

**The IP&E
Specialist**

Factory Automation Application Guide (Smart Factory)

TTI, Inc., – A Berkshire Hathaway Company



The IP&E Specialist

ttieurope.com

The Specialist in Electronics Component Distribution

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.

Why TTI?

- **Technical Experts** TTI's European team of field-based Sales Engineers and local Product and Technical Specialists are here to support you; from understanding component trends, sustainable sourceability and new product roadmaps, to in depth technical support for your design from our technical engineering experts.

- **Value Added Services** Connector assembly is one of the most important value-added services at TTI, Inc. – Europe. We are specialized in distributing manufacturer controlled and certified connectors and interconnect solutions from globally leading suppliers. Thanks to a large inventory level of connector components, TTI, Inc. – Europe can serve any market requirements.

- **Global Distribution Centers** Our European headquarters is located just outside of Munich, Germany in Maisach-Gernlinden. In total, we have 45.000m² 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's global warehouses are all ISO-registered and have received certification to the ISO 9001 and ISO 14001 Standards. TTI Europe is also certified to EN9120/EN9100, IECQ-CECC and ISO/IEC 27001 Standards. Additionally, 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.





80+
Suppliers



45.000 m²
Warehousing Space



One of the largest Autostore systems in Europe



40
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24/7
Available to Order Online



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Smart Factory Applications

Cyber Physical Systems

- Communication & control units
- Ethernet to the floor
- Wireless applications
- Gateways, remote sensor & metering
- Augmented reality
- Machine vision
- Human machine interfaces
- Motion & drive systems

Sensors & Actuators

- Intelligent sensors stream data and have their own analytics

Robotics/Cobots

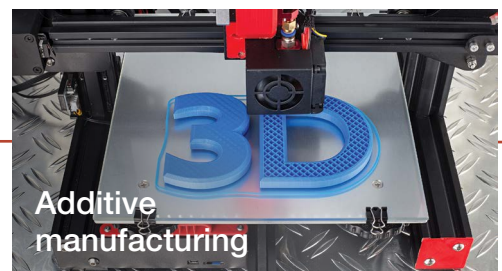
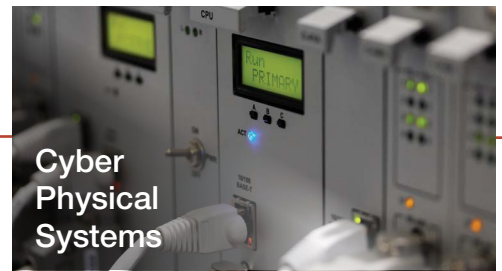
- Flexible robots create new forms of worker-robot interaction
- Collaborative robots
- Service robots
- Autonomous mobile robots

Additive manufacturing

- 3D printing allows rapid prototyping and production of spare parts

Smart Maintenance

- Predictive algorithms and remote assistant systems



Connectors

<p>Amphenol®</p>	<p>Amphenol®</p>	<p>Amphenol®</p>	<p>Amphenol®</p>
<p>LTW M Series</p>	<p>iX Industrial IP20 Connectors</p>	<p>BergStak® Connectors</p>	<p>heavy mate® – Heavy Duty Rectangular Connectors</p>
<ul style="list-style-type: none"> • Wide range of M12 for data group (Profibus/DeviceNet, Profibus/Interbus, Ethernet) • Wide range of M12 Power Group (12A to 16A) • M12 Pronto 	<ul style="list-style-type: none"> • High durability with 5,000 mating cycles • Field terminable IDC plugs with solder options • Keyed Housings (Type -A, -B, -C) 	<ul style="list-style-type: none"> • Housing & terminal supports up to 12Gb/s • Compatible with PCIe Gen 2/3 and SAS 3.0 • 40 to 200 positions sizes in 20 position increments 	<ul style="list-style-type: none"> • Vibration proof • High pole sizes • IP65 to IP69K
			
<p>Amphenol®</p>	<p>Amphenol®</p>	<p>Amphenol®</p>	<p>Amphenol®</p>
<p>Amphenol Anytek – Terminal Blocks</p>	<p>MezzoStak 0.5mm Pitch</p>	<p>Minitek127® Modular Connector System</p>	<p>PwrBlade+™ Connector</p>
<ul style="list-style-type: none"> • Rising clamp system • Screw pluggable system • Spring pluggable system 	<ul style="list-style-type: none"> • Hermaphroditic design • Polarization prevents mis-mating • Dual-point contact mating interface 	<ul style="list-style-type: none"> • Vertical and right-angle configurations • Wire-to-board and board-to-board applications • Surface mount and through mount available 	<ul style="list-style-type: none"> • High power contact option (up to 75A/contact) • Low power contact option (up to 49A/contact)
			
