

ELECTRONICS

SEPTEMBER/OCTOBER 2020

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The European magazine for purchasing professionals



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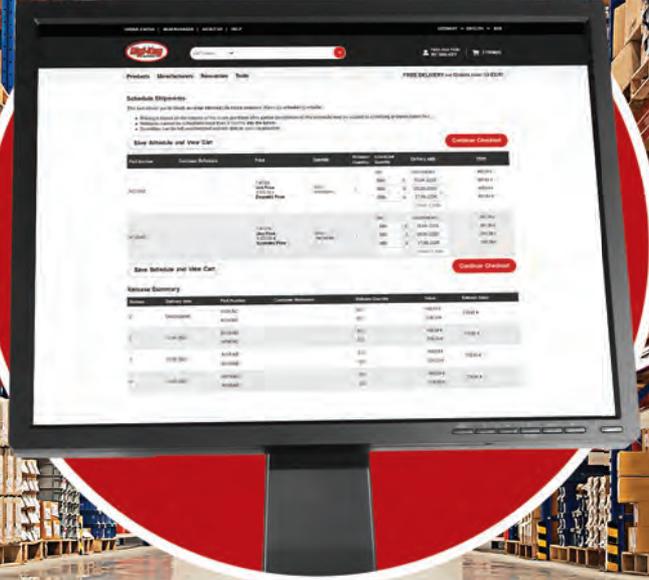
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On the cover – September/October 2020

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manufacturing ideas

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Contact



EDITORIAL

Managing Editor: Jon Barrett
jonb@electronics-sourcing.eu
Contributing Editor: Amy Barker
amyb@electronics-sourcing.com
Editorial & Production: Thomas Smart
thomas.smart@electronics-sourcing.com

ADVERTISING

Advertisement Manager: Emma Poole
emma.poole@electronics-sourcing.com
New Business Manager: Jack Pollard
jack.pollard@electronics-sourcing.co.uk

DESIGN

Graphic Designer: Josh Hilton
josh.hilton@electronics-sourcing.co.uk

CIRCULATION

Circulation Manager: Vicky Leary
vicky.leary@electronics-sourcing.com
Circulation Account Manager: Liz Poole
liz.poole@electronics-sourcing.com

PUBLISHER

Mark Leary
mark.leary@electronics-sourcing.com
Office Manager: Denise Pattenden
denise.pattenden@electronics-sourcing.com

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Editor's Word



My IoT weight loss

The first couple of months of lockdown did not do my weight any favours. Snacking and a lack of exercise saw my weight seesaw between overweight and obese. So, when I heard a health professional say that the single most important thing anyone could do for themselves before the start of the winter flu season, was lose some weight, it was the catalyst I needed.

I have an engineer's mind, so any weight management process was going to need sensors, data harvesting, data processing, data visualisation and trend plotting. Sounds like IoT to me.

Measurements include exercise, calories, blood pressure, pulse rate, pulse wave velocity, oxygen saturation, BMI and percentages of fat, water, muscle mass and water. Data is gathered across all those sensors either continuously or intermittently. All devices are Wi-Fi enabled and deliver the data to cloud storage, where applications process the data and plot trends. I see what happened in the past, what is happening now and what could happen in the future. There is nowhere to hide.

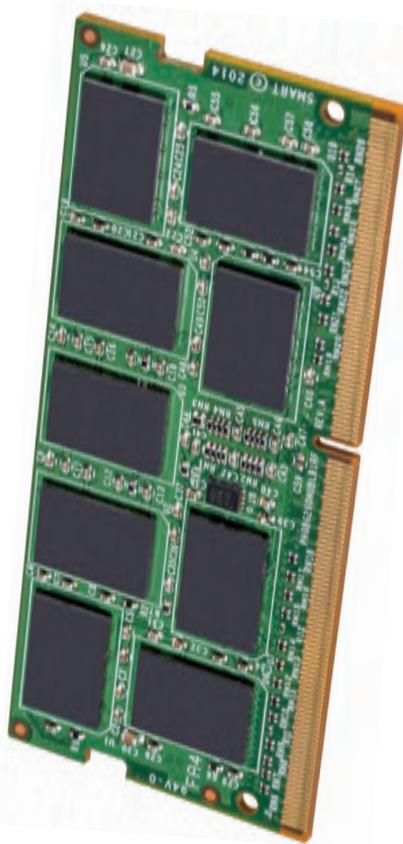
In one month, my weight has fallen by one stone in what appears to be a sustainable, straight line graph. I should hit my Covid-19 fighting weight by flu season.

However, the real gain is my blood pressure. It now reads normal or optimal, continuously. I think Covid-19 and the IoT might just have extended, if not saved, my life. Odd really.

Jon Barrett

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Expanding memory, storage and hybrid solutions in Western Europe

Smart Modular Technologies is expanding its presence in Hamburg, Germany to better support customers in the DACH region. Regional sales manager, Sven Carlsdotter, said: "With over 25 years combined experience in the memory and storage sector, our local team has vast knowledge of the market and requirements of industrial customers in the DACH region."

"Smart Germany's goal is to provide the highest level of customer support which includes intensive consultation during the engagement process to aid customers in defining their memory and storage requirements and tailoring appropriate solutions."

Senior vice president, Alan Marten, added: "We provide leading-edge technology as well as engineering and long life-cycle support to customers in computing, networking, communications, storage, mobile, aerospace, defense, transportation, medical, automotive and industrial markets."

www.smartm.com



Switch choice

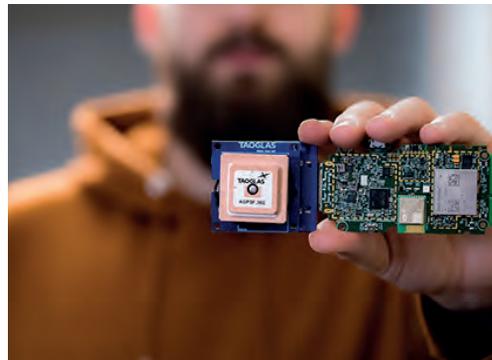
Würth Elektronik has added new buttons and switches to its electromechanical portfolio.

The WS-SLSU SPDT horizontal slide switch is attached to the outer edge of a PCB as a SMT component. The device measures 8.7 x 3.0 x 2.0 mm. New miniaturised buttons, suitable as on-board reset buttons or membrane keyboard operating elements, are available in new size and actuating force variants. For example, WS-TASV measures 3.0 x 2.6 x 1.4mm, and offers 160, 240 or 450gf.

The WS-RSTV black rocker switch is a round, standard rocker, for housing in a 20.2mm diameter cut-out. It is available for DPST/SPST schematics and is available in a 90deg rotated version. It withstands 10,000 switching cycles minimum.

Switches are available from stock and without a minimum order quantity.

www.we-online.com



Joint approach to boost IoT and AI initiatives

Taoglas has announced a collaboration with Arrow Electronics, including a new global distribution agreement focused on AI and IoT products and services. Arrow's sales and services organization will expand Taoglas' customer base, grow ecosystem partnerships and improve supply chain services.

