

ELECTRONICS

JANUARY 2024 | ANNUAL EDITION

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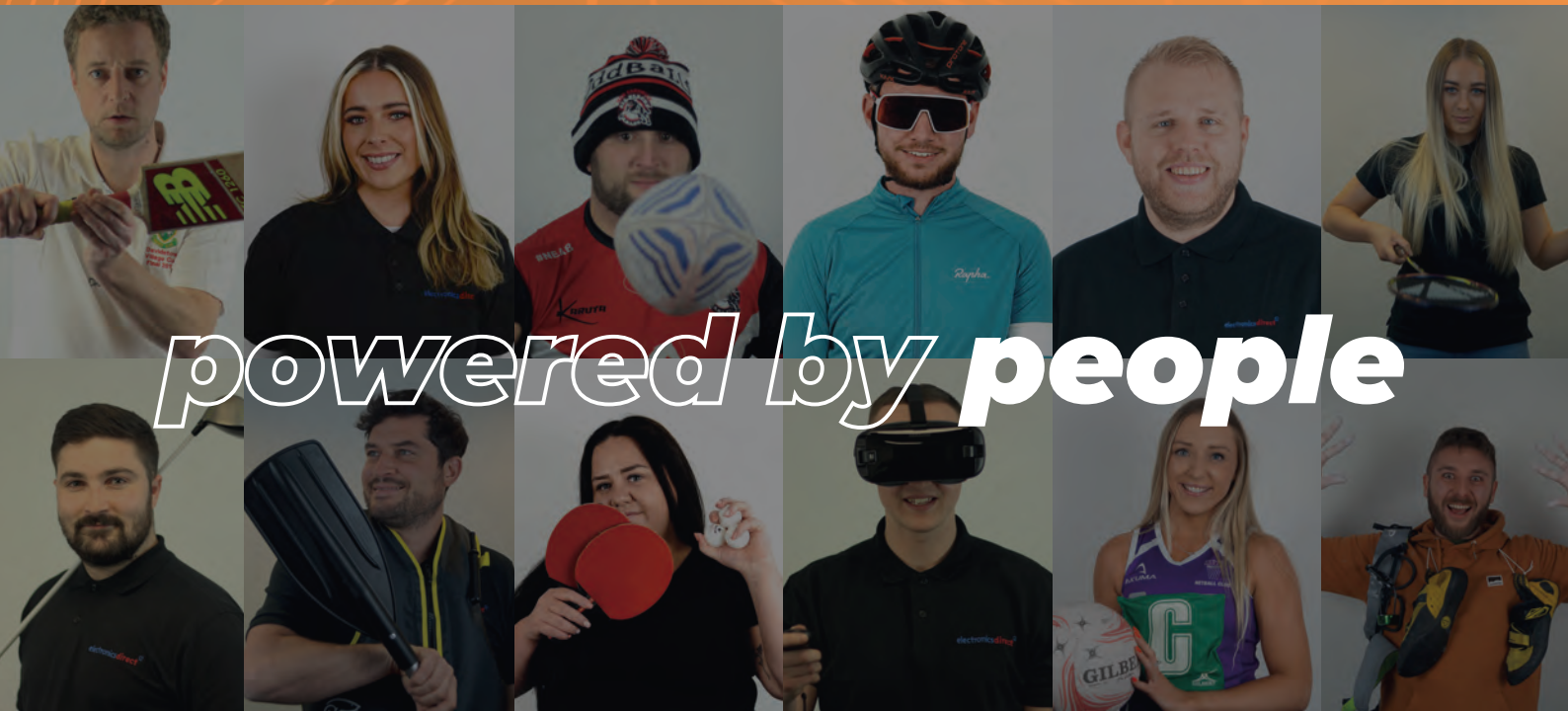
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## On the cover – January 2024

Electronics Sourcing Annual Edition  
Supplier & Distributor Focus starts from page 13

# Editor's Word



### 2024: recession, flat or growth?

I'm confused. I've spent a year in conversation with the electronics distribution sector and I can't really call 2024. On one hand, news across that period, plus the Supplier and Distributor Focus features in this issue of *Electronics Sourcing*, highlight the money OCMs, distributors and CEMs continue to invest in their people, products, facilities and processes.

If this news was my only signal, I would be calling growth. However, one organization that spends more time crunching figures than most, ECSN, is suggesting a relatively flat period when compared with recent years. I would expect this as all players burn through inventory and orders accumulated in response to the pandemic.

Then there are signals from the broadcast media listing redundancies and financial stress across many industries. For example, now most of the early adopters own their electric vehicles, government subsidies are diminishing and transition legislation is being rolled back, the gloss is coming off the EV sector and prices of used vehicles are falling.

