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AN EP&T SPECIAL REPORT
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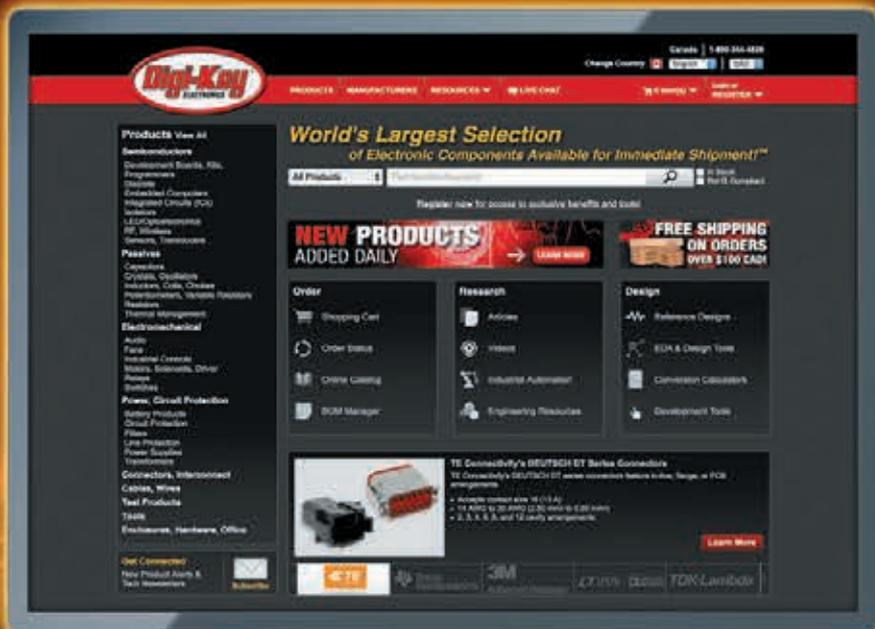
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Ontario cities pop-up on North American tech radar

A recent real estate report shows Toronto is North America's fastest growing technology market, driving office demand all over the city. An annual report from Commercial Real Estate Services Canada (CBRE), shows Canada's largest metropolis moving up six spots to number six out of 50 cities.

"We've had 30% growth in the tech sector over the last five years and we added more jobs than San Francisco and New York City combined last year," says Werner Dietl, CBRE Canada's executive VP. "We have affordability and a tremendously high quality of labour, and we also have tremendous government and immigration policies in place that are creating a little bit of a snowball effect."

Toronto added 22,500 tech jobs from 2015 to 2016 and ranked second only to Vancouver in terms of offering the best value when it comes to cost and quality of talent.

"Currency is a factor, but it's not the only factor that's creating the competitiveness," said Dietl.

Domestic startups and larger international firms are combining to fuel the demand for tech office space, says Dietl. Work being done at the University of Toronto and the Vector Institute has created a surge in interest in artificial intelligence (AI). That field is expected to have a growing impact on Toronto office space.

"Toronto is becoming known as a world leader in artificial intelligence," said Dietl. "And, when you're a world leader in anything

- that tends to attract people."

Unlike Toronto's ripened conditions, Ottawa's tech ecosystem is primed to grow, as innovative, high-tech startups are ramping up efforts to attract talent to the nation's capital. While Ottawa's high-tech sector hit an all-time low in 2009 during the collapse of telecommunications company Nortel, the city's tech leaders have since reshaped itself. Young companies like Mindbridge, Klipfolio, CENX Inc., Macadamian and established players like Shopify and QNX are on hiring sprees to scale their teams, putting the spotlight back on Ottawa.

Ryan Gibson, a market strategist at Invest Ottawa, says one way tech firms are attracting talent is through its Work in Ottawa campaign, which aims to draw tech workers from across North America to a city that is home to 1,750 tech companies that employ nearly 70,000 people. He also stressed that Ottawa has more companies from a multitude of sectors — including SaaS, artificial intelligence, cleantech, cybersecurity, and telecommunications — setting up shop in the city.

While the Nation's Capital and the country's financial hub battle it out for the tech crown, it certainly bodes well for those employed and invested in the technology ecosystem across the entire country.

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NEWSWATCH

Free tool lets Canadian SMEs forecast Cloud usage

CANARIE, an Ottawa-based player in Canada's digital infrastructure supporting research, education and innovation, announced the launch of CloudTracker, a free and innovative metrics reporting tool that gives Canada's tech small and medium enterprises (SMEs) the ability to accurately forecast what their product or service will cost to operate on a commercial cloud.

By building and prototyping their products and services on CANARIE's free DAIR Cloud and using CloudTracker, SMEs can make informed business decisions by evaluating multiple design scenarios. Cloud computing enables businesses to use virtual computing, network and data storage resources on an as-needed basis, with the flexibility to scale these resources based on their needs at any given time. Qualifying businesses who intend to use the DAIR Cloud for development and testing need only submit a short application. Access to DAIR is granted for one-year, renewable terms. At the end of their DAIR term, most businesses migrate their product or service onto a commercial cloud.

Sierra Wireless to merge with Numerex

Numerex Corp., a leading provider of enterprise solutions enabling the Internet of Things, (IoT) and Sierra Wireless Inc., a leading provider of fully integrated device-to-cloud solutions for the IoT, have entered into a definitive merger agreement under which Sierra Wireless will acquire Numerex in a stock-for-stock merger transaction.

"We believe that combining with Sierra Wireless provides us the opportunity to work with and take advantage of world-class talent and technology to improve our product offerings for our customers," says Kenneth Gayron, interim CEO and CFO of Numerex. "The transaction also provides our shareholders the opportunity to participate in the upside potential of the combined company."

"The acquisition of Numerex accelerates our IoT device-to-cloud strategy by adding an established customer base, significant sales capacity, proven managed solutions and recurring revenue scale," adds Jason Cohenour, president and CEO of Sierra Wireless.

DYMO partners with Fluke to simplify cable labels

DYMO, labeling specialists in the industrial and manufacturing sectors, will partner with Fluke Networks this September to simplify the creation and printing of cable labels with the DYMO ID LinkWare Live Import Wizard – a software tool that brings a new level of smart to jobs that should be simple.

The partnership with Fluke allows seamless integration with Fluke LinkWare Live data into DYMO ID, while end-users can pull cable identifier data automatically and leverage the data to print labels for multiple applications, including patch panels, face plates and cable wraps. This new capability increases productivity by importing data with a streamlined solution and cable labeling made simple.

DYMO ID software, with Fluke Networks integration, imports project data directly from Fluke's LinkWare Live cloud to provide a simplified solution for cable label creation. From DYMO ID, users can easily access LinkWare Live projects, import Cable ID data and use built-in label application and pre-loaded templates to further simplify labeling tasks. The solution is suitable for project managers, cable technicians and installers, LinkWare Live allows professionals to manage jobs and testers from any smart device over WiFi.

The software line will not be live until September 28th.



Feds invest in Winnipeg aerospace R+D

The Federal Government has invested \$10-million towards encouraging the global competitiveness of Canada's aerospace industry, ensuring the creation of well-paying middle class jobs and targeting skills development.

These funds will expand the Centre for Aerospace Technology and Training (CATT) and create a new space at Red River College (RRC) Notre Dame Campus in Winnipeg, dubbed the Smart Factory.

The Smart Factory will connect aerospace and other manufacturing organizations with specialized equipment and new technology to support advanced manufacturing processes. This partnership will help students develop the skills to implement new and innovative technologies and prepare them for the jobs of today and tomorrow.

"Manitoba's aerospace sector is globally-competitive and a significant part of our province's economy, producing and selling products and services valued in excess of \$1.6 billion per year," says Cliff Cullen, Minister of Growth, Enterprise and Trade for the Province of Manitoba.

IEEE approves quantum computing standards project

IEEE, a global technical professional organization, has teamed with the IEEE Standards Association (IEEE-SA) to announce the approval of the IEEE P7130-Standard for Quantum Computing Definitions project.

The new standards project aims to make quantum computing more accessible to a larger group of contributors, including developers of software and hardware, materials scientists, mathematicians, physicists, engineers, climate scientists, biologists and geneticists.

IEEE P7130 will define terms related to the physics of quantum computing including quantum tunneling, super position, quantum entanglement, as well as other related terms and terminology that will be updated as technological advances are made.

eStructure to expand Montreal data center

eStructure Data Centers Inc., a network and cloud-neutral data center operator based in Montreal, announced that it has begun an expansion project of its downtown facility. Once complete, the expansion will add another 3MW of power capacity while nearly doubling the available data center space. The expansion will support growth for both new and existing customers, and eStructure's unique high density power configurations of up to 30kW per cabinet.

Once complete, eStructure's MTL1 datacenter will have more than doubled electrical capacity, while adding additional, redundant infrastructure components for cooling and electrical distribution. Furthermore, the expansion will include the introduction of an additional, redundant carrier 'Meet Me Room', further enhancing customer's ability to connect with their preferred network carrier, cloud provider, business partners and end customers. The expansion is expected to be complete by the end of Q1, 2018.

IBM incubator launched at Communtech Data Hub

The Province of Ontario, the Ontario Centres of Excellence, IBM Canada and Communtech jointly unveiled the IBM Innovation Incubator at the Communtech Data Hub this summer. The project's mandate is to help small-to-medium startups launch new technology and products and leverage the booming field of big data.

The initiative is part of the IBM Innovation Incubator Project, fuelled by a previously announced \$22.75-million in provincial funding and an additional investment of \$24.75-million from IBM.

"The world's most valuable resource is no longer oil, it is data," says Kevin Tuer, Communtech VP of strategic initiatives and managing director of Canada's Open Data Exchange, which is housed at the Data Hub.

The Communtech Data Hub opened in May and houses Canada's Open Data Exchange. The 19,000-plus square-foot facility encourages collaboration among startups, global brands, government agencies and academic institutions to harness the potential of Big Data and in so doing further drive innovation, particularly in the fields of artificial intelligence and the Internet of Things, which are heavily data dependent.

Lalonde said he hopes the artificial intelligence capabilities of IBM's Watson and its Bluemix cloud platform will help companies to achieve their research and development goals faster and spur growth.

"We believe in really helping entrepreneurs to not only access, but adopt, disruptive technologies and to adopt those technologies in context – to use their ideas with a customer in mind, with enterprise need in mind, with global markets in mind."

"And I think that's what we can bring to this environment that perhaps others can't, or that is unique to IBM."

Avnet acquires Dragon Innovation

Simplifies the hardware path from prototype through to volume production

Avnet has acquired Dragon Innovation, expanding the global distributor's portfolio of offerings for customers as they move from design to prototype to volume production. Dragon Innovation's proven process and deep hardware experience help customers understand manufacturing costs and schedules, find factories and manage production as they scale their businesses.

"With the addition of Dragon Innovation to our connected ecosystem, Avnet further meets the needs for companies of all sizes head on – helping them launch new hardware products in an efficient and cost-effective manner that accelerates time to market," says Bill Amelio, chief executive officer of Avnet. "Dragon Innovation's hardware manufacturing expertise augments Avnet's design and supply chain capabilities beyond electronic components to encompass the entire finished product. Equally important, Dragon Innovation complements our digital strategy by delivering their services through a combination of software and access to subject matter experts matched to the customers' needs as they move swiftly through the stages of product development."

The acquisition of Dragon Innovation further enhances Avnet's role in developing new technology products by simplifying the manufacturing process, particularly for those projects that advance Internet of Things (IoT). Avnet's acquisition of both Premier Farnell (which included its element14 community) and Hackster.io last year expanded the company's reach to more than two million customers and an active community of more than 750,000 entrepreneurs, makers and engineers. In May, Avnet, through a collaboration with Dragon Innovation and Kickstarter, announced Hardware Studio, an initiative that will give creators access to expertise, tools and resources to supply, design, build and deliver their ideas to market.

TechInsights and Chipworks combine forces in technical intelligence

TechInsights and Ottawa-based Chipworks recently announced the merger of both businesses, creating a global leader in advanced technology intelligence and technology founded patent advisory services.

Ownership interests are being pooled and the new company, operating under the TechInsights name, now provides an extensive database of technology intelligence of electronics and especially, of integrated circuits at micro level of detail.

"TechInsights' ambition is to be the preferred source of technology intelligence and advice for anyone needing that information, whether in support of patent strategies, or to support product development and road-mapping, competitive intelligence, marketing, research and education, or any other needs: scale is critical to achieving that ambition and this combination enables us to double up our value to the market," says John Day, TechInsights CEO.

The combined company will have the scale and resources to advance the breadth and depth of its offering to the global technology industry and to support owners of technology patents everywhere. The two companies count 37 of the 50 largest owners of US patents among their clients.

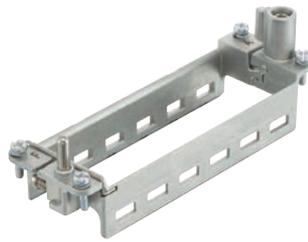
Connectors

Spring-loaded frame simplifies modular connector assembly

Han-Modular building block system now includes a spring-loaded frame, making it easier and faster to create a modular connector that precisely fits each application. The 'hinged frame plus' for Han-Modular connectors provides an additional stainless steel spring that holds the frame in the open position during assembly so modules can be easily fitted into their proper position for faster assembly and time and labour savings. All module positions (A to F) are evident at a glance; while an additional marking – a black triangle – indicates the orientation for proper insertion of modules into the frame. The frame windows have been optimized so that the modules are automatically centered as the frame is closed. Upon locking, there is a clearly audible 'click' and the spring holds the frame securely together – dispensing with the locking tab used in the past.

HARTING

<http://ept.hotims.com/65990-31>



Pcb power blocks are rated 600 Volt, 115 Amps

OTB Series high power terminal blocks are rated 600 Volt and 115 Amps and have been designed for pcb applications. The barrier-style models OTB-910-M/ML and OTB-910-B/BL provide a choice of 2 through 17 poles, allowing termination of up to 115 Amps per position. Available with or without mounting ears, the PC terminals on the devices are offered straight (M or B) or with a right-angle (ML or BL) and can accommodate wire sizes between 22 and 2AWG.

BLOCKMASTER

<http://ept.hotims.com/65990-35>



Wireless connectors simultaneously deliver access point

FL WLAN 1100 connectors provide a dual WLAN interface delivering simultaneous access point and client function. The wireless module combines an access point and antenna in a single device to provide a space-saving and inexpensive WLAN connection for the machine. Device is vandal resistant with an M40 panel mount connection.