Arrow Electronics' vice president and general manager of global IoT solutions, Aiden Mitchell, said: "Our customers need both products and services to support the success of IoT projects. Taoglas' portfolio of high-performance RF antennas and IoT solutions is a fantastic addition to Arrow's broad product and services portfolio. Our customers will benefit from Taoglas' reputation as a best-in-class, performance-driven technology provider."

Customers will have access to Taoglas' Edge portfolio of IoT solutions and newly announced Crowd Insights to measure, monitor, predict, alert and notify based on volumes of devices connected to existing infrastructure. Taoglas and Arrow's global distribution agreement provides customers streamlined access to Taoglas' portfolio of antenna and RF design offerings.

www.arrow.com



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2	IN	S/H	7
3	COMMON	NC 1	6
4	NC	VEE	5

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In Brief

Stop switch selector tool
Digi-Key has expanded its tool offerings by signing a global partnership with EAO to provide customers with a new Digital Product Selector (DPS) tool for emergency stop switches. The DPS is an interactive virtual configuration tool, enabling customers to configure products online to their specific needs.
www.digkey.com

Passive depth and breadth
Farnell is strengthening its depth and breadth of passive components with products from KOA, including thick film resistors, shunt/current sense resistors, wide terminal resistors, high voltage resistors, thin film chip resistors and surge protection resistors. End applications include industrial, commercial and automotive. Products will be available in the autumn.
www.farnell.com

Ground-breaking alternative to DRAM
Mouser is now stocking Intel Optane persistent memory, which is designed to provide an affordable alternative to DRAM with significantly increased capacity of up to 512 GBytes. Intel Optane is said to offer increased performance and efficiency, helping support applications such as in-memory databases, analytics and content delivery networks.
eu.mouser.com

Digital Exhibition targets energy-efficient
Power and thermal management specialist, Delta, has launched a digital exhibition themed Pioneering Energy-efficient Infrastructure Technologies. The event focusses on smart, energy-efficient solutions for 5G and IoT edge computing, e-mobility and smart manufacturing. Products include the UFC200 Ultra-Fast EV charger, a 200kW system especially for charging point operators
www.delta-emea.com



Investing in charging infrastructure

Phoenix Contact E-Mobility is expanding its production capacity with a new facility in Poland. The 15,000m² plant is located at the Science and Technology Park Rzeszów-Dworzysko with completion scheduled end 2020/start 2021.

The charging technology manufacturer will use the facility for the manufacture and test of AC and DC charging cables supplied to automotive and charging infrastructure manufacturers.

Project manager, Christoph Paetzold, said: "Rzeszów is a dynamic and fast-growing city with universities and many well-established industrial companies. The region is also known as Aviation Valley due to the numerous aerospace companies located in the area. We hope that this environment will help ensure the long-term success of our production location."

Situated close to an airport and benefiting from a well-developed road infrastructure, the Science and Technology Park Rzeszów-Dworzysko offers logistics advantages.

phoenixcontact.co.uk



Buying into harsh comms

Mouser is now stocking Laird Connectivity's BL653 series modules. Featuring a range of configurable interfaces, plus extended industrial temperature rating, the module provides Bluetooth 5.1 connectivity and support for NFC and 802.15.4 communication for a range of IoT applications in industrial and harsh environments.

Powered by the Nordic nRF52833 SoC, the modules use the SoC's 64 MHz Arm Cortex-M4 with FPU, output power of up to +8dBm and -95dBm sensitivity in 1Mbps.

The BL653 includes modular FCC, IC, CE, RCM, MIC and Bluetooth SIG approvals, which extend to an OEM's design with no new testing.

eu.mouser.com

Material skills and sales unite

Heilind Electronics has signed a global distribution agreement with Laird Performance Materials. Laird serves the electronics industry with thermal interface materials; electromagnetic interference shielding materials and magnetic ceramic solutions; RF and microwave absorbers; precision and structural metals; and multifunctional products.

The agreement is designed to better serve end users, specifically through leveraging Heilind's sales capabilities and engineering expertise with Laird's global footprint of manufacturing sites and engineering teams.

Heilind Electronics' vice president, Alan Clapp, said: "We are excited to expand and strengthen our relationship with Laird. Utilizing our global distribution and sales network, this partnership is a natural fit that not only helps position Heilind closer to its customers, but also allows us to more effectively meet their requirements."

www.heilind.com

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AVNET ABACUS' TECHNICAL DIRECTOR, MARTIN KEENAN

Pressure sensors improve patient quality of life

Avnet Abacus' technical director, Martin Keenan, explains how the humble pressure sensor lies at the heart of today's most sophisticated medical equipment

A comparison between a GP practice ten years ago and one today would reveal doctors' surgeries nowadays are equipped with significantly more portable diagnostic and monitoring equipment. No longer reserved for hospitals, a range of electronics-based medical equipment, such as drug delivery systems and positive pressure masks, is also to be found in patients' homes. Home health monitoring is becoming a popular method for doctors and clinical staff to keep an eye on a patient's condition. This is particularly beneficial for patients, since they remain in the comfort of their home, yet safe in the knowledge they are being monitored. Within a hospital environment, the same equipment can free clinical staff of routine tasks such as administering prescribed medicines.

Pressure sensing is a common function of medical appliances, from blood pressure, to regulating drug delivery flow. Development of multi-element microelectromechanical sensors has transformed the design of portable medical monitors, enabling accurate and reliable blood pressure detection on a beat-by-beat basis with the sensor tightly mounted on the skin above a major artery.

An automated drug infusion device is an excellent application where medical pressure sensors are used to measure both blood pressure and drug flow rate (Figure 1).

Delivering drugs as liquids is an effective method that can also be applied to other fluids such as those used for rehydration therapy. They are administered using a micro infusion pump, with the flow from

the reservoir to the microneedle array continuously measured by differential pressure sensors. The patient's blood pressure is also monitored, with the sensors connected to a signal processing unit and digital controller. This way, the correct dosage can be delivered at any time, day or night.