<p>HARWIN</p>	<p>HARWIN</p>	<p>JAE</p>	<p>JAE</p>
<p>Archer Kontrol 1.27mm Pitch Connectors</p>	<p>Datamate J-Tek 2mm Pitch Connectors</p>	<p>USB Type-C DX07 Connector Series</p>	<p>AX01 Floating High-Speed (8Gbps) BtB Connector Series</p>
<ul style="list-style-type: none"> • Withstands industrial levels of shock and vibration • Current rating of up to 1.2A max per contact • Data rate of up to 3Gbits/s 	<ul style="list-style-type: none"> • 4-finger beryllium copper and gold-plated contact • Achieves 3A per contact, electrically loaded • Withstands extremes of shock and vibration 	<ul style="list-style-type: none"> • Compatible with universal serial bus type-C specification release 1.1 • Compatible with 10Gbps SuperSpeed communication (USB 3.2 Gen2) 	<ul style="list-style-type: none"> • 8 Gbps+ high-speed transmission • Two-point contact structure • Various pin counts: 2 row 30 – 140 pins • Stacking height 8 – 30mm
			

Connectors

<h2 style="color: red;">molex</h2>	<h2 style="color: red;">molex</h2>	<h2 style="color: red;">molex</h2>	<h2 style="color: red;">molex</h2>
<p>Brad HarshIO Modules</p>	<p>SlimStack Board-to-Board Connectors</p>	<p>EdgeLine High-Speed Edge Card Connectors</p>	<p>FCT High-Density D-Sub Connectors</p>
<ul style="list-style-type: none"> • Modules provide fieldbus connectivity for PROFIBUS-DP, DeviceNet, CANopen Ethernet fieldbus: Modbus 	<ul style="list-style-type: none"> • Dual contact design • Floating • Small body and low profile 	<ul style="list-style-type: none"> • High-speed differential contact design • Multiple PCB thickness's (1.57 to 3.18mm) • Press-fit, compliant-pin terminal design 	<ul style="list-style-type: none"> • Snap-in board locks • Machined contacts • Water-proof IP67 available
			
<h2 style="color: red;">molex</h2>	<h2 style="color: red;">molex</h2>	<h2 style="color: red;">molex</h2>	<h2 style="color: red;">molex</h2>
<p>FiT Family Power Connectors</p>	<p>Brad MX-PTLTM M12 Cordsets</p>	<p>Easy-On FFC FPC Connectors</p>	<p>Modular Plugs and Jacks</p>
<ul style="list-style-type: none"> • Multiple points of contact • Polarised and keyed features • Positive locking 	<ul style="list-style-type: none"> • Quick & reliable push-to-lock connections • Mates to standard M12 receptacles • Threadless design 	<ul style="list-style-type: none"> • Various additional options: • ZIF and LIF options • Polarizing keys 	<ul style="list-style-type: none"> • Mag Jacks supporting 10/100 and Gigabit Transmission • Power over Ethernet (PoE) magnetic jacks available
			
			
<p>SPE Single Pair Ethernet</p>	<p>M12 Robust and Reliable Circular Connectors</p>	<p>TE Intercontec</p>	<p>M8/M12 (PCB) Connectors & Cable Assemblies</p>
<ul style="list-style-type: none"> • Connectors in IP20 (IEC 63171-2) & IP67 (IEC 63171-5) • Ranges of up to 1,000m, 1Gbps and 50W • Pin connector patterns for high packing densities 	<ul style="list-style-type: none"> • Environmental level IP67 • Crimp and solder contacts • Machined and stamped contacts 	<ul style="list-style-type: none"> • Mechanic solidity and highly shock and vibration resistance • Radial seal high IP protection class IP 67+ • Complete EMC shield connection 	<ul style="list-style-type: none"> • X-coded connectors support higher bandwidth needs of up to 10Gb/s • A, B, D, X, S & T coding available • Easily installable connector system
			