PHOENIX CONTACT

<http://ept.hotims.com/65990-36>



NEMA power cords come as polarized, non-polarized

Power cords provide polarized and non-polarized NEMA 1-15 plugs and a cord set with a non-polarized NEMA 1-15 plug and an IEC 60320 C7 connector. The following power cords are available: black power cord with a polarized NEMA 1-15 plug on 16AWG SJT cable (P/N 86222065) on 18AWG SJT cable (P/N 86222085). Black power cord with non-polarized NEMA 1-15 plug on 16AWG SJT cable (P/N 86222075); on 18AWG SJT cable (P/N 86222095). Black cord set with non-polarized NEMA 1-15 plug and IEC 60320 C7 connector on 18AWG SJT cable (P/N 86222105).

INTERPOWER

<http://ept.hotims.com/65990-32>



6GHz coaxial terminates via crimp or SMA

CombiTac 6GHz coaxial connectors permits user to connect 50Ω RG coaxial cables by means of crimp or SMA termination. Two 2.4GHz crimp versions are available, one for RG58 cables and one for RG316/U, RG174 and RG188 cables. SMA version allows you to connect any 50Ω RG cable type up to 6 GHz, including RG58, RG316/U, RG174, RG188, RG196, RG213, RG223 and many more. Both crimp and SMA units are designed for industrial, broadcasting and aerospace & defense applications that require long life solutions with high resistance to shock and vibrations. The UL 1977 compliant devices are resistant to shock and vibrations (EN 61373 category 1B) and provide 100,000 mating cycles.

STAUBLI ELECTRICAL CONNECTORS

<http://ept.hotims.com/65990-33>



Concentric connectors permit rotation upon setup

Multi concentric contact connector dedicated to setups where connectors need to allow some rotation. The precision engineered devices include multiple concentric electrical contacts, which range in number from 4 to 10, available in various shell sizes. The contacts are designed for low speed rotation, they can last up to 10000 rotation cycles. Product is available both in S series and E series (IP68) version.

LEMO

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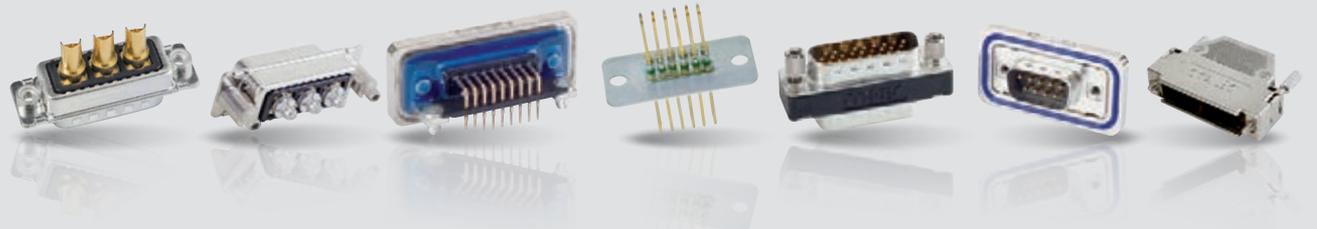
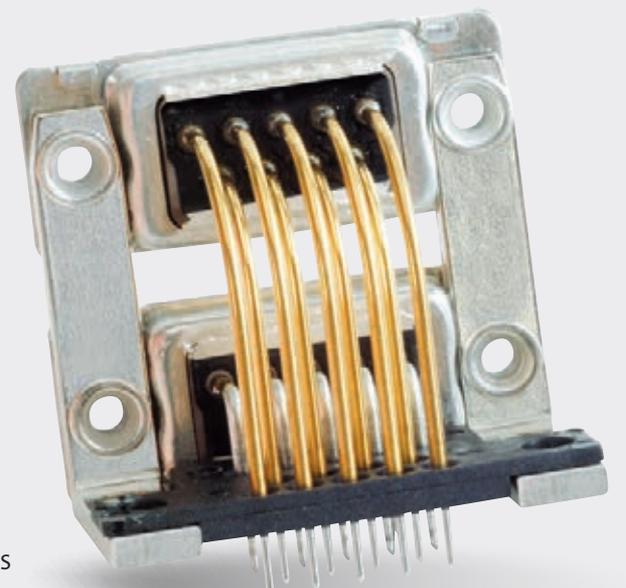
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How DIN components keep finding new relevance

By Phill Shaw, senior product manager for board level products, HARTING North America

As newer connector designs evolve, offering higher transmission speeds and smaller contact spacing, some traditional connector series continue to develop new features of their own to maintain market relevance. Take the standard DIN 41 612 electrical connector. Its demise has been predicted for many years, yet it remains



a viable, even preferred choice for many applications because the series is constantly being rejuvenated with new variants that add functionality or can provide benefits during assembly.

The connector manufacturing world has focused increasingly on ultra-high-speed surface mount fine pitch, board-to-board and wire-to-board connectivity sought by customers. In the process, many vendors have de-emphasized their DIN 41 612 offering, resulting in part number obsolescence and fewer variants in their portfolios. While embracing these newer technologies, a few of us still see a bright future for DIN and intend to support that user community with a full range of products indefinitely.

DIN 416 12 connectors offer certain market segments a better business case. The technology is proven and reliable – having been an industry staple for four decades. These connectors are robust, offering a long service life – 20 years or more, often under harsh conditions – that makes them a highly trusted solution for OEMs. There are a range of termination options, such as press-fit, solder and crimp for many variants, allowing the user

ease of processing from the prototype stage through to high volume production.

The ability of DIN connectors to reach speeds up to 3.125Gb/s with selective pin assignments is perfectly adequate for applications in many industrial sectors, such as rail, military, energy generation, transmission and management, automation and machinery. Often, they are more cost effective than newer, higher speed connector styles offered as alternatives. They are familiar to experienced hardware designers, and being standardized products, compatibility among suppliers is assured.

DIN 41 612 was conceived as a two-piece connector system for 19" modular sub-racks and was widely adopted in telecom applications (backplane to daughter card). The standard was introduced in 1976 (evolved from an earlier German military VG standard) and was subsequently updated to IEC 60603-2, which describes electrical connectors that have two or three rows of contacts with 16 or 32 columns per row, with contact spacing of 0.1" (2.54mm). These connectors have a variety of pin counts depending on body type with a maximum of 96 contacts in 3 rows, and form the basis for a much wider range of complementary products which are not covered by the standard. In 1996 the new IEC 61 076-4-113 standard was written, for VME 64x architecture. The HARTING har-bus 64 range of connectors was developed, offering connectors with 160 pins, while still maintaining full backward compatibility with traditional 96 pin DIN 41 612 connectors. VME 64x offers additional functionality beyond the traditional VME standard, further extending the life of the DIN 41 612 family of products.

While telecom industries have moved on to connectors with ultra high speed capabilities, the popularity of DIN 41 612 has led many other industries to seek variations to support their unique needs. That has led to a steady stream of enhancements, modifications and complementary versions, such as:

- **NFF certified DIN 41 612 connectors** to address safety requirements against flammability and gas emissions in rail cars.
- **Rugged metal housings** that offer high levels of EMI protection.
- **'Through Hole Reflow' (THR)** versions that reduce processing costs on a board that uses both through hole and SMT components. These THR versions are made from plastics that can tolerate higher solder temperatures and can be terminated during the same reflow step as SMT components, thereby reducing the overall manufacturing cost by avoiding the need for a separate wave solder or hand solder step.
- **One-half and one-third variant sizes** for smaller circuit boards that deliver more I/O capability with minimal space usage compared to full length versions
- **Hybrid versions** which combine signal contacts with power, coax, or fiber optics, in one connector. By combining different functions in one connector, it is possible to reduce the number of components and save space.

DIN variants are available in inverse



styles, where the traditional male angled/female straight termination styles are reversed. In addition to allowing freedom of choice for connector gender on the backplane and daughter card, it also opens up the possibility for DIN connectors for parallel stacked boards, or coplanar boards.

Those one-third and one-half sized variants specifically address customer demand for miniaturization and pcb board space optimization. HARTING, for example, has now added a type 3C crimp version to its family of one third size connectors. This family also includes inverse 3Q and 3R male and female connectors, making the one third length family as versatile as the full length versions, but with the benefit of space saving. As with the full-length connectors the one third versions with 20 or 30 contacts are rated at up to 2 amps per contact.

While DIN 41 612 is a standardized product series, vendors are willing to provide customers with customized solutions, like special coatless zinc die-cast housings for train control modules for rail giant Bombardier and connectors with special flanges for use in a custom backplane for another rail leader, Alstom. While standard DIN connectors are delivered according to the performance levels defined by the IEC specifications, some vendors, including HARTING, also offer customer specific plating.

You can identify DIN manufacturers committed to the future of the technology by how they meets five tests:

1. Do they provide continual support in selecting a product backed by strong after sales support?
2. Do they offer a broad portfolio from which to pick to get the best solution?
3. Do they evolve products to meet market trends, thereby keeping DIN 41 612 technology relevant?
4. Do they perform thorough testing of their new products, both for durability and reliability?
5. Are they investing in their own manufacturing capability – renewing their stamping, molding and assembly tooling to ensure continued, reliable supply of product?

In pcb design today, there are many applications where the newest ultra high speed designs might not be the best choice, all things considered. Why pay a premium for capabilities that aren't needed, or for components that may be less durable in challenging operating conditions? With DIN 41 612, a world of possibilities remain for tried and true, economical solutions that deliver everything a successful project requires.

For more information on DIN components from HARTING North America, go to <http://ept.hotims.com/65990-37>

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QFN center pads on pcb boards no longer exotic

By Duane Benson, chief technology champion, Screaming Circuits

The QFN (quad flat pack, no leads) package can no longer be considered exotic. It was about a decade ago, but not anymore. In fact, with the wafer scale BGA, it's one of the more common packages for new chip designs.

Not all QFNs come with an exposed metal pad underneath, but most do, and that can still cause problems with reflow

solder. The pad itself isn't the problem, but improper solder paste stencil layer design can be.

The default stencil layer in the CAD library footprint might have an opening in the center, a segmented paste layer in the CAD footprint and the resultant segmented stencil. You may note that I said to shoot for 50-75 percent coverage with solder paste. If you don't, you may very well have yield problems. With a 100 percent open area, you'll most likely end up with too much solder in the middle. The part will ride up or float, and may not

connect with all of the pads on the sides of the part.

The first illustration shows a stencil with too large an opening in the center, a segmented paste layer in the CAD footprint and the resultant segmented stencil. You may note that I said to shoot for 50-75 percent coverage and ask: "Well, is it 50 percent or 75 percent? What gives?"

True, that is a bit of ambiguity. However, anything in that range should be fine for prototype boards. If you're going for volume production, you'll want to work with your manufacturer to tweak

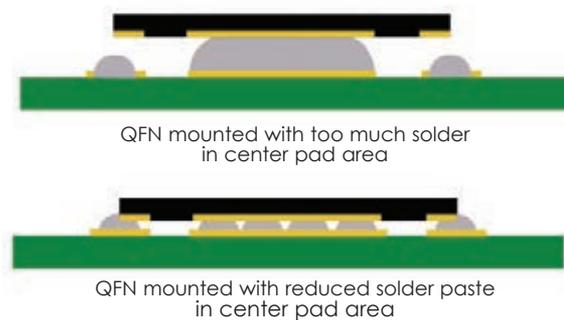


Fig. 1

the design for best high volume yield.

Good news on this front is that many QFN manufacturers and parts library creators have taken notice of this. It's far more likely now, than it was 10 years ago, to find a datasheet correctly illustrating this and footprints created correctly. But, always check your footprints to make sure.

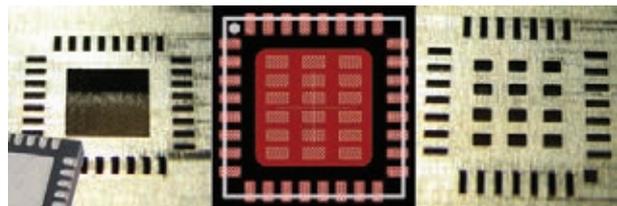


Fig. 2



Wire-to-board interconnect solution meets automotive design challenges

iBridge wire-to-board connector delivers high current density in a miniature package, providing a small 2.0mm pitch. The single-row cable connector system delivers up to 5A per contact at 20-degree C when paired with an appropriate discrete wire. Device provides secure mating for high vibration applications and is available up to 12-pins in crimp wire terminations, through-hole solder or SMT terminations for the pcb headers.