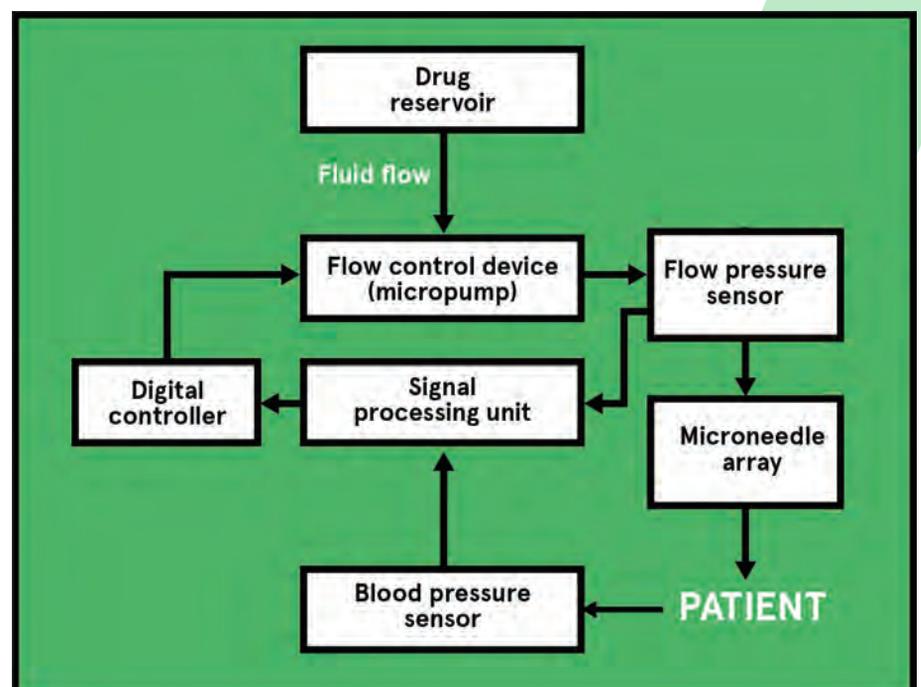
Another example is continuous positive air pressure (CPAP) masks. These are typically used for patients suffering from sleep apnoea, a long-term condition resulting in a person stopping breathing as they sleep. Untreated, sleep apnoea can lead to chronic or acute conditions, including hypertension or potential heart failure. In a CPAP machine, an airflow sensor detects air pressure inside the mask. When the patient starts to breathe in,

the sensor detects a reduction in air pressure and turns on a fan to boost the pressure, forcing air into the patient's airways. When the person breathes out the fan is switched off so they can exhale without pushing against positive pressure. Pressure sensors are complemented by other MEMS sensors for optimising air temperature and humidity.

Differential pressure sensors are capable of measuring flow rates from 0.5 to 10.0 microlitres per minute.

For more information on pressure sensors visit www.avnet-abacus.eu/pressure-sensors

Figure 1: Compact pressure sensors in automated drug infusion. (Source Avnet Abacus)



Digitally transformed purchasing delivers real-time visibility

CalcuQuote's founder and president, Chintan Sutaria explains how a digital thread takes the guesswork out of managing supply and demand

Real-time visibility is essential when making supply chains more agile and resilient to inevitable disruptions. During the pandemic, companies with digital supply chains had greater ability to adapt to disrupted supply and disrupted demand.

Real-time visibility can only exist when the supply chain, starting with CAD and BOM data, is fully digitally enabled. This begins with the way data is used in the quoting process, which is the start of a digital thread that connects the original design to final fulfilment. With that thread in place, you can quickly see the impact changes in supply or demand will have and respond immediately. Without them, you are essentially operating in the dark and relying, at best, on spreadsheets, expertise or tribal knowledge, at worse, guessing.

This is not science fiction. Tools to digitally transform supply chains from bidding, through purchasing and beyond are available and already being leveraged by forward-thinking companies. Indeed, a digital divide is forming as companies move ahead of their competitors through their commitment and investment in digital transformation.

In a world of instant gratification, B2B customers don't want to wait for quotations, lead times and availability.

The first stage is access to fast bidding, the ability to upload a bill-of-materials (BOM) and see who has stock, what prices are available and which parts may cause challenges. A single source for certain parts can be a major red flag, and we move from a just-in-time approach to a more just-in-case strategy. Software, like QuoteCQ, can quickly read a BOM and provide live data on pricing and availability.

Motivation is three-fold. Firstly, get the bid done first and you may have the best chance of securing the business. Secondly, real-time data from component distributors through APIs provides confidence demand can be met. Finally, these tools are more efficient, so you can focus manual resources on higher-value tasks, like sourcing impossible-to-find devices.

Part two of the supply chain's digital transformation is moving from the bid to processing the order and getting the product into manufacturing. At the push of a button, API-enabled digital

tools move the process from bids to orders.

In 2000 and 2001, when the dotcom bubble burst, billions of dollars of stock was written off because many companies didn't have a clear stock picture. Post-crisis stocktaking revealed huge exposure to demand fluctuation and massive amounts of redundant stock. Today, we can have real-time visibility of inventory on hand and can see what is available in the market. With this data, we can build intelligent stocking plans that hold the right volumes of critical components, without overcommitting to readily available parts that are unlikely to be disrupted.

The industry is going through its biggest ever disruption. Those with digitally enabled processes and supply chains are not immune to these challenges, but they have tools to make faster and better decisions based on intelligent, real-time data. This crisis will likely accelerate the adoption of digital transformation, which is moving from nice to have to must have.

www.calcuquote.com



CalcuQuote's founder and president, Chintan Sutaria



Part two of the supply chain's digital transformation is moving from the bid to processing the order and getting the product into manufacturing

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Smooth operator

Hammond Electronics' IP66 EJSS family is available in 304 or 316 smooth brushed stainless steel. Sealed to IP66, the family suits instrument enclosures, electric, hydraulic or pneumatic control housings, electrical junction boxes and terminal wiring enclosures.

In applications such as food processing, a lip diverts liquids and contaminants away from the seamless poured-in place door gasket, allowing hose-down during cleaning. Stainless steel is also an excellent material for corrosive environments. The family is available in 22 sizes, from 102 x 102 x 76mm to 406 x 356 x 254mm. All but the two smallest sizes are supplied with a 1.6mm thick internal unpainted galvanised steel panel. The EJSS meets IEC 60529 IP66 for European and CE, UL and NEMA 3R, 4, 4X, 12, and 13 requirements for North American markets.

The body and cover are formed from 1.3mm stainless steel with smooth, continuously welded seams without knock outs, cut outs or holes. Integral heavy-duty full width top and bottom brackets facilitate mounting the enclosure to an external surface.

www.hammondmfg.com



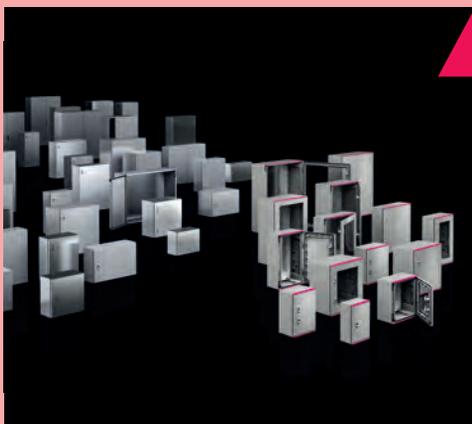
Expanded range for electrical installations

RS Components has expanded its RS Pro portfolio of enclosures designed for industrial applications. The range features new units manufactured from fibre-glass-reinforced plastic, moulded by hot compression techniques. All the enclosures come in a light grey colour (RAL 7035) and are supplied with a galvanised-steel backplate and wall-mounting fixings. The units suit transport applications.

All the lightweight units come with an anti-intruder hinge system and reversible door. They offer over 10-years of life under standard environmental conditions, without maintenance necessary.

The halogen-free units withstand the 960°C glow-wire test and are double insulated. They comply with IEC62208 for empty enclosures for use with low-voltage switchgear and control-equipment assemblies. They suit indoor and outdoor use and provide protection to IP66 as part of the EN60529 standard.

uk.rs-online.com



Safe in harsh environments

Rittal has rounded off its AX range of compact enclosures with a new plastic design. AX enclosures protect electrical components in harsh environments, such as outdoors. The enclosures suit outdoor use thanks to glass fibre reinforced plastic which has seven times higher UV resistance. For this reason, they have a UL F1 outdoor rating (UL 746C).

