

# EP&T



electronic products and technology - OCTOBER 2014

## MEDICAL ELECTRONICS



AN EP&T SPECIAL REPORT  
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EP&T (Electronic Products & Technology) is published nine times per year: Monthly in February, May, August, September, October, Bi-Monthly January/February, March/April, June/July, November/December by: **BIG Magazines LP, a div of Glacier BIG Holdings Company Ltd.**  
80 Valleybrook Drive, Toronto ON M3B 2S9  
info@ept.ca Website: www.ept.ca  
Tel: 416.442.5600 Fax: 416.510.5134  
Sales: 416.510.5207 • Editorial 416.510.5208



ISSN 0708-4366 (Print) • ISSN 1923-3701 (Online)

Subscription Rates: Canada: \$53.95 per year, US: \$79.95 per year, International: \$129.95 per year, Single copy: \$15 (Canada), \$20 (all others)

**Editorial Purpose:** Electronic Products & Technology provides timely, comprehensive coverage of the latest worldwide developments and trends in electronic products, equipment and systems, and interprets their significance to manufacturers and end-users in the Canadian marketplace.

Publications Mail Agreement No. 40069240

Canada Post: Return undeliverable Canadian addresses to:

EP&T Circulation Dept.,  
80 Valleybrook Drive, Toronto, ON M3B 2S9,  
Subscription Inquiries: 416.442.5600 x3548 • circulation@ept.ca  
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Printed in Canada

We acknowledge the financial support of the Government of Canada through the Canada Periodical Fund (CPF) for our publishing activities.



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## Feds dangle \$ carrot to advanced manufacturing players in Ontario

Constantly faced with aggressive global competition like never before, Canadian manufacturers are acutely aware of the changing landscape before them. Some manufacturers or OEMs have made the adjustments to adapt to the changing playing field. In so doing, they have improved their probability of continuing success and survival.

Many more however, need to work much harder to seize the opportunities that are out there. That's where FedDev Ontario Minister of State Gary Goodyear would like to help out. Goodyear delivered the keynote address at the Advanced Manufacturing Expo (AMExpo) in Mississauga recently.

Minister Goodyear highlighted the importance of southern Ontario's advanced manufacturers – an industry that has become more efficient, competitive and increasingly export-oriented. In addition, the Minister explained how the Government of Canada supports manufacturers through multiple FedDev Ontario initiatives, in particular the \$200-million Advanced Manufacturing Fund delivered across Ontario.

Despite having taken its blows of late, manufacturing continues to be a major economic sector for Canada, with revenues of \$591-billion in 2013 and \$270-billion in Ontario alone. The numbers don't lie, as nearly 80,000 manufacturing establishments exist across the country and contribute enormously to national and local economies and generate the majority of exports in Canada. More than 30,000 of these are in Ontario.

FedDev Ontario is currently accepting project proposals for the new Advanced Manufacturing Fund from manufacturers and not-for-profit organizations working with manufacturers in Ontario. Since

its creation in August 2009, FedDev Ontario has invested more than \$1.2-billion, resulting in partnerships with more than 5,300 organizations and more than \$1.5-billion in additional leveraged investments from almost exclusively non-government sources to support businesses, organizations and communities in southern Ontario.

"Southern Ontario has highly educated and diverse populations, plus an excellent network of universities, colleges and research facilities. We have key economic clusters in automotive, multiple technologies, communications and life sciences. There are 63 Fortune 500 firms right in Mississauga alone," Goodyear enthuses.

"It wasn't very long ago that when someone used the word manufacturing and we pictured conveyor belts, manual labour, sweat, grease," Goodyear continued. "Canadian manufacturers changed that, as today we have a picture of establishments that are high tech, with highly skilled employees, innovative and responsive to consumers."

Robotics, 3D printing and customization are much more than buzz words today, as they represent the new reality. And, they are completely necessary to succeed. Engineers, PhDs, programmers, designers have become the new faces in our new Canadian manufacturing sector.

According to Goodyear, the landscape in Ontario has never been so fertile, so if your firm is looking for some assistance in planting a seed, check out FedDev's website at: [www.feddevontariogc.ca](http://www.feddevontariogc.ca).

Stephen Law, Editor  
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@EPTmagazine

## Panasonic

### Power Supply In Package (PSiP)

NN3100xA Series

Panasonic's new NN3100xA Series is a single channel, synchronous DC-DC step down regulator PSiP that features a small 8.5x7.5x4.7mm QFN package. The NN3100xA Series achieves efficiencies of greater than 94% with low power consumption and low heat generation.



### SC SEMICONDUCTORS

### Small Polarized Power Relays

ADW1 (DW) Series

These relays now feature up to 16A at 277 VAC switching capacity in the same compact size. The ADW1 Series expanded options now offer up to a 100A inrush capability with a 600W nominal operating power. The ADW1 Series is available in 1 and 2 coil latching configurations.



### R RELAYS

### Place and Play Bluetooth® Low Energy Module

With a 5mA Current Consumption

The PAN1740 Series is Panasonic's next generation "nanopower" Bluetooth Low Energy module with reduced form factor, significantly lower power consumption, embedded BLE stack and profile. The 9.0 x 9.5 x 1.8 mm footprint of the PAN1740 Series makes it one of the smallest BLE modules available.

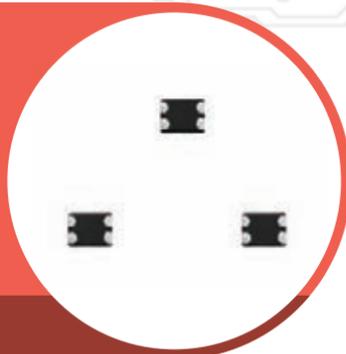


### WC WIRELESS CONNECTIVITY

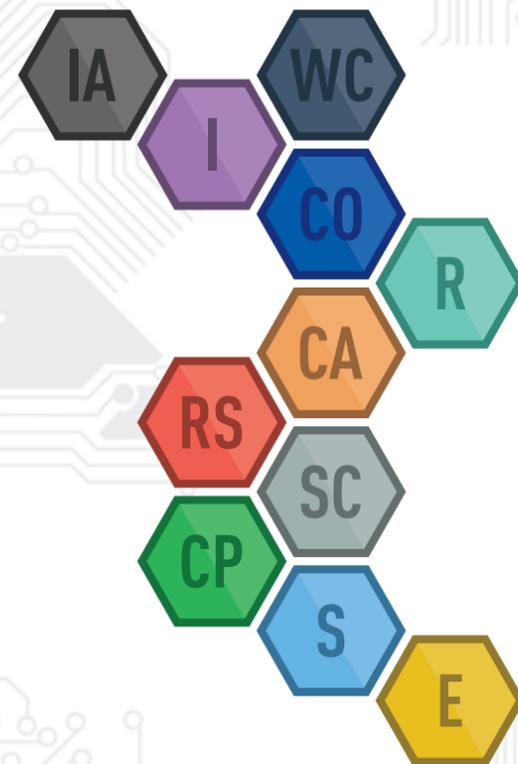
### Common Mode Noise Filters

EXC Series

These common mode noise filters, used for filtering high frequency noise, are now available in expanded size options. The EXC Series can also suppress differential mode noise in the mobile phone RF band while minimizing deformations of transmitted signal waveforms.



### RS RESISTORS



Panasonic brings strategic innovations to our customers' product development process. We provide the technology and engineering resources to enable manufacturers to plan and build world-class solutions to meet their customer needs.

# NEWSWATCH

## LEMO acquires custom cable maker Northwire

**LEMO**, a Swiss global leader in the design and manufacture of precision custom connectors, has acquired Northwire Inc., (NWI) a US specialty cable manufacturer of wire and multi-conductor cable and retractiles for the medical, aerospace and defense, energy and industrial markets.

"The acquisition of Northwire will enlarge the LEMO offering, providing a complete cable-connector solution to our valued customers. I am convinced that by creating synergy between our two companies, we can grow and prosper side-by-side," says Alexandre Pesci, CEO and president, LEMO Group. "Together we will be able to provide our customers high-quality complete cable-connector solutions. The Northwire and LEMO existing structures will remain unaltered, as the additional processes that we plan to implement will enable Northwire's integration into the Group and promote our cooperation and services provided to our mutual customers", Pesci adds.

Engineer and inventor, Léon Mouttet started LEMO in 1946, then patented the Push-Pull Self-Latching mechanism. Throughout the second generation of leadership, Marcello Pesci, who envisioned the alignment of his organization with a custom cable manufacturer, committed to the goal of creating best-in-class technology on a global scale. Currently, LEMO's third generation of leadership, Alexandre Pesci is the architect of his predecessors' vision; he is responsible for pioneering new technology, market diversification and integrating custom connectors and cable solutions on a global platform.

Sharing Mouttet's engineering and entrepreneurial spirit, Northwire founder Ormund Kravik pursued many business opportunities, before identifying the market demand for custom technical wire and cable in 1972, when he started NWI. During Mark Kravik's second generation of leadership, he established the industry benchmark for quality, on time shipping and no minimum order quantity requirements in his efforts to achieve service excellence.

## Heilind marks 40th anniversary

**Global specialists** in electronic interconnect distribution Heilind Electronics Inc. marked its 40th anniversary with an elaborate celebration and technology expo held near its Canadian headquarters in Markham ON recently.



Hosted at a banquet and convention centre in nearby Vaughan, 150 guests were treated to a live Jazz band, as well as food and beverage from around the world. Attendees were provided an opportunity to visit leading-edge product displays from more than 35 of Heilind's principals, mostly comprised of interconnect and electromechanical devices.

Founded in 1974, Heilind is a leading global distributor of connectors, relays, switches, thermal management and circuit protection products, terminal blocks, wire and cable, wiring accessories and insulation and identification products. Heilind has locations throughout the U.S., Canada, Mexico, Brazil, Singapore, Hong Kong and China.

## Murata launches easier to navigate global web site

**Murata** has launched a refreshed global website at [murata.com](http://murata.com) using the firm's new corporate visual identity.

The site has a fresh modern and tablet-friendly design, aimed to increase customer satisfaction and ease navigation and access to relevant technical application content. The site incorporates the complete line-up of Murata products and more application related content.

"Our new site provides visitors with an improved user experience by the integration of all products on one site and faster access to new product information," says Hiroshi Iwatsubo, senior VP head of global sales & marketing unit.

## SMTA Toronto addresses conformal coating, potting technology

### Electronic Coatings provides facility tour to SMTA members

The **SMTA Toronto Branch** hosted one of its many educational seminars in the Greater Toronto Area recently, with a session focused on the important role of conformal coating and potting technologies.

The session featured two speakers including Jason Keeping P. Eng. project manager, ruggedized electronics sector, Celestica Inc. His address covered the best practices for the successful implementation of a conformal coating process. Approximately 40 attending SMTA members were exposed to some key variables that go into making the right choice when selecting conformal coating needs and how to control the process to ensure consistent results.

The second half of the session was led by Tom Charlton, president of Electronic Coating Technologies, Charlton's discussion outlined the complexities of potting and encapsulation materials, helping attendees understand the selection process for materials based on design application.

The session concluded with an official tour of Electronic Coating Technologies facility in Brampton ON. Charlton founded the company in 1997, which specializes in conformal coatings, potting compounds, gaskets, adhesives and equipment. Electronic Coating Technologies also operates plants in Cohoes NY and Everett WA.



From left are Steven Chan, VP SMTA Toronto branch; Jason Keeping P. Eng. project manager, ruggedized electronics sector, Celestica Inc.; Tom Charlton, president, Electronic Coating Technologies; Tim Luke, VP of technical programs SMTA Toronto branch.

## BlackBerry acquires Movirtu

**BlackBerry Ltd.** a global leader in mobile communications, announced today that it has acquired Movirtu, a provider of virtual identity solutions for mobile operators that allows multiple numbers to be active on a single device. This improves device management in bring-your-own device (BYOD) and corporate owned personally enabled (COPE) environments. Terms of the transaction were not disclosed.

With Movirtu's Virtual SIM platform, both a business number and a personal number can be used on a single mobile device, with separate billing for voice, data and messaging usage on each number. As a result, employees can switch between business and personal profiles easily without carrying multiple devices or SIM cards, and charges are appropriately billed to the company and the employee. Additionally, in conjunction with the BlackBerry Enterprise Service (BES) platform, enterprise customers will be able to apply IT policies to the business number without impacting the usability of the device for personal use.

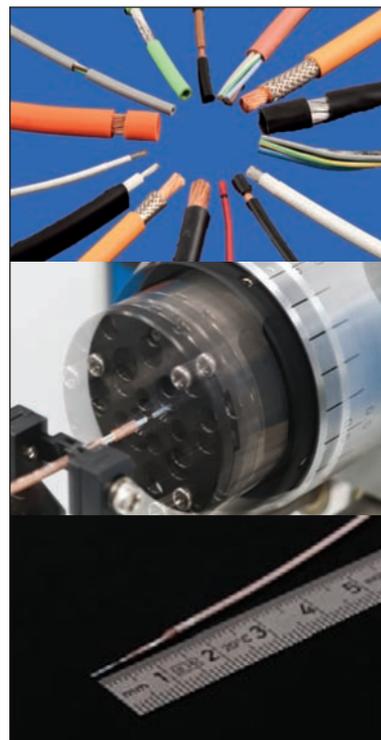
"In a BYOD and COPE world, there remain a number of efficiency and convenience challenges facing enterprises, employees and mobile operators alike," said John Chen, executive chairman and CEO, BlackBerry. "The acquisition of Movirtu complements our core strategy of providing additional value added services, and it will leverage our key assets, including our BES platform, along with our existing global infrastructure which is connected to a large number of mobile operators around the world."

The acquisition complements BlackBerry's Secure Work Space, BlackBerry Balance and other partitioning technologies, which give employees the freedom and privacy they want for their personal use while delivering the security and management needed for business use. With Movirtu, employees can switch between profiles for calls, data and messages, while on their home network and in roaming situations.