ERNI

<http://ept.hotims.com/65990-38>

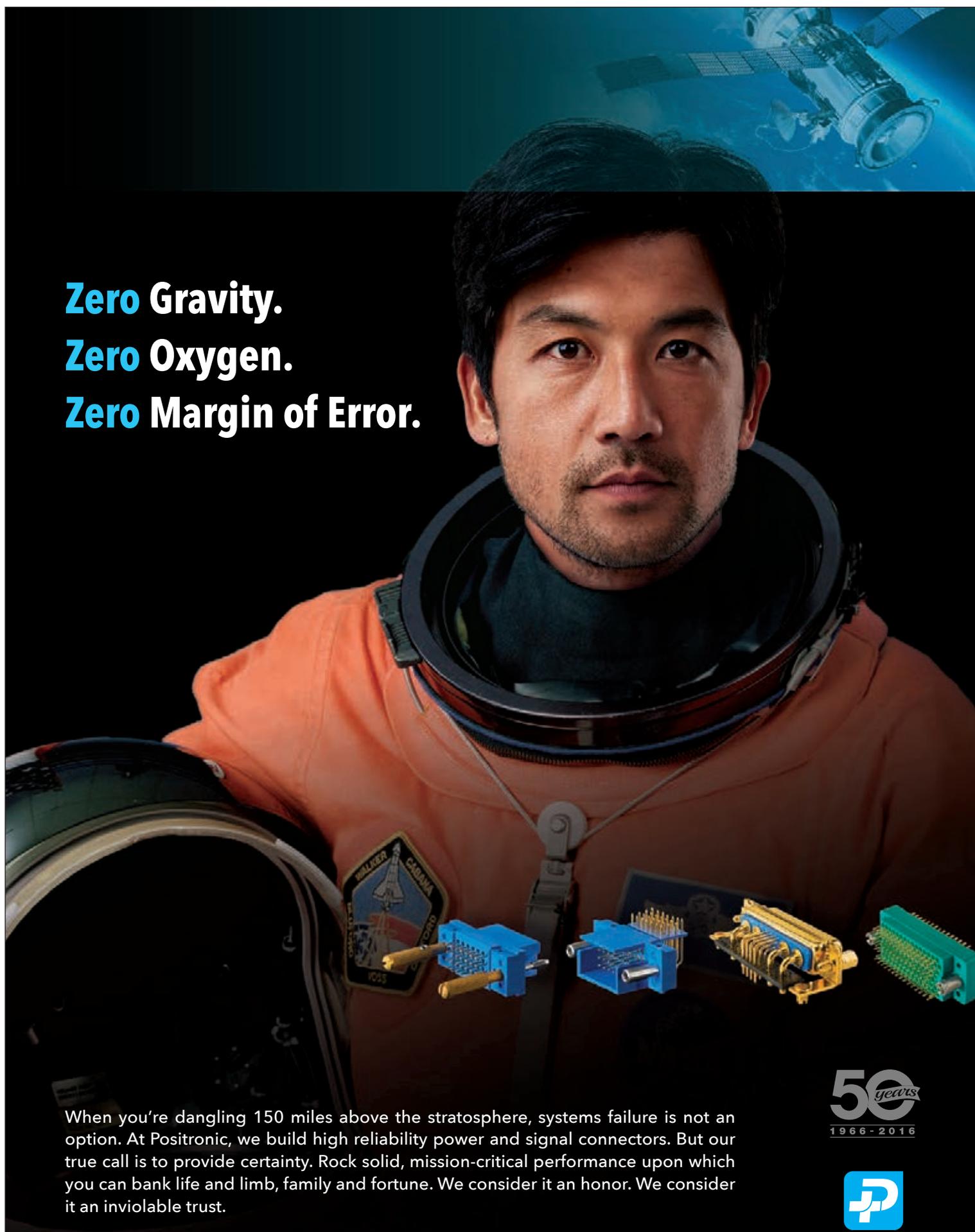


Battery holders come with pcb connectors

KEYSTONE PC Connector Plug line of plastic battery holders includes the option to have holders with a pcb connector plug pre-installed to the end of 6" wires for simplified installations. The durable devices are molded from polypropylene or ABS with polarity tabs and markings to ensure proper polarity and connectivity. Spring contacts are made from steel with nickel plating. Devices are made from Nylon 6/6 with UL 94V-0, flammability rating. A mating PC mountable jack is also available. Holder selections accommodate a wide range of cylindrical batteries from all the major manufacturers, sizes includes AA, AAA, CR2, 12v, as well as N cells. Product series is available for 1 to 4 cell configurations for each cell size.

EMX ENTERPRISES

<http://ept.hotims.com/65990-39>



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Power blocks serve electrical distribution panels

HP Series High Power Terminal Blocks are rated 600 Volt with a choice of 115 or 175 Amps, for electrical applications in power panel distribution. Devices can also be used for lighter power applications and therefore has extended utility as a 'one size fits all' product line. Products are suitable for high power distribution in electrical panels, to transition larger wire gauge, high power mains to smaller gauge lower power branch circuits.

BLOCKMASTER ELECTRONICS

<http://ept.hotims.com/65990-40>



Stamped, formed contacts fit size 12 terminals



ATHD connector series for size 12 and size 8 power contacts now include stamped and formed contacts for size 12 terminals that are rated to 25 Amps. The heavy duty, single pole, rugged, in-line connection system is designed to replace splices as well as provide power wherever needed. Size 12 terminals are also available to crimp to size 16 cable in both the machined and stamped and formed contacts.

AMPHENOL INDUSTRIAL PRODUCTS

<http://ept.hotims.com/65990-41>



What's on Your Radar Screen?

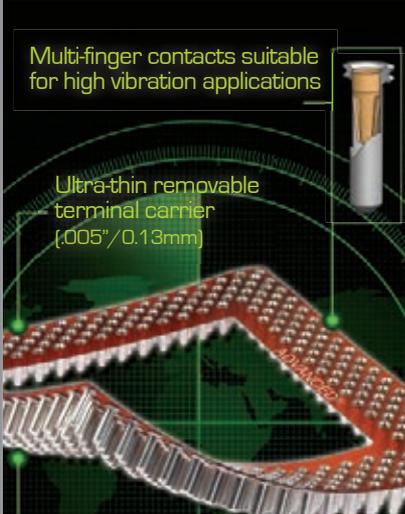
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<http://ept.hotims.com/65990-6>

Twin push-in terminal inserts simplify connections

HEAVYCON Twin-PT heavy-duty contact inserts are available with push-in termination for two conductors per contact, enabling two conductors to be wired in one contact point easily and without special tools. Devices save time, installation space and provide an additional marshaling level. Devices are compatible with many common transmission lines, so they can be combined with other housings and connection mechanisms. Products are well-suited for standard housing types, as well as box-mounting bases and EVO double-outlet plug housings.

PHOENIX CONTACT

<http://ept.hotims.com/65990-42>



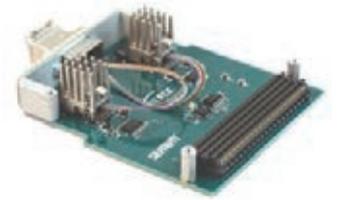
14Gbps dev kit connect FPGAs and fiber optics

14Gbps FireFly FMC Development Kit provides an easy-to-use evaluation and development platform for firm's optical engines. Device provides up to 140Gbps full-duplex bandwidth over 10 channels from an FPGA to an industry-standard multi-mode fiber optic cable.

Product supports data center, high performance computing and FPGA-to-FPGA protocols including Ethernet, InfiniBand, Fibre Channel and Aurora.

SAMTEC

<http://ept.hotims.com/65990-43>



Solder cup spring-loaded connectors with .090" stroke



824-22-OXX-00-005000 single row and **826-22-OXX-00-005000** double row solder cup, spring loaded connectors deliver over 60% more stroke than the existing series. Devices provide a mid-stroke of .045" (1.14 mm) with a maximum stroke of .090" (2.29 mm). The longer stroke helps compensate for tolerance stack-ups in assemblies and provides greater flexibility for unpredictable motion due to shock and vibration. Both 824 & 826 series headers provide the 0947-0-15-20-77-14-11-0 spring pin utilizing firm's .090" maximum stroke spring. Each pin in the connector provides a mid-stroke force of 60 grams, a solder cup sized to accommodate up to a 22 AWG wire and a current rating of 2 amps continuous use (3 amps maximum).

MILL-MAX

<http://ept.hotims.com/65990-44>

BMA connectors, adapters operate to 22GHz max frequency

Line of 52 BMA connectors and adapters provide maximum operating frequency of 22GHz and can be used in applications that include blind mating, rack and panels, phased array systems. Product line is made up of 45 connectors with VSWR as low as 1.2:1, and 7 adapters with VSWR as low as 1.15:1. Devices deliver gold-plated BeCu contacts, 50 Ohm impedance and a temperature range of -65°C to +125°C. Many of the models provide radial and axial float to help with alignment.

PASTERNAK

<http://ept.hotims.com/65990-45>



newswatch

Komax acquires Laselec, strengthens aerospace market segment

Strengthening its position within the aerospace market segment, Komax has acquired Laselec SA, marking an important step for the Swiss-based manufacturer of machines for wire processing, solar and medical technology.

Komax will be taking over Laselec in the second half of 2017, subject to the approval of the French authorities. Laselec specializes in laser-assisted cable stripping and marking solutions as well as intelligent layout boards for wire harness production. These are used primarily in the aerospace industry. Komax has held a minority stake in Laselec since 2015.

During the course of this collaboration over the last two years, the solutions have increasingly found their way into the automotive industry, Komax's largest market segment. Headquartered in Toulouse (France), Laselec employs around 60 staff and has a subsidiary in the USA (Dallas County), among others.

This acquisition enables Komax to continue with its strategy of strengthening market segments outside of the automotive industry. To achieve this, Komax is concentrating on three additional market segments in particular: aerospace, telecommunications and data communication (telecom/datacom) and industrial applications (industrial).

RIGHT ANGLE ANGLISSIMO™ PLUGS



The Anglissimo™ plug is an eight in-one plug that can be adapted by the user to all space constraints.

One plug, eight cable outlets

This new elbow connector design allows to adjust and position the connector in an efficient way.

Each connector can be orientated during its assembly and enables 8 positions.

The connector then remains securely positioned in its orientation.

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- Reduce operating failures caused by stressed cables



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<http://ept.hotims.com/65990-7>

High-current feedthrough reduces weight up to 50%

DEUTSCH lightweight bulkhead feedthrough, high-power connector provides a lightweight method of connecting electrical power through an equipment bulkhead. Suited for most harsh environments, devices are up to 50% lighter than existing standard male terminal feedthroughs. Devices are based on industry standard MIL-DTL-38999 mounting footprints to help save space and reduce costs. Units are available in threaded terminal shell sizes 17 and 23 and offer high corrosion resistance and high current handling options.



TE CONNECTIVITY

<http://ept.hotims.com/65990-46>



NBase-T compliant Ethernet ICMs boosts speed on Cat5e, Cat6 networks

Integrated Connector Modules (ICMs) series of multi-Gigabit NBase-T compliant RJ45 connector modules for 2.5GBase-T and 5GBase-T applications provides a cost-effective solution for boosting speed on existing Cat5e and Cat6 networks from 1 Gigabit to 5 Gigabits for distances up to 100 meters. Devices meet IEEE802.3bz specifications and are compatible with 100/1000Base-T specifications.

PULSE ELECTRONICS

<http://ept.hotims.com/65990-47>

UL 2682 listed connector assemblies provide arc flash protection

Woodhead ArcArrest 30A Switch-Rated Connector System safely de-energizes machinery, lighting and power distribution systems. Product simplifies lockout/tagout procedures and helps protect against injury due to hazardous energy released in industrial and commercial operations. The switch-rated devices help prevent hazardous energy release while energizing or de-energizing machines and during lockouts for service and maintenance. Spring-loaded silver-nickel contacts provide switching capabilities similar to a rotary switch or contactor.

MOLEX

<http://ept.hotims.com/65990-48>



newswatch

BlockMaster catalog covers high power terminal blocks

BlockMaster Electronics Inc., Elk Grove Village IL, a leading terminal block supplier, has announced the availability of its 12-page catalog detailing the firm's new lines of HP and OTB Series high power terminal blocks.



Each series is rated 600 Volts, with Amperage ranging from 115 to 380.

The devices can also be used for lighter power applications and therefore have extended utility as a 'one size fits all' product line.

The product series is offered in 115, 175, 255 and 380 Amp versions, each rated for 600V and are suitable to transition larger wire gauge, high power mains to smaller gauge lower power branch circuits.



AIC delivers online interconnect configurator tool

Advanced Interconnections Corp. (AIC), West Warwick RI, a global provider of interconnect solutions, has released an online video highlighting how to quickly build an application-specific connector part number with its Build-A-Part tool.

The video provides a quick tutorial for using the online product configurator's easy-to-use parametric search menus to build an IC Socket, Adapter, or Board-to-Board Connector part number. As each option is selected from a drop-down menu, such as number of positions, insulator style, and terminal type, the connector part number appears on the screen along with helpful product images.

In just a few minutes, the video shows how a design engineer or buyer can print a part-specific spec sheet, quickly access a CAD drawing, check stock, or request a quote or sample using the handy, online Build-A-Part tool.

Watch the video at:

<https://www.advanced.com/bap>

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A key to success for a company trying to compete worldwide is to offer products that are easily adapted to the needs of global markets—without requiring reconfiguration by the end user. The ability to offer a product that can be used in many different countries can be a huge cost saving benefit to the company.

IEC 60320 Inlets—Global Sales with One Product

A major advantage of the IEC 60320 system is that it can be used globally. When an equipment manufacturer designs an IEC 60320 inlet into a product, which is the most common means of connecting a detachable cord set to electrical or electronic equipment, it allows that manufacturer to make one product for sale worldwide. The detachable cord set needs to have a country-specific plug on one end and an IEC connector on the other end. This cord set allows connection to both the equipment (connector to inlet) and the power source (country-specific plug to wall socket).

An inlet and a connector (also known as appliance couplers) allow manufacturers to make one product that can be used in many different markets—only the cord set has to be changed.

Secure Your Connection

Connector locks secure cord sets to IEC 60320 power inlets to help prevent accidental power interruption. Cord sets can be easily removed without disrupting the connector lock.



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High density, low profile connectors benefit from new breed of spring-loaded pin

Connector manufacturers are turning to more affordable H-Pins over traditional pogo-style options without sacrificing performance

By Plastronics

For decades, connector manufacturers have relied on traditional spring-loaded, or pogo-style pins, to provide highly compliant, reliable interconnections.

Although expensive, these highly compliant pins are used to connect batteries to docking stations, antennas to PCBs, for rugged, high-shock and vibration applications, or to compensate for floating heights and uneven mating surfaces.

However, with the market drive to continually pack more electronics into ever-thinner, shrinking packages, spring-loaded connectors are playing a new role: as space-saving device to reduce the real estate occupied by the connector itself.

Even when miniaturized, connectors with traditional male pins and female receptacles take up valuable space. This is opening the door for compression-style board-to-board and board-to-device connectors that utilize spring-loaded pins mounted against pads or gold-plated lands on the pcb. This approach can be used to create mezzanine-tiered board modules as well.

Trouble is, with hundreds of millions of spring-loaded pins required to produce these connectors, the high cost of traditional pogo-style pins remains a consider-



able barrier.

As a result, connector manufacturers are turning to a new breed of miniaturized spring-loaded pins as small as 0.2mm that reduces costs by 30-50%. These new pins deliver high performance in a highly compliant contact that – unlike pogo-style pins – are manufactured in a fully automated, high-speed production process.

Pogo-style pins

For decades the spring-loaded probe, also known as the pogo-style pin, has delivered excellent mechanical and electrical performance. However, this often came at a high cost.

Although designed and manufactured in subtly different ways, the pogo-style pin is typically constructed of 4-5 components that includes a drawn barrel, a wound spring, two screw machined plungers and some means to bias the plunger to the barrel.