An integrated rain protection strip on the door's upper and lower edges

protects the gasket against dust and rainwater and means the enclosure is doubly sealed. Class II protective insulation up to 1,000VAC ensures increased personal protection.

The protective insulation and high protection categories up to IP66 or NEMA 4X remain intact even when the enclosure is populated. The enclosure is also UL 508A approved and has UL94 fire class V-0.

rittal.de



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Buying into automotive

In this article, Smith's vice president, EMEA, Cleat Kimbrough, answers questions regarding purchasing processes in the automotive sector

Q From a purchasing perspective, what differences do buyers face buying automotive components compared to standard industrial parts?

The main difference is ensuring product is automotive grade. It is not always a necessity, but when automotive-grade components are needed, extra caution must be taken because the part specifications are different. Automotive parts commonly have special automotive callouts in the part-number nomenclature.

Q What is the lifespan of automotive components, and how is obsolescence managed?

There are many variables to consider, including the component manufacturer, application, and industry. You can expect most components

will last the typical lifespan of the car. Obsolescence becomes a problem for vehicles still operating but in need of repair fifteen years after production, as replacement parts would often require components that are now end-of-life. Tier-one suppliers to major automotive groups need support for this, which manufacturers have not typically given.

Q Have there been problems with automotive-component lead times, given recent tariff wars, coronavirus, and the like?

Luckily, the European market has been relatively unaffected by tariff wars. COVID-19 has presented supply chain issues due to component manufacturers' difficulty achieving normal production capacities, which could continue being an issue for

the remainder of 2020.

Q What advice would you offer automotive purchasing professionals to ensure a smooth supply chain moving forward?

Act fast at the first sign of a supply chain disruption. The earlier a problem is identified, the more time you have to make adjustments and find alternative solutions. If there is an industry-wide shortage and multiple companies are trying to source the same components, the market reacts with swift price increases, forcing management to make hard decisions if they intend to keep manufacturing lines running.

www.smithweb.com



Smith's vice president, EMEA, Cleat Kimbrough



When automotive-grade components are needed, extra caution must be taken

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Seeds of change



John Denslinger is a former executive VP Murata, president/SyChip Wireless, and president/CEO ECTIA, the industry's trade association. His career spans 40 years in electronics

Future technology leadership

• By John Denslinger

Made in the USA was once the preferred branding for manufactured products. It signaled high quality, American ingenuity and skilled jobs for citizens. Following the post war re-build of Japanese and German economies, the advent of strategic trading blocs such as NAFTA and EU, and the rapid industrialisation of South Korea, Taiwan, Singapore and China, the world became equally adept at producing durable goods. One might say it was a natural consequence of advancing societies. Now 50 plus years later quality, ingenuity and skilled jobs are widespread on every continent. So too are sophisticated supply chains that tie it all together.

The seeds of change were visible almost a decade ago. After manufacturing shifted offshore, not all experienced the promises of low cost and high quality. It's only been the last few years where US based companies stepped up reshoring fueled by corporate tax cuts, easing of onerous regulations and ready access to low cost capital. This coupled with increased costs of operating overseas, a known need to lean existing supply chains, and a desire to avoid the tariff shockwaves has executives recalibrating well-established but complicated global supply networks.

Enter the black-swan of a lifetime: Covid-19. Perhaps nothing has disrupted supply chains more than factory lockdowns, port closures, rising transportation costs, reduced demand and shipping delays. Countermeasures varied widely by country and unfortunately were as much politically motivated as medically driven. Consequently, the risk picture just keeps getting murkier.

On the brighter side, a recent Thomas Insights article cited automotive, aerospace, machined parts and electronics as the most likely sectors benefitting from reshoring. Each is a strong contributor to GDP, as well as, job creation. For perspective, a recent analysis of the current US trade deficit and its impact on employment concluded there are three to five million US manufacturing jobs still offshore. That's a huge potential particularly at a time when we need to re-vitalise our post-COVID economy.

Electronics should lead the way and it is verging on real, stateside growth, especially semiconductors. Since 2000, according to the SIA website, the US was the only country of the top eight semiconductor manufacturing countries whose government provided no grants, no subsidies, no tax incentives or other assistance to domestic manufacturing. Not coincidentally CAGR has been the weakest of the bunch.

Congress was visibly silent for too long. Finally, a recognition that semiconductor research, design and manufacturing are essential to national security and pre-eminent leadership in critical technologies. Legislation is moving forward on two fronts with billions of dollars being proposed. First, there is the American Foundries Act with bi-partisan sponsorship in the Senate. The Act incentivises building new fabs and R&D facilities, as well as, funds for construction and modernisation of fabs that directly support national security, intelligence and critical infrastructure. The second, CHIPS for America Act, is a bi-partisan bill co-sponsored by House and Senate members. This Act offers Federal grants for new domestic semiconductor manufacturing facilities, a refundable investment tax credit for purchase of equipment, establishes a National Semiconductor Technology Center for research and prototyping advanced chips, and creates a center for advanced semiconductor packaging. Both of these bills have broad industry and trade association support.

Whether reshoring operations, growing domestic semiconductor capacity or encouraging foreign direct investment like TSMC's \$12B announced fab in Arizona, the challenge is steep and investment enormous. It seems the Fed is finally serious about localising and protecting semiconductor expertise. Collectively, these seeds can preserve America's future technology leadership.

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Keeping cool as EV market heats up

New report examines current methods and future trends for the thermal management of electric vehicles

As the electric vehicle market grows there is increased need for effective thermal management. Keeping heat under control leads to improved charging, performance, range, longevity and safety. A new report from IDTechEx covers aspects of thermal management for electric vehicles including the batteries, motors and power electronics.

High profile battery related fires from well-known automotive manufacturers does little to instil confidence in potential consumers. With this in mind several new regulations have been proposed relating to safety aspects unique to electric vehicles. The likely outcome of this being that manufacturers will be required to halt thermal runaway at the individual cell level and warn the vehicles occupants, giving them at least five minutes to exit the vehicle once a thermal event occurs.

Several factors must be considered when designing an electric vehicle for safety, from materials used in the

battery pack construction to thermal runaway prevention and early detection. Several companies are designing methods of stopping thermal runaway between cells including flame retardant encapsulants, interweaved products and phase change materials. Effectively dissipating heat from the battery module or pack to a heat sink is also important and usually carried out using a thermal interface material. This is another area where manufacturers have adopted several strategies including gap pads, fillers and conductive adhesives.

Every manufacturer has its own methodology to thermally manage their batteries with no clear consensus on the most effective design. Companies like Tesla are set on their patented water-glycol coolant lines which snake their way between the cylindrical cells in the pack, whereas Nissan and Toyota are committed to air cooling.

