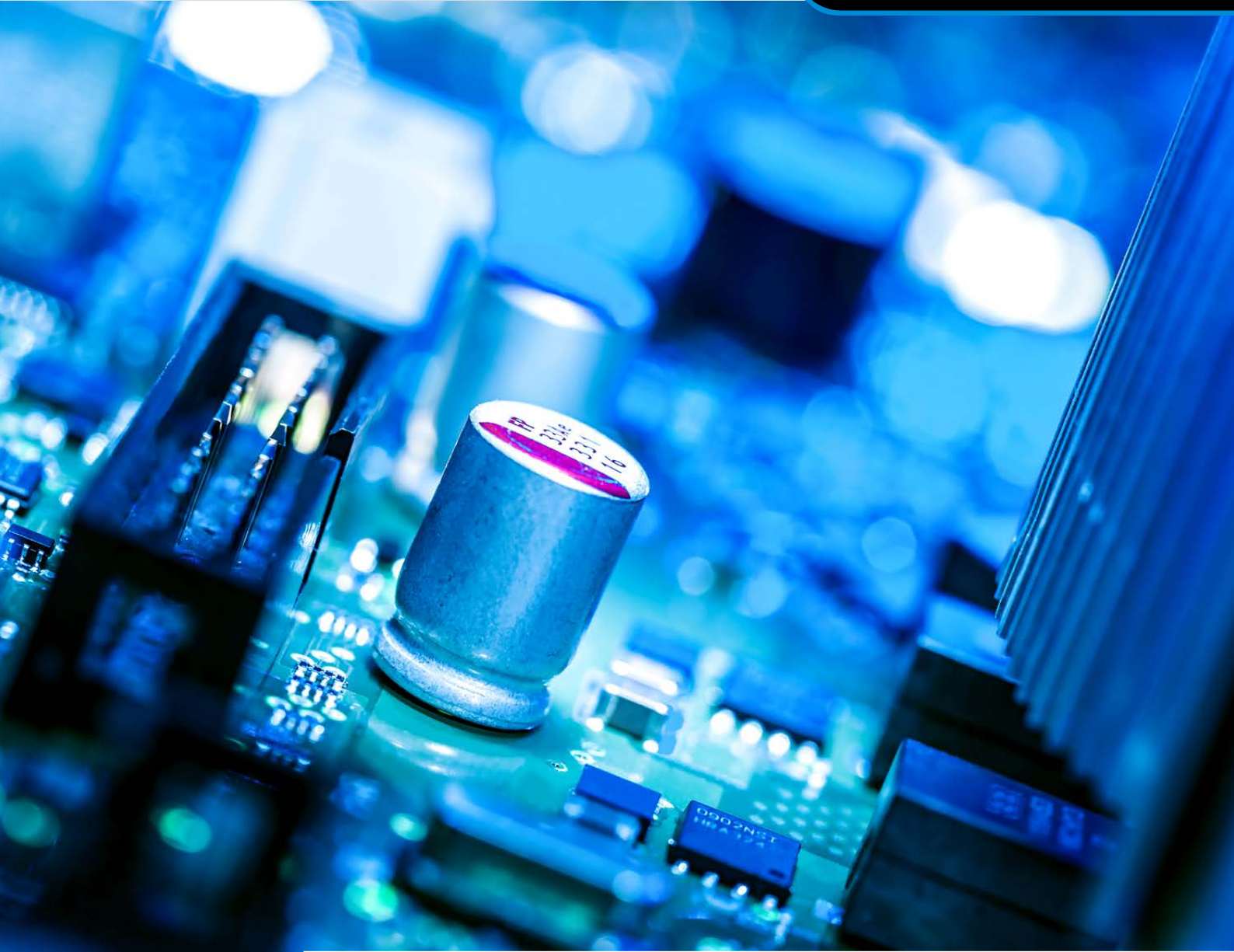


Committed to excellence



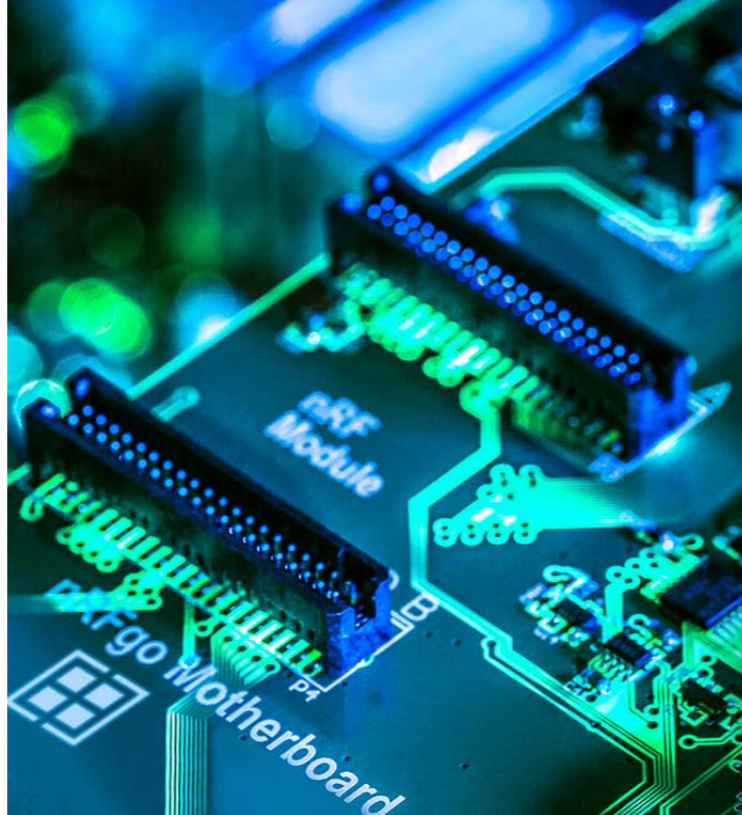
ELECTROMECHANICAL COMPONENTS GUIDE

V6.4.1








Suppliers & Focus

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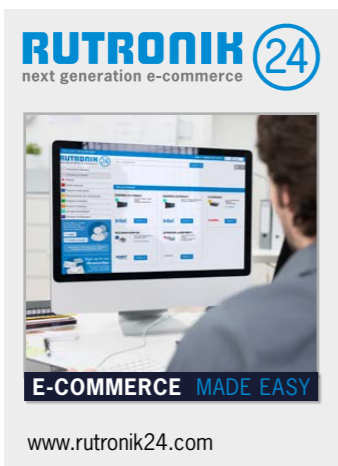
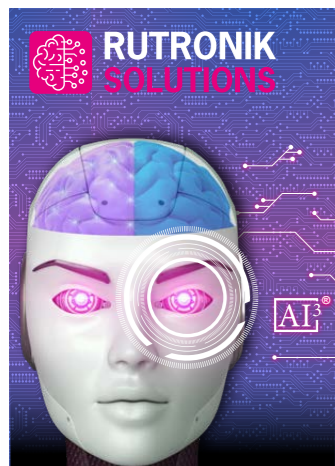


Our Product Portfolio

 Semiconductors	 Boards & Systems
 Passive Components	 Storage Technologies
 Electromechanical Components	 Wireless Technologies
 Displays & Monitors	

Our Initiatives



Committed to excellence

Consult – Know-how. Built-in.

The Technical Competence from RUTRONIK

Worldwide and individual consulting on the spot by competent sales staff, application engineers & product specialists.

Components – Variety. Built-in.

The Product Portfolio from RUTRONIK

Wide product range of semiconductors, passive and electromechanical components, displays & monitors, boards & systems, storage and wireless technologies for optimum coverage of your needs.

Logistics – Reliability. Built-in.

The Delivery Service from RUTRONIK

Innovative and flexible solutions: from supply chain management to individual logistics systems.

Quality – Security. Built-in.

Quality without Compromise from RUTRONIK

The integrated management system (IMS) encompasses quality control, information security, environmental protection, occupational health and safety.



ELECTROMECHANICAL COMPONENTS

Product areas of well-known history, with great developments and enormous innovation leaps. Today's and future applications need speedy and reliable data, signal and power transfer and consistent energy sources.