Depending on volume, the traditional pogo pin is either assembled completely by hand or with semiautomatic process steps with pins hand-shuttled from process to process.

As a result, the market stopped using pogo pins for all applications other than



the most critical applications that could afford the premium costs.

Instead, many connector manufacturers turned to alternatives such as bend, buckle, or cantilever-style contacts that require additional space between pins during compression.

However, this approach is not viable for fine pitch applications – defined as the number of pins in a small area or the distance between pin centers – required for today's high density electronics.

Spring-loaded pins, on the other hand, operate in a purely vertical or horizontal fashion, so the maximum space occupied at any time is defined by its diameter. This allows for placement of spring-loaded pins in fine pitch distances as low as .2mm.

H-Pins

The H-Pin, on the other hand, is made using two stamped contact beams (sometimes symmetrical) and a wound spring in a fully automated, high speed assembly and inspection process.

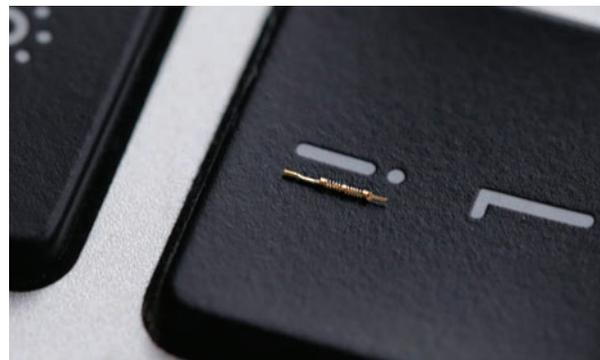
The highly compliant pin has a working range up to 1mm with a flat spring rate and can be utilized up to 15GHz with -1.0dB loss, carry up to 4 amps of current

and withstand temperatures up to 200°C.

However, it is the way these pins are manufactured that is the most striking difference. Whereas traditional pogo-style pins are produced in a semi-automated process at the rate of 200-600 per hour, the completely automated stamping process that produces the H-Pin can produce 200-600 a minute.

By automating the process, the spring-loaded probe pins can cost 30-50% less, depending on quantities. Reducing the number of components also increases reliability.

Available in various lengths and pitch sizes as low as .2mm, H-Pins are the



brainchild of Plastronics. For more than 40 years, the company has used spring-loaded probe pins – including pogo-style pins – in the related test socket industry.

Test sockets utilize the same spring-loaded pins to provide a temporary connection with pcbs for the purposes of burn-in, humidity, failure analysis and other test requirements.

To produce the pins, Plastronics embarked on a mission to re-design the pins and reinvent the manufacturing process so it was fully automated. The goal was to provide a highly compliant pin that provides high temperature, current and bandwidth performance at the price of a stamped contact.

The company also inspects each stamped contact at multiple steps in the process to ensure the pins are identical. The spring winding process is controlled by wire diameter and spring OD is 100% inspected during spring winding. All components are auto inspected as they enter the assembly machine. Finally, all finished parts are auto-inspected before leaving the machine.

Higher production rates and lower costs allow Plastronics to stock much larger volumes for immediate delivery. This can be a disadvantage for low volume or custom orders, as H-pins are produced as standard part numbers.

With the market driving demand for increasingly miniaturized, fine-pitch pins in the hundreds of millions, the high-speed, fully automated production of this new breed of pin is sure to have major implications on cost, delivery and reliability.

For more information on spring-loaded pin connectors from Plastronics, go to <http://ept.hotims.com/65990-49>

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<http://ept.hotims.com/65990-9>

Overmoulded connector speeds data volumes in industrial plants

M12x1 X-coded, axially overmoulded male mating connector extends firm's range of CAT 6A-capable devices, serving the increasing data volumes in industrial plants. Compact device meets all requirements according to IEC 61076-2-109 and with regard to the electromagnetic compatibility according to CAT 6A standard up to 500MHz. Product's vibration protection of the coupling screw has been adopted from the X-coded connector with crimp connection. The UL-listed cable has an S/FTP twisted-pair design and is suitable for temperatures in dynamic and static environments from -40°C to +80°C.

CONEC



<http://ept.hotims.com/65990-50>

Cable guiding system simplifies wire control to cabinet door

The **swivel arm** of the CGS cable guiding system makes it easy and safe for you to run your conductors, cables and cable harnesses to the control cabinet door.



The patent-pending swivel joint can be opened, allowing you to quickly feed in or reposition pre-assembled cables without tools as well. Solution saves time, as the swivel joints can be opened and pre-assembled cables can be fed through or pulled through without using any tools.

PHOENIX CONTACT

<http://ept.hotims.com/65990-51>



Audio jack sockets come with gold plated contacts

Audio jack sockets with gold plated contacts are suitable for low level signals and high-surge voltages. Devices are available in two diameters, 6.3mm or 3.5mm to mate with the most popular jack plug sizes. Products are available in stereo or mono form, may be PC or panel mounted, have on-board switch contacts and are available with an internal or external thread. Complementary accessories include black or grey combined nut and bezel, EMI/RFI screen (6.3mm diameter only) and a recessed mounting plate to facilitate flush mounting of the socket.

CLIFF ELECTRONICS

<http://ept.hotims.com/65990-52>

Right angle board-to-board battery connectors provide 2mm-pitch

9155-700 Series 2mm-pitch right angle board-to-board battery connectors are rated for 125Vac, up to 2A, and 5,000-cycle durability. Device provides miniaturized, mechanically stable, high-integrity connections in harsh environment applications subject to high shock and vibration. Device comes in a compact design with a 4mm connector height, a stable contact point 2.1mm above the pcb, robust and reliable gold-plated beryllium copper (BeCu) contacts, two SMT anchor brackets, and optional plastic locating bosses.

AVX



<http://ept.hotims.com/65990-53>



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<http://ept.hotims.com/65990-10>

BMA connectors, adapters lower VSWR to 1.15:1

Line of 45 BMA connectors with VSWR as low as 1.2:1, and seven BMA adapters with VSWR as low as 1.15:1 can be used in applications that include blind mating, RF backplanes, rack and panel connectivity, high-speed switching and use in phased array systems. Devices provide a maximum operating frequency of 22GHz and deliver 50 Ohm impedance, gold-plated BeCu contacts and an operating temperature range of -65°C to +125°C. Radial and axial float is offered in many of the models to help with alignment.

FAIRVIEW MICROWAVE

<http://ept.hotims.com/65990-54>



Three-point SMT contact is ultra-reliable, durable

SYCAMORE surface-mount socket provides improved pin retention and durability for high-volume applications manufactured using advanced automated systems. Product features three points of contact, providing the assurance of continuity and robustness previously only available from two-piece assemblies which are rarely available on tape & reel. Device features a single-part SMT socket design with low profile of 0.3mm above the pcb. Available in top and bottom entry versions, device accepts 1.0mm or 1.50mm diameter pins and is open-ended, so mating pin depth is not limited.

HARWIN

<http://ept.hotims.com/65990-56>



Graphite tool serves CGA1738 micro-coil spring

Graphite Tool for precision positioning of 0.4mm diameter Micro-coil springs onto BGA1738 organic substrates as an alternative to conventional solder balls. Micro-coil springs provide compliant interconnects between IC packages and the printed circuit board (pcb). The footprint of 1738 packages is 42.5mm x 42.5mm with a pad pitch of 1.0mm. After attaching Micro-coil springs, the reworked package provides more compliance than ball grid array (BGA) solder balls to absorb stress caused by CTE mismatch and to increase solder joint reliability under harsh operating conditions.

TOPLINE

<http://ept.hotims.com/65990-55>



QFN socket operates at bandwidths up to 6.5Ghz

SS-QFN204A-01 high performance QFN socket for 0.65mm pitch devices is designed for a 12mm package size, operates at bandwidths up to 6.5Ghz with less than 1dB of insertion loss. Designed for up to 500,000 actuation cycles, device is able to dissipate up to 4 watts over a temperature range of -40C to +150C without the need for an additional heat sink. This is all accomplished within a 2.5mm larger border, the smallest footprint available to the industry.

product accommodates a chip with 204 pins plus ground pad in the center of the QFN is contacted with additional spring pins for highest bandwidth interface.

IRONWOOD

<http://ept.hotims.com/65990-57>



newswatch

GCT releases catalog of connector models on SnapEDA

Engineers can easily design-in a wide variety of connectors with free symbols & footprints

Global Connector Technology (GCT), a leading supplier of standard and custom interconnect products, and SnapEDA, an online parts library for printed circuit board (pcb) design, have teamed up to provide symbols & footprints for its connectors across an extensive nine product ranges.

With this new collaboration, designers can easily download and design-in GCT's high-quality and reliable connectors, which include USB, SIM card, FFC, modular jack, lighting, dc power jack, and smart card connectors.

The process is simple - designers just download the free connector model for their pcb design tool of choice on the SnapEDA website and then drag-and-drop the model into their designs, saving them hours of time.

Connectors are one of the most time-consuming categories of components for designers to create footprints for because of their non-standard shapes, non-circular pads and lack of patterns in pins and cutouts, according to Natasha Baker, CEO of SnapEDA.

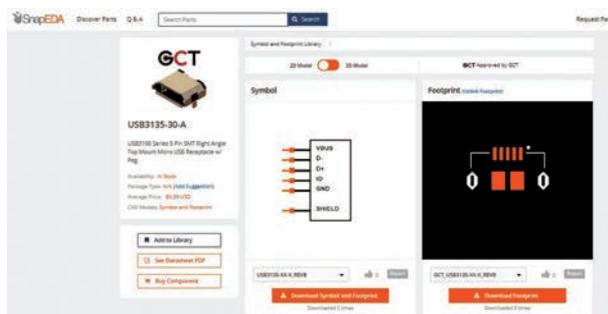
"They generally take hours to build and cause hours of frustration for designers who just want to design them in as quickly as they can so they can complete their product design," Baker says. "Connectors are highly in demand on SnapEDA, so we're thrilled to be able to provide our users with models for GCT's extensive range of products," she adds.

Laurence Hill, managing director at GCT added, "We have always offered customers a first class experience when designing in our connectors and continue to look for innovative tools to make this easier and more efficient. Having a broad selection of our products with pcb layout models in various file formats available to download will certainly support this, reinforcing GCT's commitment to provide an industry leading service for our customers."

SnapEDA works with semiconductor and electronic component vendors to provide digital models for their components in all major CAD formats. In addition to helping customers move to production faster and more reliably through verified manufacturing models, they also help vendors secure design wins for their components.

Symbols & footprints for GCT's connectors can be downloaded for all major PCB software formats, including Altium, OrCad, Allegro, Eagle, PADS, DXDesigner, KiCad and more. The models are auto-verified using SnapEDA proprietary verification technology.

The connector models can be downloaded for free via GCT's website at www.gct.co, or in SnapEDA's free parts library at www.snapeda.com.



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<http://ept.hotims.com/65990-11>

Pcb terminal blocks serve power electronic designs

Series 2624, 2626, 2636 push-in cage clamp pcb terminal block provides streamlined and compact connections for all wire types. Solid and ferruled wires can be directly pushed in for connection, while tool-actuated termination is available parallel to the conductor entry for stranded wire and for the release of all wire types. Devices are suitable for panel feed through applications because operation and wire entry are from the same plane. Products meet requirements of EN and UL 61800-5-1 making them suitable for panel feed through connection in electric drives systems applications.

WAGO

<http://ept.hotims.com/65990-58>



Connectors boost performance 30%, meet rail standards

REP Series of high reliability, multi-pole, sealed rectangular plastic connectors comply with the most stringent rail standards. Protected to IP66 and IP67, devices deliver high performance and capacity, plus the shock, vibration and smoke and fire protection demanded by the modern rail industry. Devices utilize Hypertac hyperboloid contact technology ensuring low insertion and extraction forces, immunity to fretting corrosion, a long life cycle in harsh environments and superior performance, combined with 30% higher current carrying capacity than standard contacts of the same size.

SMITH INTERCONNECT

<http://ept.hotims.com/65990-59>



Modular power supply delivers communications interface

PMBus communications interface option card for the 700 to 1500W rated QM series of modular power supplies is an open standard digital power management protocol, allowing power devices to communicate with each other. QM power supplies are available with up to 16 outputs, have full medical MoPPs isolation and low acoustic noise. The addition of PMBus allows the user or system to remotely turn the QM power supplies on and off (inhibit or enable mode), read back their incoming air temperatures, total operating hours, fan speed, fan status and manufacturing details.

TDK-LAMBDA AMERICAS

<http://ept.hotims.com/65990-60>



Integrated cellular + WiFi protocol verification solution tests simultaneously

T5510S Cellular + WiFi Emulation System is a powerful, flexible platform enabled by the combination of Keysight's UXM network emulator and the Ixia Solutions Group's Wave Test System and supports simultaneous cellular and WiFi testing. The test platform covers a complete cellular and WiFi system, from data traffic generation to physical transmission, layers 1 to 7. The complete system tests with the latest cellular standards (LTE/LTE-Advanced/NB-IoT/Cat-M), as well as all WiFi protocols (802.11a/b/g/n/ac) under a wide range of traffic and RF emulation conditions.

KEYSIGHT TECHNOLOGIES

<http://ept.hotims.com/65990-63>



Regenerative battery pack test system reduces consumption

17040 battery module and pack test system is regenerative, so power consumption is greatly reduced. The energy discharged from testing is recycled back to the grid reducing wasted energy and without generating harmonic pollution on other devices - even in dynamic charge and discharge conditions. Product is equipped with a charge/discharge mode, as well as a battery simulation mode to verify if a connected device like a motor driver is functioning properly under varied conditions. Software/hardware integration and customization capabilities include BMS, data loggers, chambers, external signals and HIL (Hardware in the Loop).

CHROMA

<http://ept.hotims.com/65990-61>



Dev kit serves as robust hardware design platform

Terasic Technologies DE10-Nano development kit is a robust hardware design platform built around an Intel System-on-Chip (SoC) FPGA, which combines a processor, peripherals and an FPGA fabric into a single, user-customizable device. Product is based on the 28nm Intel Cyclone V SoC FPGA, which integrates dual-core ARM Cortex-A9 embedded cores with industry-leading programmable logic for maximum design flexibility. Developers can leverage the power of reconfigurability along with a high-performance, low-power processor system. Kit includes two 40pin general-purpose input/output (GPIO) headers, 1 GByte of high-speed DDR3 memory, a 12-bit analog-to-digital converter (ADC), Gigabit Ethernet networking, and an HDMI transmitter. The kit contains all the components required to use the board with a computer running Microsoft Windows XP or later.