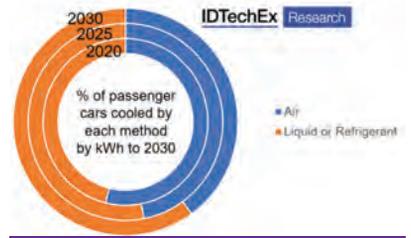
Active battery cooling with fluids keeps a vehicle cool in conditions where it is

stationary but the batteries are in high demand (eg during fast charging). It also allows batteries to be raised to optimal temperature in cold ambient conditions. These are significant advantages but come at the expense of weight, complexity and cost.

Despite these caveats, IDTechEx has observed a market shift towards liquid or refrigerant cooling and foresee this trend continuing into the future, especially following the rise of charging with 350kW sources, with the amount of liquid or refrigerant cooled batteries exceeding 500GWh by 2030.

In addition to widely adopted technologies, other emerging alternatives include immersion cooling and phase change materials. These technologies are gaining modest traction, especially for more specialised markets like construction. The report appraises all these cooling methods in addition to the players utilising them.

The electric motor is the unifying component of



Air v liquid cooling



Every manufacturer has its own methodology to thermally manage their batteries with no clear consensus on the most effective design



Automotive Industry Approval for Mercury

Mercury has become an approved supplier to the Automotive industry, gaining approval to IATF16949. This further reinforces Mercury's commitment to longevity and ruggedness as well as design innovation in the taxing automotive component environment.

Mercury Europe provides sales, customer service, engineering expertise and market promotion in the Europe-wide market for quartz crystal product.

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an electric vehicle and more demand is being put on them regarding performance during extended use. Most manufacturers use motors containing permanent magnets. These magnets can be denatured and rendered useless above a critical temperature and also need effective thermal management.

Even motors without permanent magnets still require cooling to improve performance and reduce overheating neighbouring components. Methodologies adopted typically consist of air, oil or water-glycol cooling. Several manufacturers use the same coolant circuit for their batteries and motors. This reduces the number of components and fluids, while simultaneously allowing excess motor heat to warm the batteries or passengers in cold conditions.

In addition to batteries and motors, power electronics also have to deal with significant heat. The way wire bonds and soldering is carried out, plus the material used, impacts the performance and longevity of the power electronics. Several OEMs are shifting towards advanced substrates and even eliminating the thermal interface material altogether.

IDTechEx's report, *Thermal Management for Electric Vehicles 2020-2030*, covers the above topics through extensive research including primary interviews with companies in the field. The report covers the strategies used by major OEMs, emerging technologies and market forecasts.

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Tapping into interconnect specialist resources

ECCO argues that sourcing from specialist interconnect distributors means buyers get more help when the going gets tough

Buyers sourcing off-board connectors know available inventory can be important because these connectors are often part of a cable or harnesses system and can involve options bought as the last part of a 'system buy'. Usually, these orders have more options and variables than the core BoM and PCB which are more locked down. Additionally, they may be hard to second source if the engineers tested and chose one approved supplier due to time and resource constraints towards the end of a project. This can leave procurement professionals in troubled waters if issues arise.

To address inventory availability issues, specialist distributors typically build connectors themselves allowing for assembly times and taking advantage of component inventory that is stock-to-build (STB). STB capability from the likes of TTI, Electro Enterprises and ECCO gives a broader account of available SKUs to make since the connectors are not assembled, glued and finished. This gives a specialist distributor more flexibility on inventory and

part combinations. By doing so, those distributors expand the reach of their inventory profile and provide greater service and supply capability to customers.

Specialist interconnect distributors can also perform value added services to assist supply chain and inventory management. Those include customer specific inventory bonding; just-in-time (JIT) software and apps for re-ordering; Kan Ban functionality; consignment programs (popular with wire products); special packaging for marketing or unique security/storage needs; and blind shipment services where direct ship to an end customer makes sense.

Obsolescence avoidance and lower labour costs contribute to procuring and using those services, thus helping companies stay competitive and reallocate their resources to other areas of expertise and competitive differentiation.

Knowledge is another area where specialist interconnect and electro-mechanical distributors excel. The table

below shows many series of connectors that ECCO supports, whether by building or selling manufacturers' completed connector. By assembling the various parts of a connector, specialist distributors have an innate know-how regarding form, fit, and functional equivalents or options that might work in a customer's design. This allows for more flexibility in sourcing, pricing and performance for procurement professionals.

In summary, to address the problems of inventory availability and part complexity, look to distribution specialists who can assist with more expansive inventory offerings via STB capabilities, additional supply chain programs and assembly services for JIT support and lowered carrying costs, and overall knowledge of the product. Acting as an extension of your procurement team via a more focused resource with these commodities are what interconnect specialists will do for you.

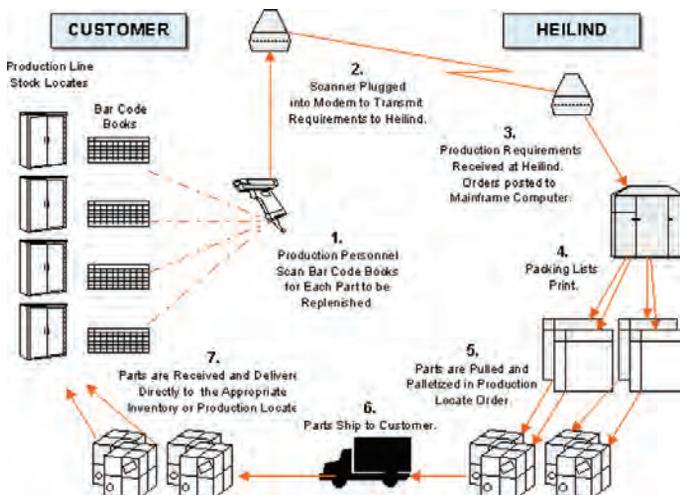
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President of ECCO, Bernard Gizzi

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C48 Series MIL-C-26500	
MIL-DTL-26482 Series I	
MIL-DTL-26482 Series II	
MIL-DTL-26500	
MIL-DTL-38999 Series I	
MIL-DTL-38999 Series II	
MIL-DTL-38999 Series III	
MIL-DTL-5015 Series I E/F/R	
MIL-DTL-5015 Series III	
MIL-C-39029	
MIL-DTL-83513 Series	
MIL-DTL-24308 Series Dsub	
MIL-DTL-22992 Class L	

Many connector series are supported via building or selling a manufacturer's completed connector



Heilind's Inventory Management Replenishment System

Keeping ahead of the obsolescence wave

PEI-Genesis' European product director, Shaun Findley, discusses how choosing the right supplier can reduce the pressure when vital parts go end-of-life

The word 'obsolescence' induces anxiety for many buyers. There are several reasons parts become obsolete. The obvious reason is a superior model supersedes an existing part. For instance, flat-screen monitors replacing cathode-ray tubes. Other reasons include changing regulations or standards, plus manufacturer redesigns.

For highly regulated sectors including aerospace, military and medical, obsolescence can leave original equipment manufacturers (OEMs) non-compliant with regulatory standards. It also makes repairs and maintenance more difficult because like-for-like parts may not be available, or the technical support that comes with

them. What's more, parts that reach end-of-life after prolonged use in extreme environments may degrade in performance or pose a safety risk.