Continuous adaptation to innovations and market needs put this product division in leading positions in the field of Interconnect, Electromechanics and Batteries. Explore our resources to stay up to date with its trends, technologies and technical expertise.

Rutronik is one of the world's leading broadline distributors with a product portfolio including semiconductors, passive and electro-mechanical components as well as embedded boards, storage & displays, and wireless products. On a permanent basis, 28 billion components are available for Rutronik's customers. For five decades, the independent family-owned company has been committed to sustainable growth with a focus on high-growth future markets.

A functioning supply chain and reliable logistics are crucial in the electronics industry. With its longstanding experience and expertise, Rutronik makes a significant contribution to ensuring on-time delivery of required electronic components in this sector. Especially the last few years have proven Rutronik's standing as a reliable business partner even in times of supply bottlenecks and global supply chain management challenges.

On the Podium of the "Distributor of the Year" Awards

In the 2023 election of the B2B trade magazine "Elektronik", Rutronik was once again able to convince the readers: In its 50th anniversary year, the company is particularly pleased to be ranked first as Distributor of the Year in the range of "Volume Distributors". Rutronik was able to achieve even more outstanding results in the categories "Supply Chain Performance", "Digitalization" and "Sustainability". The magazine's editors call the annual reader's choice "an established indicator of distributor success".

According to the magazine, 2022 was once again a special year for distribution, at least when sales are considered. As a result of the changes in the industry, distributors now offer more than just logistics and delivery processing, with their portfolio including consulting, maintenance, and other additional services. This is why in the readers' choice awards for "Distributor of the Year", the distributors were also judged based on different categories.





INTERCONNECT SOLUTIONS

Suppliers



Our Linecard – Cables

	Adam Tech	Alysium	Amphenol	Assmann WSW	Gradconn	JAE	Lumberg / Lutronic	Molex	MPE Garry	Sumida
Franchise Situation	Global	Global	Europe *1	Global	Global	Europe, Asia	Global	Europe *2	Global	Global
Headquarters	USA	GER	USA	GER	TWN	JPN	GER	USA	GER	GER
Main Production Facilities	CHN	Asia	Worldwide	SVK, CHN	TPE, CHN	Worldwide	GER	Worldwide	CHN	Worldwide
Round Cable		■	■	■			■			
Flat Cable				■						
FFC/FPC	■	■	■	■				■	■	■
Standard Assembly	■	■		■		■		■		
Customized Assembly	■	■	■	■	■	■	■	■		■
EV Charging Cable	■		■			■				

*1 Amphenol CS in Asia too *2 Molex dedicated countries



Our Linecard – Connectors

Type	Adam Tech	Alysium	Amphenol	Assmann WSW	Gradconn	JAE	Kyocera AVX	Lumberg / Lutronic	Molex	MPE Garry	Pancon	Preci-Dip	PULSE - YAGEO Group	Sauro
Franchise Situation	Global	Global	Europe *1	Global	Global	Europe, Asia	Global	Global	Europe *2	Global	Global	Europe	Global	Global
Headquarters	USA	GER	USA	GER	TWN	JPN	JPN	GER	USA	GER	GER	CHE	USA	ITA
Main Production Facilities	CHN	Asia	World-wide	SVK, CHN	TPE, CHN	World-wide	World-wide	GER	World-wide	CHN	Europe, Asia	CHE	MEX, CHN	ITA
Board-to-Board	■		■	■	■	■	■	■	■	■	■	■		
Wire-to-Board	■		■	■	■	■	■	■	■	■	■	■		
Wire-to-Wire	■		■	■		■		■	■					
Crimp Terminals	■		■	■		■			■	■				
FFC/FPC	■	■	■			■	■		■					
IC Socket	■			■						■		■		
USB	■		■	■		■			■				■	
Audio/Video	■		■	■		■		■	■					
D-Sub	■		■	■					■					
Memory and SD Card	■		■	■	■	■	■		■					
Modular Jacks	■		■	■					■				■	
Circular Connectors	■		■	■				■	■					
Coaxial Connector	■	■	■		■				■					
EV Charging	■		■			■								
Terminal Blocks	■		■	■				■	■					■
Customized Connectors	■		■	■	■	■	■			■				
Tools Crimp			■			■		■	■					

*1 Amphenol CS in Asia too *2 Molex dedicated countries



Amphenol

Electric Vehicle, Circular and PCB Connectors

SurLok Plus Connectors

- DC current rating up to 500 A
- DC voltage up to 1000 V (@105°), 1500 V optional (@125°C)
- Operating temperature range -40°C to +105°C (+125°C optional)
- Single wire connection, 90° and 180° plug orientation
- Field installable plug, molded cable assembly
- 3,6 mm to 14 mm contact diameter, 16 to 85 mm² cable diameter
- Different color coding (available in black, red and orange color)
- Quick lock and press-to-release design, HVIL optional
- Waterproof - IP67 mated, IP2X unmated (IP6K9K optional)
- EMI shielding (optional), 360° rotating plug optional



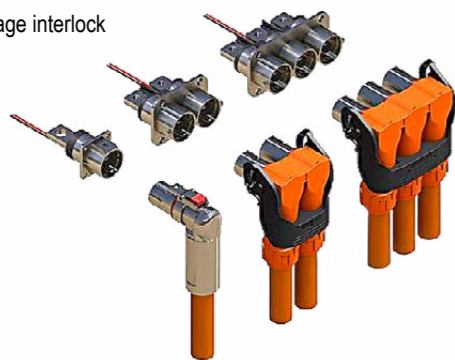
Minitek® Pwr Connectors

- Wire-to-wire and wire-to-board configurations
- 2 to 24 circuits for dual row and 2 to 12 circuits for single row
- Current rating up to 5A per contact
- Current rating up to 9A per contact
- Voltage Rating 600 Vrms
- Large variety of receptacles and cable assemblies available
- Ruggedized design for tough location
- Audible and tactile feedback
- Operating temperature range -40°C to +105°C
- Blind mating interface (BMI) option
- Glow wire compliant option
- Terminal Position Assurance (TPA) products



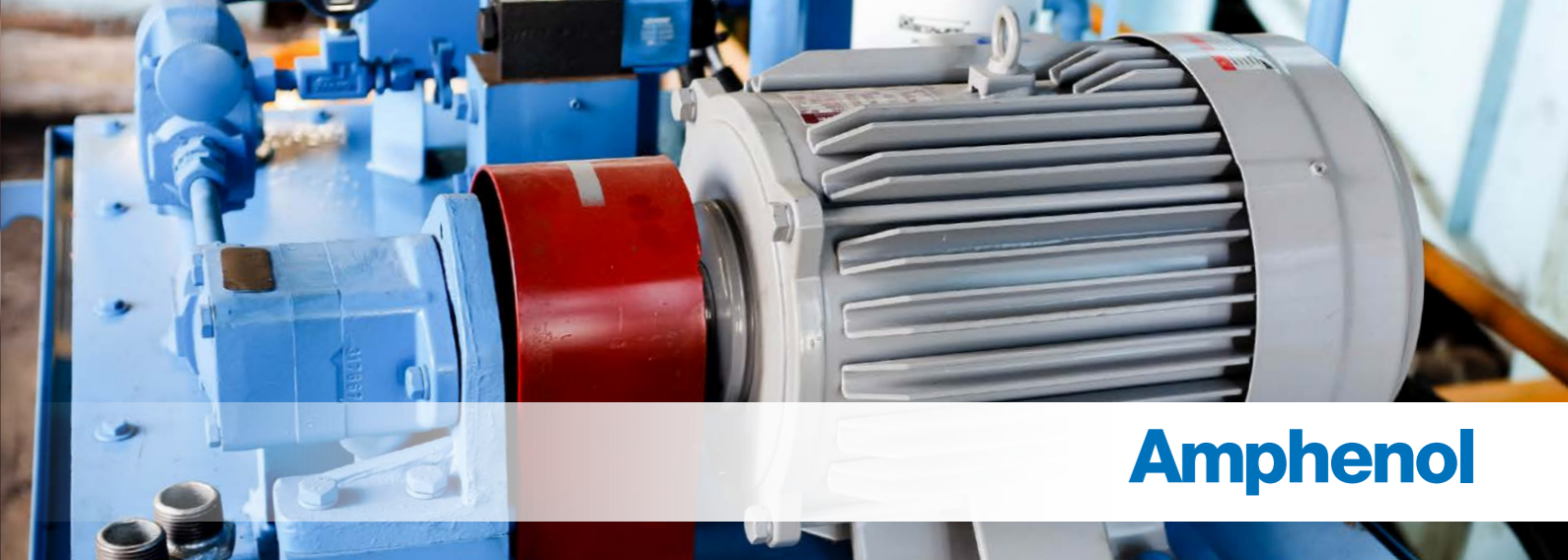
Powerlok™ HVIL Connectors

- DC voltage rating up to 1000 V
- DC current rating from 70 to 500 A | 20 to 750 A
- Operating temperature range -40°C to +125°C
- 90° and 180° plug
- Automatic secondary lock
- Different color coding
- Waterproof - IP67/IP69K mated, IP2X unmated
- EMI shielding
- HVIL = high-voltage interlock