MOUSER ELECTRONICS

<http://ept.hotims.com/65990-62>



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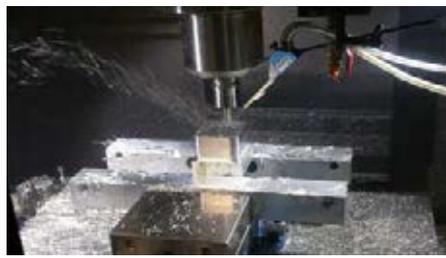
- ▶ 2-3 DAY TURNAROUND
- ▶ NO MINIMUM ORDERS
- ▶ SHEET METAL MILLING
(Aluminum, Cold Rolled Steel, Galvanneal, Stainless Steel, and Copper)
- ▶ BAR STOCK MILLING
(For producing a wide variety of machined parts & enclosures)

WHY CNC MACHINING?

- ▶ INCREDIBLY DURABLE, allows for a very high level of protection from the elements
- ▶ IDEAL for creating panels, enclosures and parts that need pockets, grooves, or chamfers

BUILT IN 2-3 DAYS

We can CNC machine enclosures, panels, bus bars, and standalone machined parts from your CAD drawings, or you can take advantage of our design services. Simply specify all of your features and custom cutouts in your design, and we'll create them during fabrication. Enhance aesthetics and functionality with powdercoat finish, silkscreening/direct digital printing and engraving.


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<http://ept.hotims.com/65990-12>

Network power meter permits customization of parameters

Dent PowerScout PS3037 network power meter has the ability to monitor voltage, current, power, energy and many other parameters. Choose between models with or without digital displays, customize the communications with the option of ethernet or serial. Unit provides a broadband power supply (80-600Vac) and the capability of being paired with a variety of current transformers, including split cores that measure < 1A and RoCoils designed for measuring 4000A. Communications protocols are field-selectable, allowing users to easily toggle between Modbus or BACnet. Configure by connecting the meter to a PC outfitted with the ViewPoint software.

ITM INSTRUMENTS

<http://ept.hotims.com/65990-64>



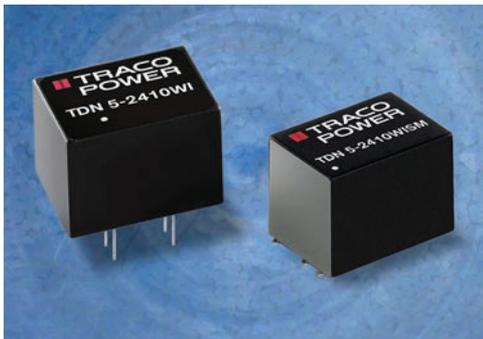
5W Converter comes in ultra-compact DIP package

TRACO Power TDN 5WI series isolated 5 Watt dc-dc ultra compact DIP converters are housed in cubical non-conducting FR4 casing that is 1.23 cm³ without any compromise regarding reliability and functionality.

The highly efficient TDN 5WI series is available in both single 3.3, 5, 12, 15, 24Vdc and dual ± 5 , ± 12 and ± 15 Vdc output voltages, Offering a 4:1 wide input voltage ranges of 4.5-12Vdc, 9-36Vdc and 19-75Vdc. Standard features include remote On/Off, overload and short circuit protection, fully regulated outputs, 1600VDC I/O isolation and an operating temperature range of -40°C to +75°C without derating. An input filter makes the converters comply with conducted emission EN 55022 Class A or B and EN 61000-4-6 ESD immunity standard.

POWER SOURCES UNLIMITED

<http://ept.hotims.com/65990-65>



Standalone multi-channel datalogger delivers isolated/universal input

Graphtec America GL840-M isolated/universal input, standalone multi-channel datalogger provides temperature measurement in multiple channels. Unit has various function such as bar chart data display, alarm output function, navigation function and networking features. The multi-channel device provides built-in 4GB Flash Memory with SD card support, along with three types of input systems which enables measurement of various signals.

TRADEPORT

<http://ept.hotims.com/65990-66>

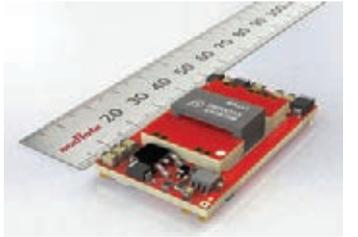


Dc-dc converters boost isolation for industrial power installations

MGJ6 series high isolation dc-dc converters are wide and low-profile providing a 14mm creepage and clearance distance for use in reinforced-rated isolated-gate drive-power applications in higher efficiency 690Vac industrial electrical distribution systems. Devices provide optimized voltages for best system performance and efficiency. Rated at 6W, the dual output converters provide a wide 2:1 input voltage range with nominal values of 5, 12 and 24V and with output voltages of 15/-10V, 20/-5V and 15/-5V.

MURATA

<http://ept.hotims.com/65990-67>

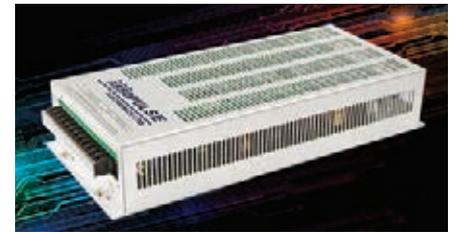


1000Vdc input industrial dc-dc converters deliver 500W

HVI 500-1K-XX-FX Series of dc-dc converters are suitable for rugged industrial applications that require high input voltages and wide dc-input ranges. Units accept a nominal input voltage of 1000Vdc with an 800Vdc to 1200Vdc operating input range. 500W units provide 36V, 48V, 110V, 125dc or custom outputs. An optional built-in redundancy diode allows for a number of units to be connected in parallel to achieve higher output power or N+1 redundancy.

ABSOLUTE ELECTRONICS

<http://ept.hotims.com/65990-68>



All-in-one signaling tester supports LTE-advanced 1Gbps IP throughput



Signaling Tester MD8475B single-instrument solution enables 1Gbps IP data communications throughput testing and supports 4x4 MIMO with 256QAM high-order modulation and four component carrier aggregation. The integrated system, which consists of the new Enhanced Multi-signalling Unit MD8475B-071 option and

LTE 4x4 MIMO software, lowers cost-of-test and improves time-to-market by simplifying mobile device evaluation for device makers, chipset manufacturers, and mobile operators.

ANRITSU

<http://ept.hotims.com/65990-69>

Super capacitors lower ESR for power, energy storage

DGH Series super capacitors provide capacitance values up to 350 Farads. Product series includes 21 different value/voltage combinations, ranging in capacitance from 0.5F (Farad) to 350F, with voltage ratings from 2.7 to 5.5WVdc. ESR varies by part, but is notably lower than devices with similar storage capabilities. Operating temperature ranges from -40 to +65°C for extended life performance in many applications. At 2.7 volts, operating life is rated at 10 years with 500,000 cycles.

ILLINOIS CAPACITOR

<http://ept.hotims.com/65990-70>

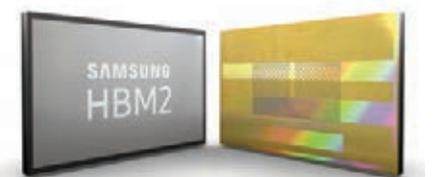


DRAM addresses rapidly growing market demand

8-gigabyte (GB) High Bandwidth Memory-2 (HBM2) DRAM with 256GB/s memory bandwidth meets growing market needs across a wide range of applications including artificial intelligence, HPC (high-performance computing), advanced graphics, network systems and enterprise servers. Product consists of eight 8-gigabit (Gb) HBM2 dies and a buffer die at the bottom of the stack, which are all vertically interconnected by TSVs and microbumps.

SAMSUNG SEMICONDUCTOR

<http://ept.hotims.com/65990-71>



Schleuniger



take off

EcoStrip 9380

Welcome to the Future of Entry Level Cut & Strip

The EcoStrip 9380 offers the most complete feature set at an economical price point. This flexible machine can be configured with rollers or belt feeding unit capable of short mode processing and is easily operated via the 5.7" color touchscreen and underlying Schleuniger S.ON software. Turn the EcoStrip 9380 into a fully automatic processing line with a wide range of accessories for prefeeding, marking, stacking, coiling and tying.

schleuniger-na.com/es9380_ept
905.827.1166



To Be Precise.

<http://ept.hotims.com/65990-13>

Dorigo and Streamline Transportation disrupt fleet biz with IoT innovation

BC-based firms design and manufacture Navilink Vehicle Controller

Knowing where fleet vehicles and drivers are at all times identifies potential problems sooner and mitigates risks before they become larger issues that can impact driver safety or increase operating costs. This vision is what has propelled the design of Navilink, an IoT transportation controller which is disrupting today's fleet management. Manufactured by Dorigo Systems Ltd., this controller is a critical component of the Navistream onboard intelligence solution offered by Streamline Transportation Technologies Inc (STTI), Kamloops BC.

Burnaby-based contract electronics manufacturer (CEM) Dorigo Systems was chosen as the CEM to create the first Navilink prototype. "Dorigo was willing to invest time and manufacturing support to help bring Navilink to market early in our design stage," says Ron Iacobelli, P.Eng and COO at STTI. "Together, we designed and manufactured a controller that is used in our vehicle control system."

"We were able to provide design for manufacturability suggestions after the prototypes so the Navilink controller could be seamlessly launched into production," states Paul Vasvary, business development manager, Dorigo Systems. "Our mission is to manufacture the highest quality electronics using our fast turnaround and dedicated service capabilities to cost-effectively take our customer's product from prototype to full production."

The Navilink design team wanted to deliver a Canadian product sourced through local manufacturing channels. In their opinion, the ability to oversee production locally, and to evolve prototype builds quickly, was critical to successfully bringing Navilink to market.

"The nature of our product is to be safety critical," says Iacobelli, "so we needed to work with a local CEM where we could oversee product builds and ensure our controller was designed the way it was specified." STTI works with Dorigo Systems, a leading EMS provider in the Pacific Northwest.

"We don't just assemble circuit boards – we become partners in the production process," says Ken Pauls, business operations

manager, Dorigo. "Our team handles everything from procuring components, handling metalwork and final assembly to testing, labeling and shipping of the end product to customers. In STTI's case, they have benefitted from our highly leveraged purchasing power to reduce component costs."

STTI provides complete connectivity for fleet management by providing the data and visibility to manage not only performance, location, compliance and



fuel economy, but also insight into the safety and reliability of fleet drivers with Navistream.



IJA Series

35A Non-isolated SMT Point of Load with PMBus™

- ◆ Only 0.45 in² Board Space
- ◆ 8 to 14V Input
- ◆ 0.6 - 3.3V Output
- ◆ Digital Adaptive Control
- ◆ Configurable Sequence and Fault Management

<http://us.tdk-lambda.com/lp/products/ija-series.htm>



IJB Series

60A Non-isolated SMT Point of Load with PMBus™

- ◆ Only 1.0 in² Board Space
- ◆ 8 to 14V Input
- ◆ 0.6 - 2V Output
- ◆ Digital Adaptive Control
- ◆ Configurable Sequence and Fault Management

<http://us.tdk-lambda.com/lp/products/ijb-series.htm>



IQG Series

300-504W Isolated 1/4 Brick Converters

- ◆ Quarter Brick Footprint
- ◆ 48V Nominal Input
- ◆ 9.6 and 12V Output
- ◆ Up to 95% Operating Efficiency
- ◆ High True Usable Power

<http://us.tdk-lambda.com/lp/products/iqg-series.htm>



IAH Series

40A Non-isolated SMT Point of Load

- ◆ Only 0.69 in² Board Space
- ◆ 3.5 - 17V Input
- ◆ 0.7 - 5.5 Output
- ◆ No External Tuning Components Needed
- ◆ DOSA Compatible Footprint

<http://us.tdk-lambda.com/lp/products/dosa2-series.htm>



IBH Series

20A Non-isolated SMT Point of Load

- ◆ Only 0.36 in² Board Space
- ◆ 3.5 - 14V Input
- ◆ 0.7 - 5.5 Output
- ◆ No External Tuning Components Needed
- ◆ DOSA Compatible Footprint

<http://us.tdk-lambda.com/lp/products/dosa2-series.htm>

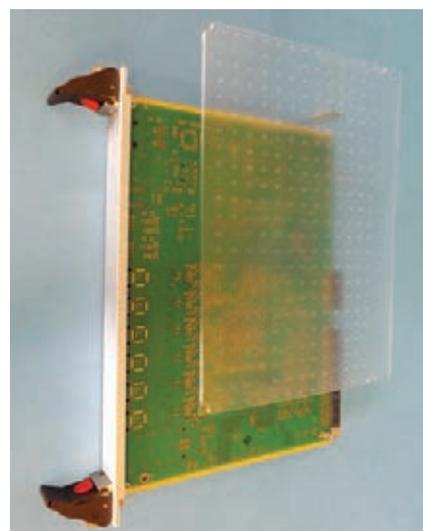


ICH Series

12A Non-isolated SMT Point of Load

- ◆ Only 0.23 in² Board Space
- ◆ 4.5 - 14V Input
- ◆ 0.7 - 8.5 Output
- ◆ No External Tuning Components Needed
- ◆ DOSA Compatible Footprint

<http://us.tdk-lambda.com/lp/products/dosa2-series.htm>



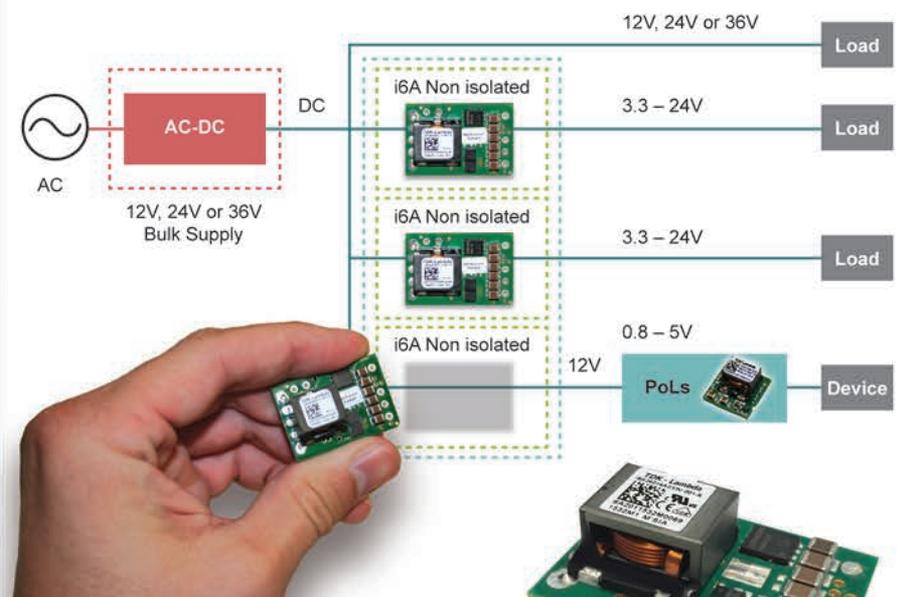
Covers protect 3U and 6U Eurocard pcbs

Protective solder-side covers for 3U and 6U Eurocard printed circuit boards (pcbs) come in a version that mounts to OpenVPX, CompactPCI, and VME/64x boards. Devices mount to Eurocard-based boards and provide mechanical protection of the component side of the modules during storage and transportation. The attachment holes are per the respective OpenVPX, CompactPCI, and VME/64x specifications. The covers come in solid or perforated options. Standard sizes are 3U x 160mm and 6U x 160mm.

