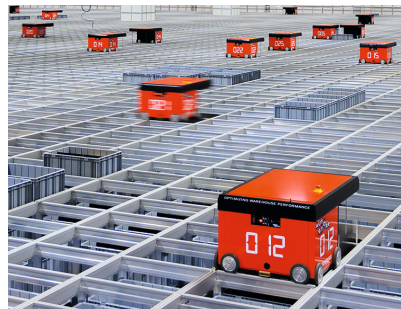




Building Automation Safety, Security & Access Control Application Guide

TTI, Inc., – A Berkshire Hathaway Company

The Specialist in Electronic Component Distribution



**Global Distribution Centres
with more than 195,000m²
of automated warehousing
in North America, Europe
and Asia.**

Why Choose TTI?

Founded in 1971, TTI has steadily grown to become a world leading specialist distributor of electronic components. The company was founded on the premise that passive component purchasing could be made more efficient by offering product specialization, customer-driven service and proprietary supply chain solutions.

Global Distribution Centres

Our European headquarters is located just outside of Munich, Germany in Maisach-Gernlinden. In total, we have 42,600m² of dedicated warehouse space and local sales and technical support in over 40 locations across Europe. TTI has more than 195,000m² of automated warehousing in North America, Europe and Asia. All are linked into a global warehouse management system that provides superior customer service and overall business efficiencies. Wherever you are in the world, TTI can support you.

Year after year, customers rate our inventory availability, on-time delivery and accuracy among the very best in the industry – contact us today to find out what a true specialist has to offer.

Quality and Reliability

TTI is the first distributor to have all global warehouse locations ISO registered and certified to ISO 9001 and ISO 14001 Standards. TTI Europe is also certified to EN9120/EN9100, IECQ-CECC and ISO/IEC 27001 Standards. Additionally, all of our European sales branches are ISO 9001 certified. TTI has one global documentation system that ensures that every TTI branch and warehouse in the world follows the same processes.

Building Automation Applications

Safety, Security & Access Control Applications

Access Control

- Touchless Access
- Fingerprint Detection
- Occupancy Monitoring
- Smart Lock
- Automatic Garage Door
- Video Doorbell

Room Quality

- HVAC Systems
- CO₂ Measurement Devices
- UV-C Disinfection Systems
- Smart Thermostat

Alarm Systems

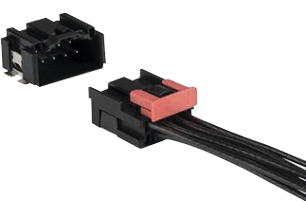
- Outdoor Security Camera
- Wireless Security Camera
- Door & Window Sensing

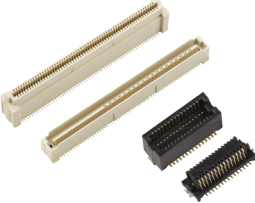
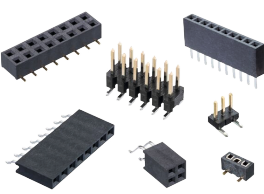
Safety Devices

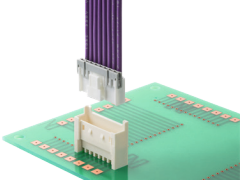
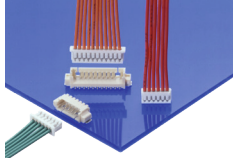
- Flame / Fire Detection
- Smoke Detection
- Heat Detection
- Gas Alarm



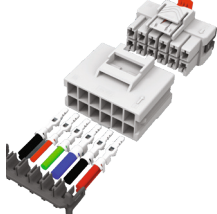
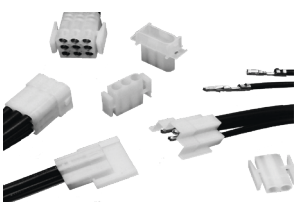
Connectors

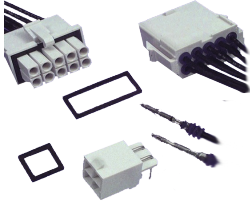
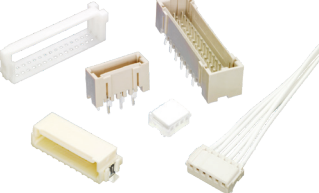
Amphenol ANYTEK	Amphenol LTW[®] Unrivaled InterConnects for Harsh Environments	Amphenol INDUSTRIAL PRODUCTS GROUP	Amphenol ICC
Terminal Blocks	Ceres, X-Lok, HS-Lok, M-Series and Eceomate	eco mate [®] Aquarius Circular Connectors	Minitek Microspace [™] 1.27mm Crimp-to-Wire Connectors
• Rising clamp system • Wire protector system • Spring clamp system • Screw pluggable system • Spring pluggable system	• High waterproof capacity (IP68, 1m/24hrs) • High tensile strength • Push lock mechanism with quick release	• IP68/69k in mated condition • Quick Reliable Mating - Bayonet Coupling • Mixed Power & Signal Layouts	• Keying to prevent visual mismatching • Terminal Positioning Assurance (TPA) • Primary and secondary contact retention
			