"BlackBerry is the best partner to help us carry forward our vision of redefining the mobile experience by introducing virtual identities," said Carsten Brinkschulte, CEO, Movirtu. "We address the challenges of BYOD and COPE by providing our unique and innovative technology

solution through BlackBerry's existing relationships with mobile operators and customers around the world."

The new Virtual SIM capabilities will be offered by BlackBerry through mobile operators to provide customers with multiple identity based service offerings. BlackBerry will support the deployment of Movirtu technology by mobile operators on all major smartphone operating systems.



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## Milplex receives CGP registration, certification

**Milplex Circuit (Canada) Inc.** has successfully earned CGP (Controlled Goods Program) certification, a domestic industrial security program administered by the Controlled Goods Directorate (CGD) of the Department of Public Works and Government Services Canada. CGP is similar to ITAR (International Traffic in Arms Regulation) in the USA.

The objective of the program is to safeguard controlled goods within Canada and prevent controlled goods from being accessed by unauthorized persons. The CGP enforces the Defense Production Act (DPA) and is legislated by the Controlled Goods Regulations (CGR).

The official descriptions of controlled goods are found in the Schedule (Section 35) of the DPA and must be read in conjunction with the Export Control List, published by the Department of Foreign Affairs and International Trade Canada.



### RTD Probe with M12 connectors

**PR-22 Series** RTD Probe comes with M12 molded connectors, which are 316 stainless steel in imperial and metric diameters. Many standard lengths are available with temperature range of -30 to 350C (-22 to 622F) probe temperature range (Class A) standard, -50 to 500C (-58 to 932F) (Class B). The temperature range for the connector is -50C to 90C (-58F to 194F). Device is suitable for use as-is or with compression fittings, spring loaded fittings and thermowells. In-line, remote wireless transmitters are available. Product is suitable for measuring automated processes, food and industrial process measurements, HVAC, lab test temperatures and engine function.

OMEGA

<http://ept.hotims.com/51128-46>

### Test suite reduces on-target footprint 60%

Firm's tool suite has been optimized with target implementation to deliver the same comprehensive software test and verification capabilities with a 60% smaller on-target footprint. Product minimizes test overhead significantly so that time-critical dependencies can now be properly traced. Instrumentation overhead no longer interferes with the real-time execution on the target. Instrumentation integrates all platform coverage dependencies into one structure.

LDRA

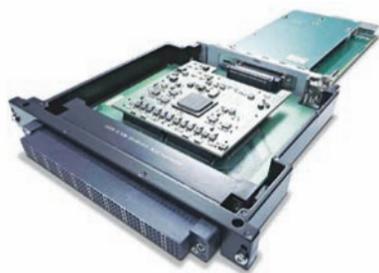
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### Range of mixed-signal PicoScopes

**PicoScope 3000D Series** Mixed-Signal Oscilloscopes (MSOs) suitable for working on a diverse range of embedded systems. The compact USB-connected devices form a complete portable test system, with two or four analog channels and 16 digital channels, as well as a built-in arbitrary waveform generator. Products are available with analog bandwidths from 60MHz to 200MHz. Maximum digital input frequency is 100MHz, equivalent to a data rate of 200Mb/s (5ns pulse width) on each channel. All models come with a USB 3.0 interface and are fully compatible with USB 2.0, boosting performance and fast update rates with both port types.

PICO TECHNOLOGY

<http://ept.hotims.com/51128-48>



### Boundary-scan hardware interface works with VPC system

**JT 2147/VPC** boundary-scan hardware interface product is compatible with the Virginia Panel (VPC) mass interconnect system. The signal conditional module allows 'ideal world' connections from firm's PXI and PXIe DataBlasters to the VPC connection system. Based on the QuadPod architecture, device is suitable for connection into G20x or G14x 192 pin 'QuadraPaddle' connectors and is compatible with the VPC 'pull thru' system. Device provides four independent Test Access Ports (TAPs) along with 16 static DIO channels and 64 dynamic DIOS channels. Each TAP can be programmed to operate through a range of voltage levels to suit various logic families.

JTAG TECHNOLOGIES

<http://ept.hotims.com/51128-49>

## Instrumentation & Test

### Arbitrary waveform generator boosts bandwidth, sample rate, port density



**65-GSa/s**, 20-GHz high-speed, wide-bandwidth M8195A arbitrary waveform generator generates digital, multilevel (e.g. PAM4, MIPI C-PHY) signal scenarios and tests electrical

and optical links with complex modulated signals up to 32 GBaud and beyond. Product provides instantaneous bandwidth from dc to 20GHz creating short, yet precise pulses. Developers of radar, electronic warfare, satellite and wireless applications can use the unit to create wideband signals up to 20GHz. Product delivers high sample rate and wide bandwidth in combination with industry-leading port density. Its functionality makes reliable, repeatable measurements when used on binary and multilevel, multichannel digital interfaces as well as coherent optical and wideband communication applications.

KEYSIGHT TECHNOLOGIES

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### DP800 - Linear Power Supplies



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- DP800 series linear power supplies feature 3 outputs and up to 200 watts power
- Built in V, A, and W measurements make power monitoring easy

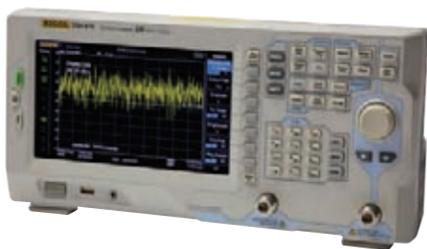
### M300 - Data Acquisition



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- M300 series data acquisition and switch systems provide accurate and repeatable measurements for up to 320 channels
- 4.3-inch LCD display with intuitive GUI for front panel configuration without a PC

### DSA815 - Spectrum Analyser



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- DS815 spectrum analyser sets new standards for performance and price
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## Averna acquires Cal-Bay Systems

### Deal provides strategic positioning on U.S. West Coast

Montreal-based Averna, industry-leading developer of test solutions and services for communications and electronics device-makers worldwide, has acquired U.S.-based Cal-Bay Systems, a privately owned provider of test systems, test and measurement solutions, automated testing and vibration monitoring tools.

This move especially strengthens Averna's presence in the medical-device, vibration monitoring, and consumer electronics markets, as well as providing the company with strategic positioning on the U.S. West Coast.

Averna has acquired 100% share of Cal-Bay Systems for an undisclosed amount and will take on management of

its U.S. and European offices. The current owners, Buck Smith and Patrick Kelly, will continue to participate in the day-to-day operations and expansion plans. Cal-Bay Systems, headquartered in San Rafael CA, brings to Averna 20 years of test expertise and customer relationships in comprehensive, automated test and measurement processes for mission-critical applications.

"We are thrilled with the acquisition of Cal-Bay, as it is very synergistic with our portfolio

of test engineering services and expertise and constitutes another building block of our growth plan," says Averna president and CEO André Gareau. "Cal-Bay's customer base and strategic location on the U.S. West Coast are a great addition to our current operations. This is also a fantastic growth opportunity for Cal-Bay's team and we welcome them into the Averna family."

"These are exciting times for our company and shareholders. This acquisition brings a wealth of business opportunities for our company, and could not have been accomplished without the talented team that we have assembled," Gareau adds.

### Averna partners with JOT Automation

Averna has forged a technology partnership for the Americas with Finnish-based JOT Automation Inc., a leading supplier of automated test and production solutions.

Under the terms of the agreement, Averna will act as a lead distributor and integrator of JOT Automation products for the Americas. The partnership will focus on the M10, G3, and Tiny Test Handler products for manufacturing and return-logistics clients and will provide a single source for automation, handling, and test of the various devices. As part of this collaboration, Averna will also integrate some of JOT's products into existing Averna test platforms to extend its product offering.

"Need for integrated test and automation systems is growing rapidly in every part of the world, Averna's excellent organization and competence together with JOT's innovative solutions will provide a very compelling offering to both companies' customer base", says Mika Mäkelä, business line director at JOT Automation.

"Together, JOT's products and Averna's test engineering solutions will combine for unbeatable automated test solutions for mid- to high-volume electronic device manufacturers, delivering substantial benefits like accelerated time to market, enhanced product quality, and reduced costs," adds François Rainville, VP Sales for Averna.

## Anritsu reaches test license deal with Broadcom

Anritsu Corp. has entered in to a Manufacturing Test License (MTL) agreement with Broadcom Corp. Anritsu's modular MT8870A Universal Wireless Test Set enables cellular, wireless connectivity, location-based services (LBS), and other technologies to be tested in a single solution. Through the MTL agreement, Anritsu is able to provide certified calibration and verification test solutions to Broadcom WLAN and Bluetooth customers.

"Access to the latest Broadcom WLAN and Bluetooth reference designs and software tools allows us to offer certified test solutions that are tailored to the needs of leading Broadcom customers. In the same MT8870A solution, we also offer non-signaling cellular calibration and verification capabilities, a core competency of Anritsu," says Pete Alexander, PhD, VP & general manager of Anritsu.

The Broadcom Manufacturing Test License agreement is a license and validation program, providing test equipment vendors with access to Broadcom WLAN and Bluetooth software tools and Broadcom technical support resources. The program is designed to provide Broadcom OEM customers with validated test systems that reduce time-to-market and improve manufacturing efficiency and product quality. Through the MTL program, OEMs can accelerate market introduction of their Broadcom-based 5G WiFi solutions.

## Entry-level 100MHz scope equipped with 7" widescreen

2190D bench digital storage oscilloscope (DSO) is a compact dual-channel unit providing several measurement functions with 100MHz bandwidth and 1GSa/s sampling rate. Product has digital features including a 7" widescreen color display, waveform memory up to 40,000 points, pass/fail limit testing, digital filtering, waveform recorder and 32 automatic measurements. Unit has a context-sensitive help feature and the ability to disable the Auto Set button along with Measure and Cursor menus.

**B&K PRECISION**

<http://ept.hotims.com/51128-90>



## 6000W electronic load extends test range to 1000v



EL9718E-M1 (1000volt 6kw) electronic load has an input rating of 0-1000volts dc at 0-120 amps and is capable of sinking 6000 watts of input power. All connections are found at the rear of the unit and can be easily enclosed for safety. Each unit comes with its own specially written remote software that is easily loaded on to a windows 7 PC which may then control the load via the USB interface module. Once connected to the PC all the functions of the load's front panel are then clearly displayed on the computer monitor.

**INTEPRO SYSTEMS**

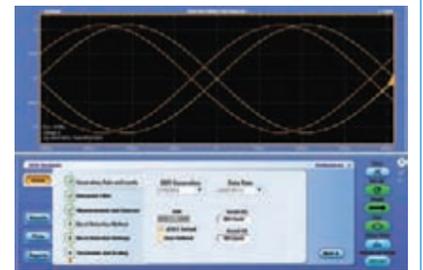
<http://ept.hotims.com/51128-91>

## PHY layer test solution support high-speed, low-power memory interfaces

Complete PHY layer and conformance test solution for JEDEC LPDDR4, the next generation of mobile memory technology. Product improves data rates up to 4.26Gb/sec and uses an ultra-low voltage core to reduce power consumption by approximately 35% to enhance performance in mobile devices. Through automated set-up and test execution, solution can reduce testing cycles from a week or more to a single hour. Firm also provides integrated PHY layer testing and debug of the new LPDDR4 standard in DDR-LP4 analysis software. By automating test setup and execution, software puts users in full conformance with memory standards.

**TEKTRONIX**

<http://ept.hotims.com/51128-92>



## 500MHz touch portable oscilloscope simplifies design, debug



WaveJet Touch 500MHz oscilloscope provides a touch screen, as well as debug tools and advanced triggering. Unit is available in two models with 350MHz or 500MHz bandwidth, four channels, up to 5Mpts of memory at 2GS/s, and a 7.5"

touch screen display. Product's intricate signals can be acquired with ease by combining a long capture time with a variety of complex triggers, including triggers for I2C,

SPI, and UART. Digital low-pass, high-pass and simple moving average filtering permit easy isolation of signals of interest. The choice of normal, peak detect, average, and high resolution acquisition modes provides flexibility when acquiring waveforms. Pass/fail mask and measurement testing enables deeper analysis and performs characterization and validation testing with ease. Scroll back in time to view previous waveforms and isolate anomalies using Replay mode. Standard GPIB, LAN, and USB device ports provide flexibility for remote control. All of this comes in a small form factor and lightweight design, making it easy to carry and use anywhere.

**TELEDYNE LECROY**

<http://ept.hotims.com/51128-93>

## Safety tester serves as 6 instruments in 1

Guardian 19032 Series electrical safety analyzers acts as six instruments in one, combining hipot, insulation resistance (IR), ground bond (GB), leakage current (LC)/ac LC/dc LC and dynamic function tests. Unit can save up to 50% of production line space, by not purchasing several safety test instruments. Product increases the efficiency of electrical safety testing during manufacturing and reduces associated labor costs. Multi-scan device support dynamic leakage current test.

**CHROMA USA**

<http://ept.hotims.com/51128-94>

## LED Replacement Lamps for Instrumentation, Panels and Test Equipment.

Bivar's new **LFR Series** of LED replacement lamps are ideally suited for direct replacements of incandescent bulbs used in both new equipment and retro-fit applications. Each series features a ruggedized design for greater durability, high energy efficiency, and longer life span - all providing long-term cost savings and maintenance free operation.

### Features:

- LED colors available in red, yellow, green, blue, warm white, and cool white.
- High reliability with 100K hours MTBF rating.
- Low current operation (8-14mA) with permitted operating voltage of 12VDC.
- Wide viewing angle of 120 degrees provides even illumination.
- Direct replacement for BA15d, T1 3/4 midget groove S5.7s, T1 3/4 Midget Flange SX6s, T3 1/4 Ba9s, and Telephone Slide TS5.5 based lamps.



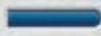
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## Supply Chain Management / Distribution

# Design-to-cost reduces supply-chain risk

By Dave Read, director of product marketing, Altium Ltd.

To be globally competitive, companies must make cost as important as any other design parameter. “Design-to-Cost” is a well-developed process for doing just that.

