

ABB limit switches are an easy and reliable way to convert mechanical movements into electrical signals. The contacts are mechanically linked to an actuator for visible operation. By combining different types of actuators and casings, our wide range of limit switches can meet the needs of countless applications.

- Plastic or metal casing, IP66 and IP67
- Able to switch strong current up to 10 A
- Mechanical durability up to 30 million operations
- Easy to install and easy to use
- Reliable in extreme conditions — ready for anything
- Continuous operation — to keep your installation running 24 hours a day

ABB engineered components



ProLine panelboards

The ProLine panelboard provides an innovative and high performance approach to branch circuit protection. For industries and service providers where reliability and 24/7 uptime are critical, the ProLine panelboard with ProLine circuit breakers is the perfect solution. This design provides the benefits of enhanced safety and improved reliability with full coordination. ABB developed the ProLine panelboard to provide current-limiting branch circuit protection for applications where reliability matters most. The ProLine panelboard uses the world-class, high performance breaker technology for which ABB is known.

- 225 A and 400 A versions
- 5 kAIC series rating at 240 V AC, 14 kAIC series rating at 277/480 V AC
- Up to 84 circuits, 1–100 A branch breakers
- Touch-safe IP20 with pluggable breaker with non-energized bolt-on screw
- Breakers are UL current limiting
- Fully coordinated
- UL 67 compliant
- Single- or double-ended incoming
- Fully rated sub-fed breaker
- Fully rated feed-through lugs



SMISLINE TP plug-in distribution system

SMISLINE is the complete line protection solution for buildings and machines where safety, availability and flexibility matter. The SMISLINE TP plug-in distribution system ensures that load-free devices and components can be snapped on and off under voltage with no need for added personal protective equipment to guard against electrical shock. When working under load, please follow the applicable regulations and laws according to the country.

- 125 A and 250 A systems, up to 600 V AC
- Touch-safe IP20
- Directly pluggable devices such as MCBs, RCDs, RCBOs, motor starters, SPDs and disconnect switches
- Prefabricated for cabinet installation both vertically and horizontally
- Busbar system is UL 508 compliant to be used in UL 508A industrial control panels



Control power and machine tool transformers

Machine tool transformers are used to provide voltage to control devices in applications where voltage regulation and minimum space are critical. Welded cores provide the highest quality electrical performance and quiet operation. Control power transformers are an economical alternative to high inrush/machine tool transformers.

- Finger-safe terminals offer added protection and safety
- Pressure plate terminals ensure secure connections
- Wide variety of fusing options
- Type IP transformers are seismically qualified



CONTACT US



Do you have a similar project and are you searching for the right Application configuration? Contact us and talk to our experts!



ABB Inc.
305 Gregson Dr.
Cary, NC 27511
United States

electrification.us.abb.com

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