Excel|mate CC - AC Couplers for EV Side

- Compliant with IEC 62196-2 standard 2-II a
- Compliant with IEC 61851-1
- No of contact 4 position for power, 1 position for PE, 2 position for signal
- Current rating 32 A for power
- Voltage rating up to 1000 VDC
- Operating temperature range -40 to +125°C
- Waterproof - IP67/IP69K mated, IP2X unmated
- Waterproof - IP55 mated
- More than 10,000 mating cycles
- Protection cap available
- Automatic secondary lock
- Insulation resistance >100MΩ (DC 500 V)



Amphenol

USB-C Connectors & Card Holders

USB-C Connectors

- Reversible plug - insertion in the right side up or upside down orientation
- USB4 receptacle up to 40 Gbps (USB4 Gen 4 speed)
- Supports up to 5 A current
- Plug and receptacle
- Waterproof receptacle - IPX8 mated, IPX2 unmated
- 16 circuits version (480 Mbps data rates), 24 circuits version
- Up to 10,000 mating cycles
- Enhanced side wall of middle plate stabilizes contact performance



RJ45 Modular Jacks & Magnetic Jacks

- Voltage rating up to 150 VAC
- Current rating up to 1.5 A
- Contact resistance Max. 20 mΩ (initial)
- Operating temperature range -40°C to +85°C
- Magnetic and ferrite-filtered types available
- 4, 6, 8, and 10 positions available
- Single, stacked or ganged version
- Through-hole or SMT mounting



X-Lok Push Lock Connectors

- Push and lock design
- Various sealing caps
- Large variety of receptacles and cable assemblies available
- Ruggedized design for tough location
- Audible and tactile feedback
- Waterproof IP68 mated
- Operating temperature range -40°C to +105°C
- Up to 1,000 mating cycles
- Easy-grip design

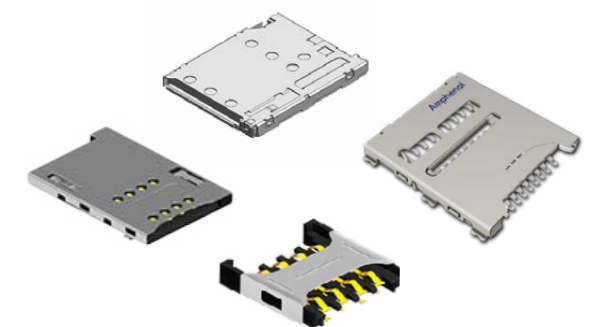


Memory Card Holders

- Several types and sizes
- ### SIM Card (mini, micro, nano)
- Correct orientation of SIM card
 - Card polarization feature
 - Lock structure and card detection

SD, microSD, SD, microSD Express, SD Express

- Hinged, push-push, push-pull
- UHS-I, UHS-II, SD express
- Space-saving design, (ultra)-thin card
- High reliability, w/o and w/ detect function

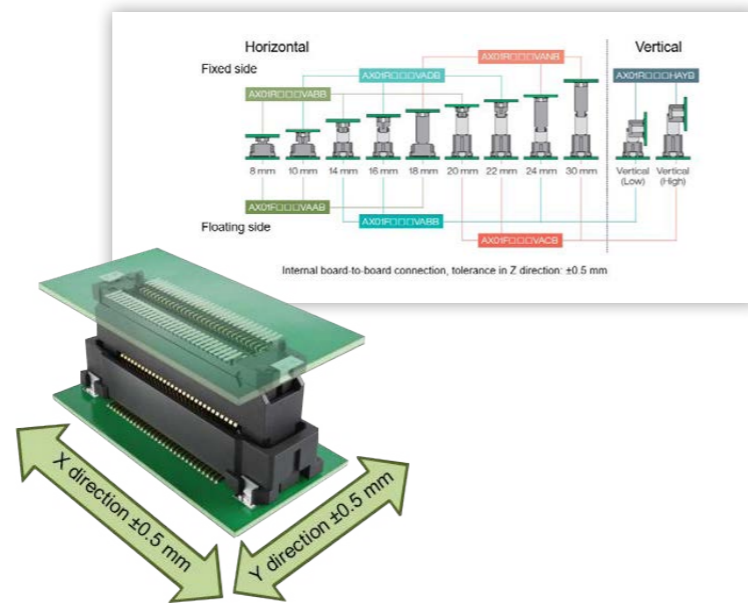




Automotive Connectors

MA01 Series – Floating Connector for Automotive

- 0.635 mm pitch
- Floating (X,Y ±0.8 mm movable)
- Vertical, parallel or horizontal combination
- Integrated absorbing misalignment
- High contact reliability
- Current rating 0.5 A, voltage rating 50 VAC
- Operating temperature range up to 125°C
- Mating guide alignment
- Dual contact structure high contact reliability
- Low removable force rolled surface connection
- PCIe-Gen3 compliance high speed transmission (equivalent to 8.0 Gbps)
- Easy-to-to use/ automation assembling



KW1/KW02 Series – CHAdeMO compatible EV Charging Plug

- Compatible with CHAdeMO, V2H Guideline 2.1
- No of contacts 2 position for power, 8 position
- Current rating 125 A for power
- Voltage rating 500 VDC
- Operating temperature range -30°C to +50°C
- Durable and highly weather resistant
- More than 10,000 mating cycles
- Intuitive and easy operability
- An emergency cover enables maintenance on-site if necessary
- CE certified and UL recognized



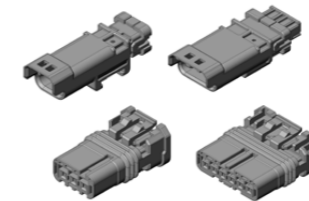
KW04 Series – Type-2 compatible Charging Plug

- Compatible with Type-2 CCS electric vehicle fast charging standard
- No of contacts 2 position for power, 1 position für PE, 2 position for signal
- Current rating 150 A / 200 A for power
- Voltage rating 1000 VDC
- Products with rated currents of 150 + 200 A are available
- Operating temperature range -30°C to +50°C
- Waterproof protection of live parts inside the Connector
- 10,000 mating cycles
- Temperature sensor available
- Structure with replaceable engagement area
- Insulation resistance 5 mega ohm min. (1,000 V DC apply)



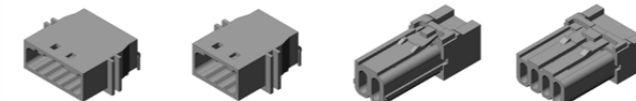
MX80 Series – Automotive Cable-to-Cable/ Cable-to-PCB Connectors

- 0.64 mm tab size
- Pitch 2.54 mm
- 1 row with 2, 3, 4, 6 ways - 2 rows under development
- Waterproof - IPX7 mated
- Operating temperature range -40°C to +125°C (silver plated terminal optional)
- Wide wire range 0.13 to 1.0 mm²
- Robust coding key
- Pre-lock front TPA/Secured Kojiri prevention
- Mechanical lock mechanism prevents incomplete mating with a click feeling
- Inline, RA and 180° PCB, panel mount, clip stowage
- Automotive-grade
- Compact design with 3x lips seal