That said, I have spent plenty of time talking to engineering innovators about how they are improving battery technology with the aim of making them faster to charge, safer, more reliable and longer lasting. Another example of huge risk capital being spent.

Everything considered, it all really depends on the sector and geography involved. For the UK, my feeling is that 2024 offers a little breathing space for all involved, while the investments that have been made improve productivity and margins, ready for the sector to push on hard in 2025. Time will tell.

*Jon Bakke*

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[www.electronics-sourcing.co.uk](http://www.electronics-sourcing.co.uk)



## Groundbreaking demand creation agreement

Pulsiv has signed a pan-European distribution agreement with WPG EMEA. The signing will see Pulsiv and WPG EMEA focus on demand creation activities to deploy Pulsiv Osmium technology throughout Europe, Middle East and Africa enabling engineers to maximise efficiency, reduce energy waste and lower cost in the next generation of power electronics designs.

WPG EMEA's president, Nigel Watts, said: "The signing of the Pulsiv technology is strategic to our product portfolio—rarely do you find a truly groundbreaking and game-changing product such as Osmium

from Pulsiv. The power market is of such significance to the industry and the Pulsiv solution is disruptive and provides customers with the ability to design power solutions simply not possible in the past."

Pulsiv's director of global sales and distribution, Nick Theodoris, added: "Partnering with WPG EMEA as a recognised distribution business will help us expand our demand creation activities."

[www.pulsiv.co.uk](http://www.pulsiv.co.uk)



## Duty paid deliveries EU wide

Anglia Components is bringing the Anglia Live e-commerce platform to Europe, following a major investment in its logistics infrastructure and website. It will offer a standard two-day service from its UK distribution centre, delivered duty paid (DDP) shipped by FedEx through its Paris hub, with invoicing available in multiple currencies.

Anglia's commercial director, Karen Ward, said: "Anglia can compete on price, availability and delivery with any of our competitors, and we have identified there is a gap in the market for a Europe-wide digital distributor offering a competitive service from locally held inventory. Invited by major franchises to bring our service to Europe, it was an opportunity we simply could not say no to.

"We invest heavily in inventory supported by smart AI algorithms which have been developed by our team of in-house software engineers. Now customers throughout Europe can experience the benefits of our approach."

[www.anglia.com](http://www.anglia.com)



## Investing in power and control

TT Electronics' Power and Control business has opened its new research, development and manufacturing facility in Rochdale, Manchester. TT Electronics states this is a strategic investment in power electronics for mission-critical aerospace and defence technology.

TT Electronics' vice president and general manager, Matt Yeates, said: "TT's recent acquisitions of the Power Supply business from Excelitas, Torotel and Ferranti Power and Control have enhanced our customer portfolio as well as significantly strengthening our engineering capability in both the UK and US. The new facility will not only support new employment opportunities in the Rochdale/Manchester area but will provide increased manufacturing capacity as a direct response to our customers' needs."

The site aligns with TT's aim to continuously invest in its global facilities and offer greater supply chain leverage and engineering capabilities to its customers. The facility is fully operational and will provide a significant increase in capacity for customers in the UK for power electronics and mission-critical aerospace and defence technology.

[www.ttelectronics.com](http://www.ttelectronics.com)



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## In Brief

### E-commerce store features thousands of parts

Lane Electronics has released a major website upgrade. Improved keyword/part number search offers part number suggestions and related products such as mating halves, dust caps, nut plates, gaskets, telescoping bushing and other accessories. Thousands of parts are featured in the new store, nearly doubling the amount available to be bought online. [www.fclane.com](http://www.fclane.com)

### Fit for business

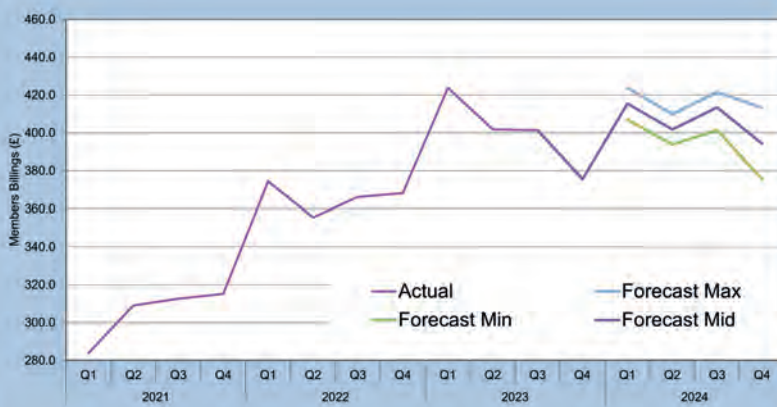
Foremost Electronics has achieved JOSCAR accreditation. Aerospace and defence manufacturers use JOSCAR to find accredited suppliers with the right infrastructure and policies to support their needs. Foremost has also achieved Cyber Essentials and Cyber Essentials Plus certification, demonstrating it has robust/secure IT systems for safe communication with customers in sensitive markets. [www.4most.co.uk](http://www.4most.co.uk)