**Designers** have a great impact on product life cycle cost, but when they're working on tough design problems, they often don't notice how their solutions are driving up the cost of a product. Coarse views of a bill of materials (BOM) seldom reveal this issue until it's too late.

If electronics companies are to be globally competitive, design teams need to understand supply chain risks during the design process and take steps to lessen those risks. This is particularly crucial since choices made during the design phase impact 70% of the life cycle cost of a new product, as shown in Figure 1. Another source estimates this impact may even be as high as 80%.

Design-to-Cost is a well-developed process for using real-time supply chain data to assess design choices with cost objectives in mind. It is a comprehensive solution that lets product design teams take into account such things as manufacturing lead times, volume pricing, volume capacity, and logistics information, while they are still deep in the design process. With this information, design teams not only produce great products, but help their companies gain and maintain a competitive advantage.

### Just what is design-to-cost?

Design-to-cost, or DTC, is a management technique that is a continuous part of the development and production process. In his seminal paper on DTC in 1994, Bill Williamson noted that design teams lacked real-time access to supply chain data. Costs were developed based on printed catalogs, vendor quotations, or in-house spreadsheets. Today, however, procurement officers access the Internet daily to obtain real-time pricing, volume, availability and logistics information. Unfortunately in many companies, engineering teams often do not have access to this supply chain data.

Without access to such information, a company's competitive position could be at risk. Even if a product is novel, competitors will inevitably arise. If a product costs too much, customers will simply look elsewhere.

One of the tenets of the DTC process is that cost be addressed at all design reviews. This is a commitment that companies must make. When originally developed, organizations committed to DTC did not have access to real-time data on each of the components in a design. Today, however, when companies collaborate with their supply chain partners, electronic design teams can have direct access to component costs and availability.

### Risks

The risks of not including real-time costs and supply chain data in the design review process include:

- Inability to identify and understand a product's cost drivers
- Unexpected actual component cost(s)
- Failure to balance requirements and affordability
- Creeping elegance filters into the design, increasing costs that exceed targets
- Limiting creative exploration of design alternatives to achieve lower cost approaches

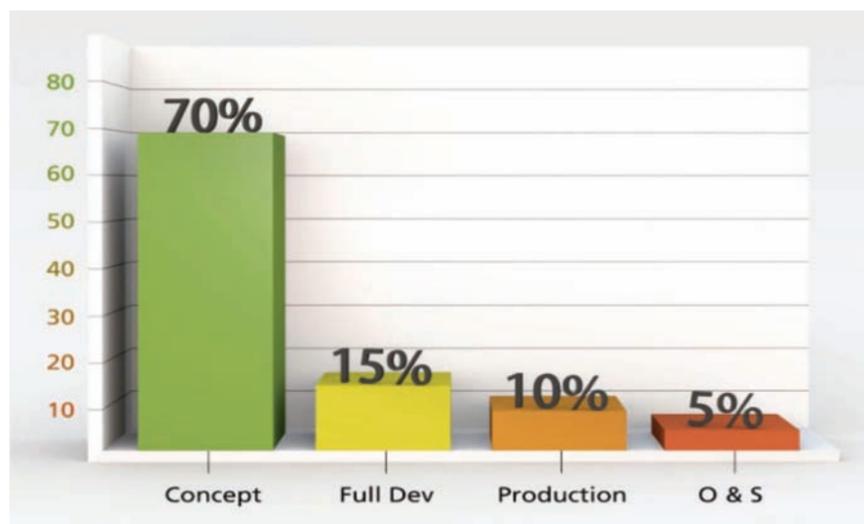


Figure 1: Leveraged Effect of Design Phase on Life Cycle Costs  
Source: Military Electronics/Countermeasures, August 1990.

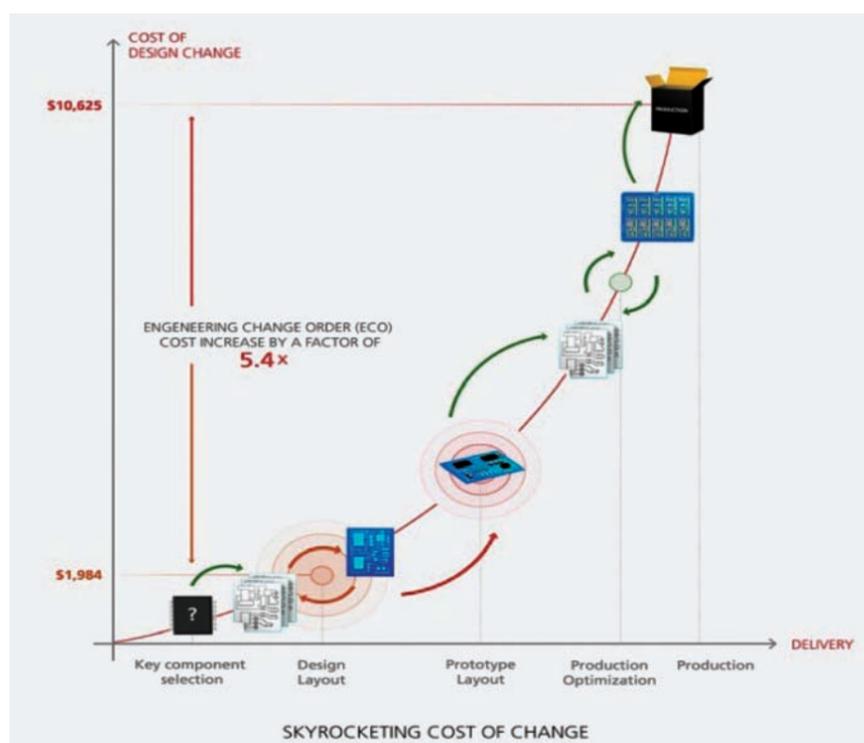


Figure 2: This chart highlights the cost of design changes at various points in a product's life. Changes are the least costly early in the life cycle.

- Vendor shortages or inadequate volume from component vendors.
- Evaluation of new product concepts solely on the basis of high performance at the expense and detriment of rigorous cost analysis, resulting in a failed design in the marketplace

### Designers explore cost-savings

DTC must be a continuous part of the product development process, not just a one-time thing. A commitment to DTC by the design team focuses increased attention on costs early in the design process. This emphasis naturally drives down the overall product cost. In turn, this positively impacts the company's cost structure, competitive position and overall profitability.

One way that DTC helps keep costs down is by addressing the problem of 'creeping elegance.' As 'elegance' creeps into a design, engineers sometimes specify parts that are difficult to source, have a high logistics cost, or may not be

available in sufficient supply. Discovering these issues early in the design cycle saves considerable engineering time and component cost.

Similarly, with accurate and current cost information, the design team can initiate preventative action that avoids costly supply chain surprises downstream. They can quickly identify other potential supply chain issues, such as parts availability or logistics problems, in real-time. In addition, DTC motivates and empowers designers to creatively explore cost-saving alternatives that still fulfill design requirements.

### Definitions of life cycle costs

DTC is meant to address product costs across the entire product life cycle. This includes:

1. Recurring production costs, including production labor, direct materials, process costs, overhead, and outside processing. [Note: Bill of Materials (BOM) cost is part of direct materials cost]

2. Non-recurring costs, including development costs and tooling.
3. Product costs, including recurring production costs and tooling.
4. Product price or acquisition costs, including product costs; selling, general, and administrative.
5. Life cycle costs, including acquisition costs, related capital costs, training costs, operating costs, and disposal costs.

Viewed from the standpoint of life cycle costs, each design decision impacts multiple areas at later stages of the product's life. For example, a particular component may require one or more of the following costs not mentioned previously: special processing, testing, increased warranty costs, additional training, and possibly other costs.

In addition, global or local general economic conditions or industry trends can impact how design engineers choose components. During the recent Great Recession, for example, a number of component vendors went out of business. For teams designing a later generation release of a key product may find that the originally specified vendor has gone out of business. Further, as is typical in economic downturns, the number of suppliers in virtually every segment of industry tends to narrow, limiting sourcing options and possibly raising prices.

### Being successful with DTC

To be successful with DTC, a company must establish cost as a constraint from the outset of the design process. Goals need to be sensible and achievable; impossibly high goals will be ignored and goals that are obviously too low do not generate team commitment to achieve them.

In addition, DTC must be a collaborative effort between management, supply chain executives, and design team. All team members must commit to cost targets, development budgets, and design timelines. And, once established, DTC needs to be continued to the end of the product's life since additional cost-saving opportunities will arise during later production, operations, and support phases.

Without DTC, design, manufacturing, and purchasing act in their best interests and this may hurt profitability. Cutting design engineering budgets, for example, may result in a less than ideal product design, driving up material and labor costs. Slashing test engineering budgets may result in a lower level of automation and higher recurring test costs during production. Cutting costs on components by purchasing managers may result in higher warranty costs and lower customer perceptions of the end-product.

### CAD tool + supply-chain visibility

Altium recognized that customers needed to establish a link between their design and supply chain teams to implement the Design-to-Cost process. As a result, we have tools that access electronic data in real time for every component in the design. This includes all data needed to fabricate, load, and assemble boards.

Our tool supplies live, real-time supply chain data in a single view, called 'ActiveBOM.' As shown in Figure 3,

Rank	Target Price	Actual Price	Availability
0.004	0.0026	Yageo	
0.5	0.5	Molex	
0.8	0.8	SHEN ZHEN	
0.56	0.1616	ON SEMICOR	
0.75	0.75	Shenzhen Xin	
1	1	Alium	
0.0015	0.0042	Panasonic	
0.9	1.08	Microchip	
0.004	0.11	KEHET	
0.002	0.068	Vishay	
0.004	0.1086	Yageo	
0.002	0.12	Vishay	
0.004	0.011	KEHET	
0.9	2.32		
0.03	0.037		

Figure 3: ActiveBOM with side-by-side fields to compare actual vs. target BOM costs.

ActiveBOM displays the components in the schematic of the design, plus any other off-board components. Side-by-side fields compare actual BOM cost to target BOM cost before and during the design process and also includes other relevant supply chain information.

ActiveBOM dynamically maintains and updates the supply chain data for each component in the database. This establishes the ongoing cost parameters for the design.

In addition, designers are often tasked with 'BOM scrubbing', a cost-focused redesign in the event that one or more design components are in short supply or about to become obsolete. With ActiveBOM, the team can review the supply chain data in the database and immediately find suitable alternatives, eliminating much of the pain associated with sourcing replacement components.

### Conclusion

Design-to-cost processes can help companies reduce costs, thereby improving their competitive position. DTC methodology, backed with a real-time and accurate view of cost implications, empowers design teams to make the best decisions upfront. The right CAD tools can help design team managers immediately assess the cost of a design change and make the right decisions.



For more information on reducing design to cost formulas from Altium Ltd., go to <http://ept.hotims.com/51128-31>

### Allied earns AS9120A certification

Electronics component distributor Allied Electronics, Fort Worth TX, has received its AS9120A certification, a quality management standard specifically designed to enhance and preserve the integrity of the supply chain for stocking distributors of aerospace products.

"Allied is committed to maintaining the highest levels of integrity within the supply chain on behalf of our customers," says Kenneth Bradley, Allied VP of supply chain & operations. "This new standard builds upon, and incorporates the requirements of ISO 9001:2008, a certification that we've held for some time. This, however, sets an even higher bar for supply chain integrity, and is something that customers in the Aviation, Space and Defense industries increasingly seek when determining which suppliers to work with.

Gaining AS9120A certification involved a complete review of Allied's Quality Management System processes and documentation to ensure that all the requirements within the standard were met.

### Mouser updates IoT applications site

Mouser Electronics Inc., has rolled out an updated Internet of Things (IoT) Applications website, <http://ca.mouser.com/applications/internet-of-things> providing developers with the resources to learn about the newest products and latest developments in this popular technology segment.

The IoT applications site contains valuable resources for developers interested in learning about this expanding field. For example, a wireless heart monitor could let doctors remotely monitor a patient's health and respond quickly if the data warrants it. Machine-to-machine (M2M) sensors monitor factory equipment while providing inter-device connectivity. The Intelligent Devices section focuses on examples that includes wearables, small wireless-enabled MCUs with attached sensors and optionally, displays.

### element14 launches online design center

element14 has launched an online Design Center, [www.element14.com/community/community/designcenter](http://www.element14.com/community/community/designcenter) serving as a comprehensive resource for engineers that provides a range of development tool information alongside product details and supporting material.

Rich application and product information, including 360 degree images, videos and downloads, are supplemented by stock availability and price, manufacturer details and engineer comments from element14's leading online community. The Design Center also includes links to supporting documentation, technical data sheets and forum posts, helping engineers make the most of their Dev Tools and solve problems as they occur.

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# Supply chain can make or break 'Maker Movement'

By Wade McDaniel, vice-president of solutions architecture for Avnet Velocity, Avnet Inc.

**Cards on the table**, when I first started hearing about the "maker movement," I had mixed feelings about it. As a life-long 'putterer,' I thought applying the do-it-yourself (DIY) model to product innovation, particularly in electronics, was very cool. As a veteran supply chain professional, however, I didn't buy into the concept of it representing the 'third industrial revolution.'

But, as I have learned more about 'making,' and watched this movement advance and unfold with astonishing speed, I have to admit – I am still skeptical. What? I know, you expected me to say I am a convert, that I embrace making and all it represents and believe it will fundamentally transform not only manufacturing, but society as a whole.

My hesitation is not an old dog-new tricks response. I am all for change and innovation, but as interesting as the maker concept is; I think that it still represents more of a vision than reality. When you get down to brass tacks, there are a number of big mountains that need to be moved before *making* represents a sustainable business model.

One of the most underrated obstacles, in my opinion, is the supply chain. Makers come from all walks of life: stay-at-home moms and dads, lawyers, doctors, artists, college dropouts, high school dropouts, you name it. In the past, these individuals may have had an idea for a great new product, but few would pursue it, even fewer would obtain the venture financing necessary to develop their ideas, and even fewer still would have the good fortune to bring that product to market before something better or cheaper came along.