MX44 Series Waterproof Board-to-Cable Connectors

- Compact Waterproof Automotive Connector
- Operating temperature range -40°C to +125°C
- 3.5 mm pitch, 1 row, 2, 4 and 6 positions 3 Amps
- Waterproof min. 98 kPa (initial)
- Vibration proof 30 G (50 to 1,000 Hz) each pole/ 3 hours
- High volume in automotive and metering business
- Each contact separately waterproof
- Socket contact is a box type which is strong against external force



USB-C Connectors & Card Holders

DX07 USB-C Connectors

- Reversible plug - insertion in the right side up or upside down orientation
- USB4 receptacle up to 40 Gbps (USB4 Gen 4 speed), else Gen 3
- Supports up to 5 A current
- Plugs, receptacles and harnesses
- Waterproof receptacle - IPX7 or higher mated
- 16 circuits version (480 Mbps data rates), 24 circuits version
- Up to 10,000 mating cycles
- 16 pins single-row SMT type (enough to fulfil USB 2.0)
- 24 pins dual-row SMT type saves space on the PCB
- pure and hybrid mounting type available



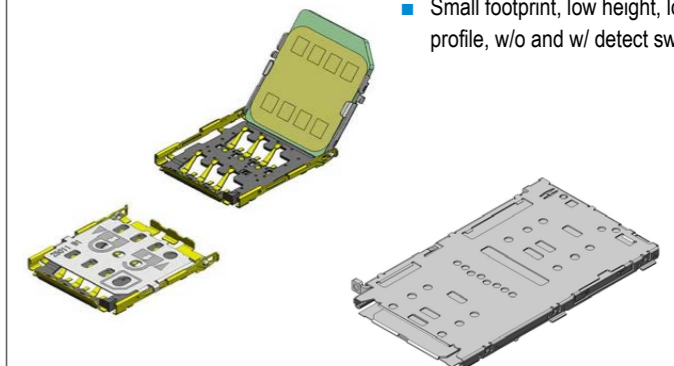
SF15 / ST19 Memory Card Holders

SIM Card (micro, nano), dual nano SIM type

- Correct orientation of SIM card
- Card polarization feature
- Lock structure and card detection

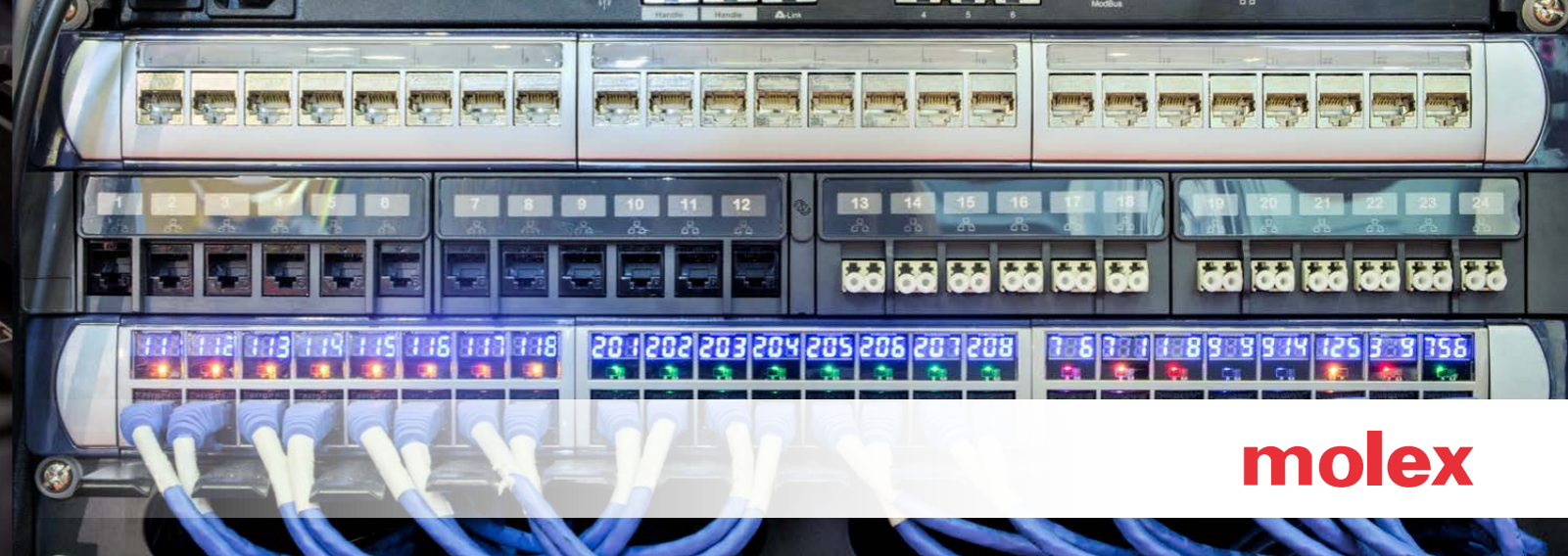
SD (Full-Size), microSD, 3-in-2 type

- Hinged, push-pull, push-push, tray, eject
- UHS I and UHS II compatible microSD
- Small footprint, low height, low profile, w/o and w/ detect switch





molex

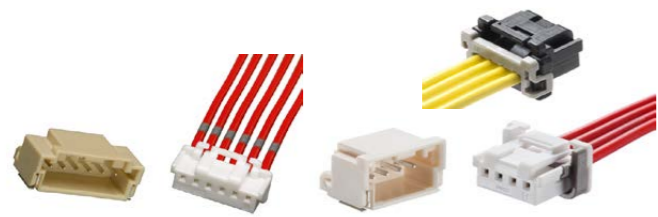


molex

PCB Connectors and Antennas

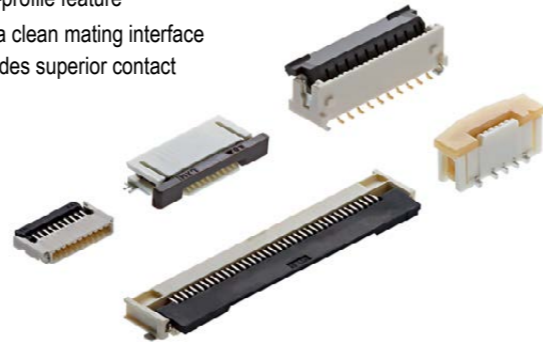
DuraClik 2.00 mm Wire-to-Board Connector System

- Voltage rating up to 125 V
- Current rating up to 3.0 A
- Contact retention to housing up to 50 N (ISL Version)
- Operating temperature range -40°C to +125°C
- 2.00 mm pitch
- Compatible with JST -> LV214
- Secure PSB retention for anti-vibration resistance (100 N per 2 nails)
- Inner positive lock
- Terminal position assurance (TPA)
- Independant secondary lock



Easy-On FFC FPC Connectors 0.50/1.00 mm double contact

- Voltage rating up to 50 V
- Current rating up to 0.5 A
- Wide range of circuit sizes 4-80
- Operating temperature range -40°C to +125°C
- 0.5 mm/1.00 mm pitch
- Molex series 522xx, 524xx, 525xx, 526xx, 527xx, 541xx
- Cable locking
- Ultra-low-profile feature
- Ensures a clean mating interface and provides superior contact reliability



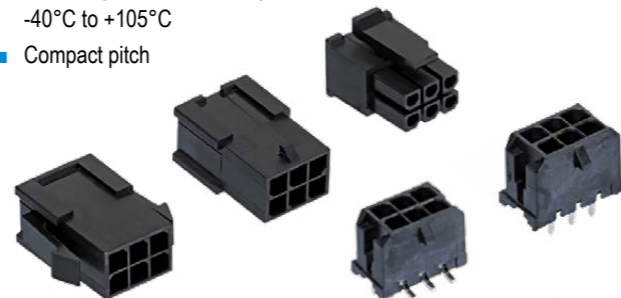
5G External Antennas

- Frequency 698-960MHz, 1.71-2.69GHz, 698-960MHz, 4.2GHz, 4.4-5GHz
- RF Power (Watt) 2.0
- Impedance (Ohms) 50
- Size (mm) 171.50 by 19.40 (straight), 151.00 by 19.40 (folded)
- High efficiency and peak gain for all major cellular bands
- Antenna Connectors in straight and folded modes
- Antenna Connectors with SMA-J and RP-SMA-J mounting options
- Multi-protocol solution that supports GSM, CDMA, UMTS, LTE, 5G NR
- Hinge joint allows 90° rotation on the vertical plane
- SMA-J Connector allows 180° rotation on the horizontal plane