This is where the challenge for buyers rears its head. Modern applications may include tens of thousands of components from potentially thousands of disparate suppliers. Attempting to manage obsolescence and upgrade outdated equipment in such a diverse portfolio can quickly become dizzying.

OEMs can take some proactive measures to manage obsolescence by auditing their components and understanding each part's lifecycle. This might involve a

risk analysis of parts that could soon become obsolete and working to secure stock from a reliable supplier.

At PEI-Genesis, customers can check parts availability in real-time by uploading a parts-list spreadsheet using the website's search function. This automatically checks a database of over 15 million products for availability and whether any parts have end-of-life (EOL) or last-buy notices. If the part is not available from one supplier, PEI-Genesis' dual-supplier status means the organisation may be able to offer the same part from a different supplier.

Even if customers need to

redesign or re-engineer parts, the company's unique business model means it holds over \$100m dollars of inventory in component form, allowing it to build millions of combinations of products using these parts. Thanks to a highly automated manufacturing process, lead times are 48-hours and minimum order quantity is one.

While it does require some consideration, obsolescence doesn't have to cause anxiety. Mitigating the impact obsolete parts have on product quality, production uptime and customer safety is priority number one.

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Distributors provide value by reducing cost, creating demand

Distributors' design, supply chain and value-added services help OEMs and EMS providers cut costs, get products to market quicker and manage supply chain risk

While some large semiconductor companies have questioned the value of distribution, many others in the supply chain including chipmakers and other component manufacturers, as well as electronics purchasers, say distribution's role is essential to the continued success and sales growth of their companies.

Last October, Texas Instruments caused a stir in the electronics industry when the company announced it would drop Avnet and some other distributors and would service more customers directly.

Many in the industry feared that other large semiconductor companies and component manufacturers would follow suit and drop some of their distributors and service more customers through websites. That concern does not appear to have legs as many buyers and component manufacturers have voiced support for their distributor partners.

Of course, the notion of distribution disintermediation is not new. Twenty years ago, there were some analysts who had forecast as technology evolved, the role of distribution would be greatly diminished. In fact, the role of distribution in the supply chain has been enhanced as more distributors offer technology-based supply chain solutions and other

services to boost efficiency and help customers compete.

Many electronics component suppliers point out that distributors reach and service customers that suppliers cannot. In addition the cost to service hundreds of thousands of customers would be prohibitive for suppliers.

"If you look at the TTI family of companies, we service more than 600,000 customers," said Don Akery, president, Americas for TTI. "Think of what it would cost to support all those customers. "Whether customers give you a \$1 million order or a \$100 order, there is a cost associated with that and no supplier can handle that unless they can force the customer to buy in a way that the customer may not choose to buy," he said.

For instance, a supplier may require large minimum order (MOQ). There are many suppliers that require a customer to order 10 reels of 5,000 pieces or 50,000, said Akery. "Most distributors offer the same product at one reel or 5000 pieces or in smaller mini-reels of 100s or even in cut-reel quantity at exactly what the customer requires," he said.

In addition, many OEM and electronics manufacturing services (CEM) providers require design, supply chain and value-added services that component suppliers cannot provide.

Adding value, reducing cost

"The distribution channel is very important to us," said Jeff Thomson, senior vice president, global channel sales, for ON Semiconductor. "They add value to the end customer and take away some of the cost of serving a customer from us by providing value-added services," he said.

He added that about 60 per cent of ON's revenue goes through the channel and distributors have provided excellent growth for us. "Over the last eight years, we have absolutely outpaced the industry in our growth of revenue in the distribution channel."

He said growth has not just been with ON's larger strategic accounts, but it has also been "in the mass market area, those hundreds of thousands of customers that we would never be able to support without them."

About 25 distributors support ON, but 11 of them account for 90 per cent of revenue and 90 per cent of the units sold through distribution. "The rest of them are specialty distributors for end-of-life products, excess inventory, wafer sales, or high service," said Thomson.

One way distributors help ON to grow sales is through demand creation. "We have our strategic accounts that we handle on a direct basis. We rely on our distribution

partners to go after the wide mass market base and do the demand creation for that. It has proven to be very successful for us," he said.

Creating demand

He noted that demand creation takes on different forms. "It could be the discovery of the ability for us to get on an AVL. It could be a design-in of one of our products into a new program. It could be expansion of our share due to work that the distributor does in an existing account," said Thomson. He said distributors not only help ON grow its customer base, but they also help the chipmaker to gain more business with existing customers.

"They help us go wider as far as more products or solutions. We call that solutions selling or designing in different types of sockets that we have to offer and they are able to drive even more share for us," he said.

Distributors bring value to ON in many ways, including providing FAE resources, broad promotion of ON's products, ensuring component availability through buffer stock, consignment programs and vendor managed inventory and extended credit payment terms for customers, said Thomson.

While suppliers such as ON appreciate such programs, so do OEM and CEM companies who benefit directly from services.

One such customer is Data Electronic Devices (DataED), based in Salem, NH.

Michael LaFleur, vice president of operations for DataED, said the CEM provider buys tens of millions of dollars of components from distributors annually. One reason is the inventory and supply chain management programs that distributors offer.

“We have vendor managed inventory, in-plant stores from one of our larger distributors,” said LaFleur. “We also have a VMI cage for 10 other distributors for other parts. Those distributors handle all “the MRP signals they bring the material in and we don’t pay for it until it’s issued out of the cage,” he said. That is typically something a manufacturer would not do.

“We also have bread man programs with some distributors where they come in every week and refill the bins to a min-max level. We pay on a consumption basis,” he said.

DataED’s distributors also manage all end-of-life notifications and make recommendations at the technical level for substitute parts. The CEM provider also uses distributor value-added services such as IC

programming and tape and reeling.

LaFleur said its distributor partners also provide crucial market intelligence about the supply chain. “We get reports from distributors on a weekly basis about trends in the industry,” he said. Such intelligence keeps DataED informed about market conditions, including availability, lead and prices for parts such as MLCCs, tantalum capacitors and chip resistors.

Supporting time-to-market

Distributor provided value-added, supply chain services and market intelligence are also important to CEM provider Coghlin Industries, based Westborough, Mass. Such services are essential to Coghlin because they help the company carry out its mission to get customers’ products to market as quickly and as cost-effectively as possible, said Jim Coghlin, vice chairman & chief supply chain officer for the company.

“One way we do that is by leveraging our distribution partners to support us with kitting or special packaging, special labeling, handling lower level subassemblies such as fan or cable assemblies,” he said. Those value-added services allow Coghlin to focus more on

supply chain management, integration, quality control and fulfillment, he said.

Distributors also provide Coghlin with bonded inventory, consignment inventory programs and vendor managed inventory programs.

Coghlin also values the level of service and technical expertise that its distributors provide. Distributors often have inside and outside salespeople and field applications engineers. “With a single phone call, you can get a high level of service. For instance, an FAE may be able to support you for multiple manufacturers in person and on the phone. In addition, most distributors that we work with have local feet on the ground and local support,” he said.