### Stock grows by 40,000

DigiKey has expanded its portfolio in Q3 2023, adding over 40,000 new stocking parts including 19,000 newly introduced products. Examples of new products include: Allegro's ASEK724LLC-30AB-T current sensor IC; MPS' MPM3695 - MPM3695-100 DC/DC power module; TE Connectivity's RJ45 industrial IP20 connector assemblies; and Vishay Dale's HV-IBSS-USB series power shunt reference design. [www.digikey.com](http://www.digikey.com)

### New communication portal

Lemo has launched its new website, designed to enhance users' online journey. Benefits include a fresh look, revised content and user-friendly features. Lemo states the platform offers a sleek, intuitive interface that simplifies navigation, making it easier for customers to explore the company and stay informed about updates. The site is a direct communication portal between Lemo and its customers. [www.lemo.com](http://www.lemo.com)



## Low single digit growth in 2024

ECSN's 2024 forecast predicts the UK and Ireland electronic components market will be essentially flat-to-down in the first half of 2024, returning billings growth of between three to one per cent, with a mid-point growth of around one per cent.

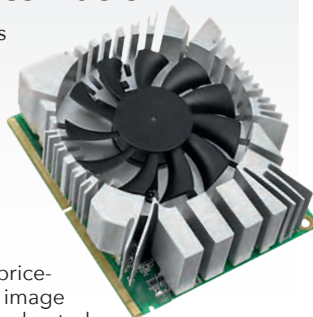
In the second half of the year the association predicts that billings will grow modestly in the range one to eight per cent to give an outcome for the full year in the range 1.5 to 4.1 per cent and showing a mid-point of 1.4 per cent growth over the previous year.

Despite ECSN forecasting lower growth in 2024, chairman Adam Fletcher is confident that the trajectory for UK/Ireland and global electronic components markets continues to be up and to the right and that stronger underlying growth will return to global electronic components markets in 2025 and beyond.

[www.ecsn-uk.org](http://www.ecsn-uk.org)

## GPU integrates into factory automation

Mouser Electronics is now stocking the VEGA-X110 embedded GPU card from Advantech. Leveraging Intel Arc graphics solutions, the card delivers superior performance and price-per-watt, powerful image processing and accelerated edge AI. Features include a PCIe 4.0 x8 interface for integration in medical imaging, gaming platforms and factory automation applications.



The MXM Type A embedded GPU card is powered by the Intel Arc A370M GPU with eight Xe-cores and 128 Intel Xe matrix extension engines with H.264/H.265/AV1/VP9 encode/decode technologies. It uses Intel Deep Link Technology to accelerate artificial intelligence and graphics computing performance while optimising CPU and GPU workloads. The card also integrates Intel OpenVINO, an open-source toolkit with 100+ pre-trained models and popular public frameworks. Offering four DisplayPort 1.4a outputs with a maximum resolution of 7680 x 4320 (60Hz), the VEGA-X110 delivers high performance for healthcare and image processing applications.

This collaboration between Advantech and Intel is seeking to meet increasing demand for GPU and vision AI performance while developing a more open AI ecosystem.

[www.mouser.com](http://www.mouser.com)



## New solder and rework technology underpins productivity and quality

Advanced Rework Technology has invested over £30k in reworking, soldering and heat management tooling so trainees will learn the latest practices using the newest equipment.

A new JBC DMPSE rework station lets users operate four tools simultaneously. Stackable modules help conserve workspace and a selection of compatible tools provides flexibility across multiple soldering and rework applications.

A variety of new soldering and rework tools includes devices for small SMDs, high power requirements (ground plane soldering) and removing excess solder after SMD rework. JBC boasts an extensive cartridge range, with over 500 different shapes or tip geometries to choose from. Tip selection is crucial for soldering and rework tasks, ensuring optimal results are achieved.

Finally, ART has added JBC's Intelligent Heat Management Technology. Each stand can detect when the tool has entered the stand and place it into sleep or hibernation mode when not in use. This efficient heat management helps extend tip life.

The new fit-out was delivered and set up by Kaisertech.

[www.rework.co.uk](http://www.rework.co.uk)

## EXEMPLARS BEAT SUSPECTS

This month's counterfeit investigation from Princeps demonstrates the value of maintaining a library of known-good devices to compare against suspect parts

The part in Figure 1 was received from a European broker but suspect conditions were identified during initial x-ray inspection.

Princeps has a long history of supplying this part to a commercial customer, but it was made obsolete by the manufacturer last year. Princeps' extensive image library of known-good devices proved invaluable, making it possible to pull images of two previously received known-good devices for comparison.