PIXUS TECHNOLOGIES

<http://ept.hotims.com/65990-72>

Create your own!



i6A SERIES -

250W, 3.3 to 24V 14A Output Non-Isolated Converters

The i6A is ideal for creating additional high power output voltages from a single output AC-DC supply. Rated at 250W, this 14A step-down converter can be adjusted across a 3.3V to 24V output, accepting a wide 9 to 40Vdc input.

Packaged in the industry standard 1/16th brick footprint, with an ultra high efficiency of 98%, the i6A can operate in even the most demanding thermal environments.

Contact TDK-Lambda for an evaluation board or check our website for distribution inventory

<http://us.tdk-lambda.com/lp/products/i6A-series.htm>

For more information on how TDK-Lambda can help you power your unique applications, visit our web site at www.us.tdk-lambda.com or call 1-800-LAMBDA-4

- ◆ Only 1.2 in² Board Space
- ◆ 9 to 40V Input
- ◆ 3.3 to 24V Output
- ◆ Up to 98% Efficiency
- ◆ Minimal External Components Required



SigmaPoint Technologies unleashes re-brand strategy aiding start-ups and reshoring OEMs

The main focus behind the rebranding strategy of electronic manufacturing services (EMS) provider SigmaPoint Technologies Inc. is pretty simple – advance new product introduction (NPI) and speed-up the prototyping process for its customers. The Cornwall Ontario-based EMS player is fully supporting its efforts with a revamped website, along with beefed up social media and business development strategies, according to Sylvain Duval, director of customer experience, SigmaPoint.

The firm's key objective will be to help start-up designers and OEMs successfully introduce new product to market faster, while helping them manage volume production runs more locally. There are many reasons for North American OEMs and startups to reevaluate off-shoring and consider re-shoring, notes Duval.

"Our customers are increasingly recognizing that costs, risks and strategic impacts previously ignored are large enough to overcome the shrinking low cost off-shore wage advantages. They are seeing the benefits of proximity, such as producing in the market as an example," Duval says.

Similar pricing as low-cost countries

Duval says SigmaPoint's objective will be to help its customers identify the top reasons that enable them to reshore in Cornwall, situated approx. 400km east of Toronto and 100km west of Montreal. Duval points to a number of attributes associated with SigmaPoint's lean enterprise methodology and increased flexibility that

will result in similar pricing as low-cost countries.

- Improved lead time
- Higher product quality and consistency
- Wages
- Skilled workforce
- Lower freight costs
- Lower inventory levels, better turns
- Better responsiveness to changing customer demands
- Better responsiveness to change management
- Minimal intellectual property and regulatory compliance risks
- Improved innovation and product differentiation
- Local tax incentives (Duty or others)
- Currency exchange

SigmaPoint has a diversified and balance customer base operating in various market segments, including telecom, industrial, imaging, medical, wireless, industrial, defense/military, audio/video broadband and automotive. Employing 315 personnel at its 84,000-square-foot lean facility, SigmaPoint serves the Montreal, Quebec, Ottawa and Toronto market, while focusing on developing channels in Western Canada, as well as in the USA (New England region).

Reinforcing its position as the rightful landing spot for electronic OEMs seeking to re-shore within Canada or simply launch

their design, SigmaPoint recently invested in some new capital equipment, including:

- Dedicated NPI Line SMT mirror image of our volume manufacturing line;
- Universal Fuzion high capacity chip shooter to accommodate tape & reel, bulk, tube or tray packaging.

"We help our customers identify the top reasons that enables them to reshore in Cornwall. Our new business case demonstrates our operational excellence and lean enterprise methodology that will result in similar pricing as low-cost countries and increased flexibility for them," Duval adds.

Advanced lean manufacturing principals

SigmaPoint now has several examples of customers who were planning to off-shore their high-volume production demands, until becoming aware of the EMS provider's revised operation plans including advanced lean manufacturing principals, designed to remove waste from processes and creating a labour cost structure suitable for reshoring in Ontario.

Ensuring its position with leading edge design development, SigmaPoint will occupy a state-of-the-art manufacturing facility at Catalyst137, a brand-new hub in Waterloo that will bring together everything an Internet of Things (IoT) company needs to accelerate its time-to-market. Slated to open Jan. 2018, Catalyst137 represents a 475,000 sq ft warehouse that will become home to the Waterloo-area high tech maker community and will provide centralized funding, consulting, engineering and other services, to be consolidated under one massive roof.

SigmaPoint will be the sole EMS provider within the facility for prototyping services helping clients in their early stage of research and development.

"This opportunity allows us to reach startup and OEMs alike when they are at the Prototype and new product introduc-



tion level," says Duval. "We want to help them meet their aggressive goal of time to market, while keeping in mind the ability to quickly and cost effectively go to volume production right here in Canada."

SigmaPoint will have a complete SMT line on site in order to manufacture PCBA assembly in quick turnaround time as needed by the market. Lead time could go from three to 10 days depending on customer needs and product complexity. Furthermore, a dedicated team of NPI experts will accompany its customers for supply chain, component and product test engineering and project management.

"We will have the ability to provide design for velocity (DFV) feedback and post mortem reports for immediate product improvements," says Steve Blouin, P.Eng., vice-president of engineering services. Blouin describes DFV as being the sum of all the manufacturing design expertise like design for manufacturing (DFM), design for test (DFT) and design for supply chain (DFS), with the single goal to maximize product margin apex for the customer as soon as possible in the product life cycle.

"Our supply chain analytic capabilities via Kanaxis RapidResponse and our operational lean manufacturing culture will prepare our customer for what to expect when they are ready to go to volume production."

Duval is confident that partnering with Catalyst137 will help bring hardware development to the forefront of his customer's design cycle - making SigmaPoint well positioned in the high tech community in the GTA/Waterloo corridor.



newswatch

CEM and design market is expected to bump-up

The global contract electronic manufacturing (CEM) services providers and design services market are expected to reach USD\$639.9-billion by 2025, according to a new report by Grand View Research Inc.

The competitive nature of the electronics industry, increasing complexity of electronic products, increased pressure on original equipment manufacturers (OEMs) for reducing costs and decreased product lifecycles have increased the demand for better manufacturing capabilities and their related services. To achieve the same, OEMs are seeking support from contract manufacturers.

OEMs subcontract CEM companies and benefit from their expertise in design, manufacturing and supply chain management. Outsourced manufacturing model enables OEMs to leverage resources, reduce costs, access the leading manufacturing technologies, reduce investments in fixed capital, and adapt to the market demand.

Additionally, it also aids in retaining the overall control responsibilities and in-house activities such as customer service, integration of network solutions, product cost management, customer interactions, quality assurance, order management, and new product introduction.

All the above mentioned factors are expected to drive the electronic contract manufacturing services market over the forecast period.

Electronic contract manufacturing

services market is projected to witness high growth across non-technical segments, such as medical, aerospace & defense, and automotive, over the forecast period, owing to low penetration rates and high growth opportunities (over the next few years) in these sectors. The surging need for optimizing resources is the primary reason that is expected to drive the growth of the electronic contract manufacturing services market over the next nine years.

Further key findings from the report suggest:

- The global CEM and design market is expected to witness a CAGR exceeding 7% from 2017 to 2025, owing to the rising need for resource optimization.
- CEMs accounted for the highest market share in 2016; however, electronics design & engineering services are projected to witness high growth over the forecast period.
- CEMs in the IT & telecom segment held the highest revenue in 2016. However, non-technical segments, such as healthcare, automotive and aerospace & defense, are expected to witness noteworthy growth over the forecast period, owing to the rising outsourcing trends in these industries.
- The Asia Pacific region accounted over 40% of the overall revenue share in 2016 and is expected to dominate the market over the forecast period.
- Foxconn, FLEX, Jabil Circuit, Sanmina-SCI, Venture Corp., Benchmark, among others were a few key players that captured a significant market share in 2016.

Laser wire stripper processes 'nick-free'

Mercury-4 laser wire bench top stripping machine processes wires and shielded cables ranging in size from 0.025 – 6 mm OD (0.001" – 0.2"). Powerful and slim unit provides completely nick-free stripping every time, making it a suitable solution for critical applications where mechanical stripping is simply not possible or allowed. Users can further increase productivity with a custom wire fixture to hold and process multiple wires in one cycle or hold flat cables to perform any type of stripping pattern within a 50 x 50 mm (2 x 2") strip area. The simple touchscreen interface allows all parameters (laser power, speed and position) to be set up with just a few clicks.

SCHLEUNIGER

<http://ept.hotims.com/65990-73>



Two part epoxy bonds, seals and coats encapsulation

Master Bond EP415-F is a two part epoxy for bonding, sealing, coating and encapsulation applications. Product combines fast ambient temperature cure speed with chemical resistance and superior electrical insulation properties. Versatile system is easy to handle and has a forgiving 100 to 25 mix ratio by weight. After mixing, product polymerizes quickly and can usually be removed from a fixture within 20-30 minutes. Full cures are achieved in 24 hours at 75°F or in 45-60 minutes at 200°F.

MASTER BOND

<http://ept.hotims.com/65990-74>





Switches matter in today's automated factories

By Mike Bolduc, global marketing manager, C&K



The Internet of things (IoT) trend is impacting almost every facet of modern life, ranging from smart homes to smart cities. One area that appears to hold promise for real gains in efficiency and productivity is the smart factory.

Commonly referred to as Industry 4.0, the goal is to combine factory automation devices (the 'hardware') to information technology (IT) platforms such as manufacturing execution systems (MES), enterprise resource planning (ERP) and business intelligence (BI) systems in order to provide greater flexibility and higher efficiency to manufacturing companies.

The trend has spawned a number of fancy new buzzwords and terminology in the manufacturing industry.

Starting with the hardware, which carries out all the work, there are fieldbus networks (similar to the local area networks that connect desktop computers) which link the sensors, actuators, and controllers on automated equipment.

Fieldbus networks are known under many names including DeviceNet, HART, and Profibus, as well as the newer Ethernet based platforms such as EtherCat and Profinet. These local hardware systems link to wireless and cellular networks through gateways and routers, commonly called 'edge devices.' The Cloud-based data generated is used to manage scheduling and other priorities among globally dispersed factories, and vendors have emerged to manage these device networks and systems, advertising themselves under the category platform-as-a-service (PaaS).

But with all the excitement around the software platforms, communication protocols and Cloud networks, it's easy to forget about the foundation of industry 4.0; the hardware, which does the work. High volume assembly for many products (such as iPhones) is more economically done on automatic assembly equipment than by human operators. These machines typically use a motorized belt or indexing table to move the product from one station to another, adding and modifying various components until it's fully assembled. The basic components of these systems include sensors, actuators, controllers, and communication devices.

Sensors

Before anything happens on the equipment, there is a need to make sure all the components and fixtures are in the correct locations. In addition, for safety reasons, the machine needs to know if any people are in areas where they could be injured. These functions are carried out by a number of different devices including basic snap switches, capacitive and inductive proximity sensors and photoelectric or light sensors. For the safety circuit, there are dedicated relays which monitor the inputs from emergency stop buttons and light curtains. Vacuum grippers, commonly used to grab and place small components, also require the use of pressure switches to assure the compo-



nents have been placed correctly. The sensors and switches used for these functions generally need to have small form factors and be able to withstand the harshness of a manufacturing environment.

These devices also need to be configured for things like sensitivity, delays, limits, etc. when the machine is put in service or when changes are made. Typical switches are used for this function include tact and DIP switches. These 'configuration' switches need to have small footprints, be able to withstand exposure to oils, grease, and other chemicals, perform reliably for many cycles - and have low power consumption. The miniature tact switches used on proximity and pressure sensors must also have appropriate haptics to make it easy for technicians to set up and configure the device.

Actuators

Once sensors determine that everything is safely in the correct location, components are placed into fixtures and various operations - including cutting, stamping, riveting and welding - are performed. Actuators typically come in linear or rotary configurations driven by electric motors or pneumatics. In order to function properly, these actuators use a number of devices for control and protection. With electric motors, overload relays and circuit breakers (or motor starters) are commonly used. These devices also typically require switches for setup and configuration. Tact and DIP switches (both standard and coded rotary) are commonly used to set output current levels and time delays and rotary switches are used to manually turn the device on or off. Miniature snap type switches are often used inside circuit breakers to determine trip conditions and send signals to a controller.

Relative to pneumatic actuators, valve terminals and valve controllers are used to power and control several actuators. These devices commonly use standard and rotary DIP switches for addressing and configuration. Similar to the switches used for factory automation sensors, these products need to be robust and able to perform in harsh environments. Miniature footprints, sealing against corrosive fluids and low power consumption are also key requirements for the switches used on these devices.

Control Systems

The control system takes input from various sensors and based on the control logic or program, sends signals to the actuators to carry out a variety of operations. Machine control can be carried out with a Programmable Logic Controller (PLC), a Programmable Automation Controller (PAC), or a Windows-based industrial computer. Additional components can include variable speed drives, servo-motor controllers, and power supplies.