Connectors

 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>
<p>M12 x-code Field Installation</p>	<p>Industrial Ethernet Solution</p>	<p>Industrial RJ45 Cat6A plug</p>	<p>Industrial Mini I/O Connector</p>
<ul style="list-style-type: none"> • Automatic wire cut-off function integrated in connector • Tool-less assembly installation • Speed up to 10GB/s 	<ul style="list-style-type: none"> • Extensive temperature range between -40°C and +85°C • Minimum product life requirement of 10 years • 260°C PIP soldering reflow capability 	<ul style="list-style-type: none"> • Single piece common core • Cat. 6A plug with tool-less installation • Automatic wire cut-off function 	<ul style="list-style-type: none"> • Type I and Type II I/F • LCP materials • Industrial temperature range
			
 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>
<p>Dynamic Series Connectors</p>	<p>Industrial USB IP20</p>	<p>AMP-LATCH Ribbon Cable Interconnects</p>	<p>Heavy Duty Connectors with Dynamic Inserts</p>
<ul style="list-style-type: none"> • Vibration resistant • Housings are keyed preventing mis-mating and misalignment • Positive audible locking sound 	<ul style="list-style-type: none"> • 4 contact position – max 1.5A 	<ul style="list-style-type: none"> • Mass termination capabilities • No need to strip or prepare wire • Variety of centre lines and options 	<ul style="list-style-type: none"> • Designed for harsh environments • Improved operational efficiency • Reliable and high density contact
			
 <p>AUTHORIZED DISTRIBUTOR</p>	 <p>AUTHORIZED DISTRIBUTOR</p>	<p>Weidmüller </p>	<p>Weidmüller </p>
<p>Eurocard Connectors</p>	<p>VAL-U-LOK Connectors</p>	<p>OMNIMATE® Power BUF 10.16</p>	<p>OMNIMATE® Hybrid Connectors</p>
<ul style="list-style-type: none"> • Meets DIN 41612 and IEC 60603-2 • Two-piece reliability • Polarized housings • Types B, C, D, F, M, Q and R 	<ul style="list-style-type: none"> • New high current up to 13A per line • Available in 2–24 position • Wire-to-wire and wire-to-board system 	<ul style="list-style-type: none"> • Tool-free wiring of flexible wires • Easy one-hand operation • Automatic locking 	<ul style="list-style-type: none"> • Tool-free wiring of stripped servo cables • Reliable and robust connection • Shorter installation and servicing times
			

Power Supplies & Relays

			
<p>CoolX 3KW Series</p>	<p>COOL X Series</p>	<p>TDR Series</p>	<p>UHP Series</p>
<ul style="list-style-type: none"> • 3000W • Flexible & 24 outputs voltages available • 5 years warranty 	<ul style="list-style-type: none"> • 600W & 1000W fanless with natural convection cooling • Flexible & multi outputs voltages available • 5 years warranty 	<ul style="list-style-type: none"> • Din rail three phase input • Available in 240W, 480W & 960W • 3 years warranty 	<ul style="list-style-type: none"> • Conduction cooling (no fan) • Available 200, 350, 500, 750W, 1KW, 1,5 KW & 2,5 KW • Single output • 3 years warranty
			
	 <small>INNOVATOR IN ELECTRONICS</small>		
<p>SDR Series</p>	<p>PQU650 Series</p>	<p>SFS Safety Relays</p>	<p>53TP Series IP00</p>
<ul style="list-style-type: none"> • Din rail single phase input (full range) • Available in 75W, 120W, 240W, 480W & 960W • 3 years warranty 	<ul style="list-style-type: none"> • 650W / 1U Single output 12, 24, 28, 48, 54Vdc available • Compact 6"x4" • MTBF 797Khrs 	<ul style="list-style-type: none"> • Forcibly guided contacts according to EN 61810-3, Type A • Very low dissipation power • 4pole & 6pole types 	<ul style="list-style-type: none"> • Three-phase solid-state relay • Ratings 25A, 50A per phase at 48-530 VAC • UL recognized, CE compliant to EN60950-1
			
	 <small>AUTHORIZED DISTRIBUTOR</small>	 <small>AUTHORIZED DISTRIBUTOR</small>	 <small>AUTHORIZED DISTRIBUTOR</small>
<p>DR22 Series AC Output DIN Rail Mount SSR</p>	<p>PT Panel Relay</p>	<p>Relay Package SNR</p>	<p>SRL7</p>
<ul style="list-style-type: none"> • Output ratings up to 35 Amps at 600VAC • Built-in overvoltage protection • C-UL-US and TUV approved 	<ul style="list-style-type: none"> • Switching performance up to 3000VA • AC&DC versions • Complete interface solution available 	<ul style="list-style-type: none"> • 1 CO with 6A rated load • Module width only 6.2mm • Reduced system width for increased packing density on the DIN rail 	<ul style="list-style-type: none"> • 7-Pole: 2 NC + 5 NO contacts 6A at 250VAC • Coil Power: 700mW • According to EN50205
			