The parts received carried a 2138 date code (week 38, 2021). The library brought up known-good samples from weeks 7 and 49 for comparison (exemplars bracket the suspect parts).

The exemplars showed consistent lead-frame layout and die size (Fig 3 and 4). Die measurements of the known-good parts were approximately 3 by 1.7mm.

When the suspect parts were inspected: the lead-frame shape is different (Fig 1); the die is tilted by around 15deg (Fig 2); and the die is smaller at approximately 1.5 by 0.95mm (Fig 5).

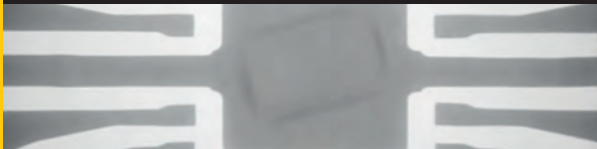
The parts were therefore rejected as suspect. The image library of known-good comparison parts was essential to determining the differences observed were not simply due to the manufacturer changing materials. The parts were reported to the ERAI and removed from the supply chain.

[www.princeps.co.uk](http://www.princeps.co.uk)

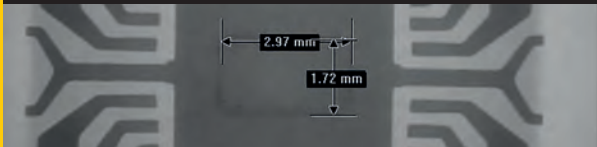
**Fig 1** Part received and identified as suspect



**Fig 2** Close-up view of the die showing unexpected tilt



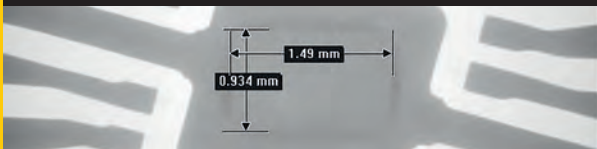
**Fig 3** Known-good device exemplar from week-7



**Fig 4** Known-good device exemplar from week-49

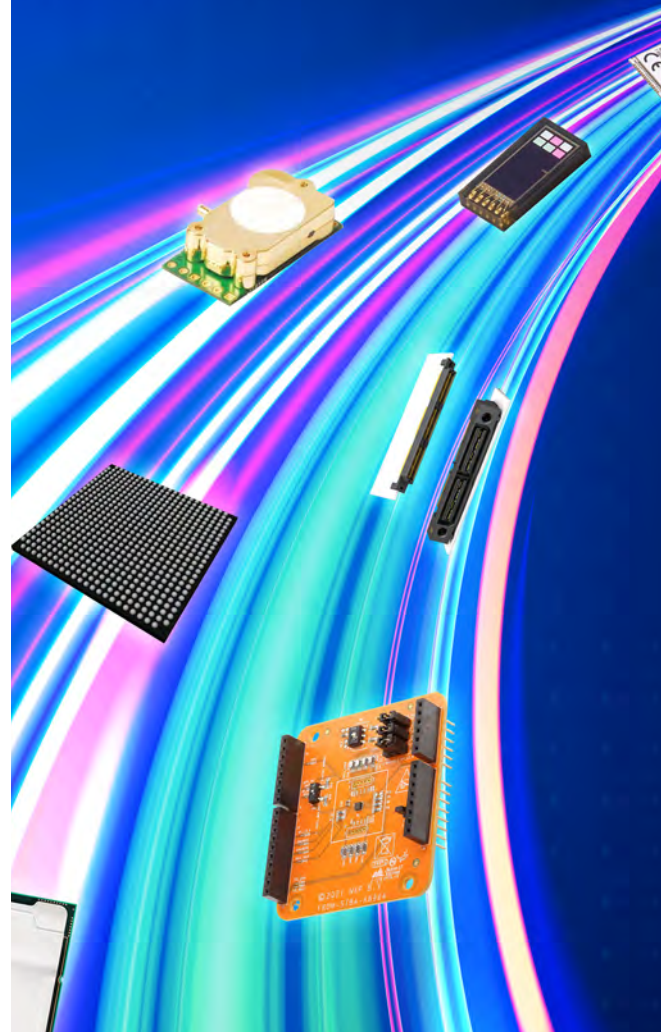


**Fig 5** Suspect part close-up with die measurements



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# Simplify your BOM process with Mouser's intelligent FORTE tool

As your design heads towards completion and becomes production-ready, the chore of creating the bill-of-materials (BOM) takes hold. A crucial part of any new product development and the key to unlocking future profits, creating the BOM demands diligence. BOMs may potentially include thousands of components, each with individual part numbers, challenging purchasing professionals with an arduous task of obtaining pricing and availability information.