Almost all control system components utilize some type of electromechanical switch for setup, addressing, or configu-

ration. PLCs for example, generally use either a slide or toggle switch to change from run to program mode at setup or when changes are made. General purpose variable speed drives often use slide switches for current and voltage selection as well as standard and rotary DIP switches for configuration or to set network addresses. Embedded and industrial computers can use tact, pushbutton, or key switches for setup and operation.

The various tact, DIP, slide, and toggle switches used on these control devices need to perform reliably for many years under harsh conditions. Attributes such as small form factors, resistance to corrosion and low power consumptions are critical for proper performance.

Communication

The communication devices used for factory automation typically fall into two broad categories; fieldbus products, which connect equipment such as sensors and controllers at the shop floor level and edge devices, which connect the factory floor to the industrial Ethernet, cloud servers, and the various IT systems.

Fieldbus components allow data transfer between the sensor/actuator level and the control level and include devices such as input/output (I/O) bus modules, media and protocol converters, couplers, and repeaters. These products are generally tailored to the particular protocols used (i.e., DeviceNet, Profibus, etc).

Edge devices such as industrial modems, gateways and routers can be embedded or stand-alone components and can interface with wired or wireless components. Similar to other automation components, communication devices such as fieldbus modules and network gateways use a variety of slide switches as well as standard and rotary coded DIP switches for configuration and addressing.

Once again, while these tiny 'configuration' switches are only a smart part of the end device, they're usually the part of the product the user interacts with the most - making them critical for communicating an image of overall product performance and quality to the end customer.

For more information on electronic switches from C&K, go to <http://ept.hotims.com/65990-75>



Control Operating Requirements & Simplify Vehicle Control Circuitry

Are you looking for ways to simplify the circuitry in your vehicle, increase battery efficiency and customize the availability of critical loads after the body control module is powered down? E-T-A's new ETR10 Solid State Relays offer:

- **Simplified circuitry:** All-in-one timer relay with monitoring and control functionality reduces the number of connections in the circuit.
- **Efficiency:** ON/OFF delay helps increase battery efficiency by activating loads at programmed times after the ignition process.
- **Flexibility:** You define the operating parameters that meet the needs of the vehicle and the vehicle operator.

Learn more about the ETR10:
www.e-t-a.ca/EPT_ETR10

<http://ept.hotims.com/65990-15>



Rocker switches come with elastomer membranes

APEM KL series rocker switches are available with elastomer membranes. Devices are suitable for off-road vehicle cabins, which are often exposed to dusty environments and this can lead to switch blocking. With the new elastomer membrane, device's actuator does not move anymore, but only deforms and is protected against dust. Switches' ergonomics, robustness and lifecycle remain unchanged. Product is suitable in open cabins with high exposure to dust.

X TRONICS

<http://ept.hotims.com/65990-76>



SMT tact switch operates on soft touch

TL9100 Series Soft Touch SMT Tact Switch provides a soft touch tactile feel in a surface mount design. It is SPST and provides a choice of 200 or 350 operating force options. Device has a contact rating of 50mA @ 12Vdc and a travel of 1.30mm. Product's applications include audio/visual, telecommunications, computer peripherals, consumer electronics, instrumentation and handheld devices.

E-SWITCH

<http://ept.hotims.com/65990-77>

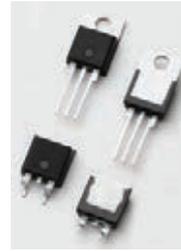


SCR thyristor handles 600V 40Arms, 150°C junction temperature

SJxx40x Series of 40A standard high-temperature silicon-controlled rectifier (SCR) thyristors are capable of handling 600V, 40Arms and junction temperatures up to 150°C. Devices prevent the overheating and thermal runaway problems SCRs can experience due to an application's limited cooling capability or occasional overload situation. Products trigger with just a few milli-amps of current at less than 1.5V potential.

LITTELFUSE

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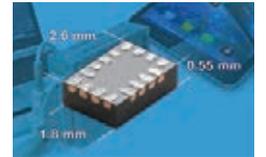


Analog switch saves space, improves signal integrity

Siliconix DG2788A dual DPDT / quad SPDT analog switch provides low resistance of 0.37ohm at 2.7V in the compact 2.6mm by 1.8mm by 0.55mm miniQFN16 package. Suitable for both analog and digital signal switching in space-constrained consumer, medical and industrial applications, device improves resistance flatness, signal integrity, parasitic capacitance and bandwidth. Device provides flatness of 10mohm, resulting in improved THD of -100dB.

VISHAY INTERTECHNOLOGY

<http://ept.hotims.com/65990-80>

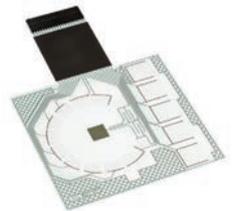


Keypad backlighting delivered on curved surfaces

PEDOT Clear Conductive Sensors solve the challenge of backlighting capacitive keys on a curved surface for user-interface designers. Devices are flexible translucent conductive circuits printed on a polyester substrate that can be implemented on three-dimensional surfaces, allowing for more elaborate designs and greater design freedom.

MOLEX

<http://ept.hotims.com/65990-81>



CPS



Metal pushbutton switch with capacitive touch sensor technology

SCHURTER's new CPS pushbutton switch series caters to the latest technology trend for robust switching, while sporting an elegant modern look.

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cps.schurter.com

SCHURTER
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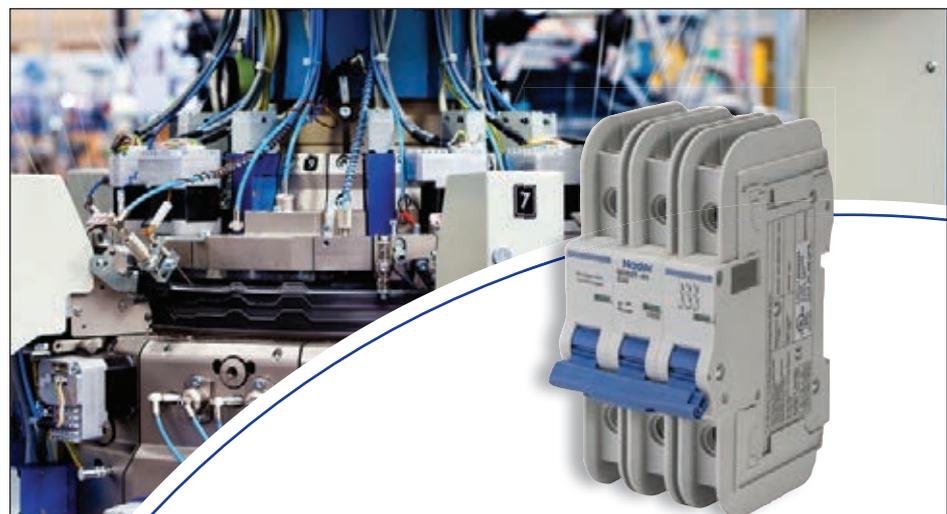
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Anti-vandal pushbuttons come with bi-color illumination

Series 82 Anti-Vandal Pushbutton is available with bi-color illumination. Control panel designers can enhance aesthetics with red and green combinations in 24V ring or dot variants with indicators or both momentary and maintained pushbuttons. The tactile devices provide strength, versatility and style and can withstand harsh, aggressive industrial use while remaining elegant enough to suit stylish, ergonomic commercial environments. Durable devices provide an all-metal front, IK10 shock protection and IP67 sealing. Extreme temperature fluctuations from -30°C to +70°C (-22°F to 158°F), or even humidity up to 85 percent, will not affect its reliability.

EAO

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Speed the development of wearable devices with a solid, targeted platform

The IoT world is expanding on all fronts, including the demand for wearable devices for a range of consumer needs and also for medical devices that can free wearers from home confinement. A targeted MCU/RTOS combination with the proper features can speed development for successful designs.

By Kim Rowe, CEO and founder of RoweBots Ltd.

The world of wearable devices is becoming one of the most challenging and dynamic areas of the Internet of Things. A recent issue of Consumer Reports featured 27 wearable fitness devices—only one aspect of the wearable world.

The combination of fitness monitoring on the consumer side and medical applications on a more specialized and serious side are leading to innovations that present the developer with an array of opportunities and challenges. On the one hand, advances in low-power, high-performance microcontrollers along with innovative and miniature sensors are presenting developers with a rich set of tools to approach the challenges.

On the other hand, a range of demands and constraints face the developer approaching the design of wearable devices, one of the more prominent being low power consumption and power management. Power consumption and management will involve the connected sensor(s), the local processor and its load and the external wireless link.

Other constraints for wearable devices are, of course, that they be attached to the body, but also not obvious to view. They can be worn hidden under or concealed in clothing or disguised as fashion items like rings or bracelets.

Many aspects of a design will depend on whether a device is primarily aimed at fitness monitoring, or has more specific medical application like glucose and blood oxygen monitoring, blood pressure, pulse and more. In many cases the latter classes will also require FDA certification. In such cases, security will also be a primary concern (Figure 1).

Then there is the matter of wireless connectivity. Perhaps the most familiar is Bluetooth LE connected to a smartphone that is also carried on the body. This has the advantage of providing a platform for apps that can process or pre-process data from the sensor(s) prior to sending it on to a gateway or ultimately to the cloud. However, this solution is not applicable to all situations, for example sporting events like football or a marathon race. Thus the selection and integration of a wireless solution will also entail design decisions involving size, weight and power.

A platform for development

Microcontrollers and processors, sensors and wireless connectivity solutions are available in rich and ever-growing variety. For example, in considering the hardware, one attractive choice would be a very low-power MCU with sleep modes that could be invoked to further save power. Parts of the design, such as A/D conversion or other frequent and relatively simple functions could be assigned to programmable logic, which inherently uses less power than a processor.

A processor consumes power by needing powered memory, fetching and executing instructions, waking and going back to sleep, etc. On the other hand, putting too much function into logic takes longer to develop and once implemented, is difficult to update, which affects flexibility and adaptability. Functions implemented in software are easier to develop, and easier to adapt to meet changing demands, so some trade-offs between programmable logic and memory are required.

Fortunately, there is a growing selection

processors sharing the same basic RTOS, lets you easily change modules and provide new functionality to quickly address changing markets. It lets you preserve, reuse and enhance the existing software offering to meet those challenges. For example, you could move the entire functionality to a compatible, more powerful processor and smoothly modify or add features including new sensors. That platform also needs to be complete in the sense that it supports such things as memory, mechanical, display, camera and

platform for wearable development.

Decisions about the user interface

A small device that is to be worn on a part of the body not normally in view or easily accessible limits the possibilities for an HMI—at least locally. It certainly can't include a large display or keyboard. In some cases where, for example, a smart watch is part of the system, its touch display and buttons can be used for limited user interaction. This still does not add up to a very rich user interface. A true HMI depends on device connectivity to the wider infrastructure.

Wearable devices, even the most unobtrusive ones, are connected, either to other devices carried by the wearer and/or ultimately to the Internet. Thus the needs for a richer HMI become bound up with the connectivity architecture of the device and this can even result in different layers or versions of user interface (Figure 2).

Imagine a health monitoring device that measures heart rate and blood pressure. Normally it might simply sense that data and send it via Bluetooth to the wearer's smart phone, which would then transmit it periodically to an Internet gateway and from there to a doctor's computer. Such a device would not be set up directly but probably from the physician's workstation using a rich graphical display. That same workstation and its HMI would be used to display and analyze the data. But there might also be a somewhat more limited interface on the smart phone or smart watch that could have a vibrating panel on the back to alert the wearer to contact the doctor or take some other action. In other words, there could be different levels of user interface depending on the connected devices and their role in the overall function of the application. This is in turn involved with the wireless connectivity model associated with the device—often in cases where the smartphone model is not appropriate.

Choosing connectivity and security

As we have noted, different forms of lifestyle, activity, application demands and situational circumstances will require different approaches to wireless connectivity and different radio types. The one thing, of course, that they will all have in common is the need for low power. While the Bluetooth connection to a smartphone may have many convenient aspects, it is not appropriate on a football or soccer playing field. In such situations, traditional Wi-Fi might look attractive but it consumes too much power. A good substitute would be the 6LowPAN protocol running on top of an



Figure 1: In addition to the latest wireless connectivity options, WearableOS supports all the latest sensors, radios, MCUs and MPUs for designing wearable devices off the shelf.

of processors that have the performance to not only support trade-offs between programmable logic and powered memory. They also have the capacity to work with a fully functional RTOS. That then lets a you start with a solid platform—a matched pair of processor and RTOS—one that has all the capabilities you may need but from which you can select only those you do need. Building on the right RTOS/processor platform gets you started faster adding unique, innovative value and speeding time to market. It also assists in porting systems and applications to new hardware environments when that becomes necessary. The key is to find the right RTOS that can offer modularity, a familiar API such as POSIX and support for a lean development model.

Having an adaptable platform, such as one based on a family or families of

other sensor systems. The availability of driver source code for a wide variety of sensors will make it straightforward to integrate them into a wearable design. For any devices you select, that code can be quickly compiled and the drivers ported for the specific MCU.

Such an inherently modular and configurable RTOS model can greatly streamline the development process by adopting a platform based on a lean or agile development model as that invented by Toyota for modular design and technology inclusion in automobiles. This model also works very well with other products. Combined with a platform consisting of the selected MCU or MPU with the RTOS already adapted and supplied, it can significantly reduce time to market and cost. A targeted RTOS like the WearableOS from RoweBots, Ltd. brings all these characteristics together in a targeted

10nm Process rollout marching right along

Contributed by Andy Wei,
senior technology fellow, TechInsights

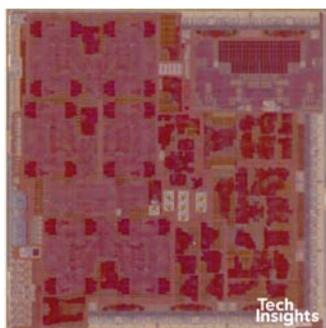
The first set of Samsung Galaxy S8 tear-downs provided access to the first SoCs produced on '10nm' class technology. The first company to produce the 10nm was Qualcomm with the Snapdragon 835, which was built on Samsung LSI Foundry's 10LPE technology. In parallel, Samsung's Exynos 8895 was released followed by the Apple A10X, which was built on TSMC's 10FF process.