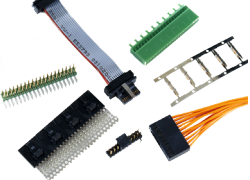
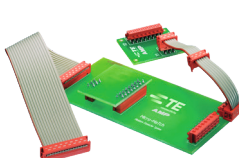
Amphenol ICC	Amphenol ICC	Amphenol ICC	HARWiN
VerIO [™] Connectors	FLH Series Mini Sealed 2.5mm Connectors	BergStak [®]	Pin Headers, Sockets
• IP67 Small form factor robust I/O connector • Push pull locking and light weight	• Wire to wire IP67 connector with high current options	• 0.5mm double row contact Mezzanine Connector • Available in 3mm to 6mm stack height options	• B2B/B2W connections, 1 to 2.54mm pitch, up to 3A per contact • Quality & dependability available now
			

JAE	molex	molex	molex
DX07 USB4 40 Gbps, 2-row SMT r/a Connector	Mini-Lock Connector System	PicoBlade Connector System	Balanced Flex and PCB Antennas
• Certified USB Type C receptacles compatible to meet USB4 specifications that support data rates to 40Gbps.	• 2.50mm pitch connector with TPA, positive-lock and glow wire to meet industry needs.	• High-density 1.25mm pitch connector providing 1.0A current rating in a compact design.	• Poly-flexible double sided adhesive antenna. • Operating at both 2.4GHz and 5GHz frequency ranges.
			

Connectors

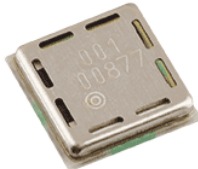
 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR
POWER TRIPLE LOCK	MATE-N-LOK	Angled RJ45 Connectors	USB Type-C Connectors
• Locks in three ways • Audible 'click' latch • Four keying options	• 600VAC or VDC, 19A maximum • 30 - 10 AWG wire range	• 45 degree angle entry jack design • Reduce signal interference • Decrease PCB assembly costs	• Designed with a flippable and reversible mating interface • Supports USB 2.0, USB 3.1 Gen 1 & USB 3.1 Gen 2 types • Deliver power up to 100W at 20V
			

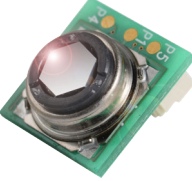
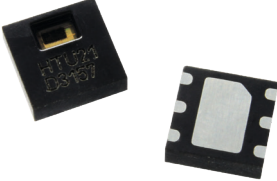
 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR
Mini-Universal MATE-N-LOK	Battery Connectors	1.5mm AMP Mini CT	VAL-U-LOK Connectors
• Fully polarized • Tool-less contact removal • 600 VAC or VDC, 9.5 Amp max.	• 5.0 mm pitch headers available for 7.2, 10.8, and 12.0V rechargeable batteries • Consumer friendly mating/unmating of battery	• Discrete wire interconnect • Circuits range from 2-20 single row, 22-40 dual row • AWG 24~28	• High current types are rated up to 13A per line • 2-24 position discrete wire interconnect • Wire-to-wire and wire-to-board system
			

 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR	 AUTHORIZED DISTRIBUTOR
AMPMODU Interconnect Systems	Micro-MaTch Connector Family	CoolSplice Connectors	Cable labels, Markers & Tags
• Assembly designs offer latching and polarization • High temperature option is SMT compatible • Applicable sizes 2-25	• Tin plated contact design • One of the smallest systems • Available at 1.27mm • UL-recognized	• Enable a waterproof solution with an IP rated splice • 2-position connector • Wire size: 22AWG to 18AWG	• Printable cable markers • Variety of colours and sizes • High temperature, and low-fire hazard applications
			

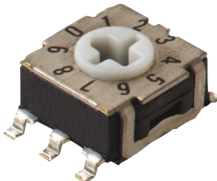
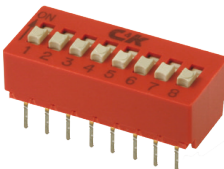
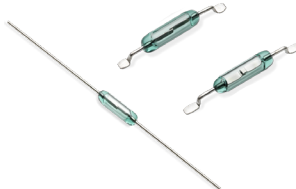
Power Supplies & Sensors