## Novice buyers ahead

But today, thanks to open-source hardware platforms such as Arduino, mbed and Raspberry Pi; communal design and development locales like hackerspaces/makerspaces, crowdfunding and affordable production technologies like 3D printing, taking an idea from concept to marketable product requires surprisingly little time, technical expertise or upfront investment. My concern, however, is that while these factors make it easier for makers to pursue their passion, it also thrusts them into the supply chain world with little or no understanding of the basic tenets of effective supply chain management. Forecasting, inventory management, supplier assessment and management are all key components of a successful supply chain, and these are skills that most makers, by their own admission, do not possess. In an article about a maker/startup called Pinocchio, company co-founder Sally Carson detailed the various technical trials of developing their open source wireless mesh network micro-controller. But the biggest challenge the company has faced, she said, was 'thinking about lead times on components and providing a gap-free stream of inventory.'

This procurement inexperience could also pose a huge risk to supply chain security. Makers tend to be risk takers. Many are professionals who left lucrative careers to follow their dreams or young entrepreneurs with very little business experience. As a result, we hear anecdote after anecdote about these individuals making highly-questionable sourcing choices. For example, in an account of his journey from maker to billionaire, GoPro camera creator Nick Woodman described how he sent his initial design concept (and \$5,000) to an unknown manufacturer in China. He got lucky, and a few months later he received 3-D models and renderings of what has become one of the most popular cameras on the market. Anyone with even five minutes of supply chain experience can tell you that placing blind trust in an unknown supplier, located half way across the world, is generally not a good idea.

Unbridled enthusiasm and naivete are



also a dangerous combination when it comes to component purchasing. Under pressure to meet development timelines promised to individuals who have subsidized their project through crowdfunding services like Kickstarter and Indiegogo, your average DIYer is much more likely to go outside authorized channels to get a needed component. This, of course, opens the door to counterfeit components. In all likelihood, these buyers have no idea about how counterfeiters prey on buyer desperation, nor will they have the resources to adequately test incoming parts for authenticity.

In addition, we must consider what happens when you take economies of scale out of the supply chain equation. An underlying precept of today's electronics supply chain is that size matters. While component distributors and even direct manufacturers have well-established processes for handling engineering sample and prototype orders, how will adding hundreds of thousands of additional small-lot orders impact the flow of materials?

From a capacity standpoint, I don't expect there would be too great of a disruption. Let's face it, the annual component requirements of even 1000 makers probably doesn't approach the monthly consumption of a global contract manufacturer like Flextronics. But, when you add multitudes of single unit orders to the channel, there could be some significant challenges supply chain policies and procedures that have been fine-tuned to meet traditional demand patterns.

## Tipping the scales

For example, picking and packing 1000 orders of five ICs will clearly be a lot more time and resource consuming than fulfilling one order for 5000 ICs, and once these packages leave the warehouse, things get even more complicated. First, shippers will need to adjust their routes and scheduling, because they will be dealing with a sharp increase in package volume, as well as a major shift in delivery destinations. Trucks will not only be going from the warehouse to major manufacturing centers, but to residences, many of which are likely to be well beyond typical city limits. This translates to added miles, increased fuel consumption, and even the potential for faster driver burnout.

Under ideal circumstances, these additional factors would add a great deal of stress to the ground transportation network. Unfortunately, today, the shipping environment is less than ideal. According to the American Trucking Associations, the trucking industry needs to add nearly 100,000 new drivers to the workforce to keep up with current demand. If freight demand grows according to projections,

the driver shortage could reach nearly a quarter of a million by 2022. This means tighter capacity and rising rates for everyone. These are important variables that must be taken into account when weighing the pros and cons of the maker movement.

## Taking root

All that being said, I do believe it would be a mistake for members of the electronics supply chain to write this grassroots movement off as a fad or a niche for craft-people and amateur techies. Innovation, regardless of the source, raises productivity across the economy and enhances our nation's competitiveness.

This could be just the solution to the challenge of better aligning new product development with customers' value expectations that companies have been looking for. The concept of encourag-

ing customers to be collaborators in the development process through open source design - a core element of the maker philosophy - has clearly struck a chord with consumers. According to a 2013 article in USA Today, makers have added \$29 billion into the U.S. economy alone.

Increasing engagement in the movement through sponsorship of various hackerspaces, Maker Faires and micro-factories among companies like Intel Corp., Foxconn, ARM Holdings, GE, Cisco and Microsoft also demonstrates growing mainstream support for the maker ideals.

In fact, in 2013 GE tossed its hat into the crowdsourcing ring with a project to improve the design of a jet engine bracket. They received more than 700 submissions, including the winning entry from a 21-year old student from Indonesia who proposed a 3D-printable design that was nearly 80 percent lighter than GE's original model. When he announced the results of the project, Chip Blankenship, CEO of GE Appliances stated: "harnessing open innovation, the maker movement, and community involvement will enable GE to build a revolutionary new wave of smart appliances."

The key to long terms success for the maker model is to find a way to harness the creativity and potential of the movement, without throwing the supply chain universe off its axis. Strategies like supply chain segmentation, omnichannel sales and distribution and advances in 'last mile' logistics have all made the supply chain more responsive and demand-driven, which will definitely smooth the transition. My advice is to remember that if we want to revolutionize the manufacturing world, we need to be prepared for a supply chain revolution as well.

For more information on the 'Maker Movement' from Avnet Inc., go to <http://ept.hotims.com/51128-32>



## Digi-Key rides IoT wave on back of supplier innovation, user's imagination

**Given the prominence** of the Internet of Things (IoT) within design circles these days, it isn't any surprise that Digi-Key Corp. the biggest online and largest new technology distributor is vastly aware of its imminent rise within electronics distribution channels.

In a recent interview with *EP&T*, Randall Restle, director of applications engineering at Digi-Key outlined his perspectives on IoT and its impact on the supply chain.

"At Digi-Key, we believe the world will never be the same and we have drunk the same Kool-Aid as everyone else," says Restle. "To me it is very important to have the parts our customers can use. Our traditional supplier base is not just offering components alone, as players like Panasonic, Murata, CSR, Texas Instruments, – use multiple components to create a wireless module. These devices provide the end-user with technologies such as WiFi, ZigBee, Bluetooth and Bluetooth low energy, Z-Wave, Sigma Designs. In the end, it is our job to ensure we stock the low level chips, but more importantly we have the modules to help people get things developed," he enthused.

Restle says some customers may be surprised to find a catalog distributor such as Digi-Key do have qualified design engineers at their disposal.

"Part of Digi-Key's legacy has always been to provide technical support. Company founder Mark Larson has a PhD in electrical engineering and he always answered any questions people had on a part Digi-Key was selling. That legacy continues today," he says.

Digi-Key remains engaged in the rise of IoT by participating in international trade shows and conferences such as Embedded World (Nurnberg Germany on Feb 24-26, 2015), which will feature a heightened focus on IoT. Restle has submitted a paper to the event, which underscores the accessibility of IoT solutions, coupled with related proprietary devices. His paper tackles the issues and fact that there is currently not a good solution for making these IoT devices "self discoverable".

The IoT explosion is backed by bold predictions, such as one from Freescale Semiconductor Inc. (Digi-Key supplier) which predicts the establishment of some 15-billion devices within six years via the advent of this technology.

"What we are seeing is a lot of component vendors (suppliers) are coming out with devices tailored towards this market and the attributes of those are very high power and high performance. These components are ultimately tailored to leverage highly sophisticated functionality available in IoT things," says Restle.

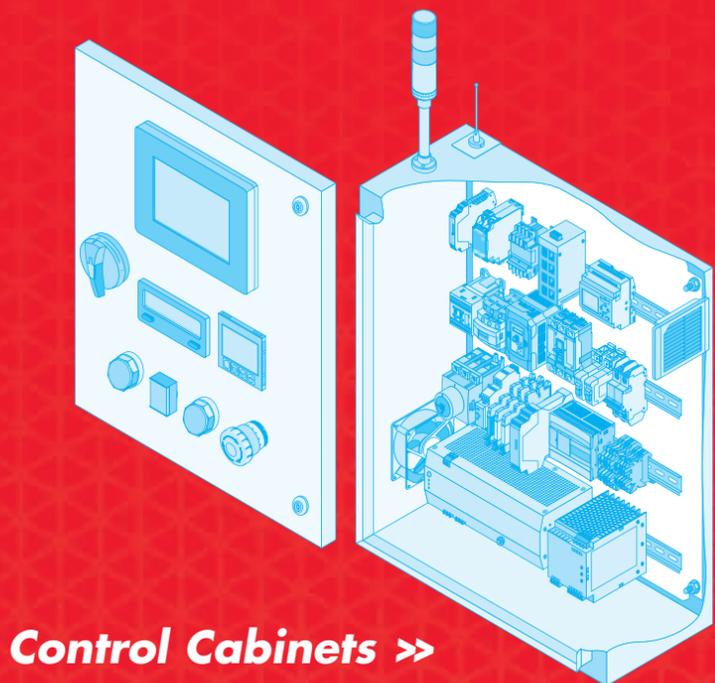
Smash hit single-board computer development kits such as Arduino and BeagleBone Black are all sold by Digi-Key. These products have allowed people to "just work on their individual applications, and not worry about starting from scratch."

Launched in the summer of 2011, Digi-Key introduced its eewiki website (<http://www.eewiki.net>) to the design community, providing customers with a venue to share knowledge and a place to learn. "We want to provide the type of design aids that allow our customers to get on their way - to focus on their application," Restle says.

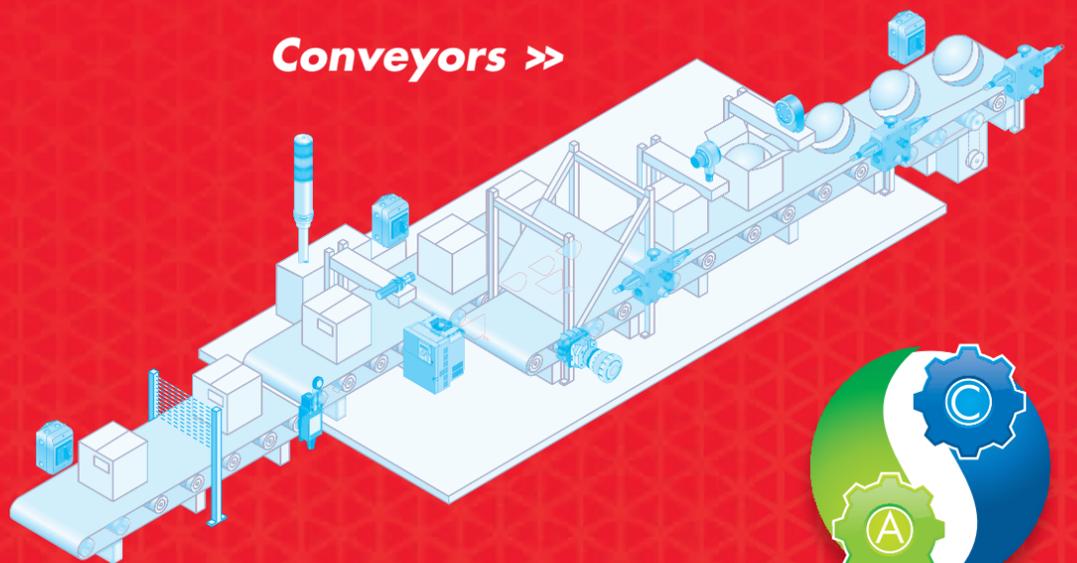
Digi-Key's technical marketing focus allows us to zero in on IoT, by featuring the products that are germane to this given space," says Restle. "As the definition of IoT remains broad, the opportunities are limitless. There is no end to the imagination of this IoT stuff."

# Automation and Control Made Easy

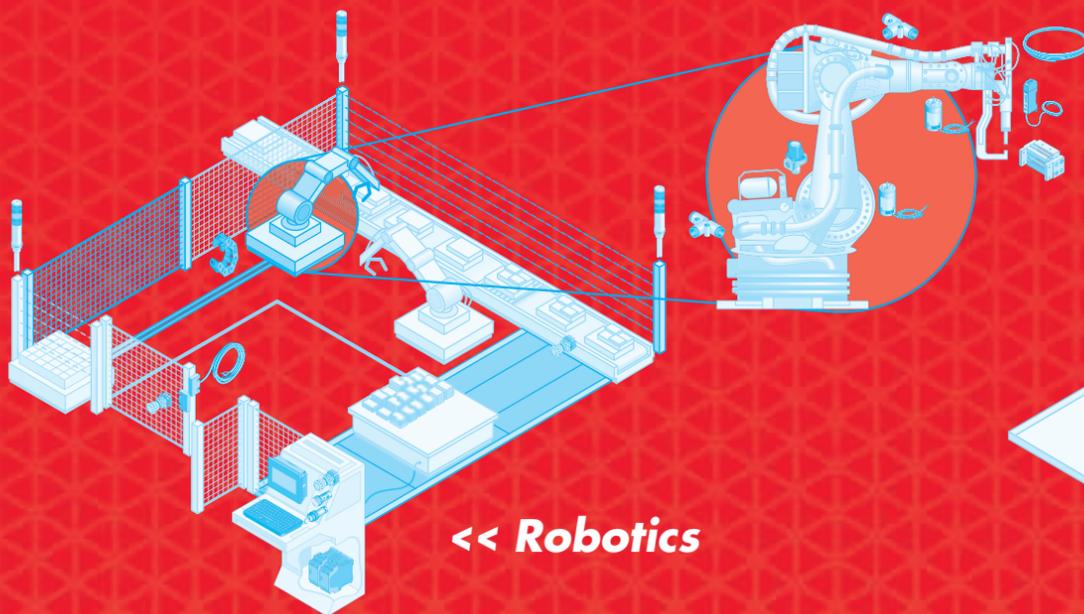
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**PHOENIX CONTACT**

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## RFID-equipped versions of heavy-duty Han HPR connectors

Han HPR heavy duty power connector lineup has been expanded with passive UHF RFID-equipped housings lets users track data they define about the unit, like part numbers for requisitioning or purchasing replacements. Products come in sizes 6B, 10B, 16B and 24B. The integrated transponder has a read range of one meter and provides the same IP68/69K protection as the locked Han HPR housing. Devices provide optimum protection against external physical influences: harsh weather, extreme temperature fluctuations as well as corrosive liquids such as cleaning chemicals or oils.