Micro-Fit Connector System

- Wire-to-wire, wire-to-board configurations
- Single and dual-row
- Voltage rating 600 V
- Current rating up to 12.5 A per contact max
- Pitch 3.00 mm
- 2 to 24 loaded circuits; single and dual row
- Micro-Fit blind mate interface (BMI) system available
- Operating temperature range -40°C to +105°C
- Compact pitch



Micro-Fit TPA Plug and Receptacles

- Single-row, wire-to-wire and wire-to-board configurations
- 2 to 7 circuits, also available for 8 to 12 circuits
- Max. voltage rating 600 V
- Current rating from 5 to 10 A
- Terminal Position Assurance with integrated secondary lock
- Compatible with all existing Micro-Fit 3.0 headers and plugs
- Reduces assembly errors that result in terminal back-outs
- Fully isolated contacts on each side of the interface



FCT D-Sub Connectors

- Power and Signal
- Standard / High-Density / Mixed Layout / Backshells / Hoods
- Current 5.0, 7.5, 40.0 A
- Waterproof - IP67 mated, IP20 unmated
- Coaxial, High Power, High Voltage contacts
- Machined, Pneumatic, Stamped Crimp contacts
- Still a reliable solution in a broad range of applications and various industries
- Time-tested for signal transmission, communications, power distribution
- Readily available in a wide variety of materials and plating combinations



USB-C Connectors & Card Holders

USB-C Connectors

- Reversible plug - insertion in the right side up or upside down orientation
- USB4 receptacle up to 40 Gbps (USB4 Gen 4 speed), else Gen 3
- Supports up to 5 A current
- Plug and receptacle
- Waterproof receptacle - IP67 up to IP*8 mated
- 16 circuits version (480 Mbps data rates), 6 circuits version (power only)
- Up to 10,000 mating cycles
- Mid-plate "tongue" design - helps ensure high reliability



Memory Card Holders

- Several types and sizes

SIM Card (mini, micro, nano)

- Correct orientation of SIM card
- Card polarization feature
- Lock structure and card detection

SD, microSD, Combo Sockets

- Push-push, push-pull, eject, hinged
- UHS I and UHS II compatible
- Low-profile design, compact size and low-profile height





RELAYS



Suppliers



Our Linecard – Electromechanical Relays

	Finder	FCL Components	HongFa	Nexem	NF-Forward	Omron	Panasonic	Relpol	TDK
Franchise	GER, AUT, NED, HUN, CZE	Europe without Italy	Europe, North America	EMEA without Israel	Global	Europe	Europe	Global	Europe
Headquarter	ITA	JPN	CHN	JPN	GER	JPN	JPN	POL	JPN
Main Prod. Facility	ITA	JPN, CHN	CHN	JPN, PHL	CHN	JPN, CHN, MYS	JPN	POL, CHN	Worldwide
Signal	■	■	■	■	■	■	■		
Power	■	■	■		■	■	■	■	■
Automotive		■	■	■	■	■	■		
Security	■		■			■	■		
Timer	■		■					■	
Sockets	■	■	■		■	■	■	■	

Our Linecard – Reed and MOSFET Relays

	Comus	Coto	Littelfuse	Omron	Panasonic
Franchise Situation	Europe	Global	Europe, Asia	Europe	Europe
Headquarters	USA	USA	USA	JPN	JPN
Main Production Facilities	CHN, IND, BEL, NED	MEX, TWN	MEX, CHN, PHL	JPN	JPN
MOSFET Relays	■	■	■	■	■
SSRs	■				
Reed Contacts	■	■	■		
Reed Relays	■	■	■		■
Mercury Relays	■				
Proximity Switches	■		■		

Electromechanical Relays

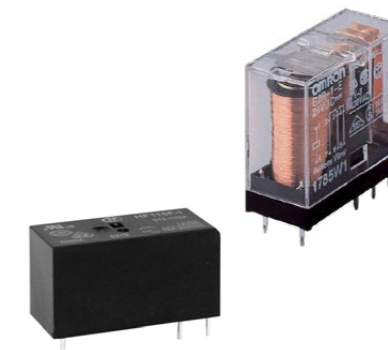
Power Relays

Applications

- Fans (motors)
- Door motors
- Contact loads
- Pump motors
- Heater element
- Lighting applications
- Smart meter
- White goods
- EV-Charging

Focus Series

- Hongfa: HF118F, HF115F
- Omron: G2RL2, G5Q



Latching-Relays

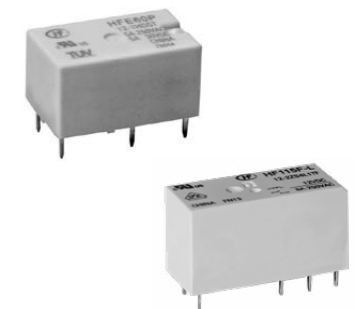
Applications

- Intelligent meter
- Intelligent lighting
- Intelligent socket
- Relay protection

Focus Series

- Hongfa: HF115L
- Omron: G6B

A latching electromechanical relay maintains its position after it gets actuated. It remains in its last position when the drive is removed.



Automotive Relays

Applications

- Automotive body control
- Motor control
- Security control
- Driving information collection
- Convenience



Signal Relays

Features

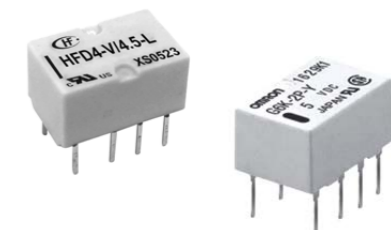
- Compact and light weight
- SMT and THT types available
- Low power consumption
- Available in different voltage and current ranges

Applications

- Energy (metering)
- Security & medical devices
- Consumer & home appliances
- Automotive, ASIL related applications (electronic parking brake)
- Everywhere where detection of mechanical movements is needed

Focus Series

- Hongfa: HFD4
- Omron: G6K





Reed and MOSFET Relays

MOSFET -Relays

Features & Benefits

- Small size
- High current switching
- Low CxR
- High speed switching
- Low power consumption
- High isolation input/output

Applications

- Communication equipment
- Security equipment
- Test and measurement equipment
- Industrial equipment
- Gambling machine
- Ticket machine

Focus Series

- Omron: G3VM
- Littelfuse: CPC1017



Reed-Contacts

Features & Benefits

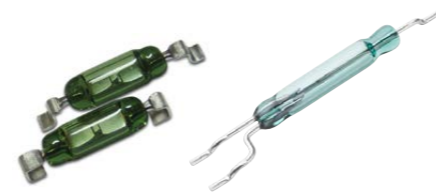
- Free from contamination
- Safe to use in harsh industrial and explosive environments
- Hermetically sealed
- Are immune to electrostatic discharge (ESD)

Applications

- Proximity sensing
- Security alarm sensor
- Level sensor
- Flow sensor
- Pulse counter
- Fasten seatbelt

Focus Serie

- Comus/Coto: R180SMD



RedRock – Magnetic Sensor Based on TMR Technology

Features

- 0.3 to 4 V op. voltage
- Zero hysteresis
- 1.5 mA low current
- Omnipolar sensitivity
- Continuous operation
- Different polarities

Applications

- Proximity detection
- Rotary sensing
- Fluid level detection
- Door/Lid closure detection
- Portable medical devices
- Motor controllers
- Consumer electronics



Timer Relays

Applications

- Lighting Control
- Air Conditioner
- HVAC systems
- Automotive
- Industrial



Electric Vehicle Charging Products

PSR-Series

- EV-charging: Mode 4
- Voltage range: AC 550-1,300 V / DC 500-1,000 V
- Ampere range: 40-2,000 A