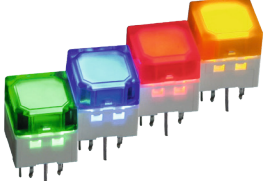
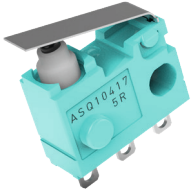
			
LCC Series 250 - 600W	HRP-N Series	DIN Rail HDR	CR Series Low Power DC-DC
• 250 W or 600 W fanless power supplies • Optional IP65 rated enclosure • Differential remote sense (-40 to 85 °C Baseplate temp. (no Derating))	• Operating temperature range: -40 ~ +70 • 250% peak power capability • High efficiency up to 89%	• Ultra slim design • No load power consumption <0.3W • Over voltage category III	• Guaranteed start up from -40°C and full power output at 85°C • Safety agency recognised • Industry standard packages and pin out
			

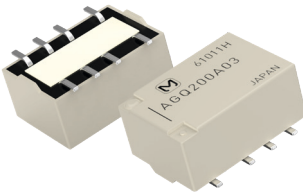
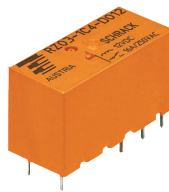
			
INIR	MIPS	CRIR	Ultrasonic Sensor
• Concentration range up to 100% • High resolution (10ppm) • Easy implementation • Linear & temperature compensated output	• Rugged stainless steel housing • Pressure range up to 60bar • High accuracy ±0,75% TEB • IP67 rating	• HVAC, demand controlled ventilation • Indoor air quality (IAQ) measurement • Air purification systems	• Open structure • Frequency 40kHz • Surface mount • Directivity depend on customer's request
			

			
D6T IR Sensors	PIR Sensors EKM	ACW4 Hall-Effect Rotary Position Sensors	HTU2X Humidity Sensors
• Compact size • Resolution from 1x1 up to 32x32 • Easy implementation with digital output • Accuracy up to ±0,2°C	• High accuracy & reliability, small size • Digital or analogue output • Low current consumption	• Compact, simple to install • Well-sealed, offering environment	• Range 0-100% RH • Miniaturized footprint 3x3mm • Fully calibrated • Digital I²C output • Fast response time
			

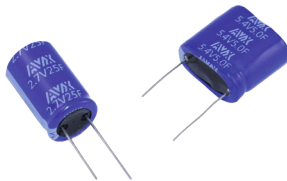
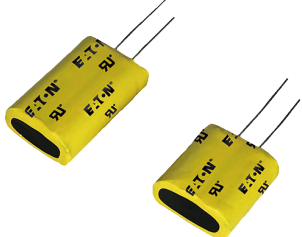
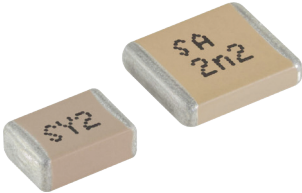
Relay & Switches

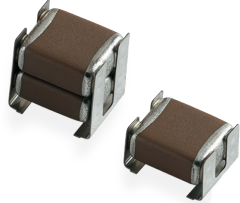
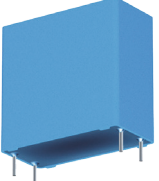
			
KSC-4 Tactile Switches	RTE Rotary Dip Switches	BD Dip Switches	Reed Switches
• KSC-4 tactile switches for SMT are IP67 rated and with 5.2mm high soft actuator	• 4, 10 & 16 Pole Low Profile Rotary DIP Switches	• Dip Switch with actuator and an open bottom construction that allows for solder washing w/o the need for a tape seal	• Magnetically operated position sensor • Hermetically sealed • No standby power • Switching up to 265Vac/300Vdc
			

			
G5NB Relay	G5Q Relay	B3W-9 Illuminated Tactile Switch	ASQ Detection Switch
• Miniature Power Relay 5A, 1NO contacts and 10 kV Impulse Withstand Voltage	• IEC/EN 60335-1 conformed Power Relay, 10A with 1CO contacts	• Compact Illuminated • Through-hole-mounting Switches with Two LEDs	• Sealed • Long stroke and sliding contact construction • High contact reliability for low level loads
			