Churning through each component becomes a repetitive task beset with part number and code challenges. For example, parts flagged as no longer suitable for new designs require purchasing professionals to go back to engineering to check alternative part numbers. Even simple part code errors introduced when creating the BOM can take ages to rectify.

So what can you do? Save time, improve order accuracy and increase purchasing confidence with Mouser Electronics' FORTE intelligent BOM tool.

**FORTE, the intelligent BOM tool from Mouser**  
FORTE removes the uncertainty of specifying and purchasing semiconductors and electronic components. With its time-saving import features, you can upload your BOM from a spreadsheet or CSV file or cut and paste it from another document. A clean, easy-to-understand interface enables adding, amending and deleting parts and checking price breaks for multiple quantities without committing to changing the BOM.

FORTE's intelligent part number capabilities can analyse partial part numbers and part descriptions to check for correct part numbers and suggest alternative components. FORTE accesses Mouser's online database of millions of orderable part numbers to recommend alternatives that reduce product lifecycle risks.

FORTE is free to use, and no subscription is required.

**Getting started with FORTE**  
It couldn't be easier to start experiencing a more

straightforward way to research and purchase electronic components. To change your BOM experience for the better and discover FORTE's intelligent and time-saving features, you just need to log into your My Mouser account. Once logged in, select whether you wish to upload a spreadsheet document in a Microsoft Excel or CSV file format or paste in part numbers or quantities as illustrated in Figure 1. To start the import process, simply assign each column of your import file to the nominated BOM heading (part number, quantity, etc.). FORTE then processes your BOM file and displays instances where a product match hasn't been found, notifies minimum order quantities, and highlights products with lead times and products at the end of their production life (Figure 2).

Take control of your BOM and start using Mouser's intelligent and comprehensive BOM tool today.

[www.mouser.co.uk/bomtool](http://www.mouser.co.uk/bomtool)



**Mark Patrick**  
Technical Marketing Director  
EMEA Marketing

As Mouser Electronics' Technical Marketing Director for EMEA, Mark Patrick is responsible for the creation and circulation of technical content within the region – content that is key to Mouser's strategy to support, inform and inspire its engineering audience.

Prior to leading the Technical Marketing team, Patrick was part of the EMEA Supplier Marketing team and played a vital role in establishing and developing relationships with key manufacturing partners.

In addition to a variety of technical and marketing positions, Patrick's previous roles include eight years at Texas Instruments in Applications Support and Technical Sales.

A "hands-on" engineer at heart, with a passion for vintage synthesizers and motorcycles, he thinks nothing of carrying out repairs on either. Patrick holds a first class Honours Degree in Electronics Engineering from Coventry University.

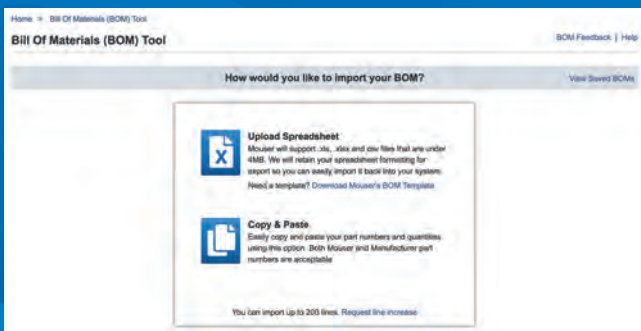


Figure 1

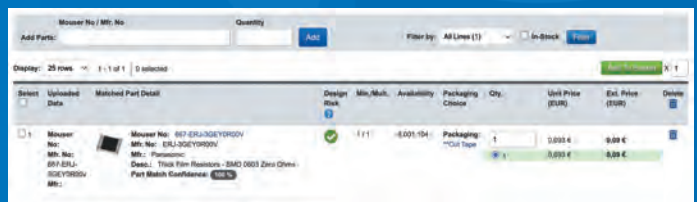


Figure 2



# Continued challenge of counterfeit products

*Electronic Manufacturing Solutions' sales director, Rob Moore, walks readers through the procedures and standards the company uses to maintain product quality*

It's been a great relief to see improvements in the electronics manufacturing industry during 2023. Supply and demand levelled out, backlogs have cleared up and lead times have shortened—making for more streamlined day-to-day operations for producers and consumers of electronic devices. However, the coast's not clear just yet.

Many people turned to sub-par components in 2022 after struggling to get new, genuine ones, resulting in a 35 per cent increase in the number of reported counterfeit and non-conforming parts from the year before. And even though supply chain disruption has eased as the world's adapted to events like the pandemic and Russia-Ukraine conflict,

this trend continued into 2023 while manufacturers attempted to cut costs and speed up turnaround times.