JLLS-Series

- EV-charging: Mode 2 / 3 / 4
- Voltage range: AC 300 V / DC 500-1,000 V
- Ampere range: 1-1,200 A



G6B-Series

- EV-charging: OBC
- Voltage range: 380 VAC
- Ampere range: 5 A



HFE82V-150C-Series

- EV-charging: Mode 4
- Coil voltage: 12 / 24 VDC
- Max. switching V/C: 750 VDC/150 A
- Operating temperature: -40 to +85°C



FTR-K1/K5-Series

- EV-charging mode: 1/3/4, AC-side circuit
- Coil voltage: 12 / 24 V
- Max switch. Voltage / Carry Current (NO side): 277VAC/20A (FTR-K1) / 277VAC/40A (FTR-K5)
- Operating temperature: -40 to +105°C
- RTIII available



HVC500B-24S-Series

- EV-charging: Mode 4
- Voltage range: DC 900 V
- Ampere range: 500 A





FUSES



Suppliers



Our Linecard – Fuses

	Conquer	Eaton	Littelfuse	Schurter	Siba	Yageo Group
Franchise Situation	Europe	Europe	Europe, Asia	Europe, Asia	Europe	Europe
Headquarters	TWN	USA	USA	CH	GER	TWN
Main Production Facilities	TWN	GBR	CHN, MEX, PHL	CH	GER	TWN
5x20 / 6.3x32	■	■	■	■	■	
Automotive Fuses	■	■	■			
Subminiature Fuses	■	■	■	■	■	
SMD Fuses	■	■	■	■	■	■
Resettable Fuses	■	■	■	■		■
Fuseholders	■	■	■	■	■	
High Voltage Fuses	■		■	■		

SMD Fuses

Features & Benefits

- Numerous current ratings
- High rated voltages
- High breaking capacity
- Super-quick-acting (FF), quick-acting (F) and time-lag (T) versions
- Precise, low power dissipation, resistant to vibrations and pulses

Focus Series

- Schurter: UMT250
- Littelfuse: 154 and 454 serie

Applications

- Secondary protection on SMD PCBs
- Industrial electronics
- Smart meters
- Battery protection
- Sensors
- Lighting
- Mobile devices
- Semiconductor protection



Fuseholder / CLIPS

Features & Benefits

- Fuseholders for a wide range of diverse fuses
- SMD or THT, and as panel mount
- Screw-in, snap-in, soldered or mountable on DIN-Rail
- Models are standing or lying or are designed as drawer or as clip
- Compact designs even for high power consumption
- IP protected to IEC 60529

Applications

- Household appliances
- Industrial equipment
- Control electronics
- Medical equipment
- Photovoltaic applications
- Inverters
- Battery charge controllers
- String fuse holder
- DC applications
- E-Mobility charging stations

Focus Series

- Schurter: FPG4; OGN



Surface Mount PPTC Devices

Features and Benefits

- Size from 0603 - 3729
- Hold Current 0.04 - 7 A
- Max Voltage 6 - 250 V
- Max Fault Current 3 - 100 A
- LowRho Version for 0402-2920
- Also with AECQ

Applications

- Automotive
- Telecommunication
- Industrial / consumer
- General electronics
- Computers & peripherals
- Game console port protection



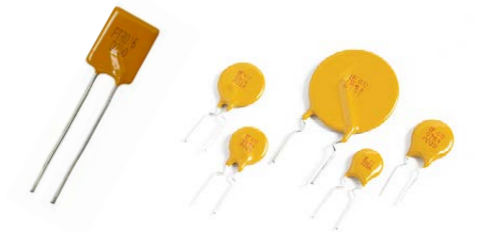
Radial Leaded PPTC Devices

Features and Benefits

- Hold Current 0.05-15 A
- Max Voltage 6 - 600 V
- Max Fault Current 3 - 100 A

Applications

- Automotive
- Telecommunication
- Industrial / consumer
- General electronics
- Computers & peripherals
- Game console port protection





SWITCHES

Suppliers



Our Linecard – Switches

	C&K / Littelfuse	Diptronics	Knitter-switch	Omron	Panasonic	Schurter
Franchise Situation	Europe, Asia	Global	Global	Europe	Europe	Europe, Asia
Headquarters	USA	TWN	GER	JPN	JPN	CHE
Main Production Facilities	FRA, CHN, VNM	CHN, VNM	CHN	CHN, JPN, MY	CHN, JPN, MY	CHE
Tact Switches	■	■	■	■	■	■
DIP Switches	■	■	■	■		
Slide Switches	■	■	■			
Pushbutton Switches	■	■	■		■	■
Rotary Switches	■		■			
Rotary Coded Switches	■	■	■	■		
Encoder Switches	■		■		■	
Toggle Switches	■		■			
Navigation Switches	■	■	■			
Industrial Switches	■	■	■			■
Rocker Switches	■		■	■		
Detection Switches	■	■	■	■	■	
Micro/Snap-acting Switches	■	■	■	■		
Rubber, Membrane, Steel Keypads			■			

Switches

Tact Switches

Features & Benefits

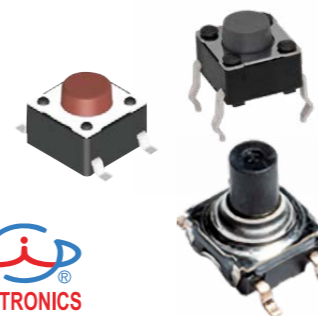
- Different actuator heights available
- Different operation forces available
- Terminations (SMT J/G, THT)
- IP67/68 available

Focus Series

- C&K: KSC, PTS
- Diptronics: DTSM

Applications

- Medical device
- Home appliances
- Automotive
- General industry
- Consumer



DIP Switches

Features & Benefits

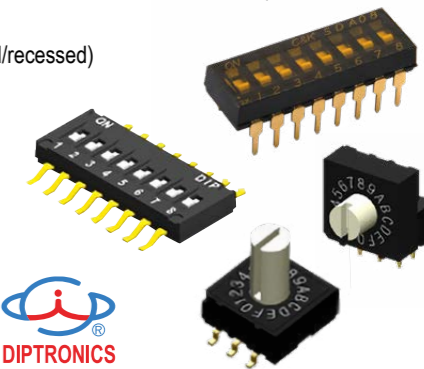
- Both ON/OFF position applicable for soldering process
- Gold contact for high reliability
- Low profile SMD half pitch
- Positions 01-10, 12
- Actuator optional (raised/recessed)

Focus Series

- Diptronics: DMR, NDS
- C&K: SDA, RTE

Applications

- Cloud devices
- IT industry
- Industrial control field
- Security



Micro and Detect Switches

Features

- Various actuator configurations (e.g. pin plunger, lever and roller lever)
- Different operating forces and electrical ratings
- Terminal styles (PCB through-hole, quick connect, wire leads, screws)
- Different contact types (SPST, SPDT, DPST, DPDT)

Focus Series

- Omron: D2F
- C&K: SDS
- Diptronics: TE

Applications

- Energy metering
- Security devices
- Consumer electronics
- Medical devices
- Automotive, ASIL related applications
- Everywhere where detection of mechanical movements is needed



Pushbuttons

Features & Benefits

- Available in SPST, SPDT, DPST and DPDT functions
- Momentary or lock version
- Anti-Vandal and sealed IP67 versions available for harsh environments
- Illuminated & non-illuminated

Focus Series

- C&K: K12, D6
- Schurter: MSM

Applications

- Elevator
- Alarm, safety & security systems
- Automotive, motorcycles
- Offroad transportation controls



THERMOMANAGEMENT

Suppliers



Our Linecard – Thermomanagement

	ADDA	Assmann WSW	Delta	Fischer Elektronik	InnoTape	Jamicon	Mechatronics
Franchise Situation	Europe without Italy	Global	Europe	Global	Europe	Europe	USA
Headquarters	TWN	GER	TWN	GER	GER	TWN	GER
Main Production Facilities	Asia	SVK / CHN	Asia	GER	GER	Asia	USA
AC Fans	■					■	■
DC Fans	■		■			■	■
EC Fans			■				
CPU Cooler	■		■				
Blowers	■		■			■	■
Heatsinks	■	■	■	■			
Heat Contacting Foils				■	■		
Heatpipes	■		■	■			
Housing				■			