			
AGQ Signal Relays	PhotoMOS® Relay RF	SNR Relays	RZ Relays
• 2A, 2CO • 1,500V FCC • 2,500V Telcordia • Power type for 3,5A inrush current available	• Photo coupled MOSFET HF relay • 20V...400V • Low CxR • Very good RF characteristics • Low signal loss	• 5mm small size Interface Power relay for 230VAC and 5A	• PCB Power Relay 1xCO 230VAC and 16A for actors
			

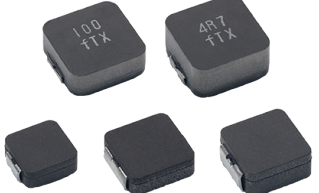
Capacitors

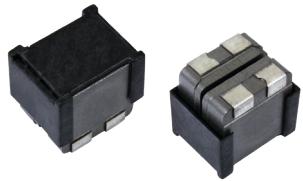
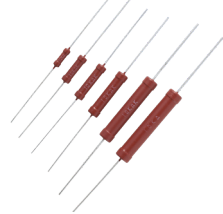
 A KYOCERA GROUP COMPANY	 Powering Business Worldwide	 a YAGEO company	 PRECISION DESIGN COMPEX • DLI • JOHANSON MFG NOVACAP • SYFER • VOLTRONICS
Supercapacitors	PTV Supercapacitors	ALS Electrolytic Capacitors	Safety Capacitors
• High pulse power capability • Low ESR & Low leakage current • GSM/GPRS pulse applications • Electronic locks • Portable devices	• 6.0 V operating voltage for high power and energy • Ultra low ESR for very high power density • Large capacitance for high energy density	• High ripple current • Excellent surge voltage capability • 25 - 550 VDC • PET Sleeves	• Safety capacitors with 4mm minimum creepage/clearance capability • Safety capacitors with 305Vac rating • Safety capacitors with 1kVdc rating
			

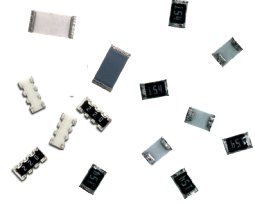
 INNOVATOR IN ELECTRONICS			
Safety Capacitors	SMD Hybrid Capacitor	DC Link Capacitors	159 Snap In Capacitor
• High impulse tolerance • Product can help reduce the size of the board and the height of the set thanks to its small size and low profile	• 4,000h @125°C (ZC series) • High ripple current & large capacitance • Vibration proof types available	• AEC-Q200 qualified capacitors available on request THB Test (60°C/95% H/1000h) voltage range - Vr at 85°C 450 to 1100V capacitance range - 1.5 to 120 uF	• New feature! 500V products with a useful life of 3000h at +105°C • High ripple current capability, robust design
			

			
High Q MLCC			
• Narrow tolerance in capacitance • Low ESR, low ESL and high-Q in RF, UHF(300MHz-3GHz), SHF(3GHz-30GHz) & microwave frequency bands • High withstanding voltage			
			

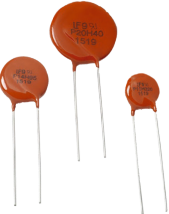
Electromechanical & Resistors

 A KYOCERA GROUP COMPANY		 a YAGEO company	 INNOVATOR IN ELECTRONICS
Antennas	SRPxxxxC Consumer Grade Shielded Power Inductors	Power Inductors	1210 Common Mode Choke
• LTE, NB-IoT, ISM, GNSS, UWB, BT, WLAN • Active and passive antennas • High performance with different form factors	• Shielded construction • Metal alloy powder core • Inductance selection 0.1 – 33µH • RoHS compliant	• Metal composite core has high saturation characteristics maintaining function in rush current mode • Composite construction with low acoustic noise	• High common mode impedance at high frequency range • Wide operating temperature range meet automotive application including in CAN/ Ether (-40 to +125°C)
			

			
IHLD High Current Inductors	HPC Ceramic Pulse Resistors	Wide Terminal Shunt Resistors	EBW Series Metal Shunt Resistor
• Low coupling (average < 5%) between adjacent inductors reduces crosstalk and noise • Optimal design enables high-quality audio with low distortion	• Full ceramic body for HV and surge currents • 25 kV pulse voltage (HPC 3, 4, 5) • Power rating up to 5 W • Non-inductive, AEC-Q200 tested	• Small size, high power • Excellent long term stability • Superior heat dissipation to avoid hot spots	• Robust construction improves equipment reliability • Low ohmic values reduce power loss and equipment temperature • Low measurement error frees up the designer's error budget
			

			
GBCN / GHVC Thick Film Green Resistors			
• All featured series are free of Pb and its compounds • All featured series are RoHS compliant without exemptions			
			