As an electronics manufacturing services provider committed to quality, EMS feels strongly about the negative consequences of using counterfeit products. So, we're here to explain why it's always best to stick with trusted components and outline how EMS can help customers maintain the highest standards even whilst this challenge persists.

In electronics manufacturing, counterfeit products are considered any component or part that's an unauthorised copy, imitation, substitute or modification of a real part or component. Whilst

some of these fakes—often sold by overseas suppliers at a heavily discounted price—are made from aged components that have been refurbished and sold as new, others are built with parts that are relabelled and sold as entirely different ones.

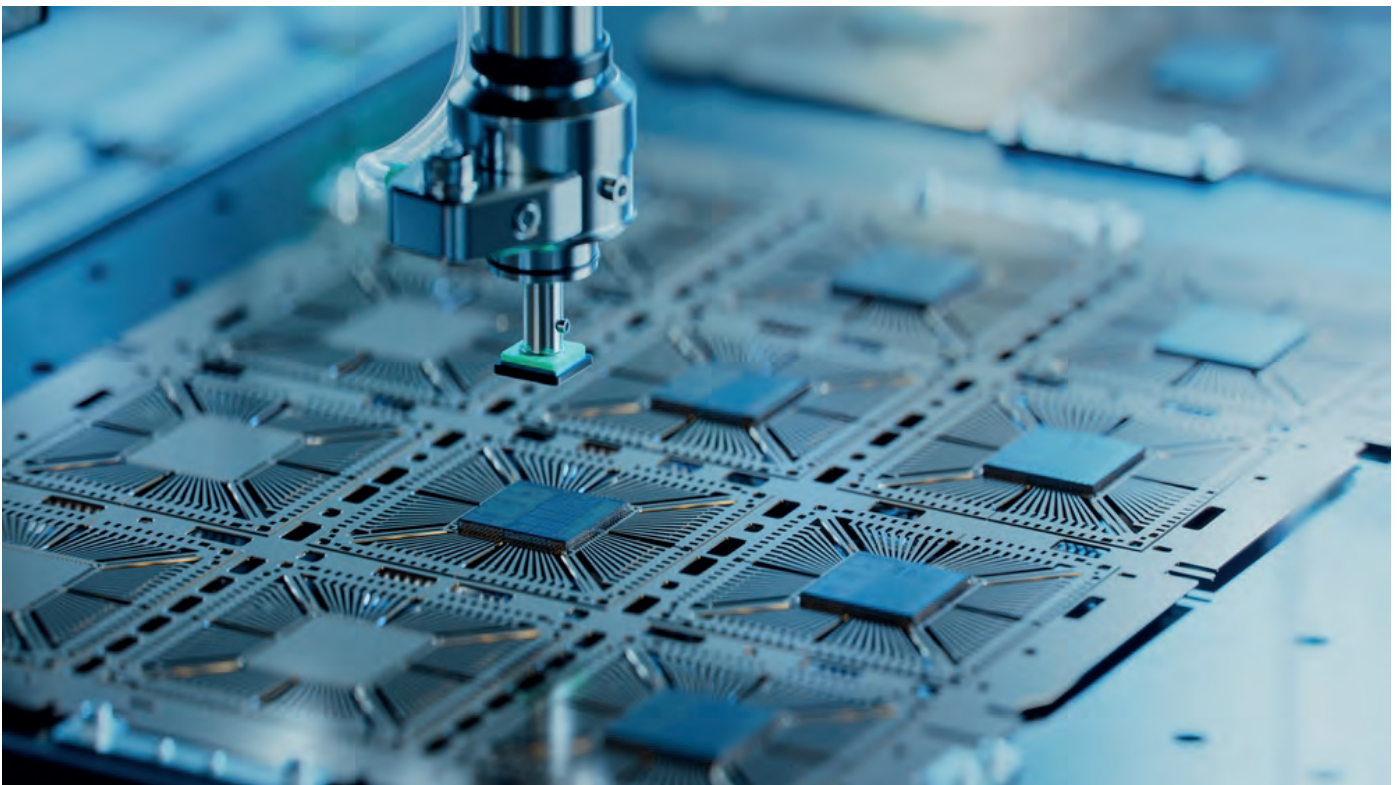
Worryingly, counterfeit products often make it through the production line without manufacturers knowing anything's wrong, as it's incredibly difficult to detect an old or imitation part—and they do not always fail quality control tests. Instead, problems can arise once the device they are built into reaches customers, which can be extremely dangerous.

For example, if counterfeit printed circuit boards lead



**Electronic Manufacturing Solutions'**  
sales director, **Rob Moore**

*Continues on next page >*



to wearable medical devices not providing accurate test results, they can lead to incorrect diagnoses and prevent patients from receiving the treatment they need. Plus, if the PCB malfunctions, not only will nearby elements in the device become damaged, necessitating tricky and expensive repairs, but the wearer could also get hurt.