Fans – Standard and Customized Solutions

DC - FAN

Features & Benefits

- Standard sizes 25mm > 200mm
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time

Attachable Heatsinks

- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication
- Medical device



EC - FAN

Features & Benefits

- Standard sizes 120mm > 910mm
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time
- With Bracket possible

Attachable Heatsinks

- Welding machine
- Frequency converter
- Inverter
- Control cabinet
- Cooling system, refrigerator



AC - FAN

Features & Benefits

- Standard sizes 80mm > 172mm
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time

Attachable Heatsinks

- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication



Blower

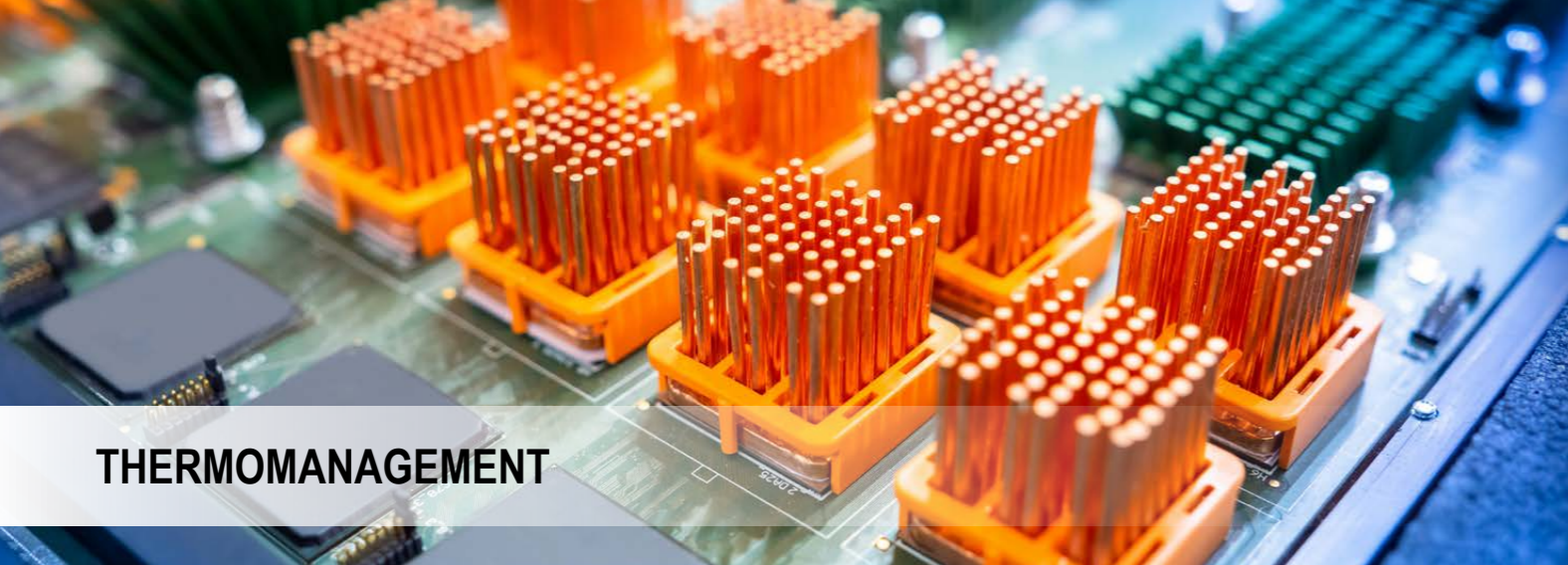
Features & Benefits

- Standard sizes 50mm > 97mm and 280mm > 630mm for EC Blower
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time

Attachable Heatsinks

- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication





THERMOMANAGEMENT

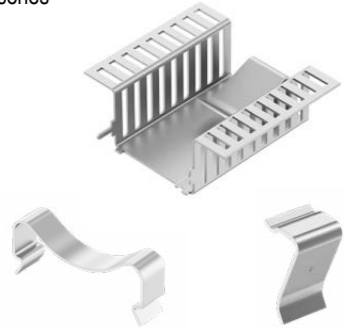


Heatsinks

Every electronic component generates heat, and with increasing power the heat development increases. If the heat is not sufficiently dissipated, this can lead to overheating of the device or even a complete system failure. Heat sinks take over the thermal management of electronic devices.

Standard Heatsinks

- With different mounting solutions
- With several finishing
- Wide range of thermal resistance
- Several accessories available

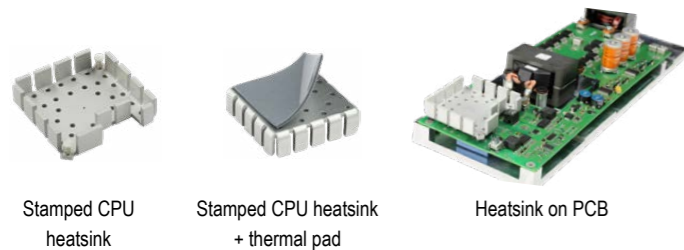


Stamped CPU Heatsink

For PGA (pin grid array), BGA (ball grid array) and other high power components. The new development series is a combination of cross-cut and finger-shaped heatsinks. Optimally used to mount the heatsink on the PCB via "Push Pins". The advantage of this new heatsink design improves the air convection.

Optional

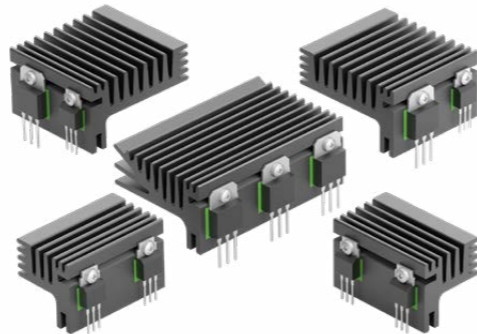
- Alternative material thickness
- Modifications of all dimensions & perforations
- Special surface treatments
- Customer made heatsink attachment methods



Stamped CPU heatsink Stamped CPU heatsink + thermal pad Heatsink on PCB

Customized Heatsinks

- Based on customers requirement
- With special mounting solutions
- With CNC machined
- Open sizes



Cases / Housing

To effectively protect electronic components and printed circuit boards from external influences, Fischer Elektronik offers a wide range of housings. These include combination and system enclosures as well as small aluminium enclosures and enclosures with special heat dissipation properties. The range also includes accessories for enclosure technology.



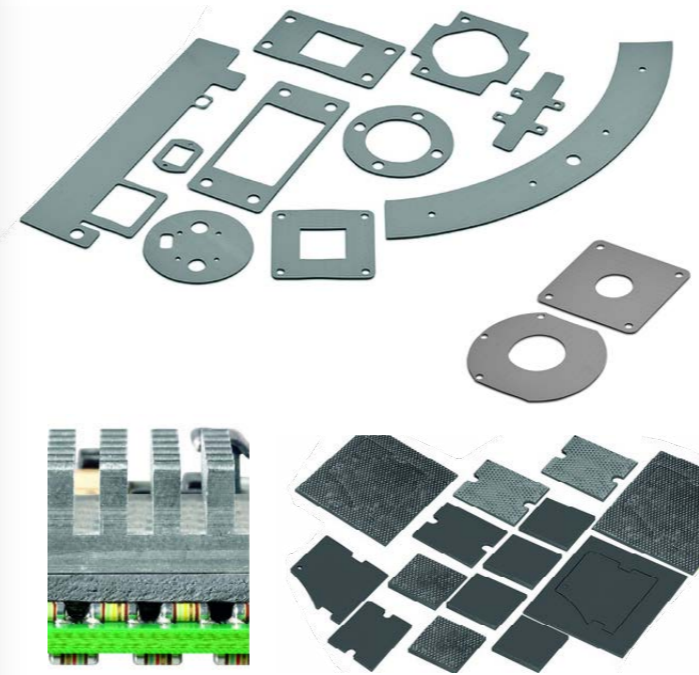
Heat Foils

In order to avoid temperature-related failures of electronic components or systems, it is important to ensure optimal thermal management. Electronic semiconductors only remain functional for a long time if they are operated in the right temperature. In addition to the appropriate heat sink, the perfect heat conducting material also plays a key role.