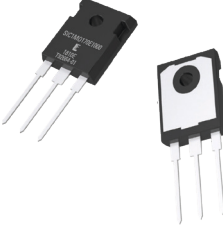
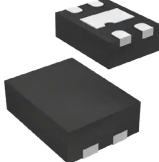
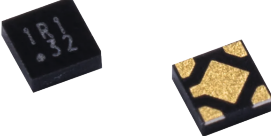
Circuit Protection

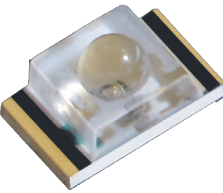
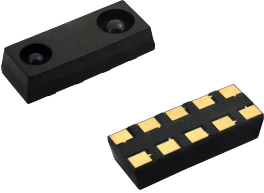
			
SF-3812F-T Fast Acting SMD Fuses	0603HV Series	HMOV Varistors	Nano Fuse
- UL 248-14 listed - Single blow fuse for overcurrent protection - Surface mount packaging for automated assembly	- Unique 63V rating in 0603 package size - Ideal for POE++ lines protection - Ideal for up to 48V Lilon BMS sense lines protection	- Complies with 1000 cycle, -55°C to 125°C, Thermal Shock Cycling Test - Wide operating voltage range - Three disc sizes available: 10mm, 14mm, and 20mm	- Meets AEC-Q200 automotive qualifications - Meets Littelfuse's automotive qualifications with a compact footprint of 10.86 x 4.78mm
			

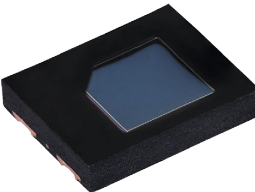
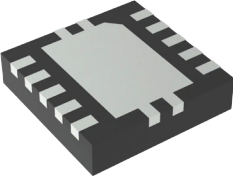
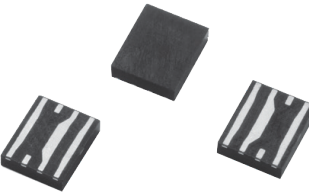
	
High performance SMD fuses	NTC Thermistors
- UMT/UMF/UMZ 250, UMT-H - Solutions for primary and secondary protection - Compact design - High breaking capacity - Pulse resistant	- NTC families with standard lead spacing design - NTC mini sensor - NTC with flexible wires - Wide variety of resistance values R(25°C)
	



Discrete Semiconductors

			
LSIC1M0170E1000 1700V SiC MOSFET	SIC931 DC/DC Regulator Module	SIP32501DNP SMD Load Switches	TCR5AM11,LF(S 500mA CMOS LDO
- Optimized for high frequency applications - Extremely low gate charge and output capacitance - Low gate resistance	- Versatile - Operation from 4.5 V to 18 V input voltage - Adjustable output voltage down to 0.6 V	- Low input voltage, 0.9 V to 2.5 V - Low RON, 66 mΩ typical - Fast turn on time	- Low Drop-Out voltage - Low stand-by current - Low quiescent bias current
			

			
KPTD-2012 New 0805 Dome Lens LED	VCNL4200 Digital long range PS	TLP240A(TP1F(O	VSMY2890 High Speed IR LED
- Dimensions: 2,0 mm x 1,25 mm x 1,05 mm - Low power consumption - Pack size: 3.000 pcs per reel	- SMD Package - Integrated modules: IRED, ALS, PS, IC - Proximity distance up to 1.5 m	- Normally opened (1-Form-A) - OFF-state output terminal voltage: 60 V (min) - Trigger LED current: 3 mA (max)	- GW, RGW SMD Package - AEC-Q101 qualified - Peak wavelength: $\lambda_p = 890$ nm - Angle of half intensity: $\pm 10^\circ$ $\lambda_p = 890$ nm
			

			
VEMD5080X01 PIN Photodiodes	TCKE805NARF(S Electronic Fuse IC	SEP-Series Protection Thyristor	EC03M 0,8 A Sensitive SCRs
- Radiant sensitive area 7.5 mm² - AEC-Q101 qualified - Enhanced sensitivity for visible light - Package type: surface-mount	- High input voltage: VIN max = 18.0 V - High output current: IOUT (DC) = 5.0 A - Low ON resistance: RON = 28 mΩ (typ.)	- Compatible with 1000Base-T - Balanced overvoltage protection - SO-8 footprint compatible	- Glass – passivated junctions - Voltage capability up to 600 V - Surge capability up to 20 A
			



Contact TTI today to see
what a true specialist can offer.

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