Qualcomm Snapdragon 835 vs. Snapdragon 820/821

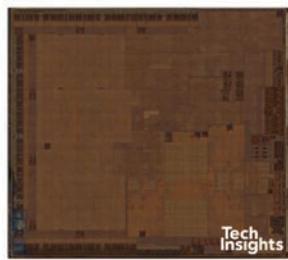
The Qualcomm Snapdragon 835 has a die size of 72.3 mm², which is a 36% die size shrink when compared to the die size of the Snapdragon 820 at 113.7 mm². It appears to be a shrink of the Snapdragon 820/821 family. While it has upgrades to similar IP blocks as in the 820/821 family, no major new IP blocks were added.

The biggest change identified by TechInsights is in the CPUs. The Snapdragon 820 family used a very large area, 2+2 big-little implementation, which seemed out of place for a mobile applications processor. We suspect the Kryo was a re-use of cores designed for Qualcomm's ARM-based server products. The Snapdragon 835, however, uses a more ARM-like 4+4 big-little implementation in the Kryo 280, as they appear to be a derivative of the ARM Cortex-A73/A53 implementation we saw in the HiSilicon Kirin 960.

This major change in CPUs skews the overall die size reduction giving the appearance of a more significant scale factor. However, looking at functional

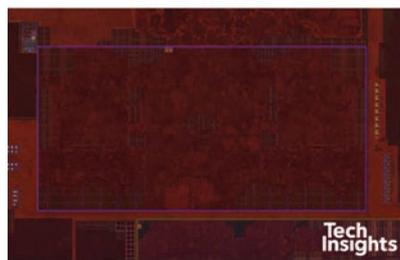


A9X 143.9mm²

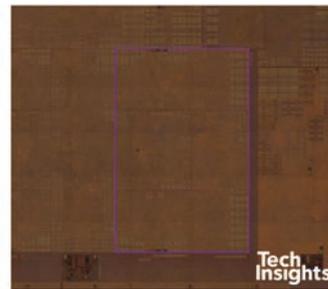


A10X 96.4mm²

Dimension to Scale



A10 GPU Cluster



A10X GPU Cluster

Dimension to Scale

blocks with more minor changes, such as the Adreno 530 to Adreno 540 GPU MP unit, the reduction is a similar 36% area scale. Without further, detailed analysis, it is not clear whether this indicates the true scale factor or the result of a concurrent increase in complexity to take advantage of the area scale.

In evaluating implementations of Samsung's 10LPE technology, TechInsights is currently looking closely at the standard cell level and routing. This allowed our analysts to gauge actual routed gate density gains and cost per gate scaling improvement.

Apple A10X

The A10X die size comes in at 96.4 mm² as compared to the previous generation, A9X at 143.9 mm², which was built on TSMC's 16 FF-Turbo technology. This is an impressive full node scale, when accounting for the extra CPU cores built into the A10X and extra IP blocks of the A10 vs. A9 family. TechInsights estimates a 45% die level scale (0.55x the area of running on the previous technology), based on our detailed floorplan analyses of the Apple A-series.

The Apple A10X examined was extracted out of the new iPad Pro2, which was introduced in June 2017. It's interesting to note that the original rumored release date for this iPad was in March. This meant it would have had to align with TSMC's 'Night Hawk'

program's stated goal to accelerate 10FF R&D in order to beat Samsung 10LPE's known launch date of April 2017. The 1Q delay, along with well-known design losses of MediaTek's Helio X30, also designed on TSMC 10FF, indicates a slower than anticipated ramp for this technology. These delays, along with TSMC's statements that 10FF will be a short-lived technology that will be supplanted by 7FF in 2018, indicates some non-ideal performance/power, area, and cost factors for 10FF.

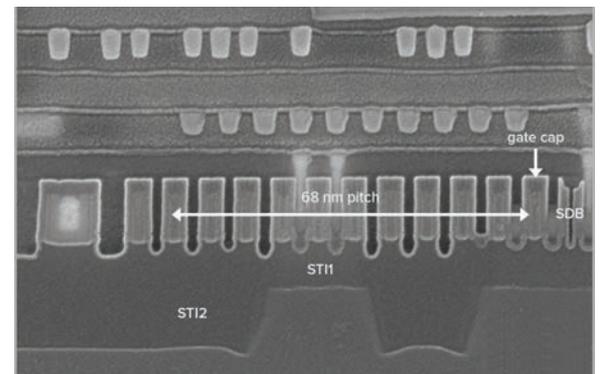
At an IP-block level, TechInsights compared the GPU between A10 and A10X, which appear to be the same Apple customized Imagination PowerVR cores. This showed ~49% area scale (0.51x the area of running on the previous technology). This would indeed point to an impressive full node scale, and will be verified as we look closely at the standard cell level and routing of Apple's implementation of TSMC 10FF.

Node Confusion

There is currently confusion around what a technology node name actually means, as the node names have been decoupled from physical pitch or even scale factor. Unfortunately, this confusion will only continue moving forward. Samsung 10LPE scale factor vs. Samsung 14LPP, for example, was only 36% at the IP block level, and node names have been announced down to '4LPP'. Intel, on the other hand, has announced their 10 nm

to be "hyperscaled" compared to their 14 nm, which according to their metric would lead to ~63% IP block level area scaling. Adding to the confusion, 10 nm will likely be a long-lived node for both Samsung and Intel, and a short-lived node for TSMC, with multiple "7 nm" technologies around the corner, and a slew of other node names and node variants in-between. The marketing battle is fierce for the hearts and minds of companies locked in battles to dominate high margin mobile, data center infrastructure, and looking to win in the race to 5G, automotive automation, and pervasive artificial intelligence.

This is an exciting time. Rather than an abrupt end to Moore's Law scaling as many industry analysts had predicted, we are finding ourselves in the midst



of very high innovation to overcome physical scaling limits and maintain traditional cost and performance scaling. TechInsights will continue to analyze entries into the '10nm' class technology and provide insight on how they fare compared to the players at 14/16nm, and what the future holds for sub-10 nm.

As our in-depth analyses at the functional block floorplan level, standard cell library, utilization, process analysis, and transistor characterization conclude, we will offer insights to what's inside technology through our SoC Design Architecture program.

For more information on SoC Design Architecture from TechInsights, go to <http://ept.hotims.com/65990-82>

Desktop software provides advanced pdf scraping capabilities

Ultra Librarian desktop software version 8.2 and an expanded library provides designers access to symbols, footprints and 3D models for more than 12-million parts. This version uses techniques to extract datasheet information into the part building process. Users can load the datasheet into the Ultra Librarian desktop software, extract the information they need to create the part, and copy it directly into the software. One such function allows a user to select a pin list table from the PDF and copy the contents into the symbol creation software. Another allows overlaying the datasheet image of a footprint on top of the software created footprint as an added quality assurance step. These types of copy/paste operations speed creation of symbols and footprints providing unparalleled accuracy of component creation based on manufacturer data.

EMA DESIGN AUTOMATION

<http://ept.hotims.com/65990-83>



Mini PCI Express digital I/O cards deliver digital integration

mPCIe-DIO Family of mini PCI Express digital I/O cards with digital integration features provide a large selection of digital I/O functions for compact control and monitoring applications. Choose up to 24 channels offering various voltage, isolation, speed and counter/timer options. Easily integrate additional I/O functions in systems without board modifications or customization. Devices provide high retention latching connectors for shock and vibration mitigation as well as an extended operating temperature of -40°C to +85°C.

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Rugged single board computer suits industrial applications

EPX-C414 EPIC Industrial INTEL E3845/E3825 Single Board Computer uses Intel's Bay Trail E3845 or E3825 processor. Unit's rugged design and extended operational temperature makes it suitable for industrial applications. Product includes an Intel graphics engine, as well as PC/104 and PC/104-plus expansion buses. Unit provides an operational temperature range of 40°C to +85°C. Product provides 8 USB 2.0 ports, 4 serial ports (RS-232/422/485) and two 10/100/1000 Mbps Ethernet ports.

WINSYSTEMS

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Controller provides turnkey crypto security in IoT

MAXQ1061 DeepCover cryptographic controller protects the confidentiality, authenticity and integrity of software IP, communication and revenue models. The turnkey security solution enables users to add an extra layer of protection to Industrial Internet of Things (IIoT), smart metering, network appliances and other connected embedded systems. Device incorporates embedded security technology, which applies multiple layers of advanced physical security to provide the most protected key storage possible.

MAXIM INTEGRATED

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Speed the development of wearable devices

continued from page 19

802.15.4 radio, which also allows group communication among teammates. For more spread-out events like marathons and road races, there is the emerging LoRaWAN radio with a range of some 15 kilometers. It depends on the presence of gateways, but these are becoming increasingly popular with city administrations for a range of management tasks from street lighting to waste management and more. Alternatively, a set of gateways could easily be set up along the course of a race. On the horizon are other technologies such as LTE CAT-M1, which uses a slice of the cellular network.

For wearables—especially the medically sensitive ones—security is essential. This is important not only for access, but also for communications in the form of transport layer security (TLS) along with secure SFTP and SSH for file transfer.

Depending on the hardware, the RTOS should be able to work with secure processor features such as ARM trust zones

and silicon supported encryption. Over the air updates also require secure boot. In addition, the RTOS must provide the ability to roll back to a previous release if an update is interrupted or doesn't succeed.

A development platform made up of a selection of processor families supported by a portable RTOS will serve as a solid basis for building wearable devices. The RTOS should offer a well-understood API like POSIX or embedded Linux and rich features that can be selected and quickly integrated to form the image that best fits the target design. This means supporting a rich selection of sensors, peripherals and wireless communication alternatives along with security. Such a platform will also be accessible by a wide choice of development tool suites that will quickly fit into the existing environment of most development teams and speed the creation of unique value while shortening time to market, which are the keys to success.

For more information on Linux and POSIX compatible embedded or real-time operating systems (RTOS) from RoweBots, go to <http://ept.hotims.com/65990-87>

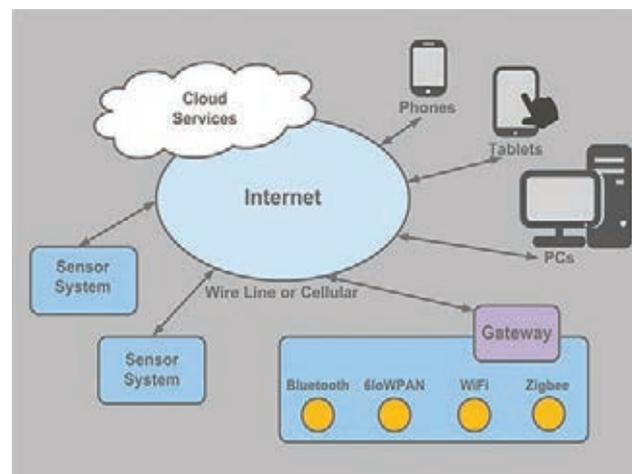


Figure 2: Sensors worn on the body need to get their data to a processor that is also either worn, carried in a smartphone or set up in some gateway device. That data, along with results of any processing ultimately needs to be passed on the Cloud.

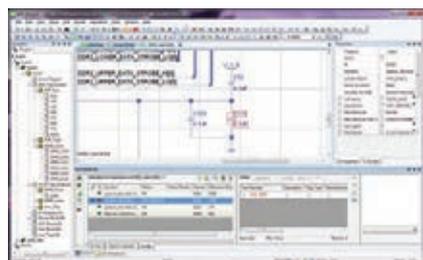
Next-gen in-circuit debugger boosts speed, flexibility



MPLAB ICD 4 in-circuit programming and debugging development tool for firm's PIC microcontroller (MCU) and dsPIC digital signal controller portfolios. Product includes all the features of the popular MPLAB ICD 3 tool while adding increased speed through a faster processor and increased RAM. Improvement in speed is accomplished through a 32-bit MCU running at 300MHz, along with an increased buffer memory of 2MB. The puck-shaped device is housed in a durable, black case with a brushed aluminum top and is accented with an LED light strip to indicate debugging status.

MICROCHIP
<http://ept.hotims.com/65990-88>

newswatch



Parts library for Mentor PADS & DX Designer accelerates pcb design

Mentor, a Siemens business and SnapEDA, a web-based parts library for circuit board design, have announced new support for Mentor PADS and DX Designer on SnapEDA.

With the launch, Mentor PADS & DX Designer customers gain access to SnapEDA's extensive component library containing millions of symbols, footprints and 3D models, further enhancing the vast resources available for Mentor pcb design software, according to Natasha Baker, founder & CEO of SnapEDA.

All parts are auto-verified with SnapEDA's proprietary verification technology, helping to reduce risk and unneeded, costly prototype iterations. This technology answers common questions designers have about libraries, such as "what standards does this footprint conform to?"

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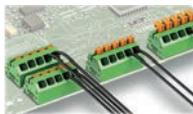
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New EPCOS NTC sensor element by TDK is designed for measuring temperatures up to 650°C. The H650 series NTC sensor element is characterized by high resolution and an extremely robust construction. This high temperature sensor is AEC-Q200 qualified. Applications include the automotive industry and commercial and consumer appliances such as 3D printers or ovens. Download the high temperature product brochure for more details!



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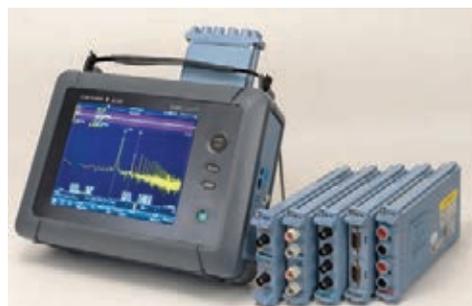
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products on review

Measurement instrument optimized for field performance testing

DL350 ScopeCorder provides a built-in battery and a lightweight, space-saving design, optimized for the performance testing and troubleshooting of products and equipment in the field. Unit provides improved noise resistance and the capability to measure and record a variety of signal types received via multiple channels over long periods of time. Units are typically used to measure signals from inverters, which are key elements in energy saving systems and for analyzing signals from automotive electrical and control systems.

YOKOGAWA



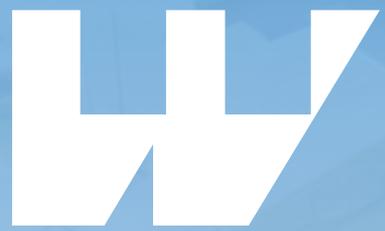
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