**HARTING**

<http://ept.hotims.com/51128-36>



## west tech report

# Vancouver emerges as a world-leading hub for innovation

## Microsoft's billion dollar investment in BC

The technology industry in BC witnessed a resurgence since 2008-2009, recently placing 9th on Startup Genome's ranking of the 20 best cities where high-growth technology startups thrive. Vancouver is beating larger centres such as Chicago, Paris, Sydney and Singapore.

BC Technology Industry Association president Bill Tam recently said, "the home grown successes of Hootsuite, BuildDirect, Vision Critical, Avigilon cast a spotlight on Vancouver... as [companies] see the progress that those companies have made and where it makes strategic sense to invest... Vancouver marks very high on that scale".

One giant bellwether for technology ecosystem success is Microsoft and this summer, they announced the opening of a new training and development centre which will significantly expand the company's investment in BC. The new Microsoft Canada Excellence Centre (MCEC) is slated to open by late 2015 and will be located in the heart of downtown Vancouver. A recent study by Ernst & Young LLP estimated that Microsoft's new investment in Vancouver will be at least \$90-million annually, resulting in more than \$181.4-million per year in direct, indirect and induced economic growth. The direct investment alone will add up to almost a billion dollars over the next decade.

"Vancouver is a vibrant international hub for technology development with growth potential given its attractive location, amenities, reputation and proximity to top British Columbia universities and a highly-educated and diverse workforce and population," says Janet Kennedy, president of Microsoft Canada. "This investment will enable us to create a world-class center of training and innovation that will have a positive ripple effect across the local, provincial and national economy."

I recently had the opportunity to speak with **Marc Seaman, national director of education and public affairs for Microsoft Canada**, to find out why Vancouver has been so successful in attracting investment over the past five years in the technology industry.

**Q: What has been Microsoft's experience having a satellite office in Vancouver?**

"Living and working in downtown Vancouver, the feedback is tremendous," says Seaman. "Vancouver has a vibrant multicultural society and the location being in an urban setting is appealing not only to corporate Microsoft employees but also employees at [Microsoft's video game developers] Black Tusk and Big Park Studios."

**Q: What is it about Vancouver that appeals to Microsoft?**

"When employees live in Vancouver, they don't want to leave. This speaks volumes as to how they enjoy the environment, the social network, and Vancouver as a tech hub," explains Seaman. "In 2007, Microsoft's Vancouver Development Centre opened in Richmond, but our learning was that people wanted to be in Vancouver." In 2011, Microsoft decided to consolidate the offices so that everyone was together in Vancouver. Eventually, Microsoft expects this new MCEC will house at least 750 Microsoft employees.

**Q: Does the proximity to Seattle benefit your Vancouver office?**

"Absolutely," says Seaman. "By air or car within a few hours, with the type of integrated development work that we do at Microsoft, this is really important and was a key consideration in expanding the office to Vancouver."

**Q: Is there any other news you would like to share with EP&T's readership?**

"Foundry Vancouver, which will hire 25 interns from across Canada once operations are up and running in the fall, will provide an opportunity for some of the best Canadian students to share their skills with our teams," says Seaman. This paid internship program, which will eventually grow to 50, invites development and design students enrolled at Canadian universities to participate in a 16-week intensive program that centers on building applications for Microsoft's latest platforms and devices.

This Foundry Vancouver program and Microsoft's investment in BC is important validation of Western Canada's continued emergence as a world-leading hub for innovation, with new investment and job creation in the region's fast-growing technology sector.

For more information, go to <http://www.microsoft.com/en-ca/sites/vancouver-development-center/>



Sohail Kamal  
West Coast  
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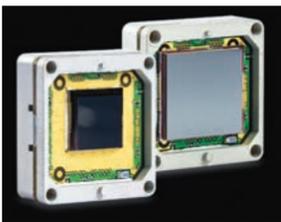
October 28 • 10am-4pm  
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**MISSISSAUGA**

October 30 • 10am-4pm  
Mississauga Convention Centre

### Thermal imaging camera core simplifies integration

**Muon thermal imaging** core product dramatically simplifies the integration of thermal imaging capabilities for OEM customers. Product lowers costs and simplifies the thermal imaging integration by providing a plug-in module with calibrated video output using industry-standard interfaces. To minimize system design complications, product operates on standard imaging device power and communication protocols. Product is based on firm's latest high volume wafer-scale packaged detector technology and is available in multiple resolutions up to and including VGA. Product has a form factor of 22 mm x 22 mm x 6 mm, a mass of less than 5 grams, and depending on the configuration, uses less than 300mW of power.



FLIR SYSTEMS

<http://ept.hotims.com/51128-37>

### 300V recyclable cable is small, light



**EcoCable** recyclable cable line includes a 300 V version that is up to 32% smaller and 44% lighter than standard 300V PVC cable. Product provides recyclable mPPE jacketing and insulation with improved dielectric properties, a -40C to +80C temperature range, five shielding options and is available in more than 250 standard multiconductor and multipair constructions from 28 to 20AWG. Custom and composite configurations are also available. Product's low outgassing makes it suitable for power and signal transmission applications in

medical devices and semiconductor manufacturing equipment."

ALPHA WIRE

<http://ept.hotims.com/51128-38>

### Fiber optic cable is meets ISO 9001

**REMEE** Loose Tube and Tight Buffer fiber optic cable is manufactured under ISO 9001 accreditation. Firm produces indoor and outdoor fiber optic cable in both armored and unarmored configurations, along with polyethylene, low smoke zero halogen (LSOH) and PVC jacket types including 2- 288 fibers and SM, MM, OM3, OM4 configurations, as well as 10Gb fiber types. Product is suited for most applications including demanding conditions such as transit, mining, light rail and wind farms.



EML

<http://ept.hotims.com/51128-39>

### SMT socket accommodates wider range of pins

**EZ-BoardWare** pcb socket portfolio includes contact that can accommodate mating pins ranging from 0.8mm to 1.5mm in diameter. Products complement an existing range, including parts with pin diameters from 0.8mm to 1.8mm. A cost-effective alternative to turned pcb sockets, devices are designed for SMT assembly and are suitable for high volume applications. Devices are stackable on 2.54mm pitch spacing. Product provides a two point contact system, ensuring secure retention and easy removal or replacement of the socketed component.



HARWIN

<http://ept.hotims.com/51128-40>



### DIP coded rotary switch has permanently fixed thumbwheel

**DH Series** completely reflow solderable 10-position DIP coded rotary switch with a permanently fixed thumbwheel. Available as pcb left or right surface mount configurations; device is 5mm wide (6mm with crown) and can be numerically marked as 0-9 or 1-10, making it suitable for applications with limited space and narrow housings. Products are versatile and compact enough to simplify human interface in address

and parameter setting in a variety of electronic applications.

APEM

<http://ept.hotims.com/51128-41>



### Miniature spring-loaded plunger limits space requirements

**56 Miniature** spring-loaded plunger enables quick-access fastening in tight spaces and is available with an over-molded head that can be used to designate access through an array of standard and custom color options. Designed for use in limited space applications and minimum 0.8 mm thick panels, device provides simplified positioning of sliding components, simple installation and quick-release for easy removal. Press-in and flare-in styles and stay-open/non-stay-open options provide versatility for fastening and unfastening

by hand when mounting doors, panels and other hardware components in applications where space is limited.

SOUTHCO

<http://ept.hotims.com/51128-42>

### TFT display offers two user interfaces

**Winstar TFT M display Series (Clever System)** provides two user interfaces including RS232 and SPI; and it supports backlight brightness adjustment, PWM signal output and 4 switches button sensor. The all-in-one-system builds the micro controller behind the TFT panel, so it can drive TFT, backlight and touch panel directly. Firm also supplies a TFT editing program for end-users to design their software more easily. Designers can use RS232 or SPI-4 Line to drive TFT directly.



DB LECTRO

<http://ept.hotims.com/51128-43>

### Control cable is flexible, oil-resistant

**TrayControl 550 TPE control cable** is flexible and oil-resistant, providing blue or red-colored conductors that are approved for open, unprotected installation in cable trays from power sources/control units to the machine. Product helps offset the need for PUR cables in tray applications. The specially blended product perform as well as standard PUR cables with the added benefit of being able to transition from cable trays to free air, an installation method not permitted for PUR cables.

HELUKABEL CANADA

<http://ept.hotims.com/51128-44>

### Thermal control system characterizes IC packages

**Ironwood** partners with Mechanical Devices to introduce Thermal Management Solutions a Thermal Control System that allows any IC device to be placed inside of any compatible socket and operated at the IC's extreme temperature to determine its thermal capability. System enables temperature control of the IC devices during thermal characterization using direct contact technology that provides accurate and stable temperatures on the IC resulting in precise characterization. The three main components of the thermal management system are the thermal controller, the plunger and the adapter. The thermal controller has an integrated compressor for cooling and a touch screen for parameter inputs. Plungers are designed specifically to accommodate particular IC size and attached to the thermal head. Adapters are custom designed as well to interface thermal head with plunger to specific IC socket. It also has an easy to use graphical user interface (GUI). Features include the ability to set a temperature, tune the system, change and save configurations setting, log data and run custom scripts



IRONWOOD ELECTRONICS

<http://ept.hotims.com/51128-45>

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<http://ept.hotims.com/51128-9>



## Medical Electronics

# Fast growing medical devices market opens door to international manufacturers

By Fanny Han, Medical Device Services, SGS-CSTC Standards Technical Services Co., Ltd.

An emerging middle class, increased wealth and rapidly rising health care expenditure combine to make China the world's fourth largest market for medical equipment.

Demand for medical devices is strong across China, especially in the wealthier cities and urban areas of Beijing and Shanghai. In 2013, the estimated market value for medical devices was more than USD\$17-billion, making it the world's fourth largest medical equipment market. In an economy currently enjoying year on year growth of some 10%, the Chinese health market has consistently been growing by around 20% per year, a trend that shows no sign of abating.

Chinese health care spending accounts for just 4.7% of gross domestic product (GDP), compared to 9% in Organization for Economic Cooperation and Development (OECD) countries. With a population of 1.3 billion, almost 10% of whom are over 65, China represents an unrivalled opportunity for medical device manufacturers.

In an unusual twist, many multinational companies already manufacture medical devices and equipment in China, for export, while the country's domestic market is largely supplied by imports.



With domestic businesses unable to meet existing demand, China is an attractive market for foreign medical device manufacturers.

Socio-economic drivers in the medical device market are boosted by health reforms, which have been coming online since 2009 and the country's 5-year

plan, which was launched in 2011. These ambitious plans aim to improve the general quality of healthcare across the country, as well as to address and correct structural flaws in the existing healthcare system. Planned expansion of hospital facilities means that there will be increased investment in health care equipment in the near future.

### Regulatory reform

At the same time, China has embarked on an ambitious review of its medical device regulations, the first and most extensive review since 2004. Almost all the applicable regulations have been updated, including those relating to:

- Classification
- Testing
- Clinical evaluation
- Documentation requirements
- Agent requirements

As a result, on 1 June 2014, the newly revised Regulations for the Supervision and Administration of Medical Devices (Council Statute Order No. 650) came in to force.



### Medical devices regulations framework

In order to distribute, sell or market medical devices in the Chinese market, approval must first be acquired from the China Food and Drug Administration (CFDA). In addition to the primary Regulations for the Supervision and Administration of Medical Devices (Council Statute Order No. 650), the most important laws and regulations for medical devices are:

- CFDA Orders (second level regulation)
- CFDA Order No. 4: Administrative Measures for Medical Device Registration (will come into effect on 1 October 2014)

- CFDA Order No. 5: Administrative Measures for the Registration of In Vitro Diagnostic Reagents (will come into effect on 1 October 2014)
- CFDA Order No. 6: Administrative Rules for the Instructions and Labels of Medical Devices (will come into effect on 1 October 2014)
- CFDA Order No. 7: Administrative Measures for the Supervision of Medical Device Manufacturing (will come into effect on 1 October 2014)
- CFDA Order No. 8: Administrative Measures for the Supervision of Distribution of Medical Devices (will come into effect on 1 October 2014)
- Harmonized GB National Standards and YY&YY/T standard

### Medical device classification, testing

Complimentary to the enactment of the updated Regulations for the Supervision and Administration of Medical Devices in June, the classification and testing provisions for medical devices have also been updated, albeit in draft format for now. China's medical device classifications are broadly similar to the US FDA.

The CFDA stipulates that Class I devices are carried through routine administration, but Classes II and III have stricter controls. The provisions for device classification are given in CFDA's Order 151.

For Class II and III equipment testing, the manufacturer should draft the technical requirements. These requirements are similar to the Essential Requirements Checklist and should:

- Be in compliance with adopted standards (GB National standards and YY &YY/T industrial standards)
- Include performance specification and testing method

For active Class II and Class III devices, certification body (CB) test reports do not exempt them from testing, but they can be helpful. Devices will be tested according to the technical requirements in a Chinese testing laboratory that is supervised by the CFDA.

The applicable national standards are:

- For general safety part, GB 9706.1:2007 (identical to IEC 60601-1:1988+A1:1991+A2:1995) is mandatory
- For Class III devices, EMC testing (YY0505:2012 identical to IEC 60601-1-2:2004) is mandatory from 2014
- For Class II devices, EMC testing (YY0505:2012 (YY0505:2012 identical to IEC 60601-1-2:2004)) will be mandatory from 2015.

### Clinical requirements

For Class I devices, the clinical evaluation report will be accepted.