Another key value of distribution is flexibility, said Coghlin. “Most distributors that we work with offer an early pay discount if you’re in a good cash position,” said Coghlin. “If you’re not in a good cash position and you need some flexibility with regards to extended payment terms, distribution is usually very good to work with in that context as well,” he said.

Coghlin buys from a handful of distributors. “We have about a half-dozen



Most distributors that we work with offer an early pay discount if you’re in a good cash position

Jim Coghlin, vice president and chief supply chain officer for **Coghlin Industries**



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distributors and our goal is to purchase between 80-90 per cent of our electronics from those half-dozen distributors,” said Coghlin. “Distribution is definitely a core focus of ours.”

Leveraging services

Distributors are also important to the business model of CEM provider SMTC, headquartered in Markham, Ont., Canada. Phil Wehrli, senior vice president global supply chain for SMTC, said his company buys about 30 per cent of SMTC’s requirements through distribution including industry standard semiconductors, passives and connectors.

“Being a tier two or three CEM provider, we don’t have the volume as a tier one CEM provider to leverage things direct,” he said. “What we do is leverage the services that the distributors provide to try to offset the additional cost” of buying through distribution, said Wehrli.

“We have favorable payment terms through distribution and they provide in-plant store services, so we don’t take ownership of the inventory until we pull it from the store,” he said. We also have some rebate programs when we hit a certain dollar threshold with the distributors,” said Wehrli.

Mark Shiring, president and CEO of ebm-papst Inc., based in Farmington, Conn., said it’s important that distributors provide its customers with the services that ebm-papst cannot. The company makes fans, blowers and motors and other products for companies in many industries.

“In our business we ship pallets of products, not small boxes of parts” except for samples and replacement parts, he said. “Breaking down skids and pulling out material is not our set up,” he said. However, many customers don’t need large

volumes of products on skids.

“We have fairly significant customers that buy \$1 million of parts through distribution because that customer is looking for kits,” said Shiring. They want a returnable pack and a certain amount of our products and a certain mix of multiple products.

“I’m not set up for that kind of service,” he said. But ebm-papst distributors are. Distributors break down the parts out of the skids into the quantities and mix customers are looking for, said Shiring.

Some customers want small quantities of parts shipped weekly or biweekly. “Or they want total flexibility to tell us a week in advance when they want,” said Shiring. “I don’t have the bandwidth for that.”

If a customer is looking for smaller quantities of products and flexibility on schedule and preferred payment terms then “distribution is your best channel. We work with the customer to find the right partner and help them move into a distribution model,” said Shiring.

He said about 20 per cent of his business is through distribution. Our distribution business has been growing in the high single-digits year on year and that has been keeping pace with the rest of our business,” he said.

Shiring said ebm-papst has a core set of authorised distributors, including some broad line distributors, catalog distributors and some local distributors in different regions.” Its distributors share the same values as ebm-papst. “They have the same customer-centric focus as us,” said Shiring.

Agnostic recommendations

While many OEM and CEM customers appreciate the value added and supply chain services distributors provide, they also appreciate

the product expertise that distributors have to offer and the fact that they are “agnostic” in the parts they recommend, said Robert Derringer, director, global channel for Crouzet. The company makes switches, sensors, logic controllers and other products.

“We suppliers don’t like that, but quite frankly we would rather have them agnostic and trying to provide our customers with the best solution for their application,” he said.

“A distributor typically is not beholden to one manufacturer within a commodity,” said Derringer. That distributor is going to have multiple component manufacturers, some of whom are providing a standard solution for products, other suppliers may have less standard, more complex solutions.

“You don’t need products that are over spec’d, over-powered and over-priced in many cases.” He said distributors can recommend the appropriate solution.



The distribution channel is very important to us. They add value to the end customer and take away some of the cost of serving a customer from us by providing value-added services

Jeff Thomson, senior vice president, global channel sales, for **ON Semiconductor**



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Buying into sustainability

Sustainability is more than just an environmental focus, explains PCB supplier, NCAB. Purchasers should also probe social and economic responsibility when establishing a sustainable supply chain

In today's ever-changing economic climate, it's important that every business has a sustainable supply chain. It's natural to focus solely on the environment when considering this topic but it is crucial to harmonize three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected, and all are crucial for the well-being of individuals and societies.

The triple bottom line

When evaluating how sustainable a business is, it's important to focus on the triple bottom line concept. This model consists of social equity, economic, and environmental factors and was originally articulated by John Elkington in his 1997

book *Cannibals with Forks: The Triple Bottom Line of 21st Century Business* and later adopted by Shell for their first sustainability report in 1997.

The concept demands that a company's social responsibility lies with stakeholders rather than shareholders. This ensures employees, customers, suppliers, local residents, government agencies, and creditors are invested in ensuring the future of the company and its environment.

Why prioritise sustainability?

If a business does not focus on all three elements of the triple bottom line, then it impacts the company's

environment and its ability to react to marketing conditions is significantly reduced. This is a risk to the company and every business associated with it.

For example, if a company is under pressure to reduce cost and increase profit, they might be inclined to ignore child labour or poor working conditions to achieve lower manufacturing costs and ultimately achieve a higher gross profit.

While this might prove beneficial for their business in the short term, what would happen if employers chose to quit? What would happen if the government changed its strategy? What is the impact of this decision on the local society?

The triple bottom line concept eradicates these risks as each element is considered when any decisions are made. This ultimately improves the culture within an organisation and promotes a more conscious approach to business.

True to this concept, the NCAB Group has been proudly publishing a sustainability report every year since 2014 and has conformed to ISO26000 since 2015. We believe in the triple bottom line concept as we live it every day. It is the reason we can confidently say we will be here in the foreseeable future.

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There are several factors that should inform your sustainable supply chain purchasing decisions



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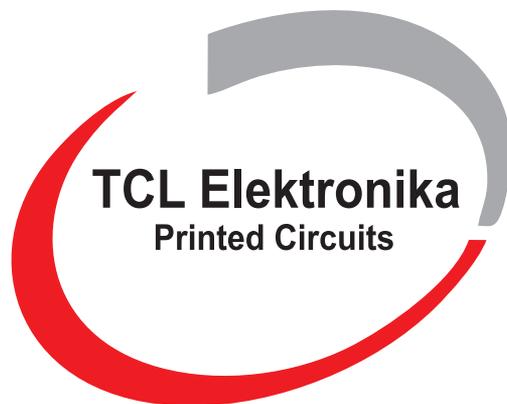
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Quoting and purchasing easier than ever

In this article, Mouser introduces buyers to a price and availability service designed to support customers' purchasing processes

Mouser Electronics has announced a new Price and Availability Assistant. Customers can drag and drop, type in or load (copy and paste) a parts list with desired quantities for rapid pricing and availability results.

Using the tool, customers can add up to 200 part numbers, with up to three different quantities per part number. The tool returns exact part matches for each line and offers replacement options for any non-orderable part numbers.