Sensors & Switches

<p>Honeywell</p>	<p>molex</p>	<p>OMRON</p>	<p>Sensata Technologies</p>
<p>HEL700</p>	<p>Contrinex Inductive and Photoelectric Sensors</p>	<p>B5L – ToF Real-Time 3D distance measurement Sensors</p>	<p>IWPT Series</p>
<ul style="list-style-type: none"> • Linear resistance vs temperature • Accurate and interchangeable • Excellent stability • Small for fast response 	<ul style="list-style-type: none"> • Housing: M8 – M18 • Operating distance: 4mm – 20mm • Dual output IO-Link + SIO 	<ul style="list-style-type: none"> • Ambient light immunity equivalent to 100,000lx • High precision of $\pm 2\%$ (2m) • Long life equivalent of 5 years of continuous use 	<ul style="list-style-type: none"> • Pressure range: -1 to +400 bar • Signal range: up to 500m line-of-site • Output: 2.4GHz ISM band
			
<p>TE connectivity AUTHORIZED DISTRIBUTOR</p>	<p>TE Connectivity AUTHORIZED DISTRIBUTOR</p>	<p>APEM an IDEC company</p>	<p>C&K</p>
<p>8911-A Wireless Accelerometer</p>	<p>M5600/U5600 Wireless Pressure Transducer</p>	<p>PBA Series</p>	<p>DA Miniature Single Pole Rocker</p>
<ul style="list-style-type: none"> • Acceleration range: $\pm 50g$, 1 axis • Acceleration and temperature output • 5 year-battery life 	<ul style="list-style-type: none"> • Pressure range: 0 – 1000bar • Accuracy $\pm 1\%$ TEB • Output: I²C (24-bit) • Rating: IP67 	<ul style="list-style-type: none"> • Ring or dot illumination • Sealed to IP68 and IP69K • Easy to clean metal surface 	<ul style="list-style-type: none"> • Guards to prevent accidental actuation • Momentary and maintained functions • IP54 splash proof rubber boot option
			
<p>C&K</p>	<p>Honeywell</p>	<p>Honeywell</p>	<p>IDEC</p>
<p>Y Series</p>	<p>14CE Series</p>	<p>GLA Series</p>	<p>XA-Series</p>
<ul style="list-style-type: none"> • Anti-static switch exceeds 20KV DC static resistance • Wire leads and harnesses available • Momentary models available 	<ul style="list-style-type: none"> • Rugged, miniature construction • Well suited for up to 10 million actuation cycles • Wide selection of actuators and cable length variations 	<ul style="list-style-type: none"> • Designed to global EN50041 standards • Sealed to IP67 and NEMA/UL 1, 4, 12, and 13 • Mechanical life up to 15 million operations 	<ul style="list-style-type: none"> • Safety lock mechanism • Removable contacts • IP65 protection
			

Passives

 <p>AVX[®] A KYOCERA GROUP COMPANY</p>	 <p>molex</p>	 <p>AVX[®] A KYOCERA GROUP COMPANY</p>	 <p>KEMET a YAGEO company</p>
<p>Antennas</p>	<p>IOT Antennas</p>	<p>Supercapacitors</p>	<p>ALS Electrolytic Capacitors</p>
<ul style="list-style-type: none"> • Broadband coverage: Full 4G/LTE, 3G, GPS, WiFi, V2X or BT • Active and passive antennas • High efficiency 	<ul style="list-style-type: none"> • Poly-flexible, double-sided adhesive tape on antenna • High antenna radiation performance • Ground plane independent design 	<ul style="list-style-type: none"> • Superior reliability, passes 4000 hours life tests • Customized options for modules • Molded encapsulation and prismatic case options 	<ul style="list-style-type: none"> • High ripple current • Excellent surge voltage capability • 25 – 550 VDC • PET Sleeves • Offset terminals available
			