For Class II and Class III devices:

- If the device falls under "clinical trial exemption database", the supplied clinical evaluation report will be accepted
- If the device does not fall under "clinical trial exemption database", a clinical trial in China is mandatory.

The 'clinical trial exemption database' is still in draft.

continued on page 19

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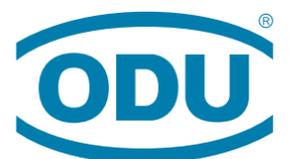
## Versatile Connector Systems

ODU manufactures a wide range of connectors with both plastic and metal shells. Our connectors are used in disposable applications and reusable applications where sterilization is required. The disposable connectors come with pin counts from 2-14, and are available in various colors. ODU standard metal connectors come with pin counts ranging from 2-40 contact points. ODU push pull connectors are intermateable with Lemo and W.W.Fischer.

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<http://ept.hotims.com/51128-11>

## IEC 62304-Compliant OS for medical devices reduces OEM's cost

QNX OS for Medical 1.1 software platform complies with the IEC 62304 medical device standard for software life cycle processes and is designed to help manufacturers reduce the cost of developing robotic surgical instruments, patient monitoring systems, infusion pumps, blood analysis systems and other safety-critical products that must pass stringent regulatory approval. Product is based on QNX OS technology field-proven in an array of systems for angiography, proton therapy, laser eye surgery, hemodynamic monitoring, and other critical healthcare applications. The OS supports both single-core and multi-core devices based on ARMv7 and Intel x86 processors, and it offers API compatibility with other members of the QNX OS family, enabling a high degree of software re-use.

QNX SOFTWARE SYSTEMS

<http://ept.hotims.com/51128-51>



## 256-Channel, 24-Bit current-to-digital converter simplifies design

ADAS1131 current-to-digital converter module reduces the cost and complexity of computed tomography (CT) scanner system design. The 256-channel, 24-bit current-to-digital device is available in a 15-mm<sup>2</sup> BGA package with a 0.8mm pitch. Device uses approximately 33% less pcb area than alternative devices that. Product can be mounted on a standard pcb substrate, a less costly and higher yield option.

ANALOG DEVICES

<http://ept.hotims.com/51128-55>



## Dc motors boost battery life with operational efficiencies in excess of 90%

Frameless brushless dc motors in multiple designs provide high operational efficiencies in excess of 90% that enable extended battery life. The high torque density device boosts efficiency with improved weight and envelope profiles. Composed of two pieces (rotor and stator), product makes it easy to integrate into a customer's existing assembly, minimizing the need for extra components and reducing overall weight. Motors range up to 20" in O.D. with torques in excess of 50Nm and operational speeds beyond 70K rpm.

BEI KIMCO MAGNETICS

<http://ept.hotims.com/51128-52>

## Industrial-grade thin barebone system suits medical applications



AIMB-B12300 series industrial-grade thin barebone system embedded with AIMB-230 Mini-ITX motherboard, supporting the latest 4th generation Intel Core i5/ Celeron processors, resulting in lower power consumption and improved graphic performance. Designed with a rich variety of I/O functions, device is suitable for medical equipment. With preloaded remote management software – SUSIAccess, products save development cost and enhance system management efficiency.

ADVANTECH

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### Lithium Ion (Li-Ion) Battery Charger

In response to increased concern and requirements of portable equipment and device manufacturers for safety related to Lithium Ion (Li-Ion) batteries, GlobTek's latest generation battery charger designs include numerous redundant safety features which when communicating with electronics in Lithium (Li-Ion) batteries prevents failure or damage of the battery pack during charging. Aside from safety, the charger includes many features to maintain and lengthen battery life. The GlobTek GT-93023-12012(R) is a customized bespoke multiple bay battery charger designed to charge 5 battery ...for more click [www.globtek.com](http://www.globtek.com)

### International Power Cordsets

This wide range of international power cordsets are approved to international safety agency requirements. Designs are available in various lengths, cable types, conductor gauge, termination, and jacket color. Cordsets are ideal for portable equipment, communication, video, power tools, consumer electronics or industrial and medical equipment. Many designs are available from stock. VERY low cost make these power supplies perfect for OEM requirements. Catalog also available on [www.globtek.com](http://www.globtek.com). Made in USA option available upon request. ...for more click [www.globtek.com](http://www.globtek.com)



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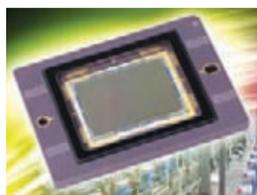
<http://ept.hotims.com/51128-12>

## CCD Image sensor boosts performance for medical imaging

KAI-08051 Image Sensor provides improved light sensitivity, reduced read noise and improved color accuracy compared to the previous generation device, expanding opportunities for 8 megapixel image capture in demanding imaging applications. Device shares the same advanced 5.5 micron pixel architecture, 8 megapixel resolution, 15 frame per second readout rate, and 4/3 optical format as the existing KAI-08050 Image Sensor, but improves key performance parameters through the use of an improved amplifier design, newly optimized microlens structure, and new color filter pigments in both Bayer and Sparse color configurations.

ON SEMICONDUCTOR

<http://ept.hotims.com/51128-53>



## 24, 40, 60W ac-dc power modules are medically approved

TMM Series of medical approved ac-dc power modules meet protection class II and are suitable for patient vicinity applications. Product provides three power classes of 24, 40 and 60 Watts and are available in single or dual outputs of 5, 12, 24, 48, ±12 and ±15Vdc. Product highlights include high efficiency up to 87%, over-voltage and continuous short-circuit protection and universal ac input range of 90 to 264Vac. Operating temperature range is -40C to +60C at full load, start-up temperature is -40C. Units are fully encapsulated and designed for pcb assembly or chassis mounting with screw terminals.

POWER SOURCES UNLIMITED

<http://ept.hotims.com/51128-54>







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<http://ept.hotims.com/51128-13>

## Durable, colorable, elastomers proven safe for skin contact

TPSiV 4000 and TPSiV 4200 Thermoplastic Elastomers (TPEs) have been shown to be safe for skin contact applications in two independent medical test protocols. Both products lack cytotoxic potential and show no potential for systemic toxicity and skin irritation. A hybrid mix of Thermoplastic Polyurethane (TPU) and crosslinked silicone rubber, materials combine the durability, abrasion resistance and overmolding options of TPUs, with the softness and resistance to ultraviolet light and chemicals offered by silicone technology. Product can be precisely color-matched to customer specifications and maintain long-lasting aesthetics.

DOW CORNING

<http://ept.hotims.com/51128-57>



## Ac-dc power supplies boost power density levels

N series of ac-dc power supplies are enclosed in ultra-low profile 1U format packages, with 90Vac to 264Vac inputs supported, the NM0501 and NM1001 have 504W and 1008W outputs respectively. Both products have the capacity to deliver power efficiency levels of up to 92%. Devices lower energy consumption and improve thermal performance, with minimal forced air cooling required. This means that ac loads are reduced and power system running costs can be kept in check.

POWERSTAX NORTH AMERICA

<http://ept.hotims.com/51128-58>

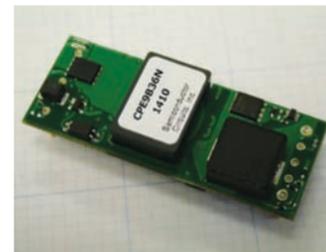


## Dc-dc converter boosts efficiencies

CPE9B36 Cool Power Technologies 12V, 9A wide input range 8th brick dc-dc converter is an open frame module that provides a full 108W of 12V power @ 55C & 200lfm of airflow. Product is compliant with DOSA footprint and interface standards and delivers an input voltage range of 18 to 72Vdc & provides 2250Vdc input to output isolation. With efficiencies exceeding 92%, device meets EN 60950 basic insulation requirements and is UL94 V-0 flammability rated. The module complies with all of the typical industry requirements including no load operation and 100V/100mS input voltage transient.

SEMICONDUCTOR CIRCUITS

<http://ept.hotims.com/51128-59>



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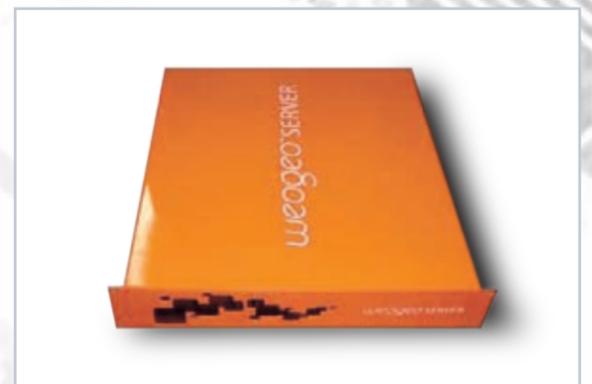
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## Power supply serves medical applications

**GTM41133-90VV-x.x-T2** ITE, medical power supply provides desktop/external, regulated switchmode ac-dc, input rating: 100-240V~, 50-60 Hz, IEC 60320/C8 ac inlet connector, Class II, non-earth ground, output rating: 90 Watts, 12-48V in 0.1V increments, Approvals: CB, CE, cETLus, cETLus 60601-1 3rd, China RoHS, Double Insulation, GOST-R, IP21, Level V, PSE, RoHS 2, S-Mark, Ukraine, VCCI, WEEE. High impact plastic, 94V0 polycarbonate, non-vented housing with

LED to indicate 'Power Out.'  
**GLOBTEK**

<http://ept.hotims.com/51128-60>

## Ac-dc modules come with medical safety approvals

**AJM-24, APM-40 and AYM-60 Series'** of fully encapsulated, Class II ac-dc power supply modules with power ratings from 24W to 60W are compliant with Energy Star and European ErP Directive 2009/125/IEC. Products are approved to medical safety standard UL/IEC/EN 60601-1 3rd Edition and feature BF Rated outputs. High performance products provide an operating temperature range of -40C to +80C, with derated power ratings after 60C. All temperature ratings are in a convection cooled environment.

**MINMAX POWER**

<http://ept.hotims.com/51128-61>



## Single pogo pin board-to-board contacts extend lifecycle

**70-9150 Series** of single pogo pin board-to-board (BTB) contacts for use in high lifecycle commercial, industrial, medical and military applications are available in five standard compressed stacking heights spanning 2.0mm to 5.0mm. Devices provide low-cost, off-the-shelf connector solutions for an extensive range of applications. Enabling improved design flexibility with regard to pin count and placement location, device provide gold plating for high reliability and signal integrity and a high force stainless steel spring that facilitates exceptional mechanical and electrical performance for up to 10,000 cycles.

**AVX**

<http://ept.hotims.com/51128-62>



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DC-DC and  $\mu$ DC-DC converters; AC-DC

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Sensors ■ Wireless Modules ■ Components ■ Power Devices

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## Open-frame ac-dc supplies deliver up to 250 Watts

**GCS series** of 250 Watt range of open-frame, high efficiency single output ac-dc power supplies are certified to both industrial and medical international safety standards. Comprising 150, 180, and 250 Watt models, products are available in multiple mechanical formats and in an industry standard 3 x 5 inch (127 x 76.2mm) open frame package, an enclosed covered version and top or end-mounted fan cover options. Product delivers up to 180 Watts by convection cooling and the full 250 Watts when provided with a 7 CFM airflow or when using the optional fan mounted configurations.

**XP POWER**

<http://ept.hotims.com/51128-63>



## Stainless steel screens are extremely fine

**Fine MicroEtch** stainless steel screens are made using photo etching technology that enables designers to specify a straight hole or a tapered hole, which facilitates liquid filtration and back flow cleaning. Hole sizes range from .003" and up. Unlike stamping, photo etching yields a burr-free product resulting in cleaner more efficient screens with greater material integrity. Products provide a tighter tolerance on hole sizes and greater dimensional stability than woven wire mesh, making them suitable in applications requiring frequent cleaning or where there is mechanical contact.

**TECH-ETCH**

<http://ept.hotims.com/51128-64>



## Thermally conductive, 2 component epoxy is medical grade

**EP21A0LV-2Med** epoxy is thermally conductive and electrically isolating with a smooth consistency and good flow properties. Product bonds well to metals, composites, glass, ceramics, plastics and many rubber materials. Product system provides a high tensile modulus of 450,000-500,000 psi, a compressive strength exceeding 18,000 psi and very low shrinkage upon curing. Product's viscosity and low coefficient of thermal expansion enable it to be suitable for potting and encapsulation applications. Product also resists many chemical including water, oils and fuels. Medical grade product is serviceable over the temperature range of -60F to +250F.

**MASTER BOND**

<http://ept.hotims.com/51128-65>

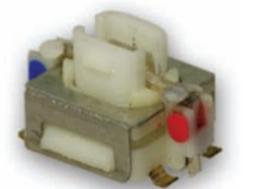


## Miniature tact switch combines illumination, IP67 ratings

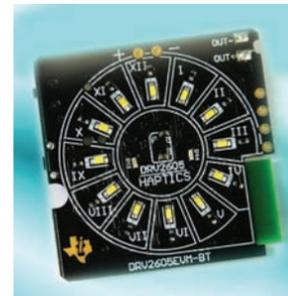
**TL6210 Series** miniature tact switch provides illumination and IP67 ratings. Device provides surface mount termination, miniature footprint and available in LED colors that include red, green, yellow, blue, white, and a combination of red/green or green/yellow. Specifications for device include: an electrical rating of 50mA @ 12Vdc; electrical life of 100,000 cycles; mechanical life of 100,000 cycles; contact resistance of 500mOhm; and a dielectric strength of 250Vac for 1 min.

**E-SWITCH**

<http://ept.hotims.com/51128-66>



## Wireless haptic development kit eases tactile feedback prototyping



**Haptic Bluetooth Kit (DRV2605EVM-BT)** development kit provides a fast and convenient way to prototype eccentric rotating mass (ERM) motor and linear resonant actuator (LRA) haptic effects. Using Bluetooth low energy (BLE) and a free iOS app, device enables users to create haptic sequences and LED patterns for tactile feedback, notifications and alerts from a pre-licensed library of more than a hundred distinct haptic effects, eliminating wires and the need to design haptic waveforms.