Mouser's president and CEO, Glenn Smith, said: "Mouser is continually improving the tools we offer to help buyers and engineers manage their product specifications and purchasing. We are excited to

add the Price and Availability Assistant to our collection of productivity tools, which help make buying as fast and hassle-free as possible. This is another way that our teams are working diligently to provide best-in-class service to our customers around the world."

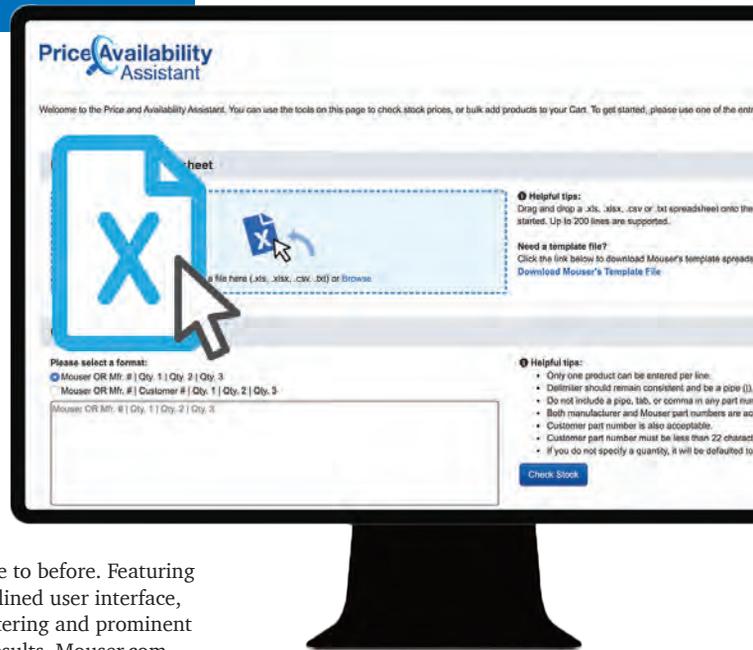
The Price and Availability Assistant is the latest addition to a full suite of productivity tools from Mouser, including the FORTE intelligent BOM tool, ECAD design resource solution and Inventory Management Tool.

Additionally, with new expanded functionality on its website, Mouser customers can browse products and narrow down product information on their own terms, in ways they've never

been able to before. Featuring a streamlined user interface, smart filtering and prominent search results, Mouser.com enables engineers to spend less time searching and more time finding the right parts.

Mouser's responsive design includes several key features to simplify product searches. When searching and browsing within a product category, customers can filter via Products, Datasheets, Images and Newest Products tabs. These features complement Mouser's popular parametric product search and build on the Scope Search with Advanced Type Ahead feature.

mouser.co.uk



Mouser is continually improving the tools we offer to help buyers and engineers manage their product specifications and purchasing



Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Location	Franchised Distributor	No. of Lines for Principle	Stock Value for Principle	Minimum Order Value	% Lead Free for Principle Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
ENCLOSURES												
Metcase Enclosures	OKW Enclosures	+44 (0) 1489 583858	www.metcase.com	EU	N/A	288	£40k	0 €	100%	5	22	Y
INTERCONNECTION												
Amphenol	PEI Genesis	+44 8716060	www.peigenesis.com	EU	Y	N/A	£1.3m	10 €	N/A	N/A	85	Y
Hirose Electric Europe B.V		0031-(0)2 655 7460	www.hirose.com/eu	EU	Y	50,000	N/A	0 €	N/A	N/A	4,190	Y
ITT Cannon	PEI Genesis	+44 8716060	www.peigenesis.com	EU	Y	N/A	£1.3m	10 €	N/A	N/A	85	Y
ODU		+49 8631 6156-0	www.odu.de	EU, USA, ASIA			N/A	0 €	N/A	50	1,650	
OBSOLESCENCE / HARD TO FIND												
	Chip 1 Exchange	949-589-5400	www.chip1.com		Y	850,000	N/A	\$0	85%	20	150	
PASSIVES												
Kemet	RS Components	08457 201201	www.rs-components.com	EU	Y	N/A	£161m	0 €	N/A	50+	2,500	Y
Würth Elektronik	Würth Elektronik	+49 (0) 7942 945 0	www.we-online.com	EU	Y	N/A	N/A	0 €	100%	250	4,000	Y
POWER & BATTERIES												
Sanyo Electronic Industries Co., Ltd.	Sanyo Electronic Industries Co., Ltd.	+81 36699 8080	www.eta.co.jp	JP	N	1,000	€3000k	20 €	90%	10	100	Y
SWITCHES & KEYBOARDS												
CHERRY	RS Components	08457 201201	www.rs-components.com	EU	Y	600	N/A	0 €	N/A	50+	3,500+	Y
Rubbertech 2000	Rubbertech 2000	+44 1594 826019	www.rubbertech2000.co.uk	EU	N/A	N/A	£40k	100 €	N/A	N/A	25	Y

PCB Buyers' Guide

Manufacturer	Telephone	Website	Service Provided (i.e. Boiler, Manufacture &/or Repair)	Location	Approvals	Volume - Small, Medium, Large	Double-sided	Multi-layer 4-10/10-20-30	Metal PCBs	Flexi / Flexi-Rigid	Obsolescence Solutions	Modifications	Prototyping
Elvia PCB Group	+33 233 763 200	www.gepcb.com	M/B	France, Tunisia, China	AS9100, PRI-NADCAP, ISO-TS16949, ESA, UL, ISO9001, ISO14001	S/M/L	Y	1-30	Y	F, F/R	Y	Y	Y
Graphic Plc	00441363 774874	www.graphic.plc.uk	M	UK/China	AS9100, NADCAP, ISO 9001, AISO14001, OHSAS 18001, MIL 31032, MIL 55110, MIL 50884	S/M/L	N	4-10	Y	Y	N	Y	Y

Contract Manufacturers Buyers' Guide

Manufacturer	Telephone	Website	Turnover	Location	Approvals	Employees	Number of Surface Mount Lines	BGA Capacity	Lead Free Manufacturer	Prototyping	Design Capability	Full Turnkey	Cables and Harnessing
AWS Electronics Group	+44 (0)1782 753200	www.awselectronicsgroup.com	£40m	UK & Slovakia	AS9100, ISO9001, 13485, 14001, TS16949, IPC-A-610 Class 3, NADCAP	430	11	Y	Y	Y	Y	Y	Y

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electronica	23		

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Single device eliminates the need for additional current regulation

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- One device eliminates the need for several individual CLDs to meet required regulation values
- Low profile DFN123F package (1.0mm) makes CMJA5050 ideal for small applications



Top View



Bottom View

JFETs for various applications, including Pro Audio

Central is committed to maintaining these hard-to-find devices

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- Exceptionally beneficial for high quality analog signal transmitting applications
- In stock now for immediate delivery, minimal leadtimes if not in stock

POPULAR JFETS: 2N4416, 2N4416A, 2N4391, 2N4392, 2N4393, 2N3819, CMPFJ175, CMPFJ176



Silicon Carbide Schottky Rectifier die: CPC04-CPC15

Optimized for exceptionally high temperature applications

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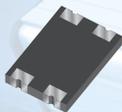
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Top View



Bottom View

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