 <p>knowles PRECISION DEVICES COMPEX • DLI • JOHANSON MFG NOVACAP • SYFER • VOLTRONICS</p>	 <p>muRata INNOVATOR IN ELECTRONICS</p>	 <p>Panasonic INDUSTRY</p>	 <p>TDK</p>
<p>Safety Capacitors</p>	<p>Safety Capacitors</p>	<p>Polymer Hybrid Capacitor</p>	<p>DC Link Capacitors</p>
<ul style="list-style-type: none"> • Safety capacitors with 305Vac rating • Safety capacitors with 1kVdc rating • Includes 1812 Y2 safety capacitor 	<ul style="list-style-type: none"> • High impulse tolerance • X1/Y1/Y2 class product which has acquired safety standard certification 	<ul style="list-style-type: none"> • Surface mount package • 4000h life at 125°C • High ripple current and large capacitance 	<ul style="list-style-type: none"> • High reliability for severe ambient conditions • Long life – 50,000h (85°C, rated voltage)
			
 <p>VISHAY</p>	 <p>YAGEO</p>	 <p>KOA</p>	 <p>Littelfuse</p>
<p>193 PUR-SI Power High Ripple Current Snap-In</p>	<p>High Q MLCC</p>	<p>HPC Series</p>	<p>HMOV Varistors</p>
<ul style="list-style-type: none"> • Useful life: 5000 h at 105°C • >25 years 24/7 application life at 60 °C • Available up to 500V • High ripple current capability, robust design 	<ul style="list-style-type: none"> • Narrow tolerance in capacitance • High withstanding voltage • Low ESR, low ESL & high-Q in RF, UHF(300MHz-3GHz), SHF(3GHz-30GHz) 	<ul style="list-style-type: none"> • Full ceramic body resistors for HV and surge currents • Max pulse voltage up to 25kV (HPC 3, 4 and 5) • Operating temperature up to +200°C 	<ul style="list-style-type: none"> • Complies with 1000 cycle, -55°C to 125°C and thermal shock cycling test • Wide operating voltage range • Three disc sizes available: 10mm, 14mm, and 20mm
			

Passives

<p>Panasonic INDUSTRY</p>	<p>TT Electronics</p>	<p>TT Electronics</p>	<p>BOURNS®</p>
<p>Metal Shunt Resistor</p>	<p>Metal Shunt Resistor</p>	<p>APC Anti-sulfur Chip Resistors</p>	<p>Model SF-2410FPxxxW Series</p>
<ul style="list-style-type: none"> • Ideal for current sensing solutions • Small case size with high power • Outer resin with high heat dissipation 	<ul style="list-style-type: none"> • Low measurement error frees • Low ohmic values • Robust construction 	<ul style="list-style-type: none"> • Precision thin film technology • Two grades of sulphur protection • Precision to $\pm 0.05\%$ and $\pm 10\text{ppm}/^\circ\text{C}$ • AEC-Q200 qualified option 	<ul style="list-style-type: none"> • Fast acting precision • UL 248-14 listed • Wire core SMD design
			
<p>EATON Powering Business Worldwide</p>	<p>Littelfuse®</p>	<p>SCHURTER ELECTRONIC COMPONENTS</p>	<p>BOURNS®</p>
<p>C308F Fuse</p>	<p>Nano Fuse</p>	<p>Fuseholder</p>	<p>Shielded Power Inductors</p>
<ul style="list-style-type: none"> • Low DCR/ohmic values • Helps meet IEC 60079-11 for intrinsically safe environments • High voltage and high interrupting ratings 	<ul style="list-style-type: none"> • Small Size/Surface Mountable Type • Reliable/Robust Fuse Design (Solderless Platform) • Meets AEC-Q200 automotive qualifications 	<ul style="list-style-type: none"> • Holders for a wide range of diverse fuses sizes • SMD or THT variants as well as panel mount • Horizontal and vertical mounting versions 	<ul style="list-style-type: none"> • High saturation current, up to 60A • Magnetically shielded • Low DCR
			
<p>KEMET a YAGEO company</p>	<p>muRata INNOVATOR IN ELECTRONICS</p>	<p>TDK</p>	<p>VISHAY</p>
<p>Power Inductors</p>	<p>1210 Common Mode Choke</p>	<p>NTC Thermistors</p>	<p>IHLD High Current Inductors</p>
<ul style="list-style-type: none"> • High efficiency inductor • Metal composite powder • Shielded construction • Low magnetic flux leakage • Operating temperature up to $+155^\circ\text{C}$ 	<ul style="list-style-type: none"> • Suitable for noise suppression at car area networks • Wide operating temperature range meet automotive application. (-40°C to $+125^\circ\text{C}$) 	<ul style="list-style-type: none"> • Type families qualified acc. to AEC Q200 • Robust design with epoxy or glass encapsulation 	<ul style="list-style-type: none"> • Two IHLP®-style inductors placed vertically in one board-space saving package • AEC-Q200 qualified • Three sizes available: 2525, 3232 and 4032
			