**TEXAS INSTRUMENTS**

<http://ept.hotims.com/51128-67>

## Wireless charging receiving coil boosts efficiency

**Dale IWAS-4832FE-50** powdered-iron-based, WPC-compliant (Wireless Power Consortium) wireless charging receiving coil suited for 10 W applications, provides a durable construction and high permeability shielding. Product delivers efficiency greater than 70 % for wireless charging up to 10W for portable electronics, including handheld medical equipment. Device's high-saturation powdered iron is not affected by permanent locating magnets and it blocks charging flux from sensitive components and batteries. As an alternative to ferrite-based solutions, which can saturate in the presence of a strong magnetic field, product provides a magnetic saturation of < 50 % at 4000 gauss.

**VISHAY INTERTECHNOLOGY**

<http://ept.hotims.com/51128-68>



## Fast growing medical devices market

continued from page 14

### CFDA application and registration

Applications for medical device approval must be made to the CFDA in Chinese and English, including all supporting documentation. In order to submit an application the manufacturer requires a local Chinese Registration Agency. The manufacturer will sign the English version of the documents and the registration agency will sign the Chinese versions, confirming that they are the same.

In addition to the application, several other documents are required:

- **Qualification for Manufacture:** a certificate issued by the authorities (or Notified Body) of the Country of Origin (CoO) to authorize the manufacturer to manufacture and distribute the medical devices, for example, in the EU this is an EN/ISO 13485 certificate
- **The Approval for the Device in the CoO:** for example, in the EU this is the CE certificate and Declaration of Conformity
- **Qualification of Registration Agency:** comprises the License of the Agency and an Authorization Letter from the manufacturer
- **Technical requirements:** typically drafted together with the manufacturer and the registration agency, and based on the user manuals, test reports and technical specifications
- **Test report for Class II and Class III devices:** issued by the testing laboratory that is authorized by CFDA, based on the Technical Requirements
- **User Manual and Labeling in Chinese**
- **Clinical evaluation report:** (see the clinical requirements section above)
- **Product Quality Guarantee Letter:** with this letter the manufacturer guarantees that the quality of the product that is to be registered for sale in China is exactly the same as in the CoO, and that the quality management system is continuously supervised
- **Letter of Authorization and Letter of Promise for the Responsible Agency in China:** the agency will need a business license, will undertake the relevant legal responsibility of product quality, report possible incidents to the CFDA, take care of product recalls, and contact the CFDA and manufacturer when necessary
- **Letter of Authorization and Letter of Promise for the After-sales Agency:** the agency will need a business license and will have responsibility for all necessary technical documents, training, spare parts, consumables, and after-sales of the device
- **Self-declaration for Documents Submitted:** provided by the manufacturer and includes a promise from the manufacturer to undertake legal responsibility.

To support the new Regulations for the Supervision and Administration of Medical Devices, this document list will be updated. At present there is no official version of the above list.

### Time to market

Finding the most efficient route to market for products means planning ahead and knowing what to expect. In principle, the CFDA technical review and Admin review need only 90 working days, if there are no on-hold comments. In practice however, the lead-time for a Class



II device is typically 9-16 months, including documents preparation, device testing and CFDA reviews.

For more information on medical device services from SGS, go to <http://ept.hotims.com/51128-69>

## Wireless semis maintain strong growth in healthcare

Semiconductors providing wireless connectivity in health and fitness devices are set for solid double-digit growth this year and beyond, especially as a clutch of wireless technologies make their way into a growing number of wearable devices, according to a report from **IHS Technology**, El Segundo CA.

Shipments this year for wireless semiconductors in health and fitness will reach a projected 61.2-million units, up 11% from 55-million in 2013. The expected strong expansion for this year continues the robust growth of 2012 and 2013. The market shows little signs of slowing, with shipments in 2018 climbing to 95.78 million units, as shown in the attached figure.

The overall health and fitness market covered by the forecast includes the sports and fitness segment on the one hand, as well as the adjacent market for health and wellness on the other. While overlaps exist between the two segments, there are also subtle differences.

For instance, data and activity sharing by wireless means is more common in sports and fitness as consumers happily disclose the results of their improving fitness levels. In contrast, sharing is not as widespread in health and wellness, where disease management is largely private and carefully guarded by the affected individuals. Yet the fitness market as a whole is particularly receptive to wireless connectivity.

"Because most health and fitness devices are mobile, wireless connectivity is important," says Lee Ratliff, principal analyst for connectivity at IHS. "And because these wireless mobile devices are in most cases also wearable and thus require a small form-factor, they cannot be power hogs and must support low-energy consumption to have the best chance of succeeding in the consumer market."

Wireless connectivity mainly serves two purposes, Ratliff noted. Especially in sports and fitness applications, wireless connectivity is often used to provide a

link to remote sensors when wired connectivity is too cumbersome. Examples here include linking heart-rate chest straps to wrist-worn heart-rate monitors, or linking wheel-speed sensors to cycling computers.

A second use is for data uploading, with wireless connectivity employed to upload fitness and performance data to PCs, smartphones, tablets or online communities for analysis and sharing.

Among the various wireless technologies now available on the market for health and fitness, Bluetooth Smart is the most successful. As a low-power technology, Bluetooth Smart enables even the smallest wearable products—such as foot pods, the size of one's thumbnail—to operate for years on a battery the size of a coin cell. Bluetooth Smart also leverages its enviable position in mobile phones and tablets: It is the only major low-power wireless technology able to communicate with all the chief mobile platforms, including Apple iOS, Google Android, Microsoft Windows 8 and the BlackBerry operating system.

 <p><b>ALD6 Series</b> 1-6 string LED driver for LCD displays</p> <ul style="list-style-type: none"> <li>◆ 12VDC input</li> <li>◆ User selectable for 1, 2, 3 or 6 strings</li> <li>◆ Small size (&lt; 1" x 1")</li> <li>◆ Analog or resistive programming</li> </ul> <p><a href="http://us.tdk-lambda.com/lp/products/ald-series.htm">http://us.tdk-lambda.com/lp/products/ald-series.htm</a></p>	 <p><b>EFE Series</b> 300 to 400W high efficiency power supplies</p> <ul style="list-style-type: none"> <li>◆ AC input with Power Factor Correction</li> <li>◆ 12V to 48V outputs</li> <li>◆ High Efficiency (90% typical)</li> <li>◆ Medical versions available</li> </ul> <p><a href="http://us.tdk-lambda.com/lp/products/efe-series.htm">http://us.tdk-lambda.com/lp/products/efe-series.htm</a></p>	 <p><b>NV Series</b> 350 to 700W Modular Power Supplies</p> <ul style="list-style-type: none"> <li>◆ AC input with Power Factor Correction</li> <li>◆ 1 to 8 outputs</li> <li>◆ Up to 90% efficient</li> <li>◆ Suitable for 1U enclosures</li> </ul> <p><a href="http://us.tdk-lambda.com/lp/products/nv-series.htm">http://us.tdk-lambda.com/lp/products/nv-series.htm</a></p>
 <p><b>CFE400M Series</b> 300-400W high efficiency power supplies</p> <ul style="list-style-type: none"> <li>◆ AC input with Power Factor Correction</li> <li>◆ 12 to 48V outputs</li> <li>◆ 300W convection cooled rating</li> <li>◆ Medical &amp; industrial safety certifications</li> </ul> <p><a href="http://us.tdk-lambda.com/lp/products/cfe-series.htm">http://us.tdk-lambda.com/lp/products/cfe-series.htm</a></p>	 <p><b>Leave a smaller footprint</b></p> 	
 <p><b>CSS500 Series</b> 500W high efficiency power supplies</p> <ul style="list-style-type: none"> <li>◆ AC Input with Power Factor Correction</li> <li>◆ 12V to 57VDC outputs</li> <li>◆ 360W convection cooled rating</li> <li>◆ Up to 92% efficient</li> <li>◆ Medical versions available</li> </ul> <p><a href="http://us.tdk-lambda.com/lp/products/css-series.htm">http://us.tdk-lambda.com/lp/products/css-series.htm</a></p>		
 <p><b>ZWS-BAF Series</b> 50 to 150W High Reliability Power Supplies</p> <ul style="list-style-type: none"> <li>◆ AC Input with Power Factor Correction</li> <li>◆ 3.3V to 48VDC outputs</li> <li>◆ Up to 91% efficient</li> <li>◆ 5 year warranty</li> </ul> <p><a href="http://us.tdk-lambda.com/lp/products/zws-series.htm">http://us.tdk-lambda.com/lp/products/zws-series.htm</a></p>	<p><b>DRB SERIES - Very Small, Efficient DIN Rail Supplies</b></p> <p>Save energy and space on your DIN Rail by using TDK-Lambda's new DRB series of 15 to 100 Watt DIN Rail mount power supplies.</p> <ul style="list-style-type: none"> <li>◆ Excellent efficiency</li> <li>◆ ErP compliant</li> <li>◆ Very low no load power consumption</li> <li>◆ Extremely narrow width</li> <li>◆ Output voltages 5, 12, 15, 24, 48VDC</li> <li>◆ 15, 30, 50 &amp; 100W power levels</li> </ul> <p>The DRB series' highly efficient design reduces waste heat, even at no-load, allowing the case size to be reduced while still maintaining conservative component temperatures.</p> <p>Put your foot down, contact TDK-Lambda for an evaluation unit or check our website for distribution inventory.</p> <p><a href="http://us.tdk-lambda.com/lp/products/drb-series.htm">http://us.tdk-lambda.com/lp/products/drb-series.htm</a></p> <p>For more information on how TDK-Lambda can help you power your unique applications, visit our web site at <a href="http://www.us.tdk-lambda.com/lp/">www.us.tdk-lambda.com/lp/</a> or call 1-800-LAMBDA-4</p> 	



## Semiconductors & ICs

### High-speed IR Array expands FoV, lowers noise

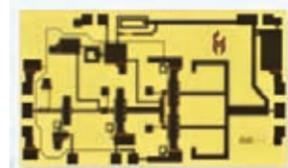
**MLX90621** infra-red (IR) arrays comes with a 16 x 4 pixel configuration and provides a field of view (FoV) of 100° x 25°. Unit has 4 times faster measurement speeds, reducing the inherent noise levels present. Factory calibrated to operate over a temperature range spanning -40C to 85C, product can accurately measure object temperatures from -20C to 300C. Interface and control is managed via the device's I2C digital interface. The speed is programmable, with a frame rate covering 0.5Hz to 64Hz supported.

MELEXIS

<http://ept.hotims.com/51128-81>



### GaN power amplifier delivers high power, linearity



**CMD217** is a 28 to 32 GHz GaN power amplifier in die form, providing greater than 20dB of gain across its operating frequency range, with a corresponding output 1dB compression point of

+36.7dBm and saturated output power of +39.3 dBm (8.5 W). Device's power added efficiency is 28% to 35% across the band. Device is a fully matched 50 ohm design and requires external bypass capacitors to complete the bias circuitry. The die is passivated for increased reliability and moisture protection.

CUSTOM MMIC

<http://ept.hotims.com/51128-82>

### Touchscreen controller supports single-layer sensors, gloved-finger tracking

**TrueTouch Gen4X TMA445** touchscreen controller supports single-layer multi-touch sensors and enables thin form factors by leveraging firm's Single-Layer Independent Multi-touch (SLIM) sensor structures. Device adds support for tracking of multiple fingers in gloves and delivers best-in-class accuracy and linearity for fingers of different sizes and gloves of various materials and thicknesses. Product automatically switches between glove and finger tracking without requiring the user to switch settings. Gen4X controllers provide industry-leading water tolerance and best-in-class immunity to electronic noise from aftermarket chargers and displays.

CYPRESS SEMICONDUCTOR

<http://ept.hotims.com/51128-83>



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**AC/DC Converter**

**1-5W Economical LS Series**

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- Short circuit and over-temperature protection

**5-60W LH Series**

- Wide AC input range 85-265Vac
- Single/Quad and triple output

**Upgraded LB Series**

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- Wide operating temp. range -40C-70C

**24-120W DIN-RAIL LI Series**

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<http://ept.hotims.com/51128-17>

### System-On-Module supports development, prototyping

**PicoZed family** of System-On-Modules (SOMs) is based on the Xilinx Zynq-7000 All Programmable SoC. In support of development and prototyping, the PicoZed Carrier Card has also been released, which provides the necessary interfaces and access to user I/O from the PicoZed SOM. Targeted for industrial control, embedded vision, test and measurement, motor control and software-defined radio applications, product enables designers to get to market faster. Product provides flexibility to migrate between the Zynq 7010, 7015, 7020, and 7030 All Programmable SoC devices in a pin-compatible footprint.

AVNET ELECTRONICS MARKETING

<http://ept.hotims.com/51128-84>



### Dual power MOSFET reduces power losses

**IRFHE4250D** FastIRFET dual power MOSFET reduces power losses by more than 5% at 25A compared to best-in-class conventional power block devices. The 25V device is targeted at 12V input dc-dc synchronous buck applications. Device provides firm's latest generation silicon and expands the power block packaging platform with a 6x6 PQFN package with exposed top and slim profile for back-side mounting that combined with excellent thermal performance, low on-state resistance (RDS(on)) and gate charge (Qg) delivers superior power density and lower switching losses to shrink pcb size and improve overall system efficiency.

INTERNATIONAL RECTIFIER

<http://ept.hotims.com/51128-85>



### MOSFET exceeds on-resistance barrier of traditional 1200V technology

**C2M0025120D** commercially available silicon carbide (SiC) 1200V MOSFET with an RDS(ON) of 25μ in an industry standard TO-247-3 package. Based on firm's C2M SiC MOSFET technology, device has a pulsed current rating (IDS Pulse) of 250A and a positive temperature coefficient, providing improved design flexibility. The high IDS Pulse rating makes it suitable for pulsed power applications and the positive temperature coefficient allows the devices to be paralleled to achieve even higher power levels.