Even if inauthentic components don't fail, they're likely to negatively impact the performance

of the device they're in—causing inefficiencies that get in the way of customer satisfaction and potentially damage business' reputations. Therefore, it's important to only use genuine components from trusted original equipment manufacturers, which is exactly what EMS does.

To effectively mitigate the risk of counterfeit products and prevent fake or aged components from making their way into any of the

assemblies EMS produces, the company abides by the terms of its Counterfeit Controls Policy.

This document asserts that EMS only sources parts and raw materials from official franchised sources and official catalogue sources, as backed by our OEM manufacturer agreements. We'll always use suppliers that offer full traceability to their factories unless customers request we use a supplier that doesn't offer this.

In such cases, the supplier will undergo supplier checks to ensure it meets the ISO9001/13485 approval process. If it doesn't, we'll inform the customer.

What's more, we use approved suppliers with a track record of producing consistent, reliable and authentic parts. If the component our customer requires is complex or set to be used in a high-value good, these suppliers will also conduct verification tests before they're purchased.

All this is a key part of our quality management system, which ensures we produce electronics assemblies to the internationally recognised BS EN 9001:2015 and BS EN ISO 13485:2016 standards and underpins all our services.

We always offer automated optical inspection of all surface-mount technology components and production batches to IPC-A-610 Class 2 and offer Class 3 inspection on request. Our teams strive to meet or exceed customers' expectations and work to maintain mutually beneficial relationships between our clients, suppliers and business partners.

[www.emsolutions.uk.com](http://www.emsolutions.uk.com)



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## Light, strong, corrosion resistant coupling

Inelco Hunter has announced availability of Sine Systems' ecomate Aquarius Fathom Lock series of waterproof connectors for industrial applications. In a mated condition, the system offers an IP67/69K rating, enabling 1.8m immersion into water for one hour.

The connectors offer a high-impact, thermoplastic design, with the advantages of a lightweight, lower-cost, sealed connector system. The Auto-Lock IP68 system offers time savings while ensuring an easy mating/unmating process of the plug to receptacle.

The connectors suit indoor/outdoor applications and the MIL-DTL-26482-

based design provides a quick and reliable bayonet coupling, verified by the tactile and audible click of the locking mechanism. To un-mate, a simple 20deg twist of the plug's coupling ring separates it from the receptacle.

Regarding UV/corrosion resistance, the connector passes the 500-hour salt spray test. Applications include harsh conditions within wet or sea spray environments including full IP68 immersion.

With improved maximum amperage/voltage ranges of 45 to 300A/600 to 900V (depending on series) the product finds uses in factory automation,



industrial, heavy equipment, heavy duty machinery, transportation and entertainment/lighting markets.

[www.inelcohunter.co.uk](http://www.inelcohunter.co.uk)



## Compact, high-performance OLED display modules

Review Display Systems has introduced a broad range of compact, high-performance OLED displays from Wisechip Semiconductor. The company can supply and support a full portfolio of Wisechip OLED displays including dot matrix, character and circular modules, plus transparent displays and flexible plastic displays.

Offering a range of compact, durable, lightweight displays from 0.48 to 5.5in, the monochrome and color OLED products offer contrast ratios greater than 10,000:1, high luminance, 10µs response times, wide viewing angles and an extended operating temperature range from -40 to 85°C.

The line-up of full color OLED displays, from 0.95in (96 by 64px) to 1.69in (160 by 128px) are said to provide exceptional optical performance in all environments, with high contrast ratios that enable deep, dark blacks and bright, clean whites and highly saturated colors. The parallel or four-wire SPI interface supports six-bit RGB data that enables a color palette up to 262k colors.

[www.review-displays.com](http://www.review-displays.com)

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# Sourcing renewable power: what to know about GaN

*DigiKey's supplier business development manager, wireless and IoT, Josh Mickolio, explains how WBG semiconductors are providing a path to smarter, more efficient power design*

The renewable energy sector has seen significant design activity over recent years. It is accelerating the use of wide bandgap (WBG) devices—specifically gallium nitride (GaN)-based power solutions—to increase capacity, allow for more efficient conversion and most importantly, allow for a sustainable future as silicon becomes harder to come by.

Wide bandgap production has increasingly hit higher capacity and more companies are introducing or expanding their offerings. However, capacity around GaN, GaN-on-silicon and GaN-on-silicon carbide (SiC) products is still in short supply because overall fab capacity remains limited. This means in a smaller environment, even a small change can impact the supply chain.

GaN provides faster switching speed, smaller size, higher efficiency and a lower cost. However, it also adds a new level of complexity to power designs and bills-of-materials. You almost always need to make changes or find a suitable second source to support different components. WBG devices

add a layer of complexity with identifying and testing compatible PFCs and gate drivers. You must look at other device attributes, layout and PCB design. This is nothing new in power design but engineers may not be as familiar with simulations and some parasitic elements introduced by inefficient layout and higher frequency operation.