Discrete Components

			
SMF4L – Transient Voltage Suppressor Diode Series	IX4310T – 2 Ampere High Speed Low-Side MOSFET Driver	SP712-Series 640W Asymmetrical TVS Diode Array	VEMD8081 High Speed PIN Photodiode
<ul style="list-style-type: none"> • Surface mount SOD-123FL package • Standoff voltage: 12 to 58 volts • Power dissipation: 400 watts 	<ul style="list-style-type: none"> • Output capable of sourcing and sinking 2A • CMOS and TTL compatible inputs • 5V to 24V supply voltage range 	<ul style="list-style-type: none"> • Working Voltages: -7V to 12V • Low clamping voltage • Low leakage current 	<ul style="list-style-type: none"> • Typical reverse light current of 33 μA • Radiant-sensitive area measuring 5.4 mm² • Wide spectral range from 350nm to 1100nm
			
			
XMC7K24CA New surface mount XClampR™ TVS	VSMY5890 – High Speed Infrared Emitting Diode, 890nm	VS-CxxET07T – 650V Power SiC Merged PIN Schottky design	SIR580 – N-Channel 80 V (D-S) MOSFET
<ul style="list-style-type: none"> • 7KW snapback Bi-directional in DO-214AB (SMC) • Low clamping voltage with high surge current • Extremely stable breakdown voltage (VBR) 	<ul style="list-style-type: none"> • Peak wavelength: $\lambda = 890\text{nm}$ • Angle of half intensity: $\pm 60^\circ$ • 0805 standard surface-mountable package • Replacement for PLCC-2 	<ul style="list-style-type: none"> • Current ratings from 4A to 40A • TO-220AC 2L and TO-247AD 3L packages available • Provide high temperature operation to +175°C 	<ul style="list-style-type: none"> • TrenchFET® Gen V power MOSFET • Very low RDS x Qg figure-of-merit (FOM) • Tuned for the lowest RDS x Qoss FOM
			
			
SIR500DP-T1-RE3 – New N-Channel 30V 150°C MOSFET	VCNL4035X01 – Integrated Proximity & Ambient Light Sensor	SIC931 – microBRICK® DC/DC Regulator, 20A	TSSP93038 IR Sensor Module
<ul style="list-style-type: none"> • TrenchFET® Gen V power MOSFET • Very low RDS x Qg figure-of-merit (FOM) • 100 % Rg and UIS tested 	<ul style="list-style-type: none"> • 16-bit resolution for ambient light and proximity sensors • Sensitivity for object detection up to 50cm • Low profile package: 0.75mm • HMI: basic gesture recognition 	<ul style="list-style-type: none"> • PowerPAK® QFN-style package is easy to handle • Low output capacitance • Wettable flanks improve board-level reliability 	<ul style="list-style-type: none"> • Up to 2m for presence and proximity sensing • Up to 20m distance for light curtain applications • PIN diode and sensor IC in one package
			



The IP&E Specialist

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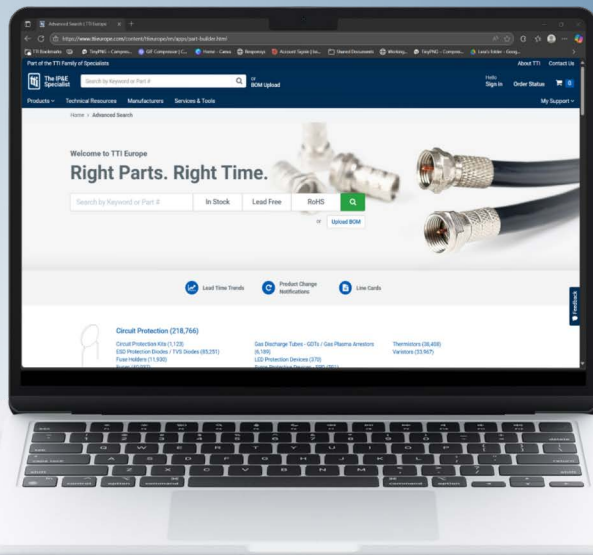
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Contact TTI today to see
what a true specialist can offer.

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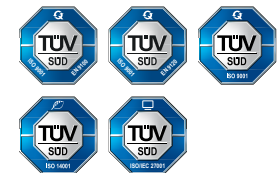
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