CREE

<http://ept.hotims.com/51128-86>



### Efficient, scalable IP core improves mainstream 64-bit processing

**Highly-efficient MIPS I-class I6400** CPU family of IP cores combine a 64-bit architecture and hardware virtualization with scalable performance through multi-threading, multi-core and multi-cluster coherent processing. Devices implement a smaller core at the same performance, or a faster core in the same area. MIPS Warrior I-class processor cores set a standard for mainstream 64-bit processing in applications including embedded, mobile, digital consumer, advanced communications, networking and storage.

IMAGINATION TECHNOLOGIES

<http://ept.hotims.com/51128-87>

### 3A synchronous buck regulator simplifies design, saves space

**Vishay Siliconix SiP12116** 3A synchronous buck regulator provides a fixed 650kHz switching frequency and a wide input voltage range of 4.5V to 15V. Device combines high-side and low-side n-channel MOSFETs with current-mode, constant on-time (CM-COT) control in the space-saving 3 x 3mm DFN10 package with thermal pad, providing designers with a complete buck regulator design in only 100 mm<sup>2</sup>.

VISHAY INTERTECHNOLOGY

<http://ept.hotims.com/51128-88>



### Zero-drift instrumentation amplifier lowers power, boosts accuracy

**MCP6N16** zero-drift instrumentation amplifier provides self-correcting architecture, maximizes dc performance by enabling ultra-low offset, low-offset drift and boosts common-mode and power-supply rejection, while eliminating the adverse effects of 1/f noise. Device improves accuracy across both time and temperature. Device's low-power CMOS process technology enables low power consumption while providing 500kHz bandwidth.

MICROCHIP TECHNOLOGY

<http://ept.hotims.com/51128-89>



### newswatch

#### AMD shatters previous CPU frequency record

**Advanced Micro Devices (AMD)**, Sunnyvale CA is claiming another record-setting performance of its FX series processors, setting a new world record for silicon processor speed according to the HWBOT.org ranking. The new FX-8370 processor provides a silicon processor speed clocking in at 8722.78 MHz, shattering the previous CPU frequency record, (which was also set by an AMD FX series processor).

Leveraging the powerful 'Piledriver' x86 core architecture, famed Finnish overclocker 'The Stilt' pushed the envelope of silicon overclocking1 to the extreme.

"World-record frequencies are just a start. The AMD FX series of processors will enable an unrivaled enthusiast PC experience -- extreme multi-display gaming and HD content creation," says Bernd Lienhard, corporate vice president and general manager, Client Business Unit, AMD. "Enthusiasts can experience seamless multitasking and unleash the real capabilities of multi-threaded applications with additional enthusiast performance-tuning features unlocked as standard."

#### Baseband IC allows users to add proprietary value on top of WiGig standard

**Toronto-based** fabless semiconductor company Peraso Technologies Inc. recently launched its PRS4000 60 GHz 802.11ad baseband chip through its Baseband Early Access Program (BEAP).

The highly integrated device includes an 802.11ad compliant MAC/PHY, a USB 3.0 system interface, and analog I/Q for seamless use with Peraso's 60 GHz RF ICs. Peraso supports a highly flexible software architecture, which allows customers to add proprietary functionality to the baseline operation of the device.

"Our development philosophy at Peraso is to ensure we have a flexible product platform from which we can address a variety of WiGig market opportunities" stated Brad Lynch, VP of product development at Peraso. "Further, our modular architecture ensures scalability, and our advanced data flow architecture ensures highly efficient power utilization, which is critical for mobile applications in particular."





### Linear dc weld control delivers ultra-fast, high current welds

**MDA-10000A** ultra-fast, high current linear dc weld control can operate in constant current mode, constant voltage mode, or both. Particularly well suited to series welding applications, unit is suitable for welding optical sensor parts, crystal oscillators, and projection welding of electronic components. Connect multiple power supplies to achieve high power welding in a short time frame. Up to 12 MDA-10000A power supplies can be connected in a slave/master configuration to design a system for high power/short process welding. One master unit controls all connected units, eliminating the need to set separate weld schedules.

Unit provides controls to collectively stabilize current from all connected units.  
**MIYACHI AMERICA**

<http://ept.hotims.com/51128-70>

### High-speed connector improves pcb retention force

**GT32 Series** sophisticated high-speed connector employs an advanced pin-in-hole intrusive reflow method to improve pcb retention force and enables a one-time reflow process with other SMT components.



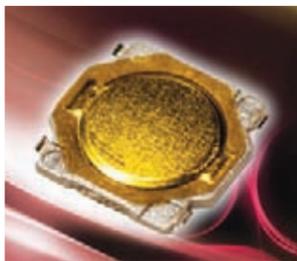
Device combines the pin-in-hole reflow method with a highly reliable positive locking structure that prevents partial locking, incomplete engagement and accidental disengagement to deliver a rugged and reliable interconnect solution that satisfies demanding automotive specifications. Shielded device has a 1.5mm pitch, providing enhanced EMI shielding and low near-end crosstalk (NEXT). Supporting LVDS, USB3.0 and HDMI 1.4a Type E, the GT32 Series high-speed connector is available in several versions.

**HIROSE**

<http://ept.hotims.com/51128-71>

### Momentary action tactile switches extend lifecycles

**PTS 540 Series** surface mount ultra low profile top-actuated tactile switches provides extended operating lifecycles up to 500,000. Devices measure 3.7mm x 3.7mm with a board-mounted profile of 0.35mm. Devices are RoHS-compliant SPST (single-pole, single-throw) top-actuated surface mount devices with a selection of operating force ratings and operating lifecycles (160gf ±50; 500,000 cycles, black casing, and 230gf ±50; 200,000 cycles, gray casing) with a travel distance of 0.15mm ±0.1mm and bounce time of less than 10ms.



**C&K COMPONENTS**

<http://ept.hotims.com/51128-72>

### Sleek industrial PC is fanless, ventless

**ML400 series** industrial & embedded PC provides high performance, boldly-styled, rugged Mini-ITX systems for commercial applications where reliability is paramount. Product combines a sleek, aesthetic look with ultra-reliable, fanless and ventless design, representing firm's full-size Mini-ITX system. Several models are available in a versatile range of I/O and processing capabilities.



**LOGIC SUPPLY**

<http://ept.hotims.com/51128-73>

### Compound grades deliver inherent electrical isolation properties

**KONDUIT PX13012** and **PX11311U** next generation of thermal conductive compounds provide inherent electrical isolation properties and industry-recognized Underwriters Laboratories (UL) ratings (UL94 V0 at 1mm for PX11311U and 0.8mm for PX13012). PX13012 black compound provides highest thermal conductivity within firm's stable of electrical isolative flame retardant compound grades. Product provides an approximate increase of 50% in tensile strength and impact and 55% elongation at break.

**KONDUIT PX11311U** compound is a white grade providing good thermal conductivity and improved UV performance, elongation at break, and heat-shock performance across a wide range of temperatures (-40C to 85C).

**SABIC**

<http://ept.hotims.com/51128-74>

### Hand-held tweezer meter handles surface mount components

**LCR-58 Tweezer LCR**

Meter is hand-held, highly versatile, economically priced and small enough for one-hand operation on Surface Mount Devices (SMD). Precise full-featured product is smaller and lighter than comparable bench-type meters. Product delivers basic accuracy of 1 to 3%. Unit provides manually selectable frequency, data hold and manual or auto range.

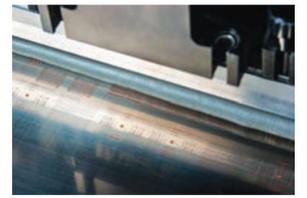
**GLOBAL SPECIALITIES**

<http://ept.hotims.com/51128-75>



### Solder paste is RMA-155 Pb-free

**RMA-155 Pb-free** solder paste provides balanced performance, making it suitable for high-complexity boards with a variety of component sizes. Compatible with both SnPb and SAC alloys, product delivers consistent transfer efficiencies, boosts response-to-pause and a strong oxidation barrier, even for long and hot profiles. The halogen-free product resists graping on small components and tiny deposits, prevents head-in-pillow defects, minimizes voiding for BGAs and large thermal planes (QFNs).



**INDIUM**

<http://ept.hotims.com/51128-78>

### Rugged in-line connection system provides power where it's needed

**ATHD series** single pole, rugged, in-line connection system replaces splices and provides power wherever it's needed. Using firm's Radsok technology, device reaches higher amperages than other connectors in its class. Suitable for rugged environments, device provides clip slots for a variety of harness mounting solutions. The size 8 system is rated to 70 amps continuous with the Radsok terminals and has a contact retention of 156 N. Size 12 system is rated to 35 amps continuous with the Radsok terminals and has a contact retention of 133 N.

**AMPHENOL INDUSTRIAL**

<http://ept.hotims.com/51128-79>

### Outlet boxes withstand harsh industrial environments

**Woodhead Watertite** Wet-Location Wiring Solutions family now includes three non-metallic FD Multiple Outlet Boxes with closure plugs and reducers. Products are constructed of rigid PVC, making them durable and resistant to impact, chemicals and solvents.



Units provide 30% more volume than traditional FD boxes and are available in single-, two- and three-gang configurations to provide greater flexibility. NEMA 4X and IP66 ratings help ensure that the boxes retain a secure, reliable watertight seal to reduce the risk of electrical shock, nuisance tripping, and other electrical hazards, even in environments where frequent high-pressure equipment washdowns are required.

**MOLEX**

<http://ept.hotims.com/51128-80>

### Railway dc-dc converter delivers RIA 12 withstand capacity

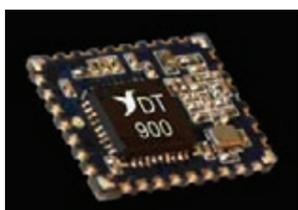
**DCR 150R** line of rugged, railway quality dc-dc converters meets the requirements of EN50155 for electronic equipment used on railway rolling stock. Product provides an input voltage surge withstand capability of 385Vdc for >1 minute (3.5Vn for 20msec min.), comfortably meeting RIA 12. With heavy filtering on the input and output, unit also complies with EN50121-3-2 and EN55022 Class B conducted noise and radiated emissions. Product has a wide operating input range of 66-154Vdc (110V nominal) and delivers 150W at 24V ± 0.2V/6A.

**ABSOPULSE ELECTRONICS**

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## newswatch

### E-T-A appoints Bay Technologies as automation rep

E-T-A Circuit Breakers, Richmond Hill ON, has appointed Bay Technologies to represent its comprehensive line of factory automation, industrial controls and process automation protection equipment.

The principal of Bay Technologies is Nicolas Haiduc, former E-T-A Automation Specialist. Haiduc is well suited for the automation sector due to his education (Bachelor of Electrical Engineering and Bachelor of Business) as well as his work history as automation drive sales engineer at ABB and Automation business development manager at Rexel Canada.



Nicolas Haiduc, principal of Bay Technologies, which has been appointed representative of E-T-A Circuit Breakers' automation products in Canada.

### Simcona Electronics hosts 21st golf classic

London-based distributor Simcona Electronics hosted its 21st annual golf classic last month. In near perfect conditions the winner of the event at minus 11, through a process of retrogression, was Michael Candler, Simcona; Ritch Mackie, MG Chemicals and Jeremy Giles, MacNeil Edmondson (\*See accompanying photo)

Tournament host, Carl Candler was dethroned from his championship reign of last year. Candler thanked all the Simcona staff who contributed to the success of the event along with hole sponsors ebm Canada, EMT Engineering, Equity Associates, Matera Technologies and X-Tronics.



### Newark Element 14 Canada appoints sales director

Newark Element 14 has promoted Darin Blackwell, to the position of area sales director for Canada.

Blackwell has been with Newark element14 since June 1998 and has previously held roles as the general sales manager for the Chicago area, and most recently the general sales manager for Canada.

Along with Darin's promotion, the business has made the strategic decision to separate the Canadian region from the overall Central region. The Canadian market has been performing at a high level for some time and this decision will allow the business to leverage all our resources to continue to expand and ensure success in the Canadian market.

Bev Daniels, area sales director, will continue leading the Central USA Region, which will now also include our sales branch in Dallas TX.

### Industry golf tournament plays for charity

Professionals representing the surface mount and electronic manufacturing industry convened to participate in the 18th Annual Electronics Industry Golf Tournament in Bolton ON recently. Held in conjunction with the Shinning Through Centre for children with Autism, the event manages to raise money annually with all proceeds going directly to the cause.



### Harting appoints sales director for Canada

The HARTING Technology Group, family owned and based in Germany, has appointed veteran sales executive Claude Langlois as sales director for Canada, heading up its expanding sales and customer engagement for the Canadian market.

Langlois will be based at Harting Canada headquarters in suburban St-Laurent, QC. He brings more than 12 years experience in executive and other senior sales positions in the electronics and industrial sectors to HARTING along with considerable knowledge in developing OEM direct sales and tiered channel strategies with customers and distributors.

Educated in Quebec, Langlois began his career 28 years ago as a sales engineer. He joins Ontario-based sales manager Randolph Froude, who also covers Western Canada for Harting, and a bilingual telephone sales desk in supporting the Canadian customer base.

"Claude is a perfect fit for Harting and our growth strategy for Canada," says Jon DeSouza, president and CEO of HARTING North America and HARTING Canada. "Since we opened Harting Canada in 2011, our sales growth has exceeded expectations and the prospects for further, strong growth are excellent. Our intention is to keep increasing our staff presence over time. Our customers really appreciate being able to interact with us directly, allowing us to identify the best solution for their needs."



Claude Langlois, sales director for Harting Canada.

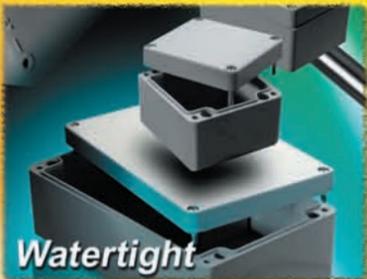


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