Thermal Conductive Material

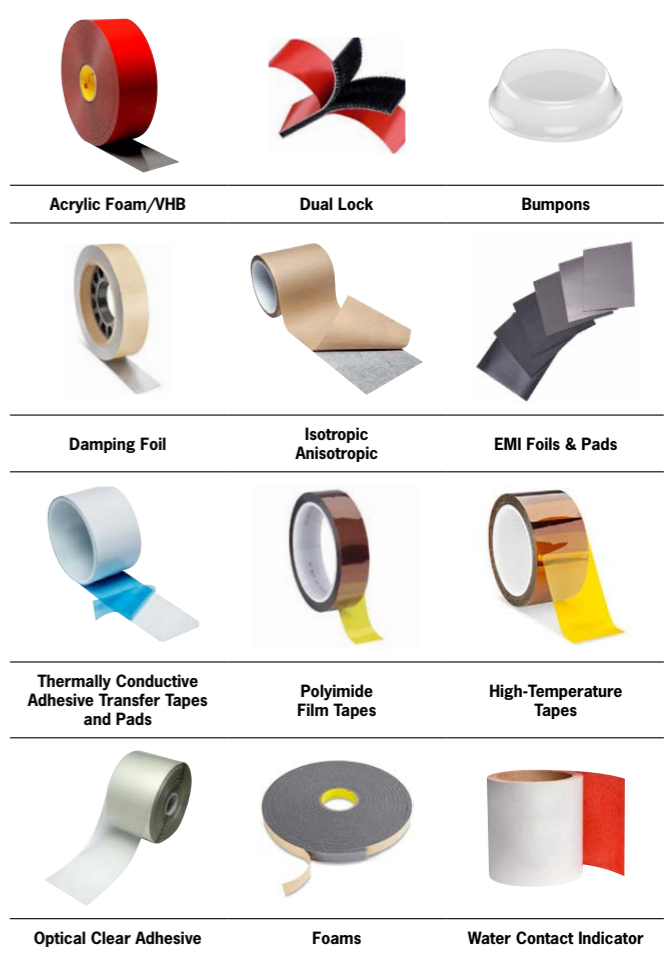
The conductive material is responsible for promoting the thermal conductivity of the thermal path by reducing the heat transfer resistance.

- Silicone rubber insulating material for semiconductors
- Thermally conductive foil made of siliconelastomer
- Silicone-free thermal conductive foils
- High thermoconducting graphite foils
- Thermal conductive foil one-sided adhesive
- heat conductive foam and gel foils



Customized Solutions

- Foil size prepared based on customers requirement
- Multilayer
- Free in forms
- Samples in short time





BATTERIES



Our Linecard – Batteries

	Adam Tech	EEMB	EVE Energy	Keystone	MPE Garry	Murata	Panasonic	Renata	Saft	Samsung SDI	Tenpower
Franchise situation	Global	Global	Global	EMEA	Global	Europe	Europe	Global	Europe	Europe	Global
Headquarters	USA	CHN	CHN	USA	GER	JPN	JPN	CHE	FRA	KOR	CHN
Main Production Facilities	CHN	CHN	CHN	USA/CHN	GER/CHN	JPN	IDN	CHE/CHN	FRA	KOR/CHN	CHN
Alkaline (Cylindrical & 9V Block)							■				
Lithium Metal coin cell (Primary & Secondary)		■				■	■	■			
Lithium Metal Cylindrical Cell (Primary)		■					■		■ ²		
Lithium Ion Polymer		■ ¹						■ ¹			
Lithium Ion (Cylindrical Cell)			■ ³							■ ³	■ ³
Battery Holder (THM & SMT)	■			■	■			■			

Additional technologies (e.g. Silver oxide, NiMH, Lead Acid) are available upon request

Additional types of batteries (e.g. customized Battery Packs or Thin-Film format) are available on request

1. Only Battery Packs incl. PCM, Side Agreement required
2. Also available: Secondary Prismatic Cells
3. Only Bare Cylindrical Cells for Pack Assembling Companies

Batteries

3.7V Lithium Ion Cells (rechargeable)

- Broad range of 18650 and 21700 cells
- High Power Cells (NCM/NCA)
 - Up to 40A continuous Discharge
 - Up to 4500 mAh capacity
- Energy Cells (NCM/NCA)
 - Long cycle lifes and fast charge
 - High densities (Wh/kg)
 - Up to 5500 mAh
- LFP cylindrical cells and modules
 - Up to 4500 mAh with up to 152 Wh/kg
 - Long life & High safety
 - Modules for ESS and EV applications
 - ESS: up to 8000 cycles
 - EV: Density > 180 Wh/kg / 8000 cycles

Applications

- Medical devices
- Gardening tools
- Construction tools
- Power tools
- E-Bikes
- Pedelecs
- Escooters
- E-Motorbikes
- Broad range of LEV
- AGVs
- Energy storage systems



Dangerous Goods Service and Expertise

Due to extremely reacting Lithium

ALL LITHIUM BATTERIES ARE DANGEROUS GOODS!

Therefore

- Regularly trained personnel
- All applicable documentation available on request
 - ISO Certificates from manufactured battery type
 - Product Specifications and Handling Guidelines
 - UN38.3. Test Reports / Test Summaries
 - Material Safety Data Sheets
- Strict adherence to DG packaging and transportation rules
- Certified dangerous goods warehouse
- Certified and audited logistic partners





Batteries

3V coin cells CR range (non-rechargeable)

- Long-term reliability
- Low self discharge rate at 20°C just 1% per year
- Good pulse capability
- Stable voltage level during discharge
- Temperature range -30°C up to +70°C

Applications

- Vending machines
- Tracking & RFID
- Wearables
- Price tags etc.
- Remote Keyless Entry (RKE)
- Medical equipment
- Car keys
- Real Time Clock (RTC)



3V coin cells BR-/BR-A range (non-rechargeable)

- Self discharge rate at 20°C just 0,5-1% per year
- Wide operating temperature range: -40°C up to +125°C
- 22+ years of experience in production
- Outstanding long-term reliability

Applications

- Tire Pressure Monitoring Systems (TPMS)
- Electronic Toll Collection (ETC)
- Heat cost allocators, etc.
- Tracking & RFID
- Memory back-up
- Meters etc.



3V cylindrical batteries BR/CR range (non-rechargeable)

- 38+ years of experience in production
- Superior long-term reliability
- Self-discharge rate at 20°C is just 0,5% per year
- Operating temperature -40°C up to +85°C
- Stable impedance throughout battery life
- High current discharge performance

Applications

- Smoke detectors
- Car alarm
- Water & gas meters
- Heat cost allocators
- Tracking & RFID
- Medical equipment
- Security devices and systems
- Automotive



3.6V cylindrical batteries LS/LSH range (non-rechargeable)

- High energy, low power applications
- 3.6V optimized for legacy electronics
- Long shelf life
- High energy densities
- High level of safety
- High and stable operating voltage

Applications

- Smart metering
- Asset tracking
- Industrial Internet of Things (IIoT)
- Medical devices
- Security systems
- E-call
- Electronic Toll Collection (ETC)



3V coin cells with pins

- Horizontal and vertical solutions
- Most tabbed coin cells available from stock
- Less space required as with battery holders due to direct mounting on PCB
- THT or SMD mounting
- Temperature range -30°C up to +70°C
- Available from all our CR manufacturers



Customized coin cell solutions

- Customized pins
- With cable and with or without connector
- Parallel or series combination of coin cells
- Shrinking tube solutions
- Customized labeling
- Combination of all mentioned options
- Sampling of customized versions



Battery Holders

Huge variety of battery holders



Coin, horizontal



Coin, retainer



Coin, contact



Cylinder, holder



Cylinder, contact



Cylinder, clip



www.rutronik.com



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