A few requirements and attributes to be aware of when considering GaN:

- Layout considerations: minimizing or accounting for parasitics at different operational frequencies
- Component selection: this is always important but identifying devices that are compatible vs those that offer performance benefits
- Thermal design: WBG devices have differing thermal properties, especially on traditional FR4 material
- EMI performance: higher switching speeds and parasitics require thorough EMI review and noise isolation

The difficulty in finding suitable second source

materials in a BoM can be alleviated by using a multi-footprint design and providing for more scalability in the surrounding design and architecture. Design flexibility is key to keeping the supply chain healthy in the long-term while ensuring designs are future proofed.

WBG-based power solutions are enabling everything from micro-inverters and optimisers to solar energy storage systems and more efficient e-mobility charging stations, all with the benefit of reducing size and long-term costs.

A lot of interesting design work is happening with GaN and SiC devices which will only accelerate electrical vehicle development and charging systems, as well as exciting use cases in smart utilities, microgrids and storage/load management systems. The renewable energy sector will continue to impact our lives in many ways and WBG semiconductors are providing a path to the next generation of smarter, more efficient power designs.

[www.digikey.co.uk](http://www.digikey.co.uk)



DigiKey's supplier business development manager, wireless and IoT, **Josh Mickolio**



**Design flexibility is key to keeping the supply chain healthy in the long-term while ensuring designs are future proofed.**

# Investing in engineering excellence

2024 sees Review Display Systems increasing its headcount and introducing new embedded computing products, display technology and support peripherals



**E**ngaging with Review Display Systems as a design and manufacturing partner enables access to the latest technology, product portfolios and technical support in embedded computing, display technology and design/manufacturing services.

Established relationships with leading global supply partners and manufacturers ensures RDS has access to a comprehensive range of the latest embedded computing solutions, display technology and system support peripherals.

Encompassing an engineering design and production team with experience across a wide range of hardware and software systems, RDS can provide design and development support including hardware design, firmware development, mechanical fixtures/ fittings, project management, approval prototypes, sub-assemblies through to full system production and sub-contract manufacture.

During 2024, RDS will continue to introduce new additions to an extensive portfolio of embedded

computing products, display technology and support peripherals. Additionally, to support continued growth and maintain exemplary service levels, the company intends to increase its headcount. A schedule of continued attendance at UK electronic component industry trade fairs in Birmingham, Coventry and Oxford is also planned.

RDS maintains a strong commitment to environmental responsibility, sustainability and quality with accreditation to the latest internationally recognised standards including ISO14001, ISO9001-2015

and ISO13485:2016 for the design and manufacture of medical technology devices.

Established in 1982, RDS engages and develops partnerships with electronics engineers, system architects and purchasing professionals in a wide range of industry sectors including process control, industrial instrumentation, medical device technology, factory automation, facilities management, in-vehicle systems, point-of-information and more.

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# Poised for sustained growth across sectors

A combination of inhouse investment and training, plus a new European manufacturing partnership, means Jaltek is perfectly positioned to support its growing customer base

One benefit of outsourcing manufacturing is removing the need to invest in expensive capital equipment and people. Jaltek does that for its customers. To provide customers with the most up to date, efficient and cost-effective solutions, Jaltek constantly reviews its technology line-up which includes surface mount equipment for volume production and a dedicated new product introduction line, all supplied by Blakell Europlacer.

The multifunction SMT pick-and-place platforms are

designed to provide high levels of flexibility. The prototyping line and main production lines are compatible, allowing prototypes to seamlessly transfer. Jaltek is continually upgrading its capabilities with recent investments including production, test and inspection kit.

As part of its growth strategy, Jaltek also increased its manufacturing space by 50 per cent, as well as recruiting production, engineering and account management staff, to meet increased demand for electronic system assembly. The new unit is fully operational.

Jaltek recently joined hands with SG Automotive, a Slovenian EMS provider known for manufacturing printed circuit board assemblies. The companies signed a collaboration agreement to support demand from European and UK markets.

Managing director, Steve Pittom, said: "We've found a top-tier professional partner within the EU who aligns perfectly with our goals and sustained growth across sectors. With SG Automotive's extensive experience we can now cater to customers seeking IATF 16949 certification. They

have a stellar track record in the automotive sector."

Business manager, Steve Blythe, added: "We have expanded our team to support growing activity across the board and our in-house training ensures all employees work to the industry's highest standards as per the Institute of Printed Circuits. This, along with our recent partnership enables us to continue delivering our vision towards world class competitiveness and productivity."

[www.jaltek.com](http://www.jaltek.com)

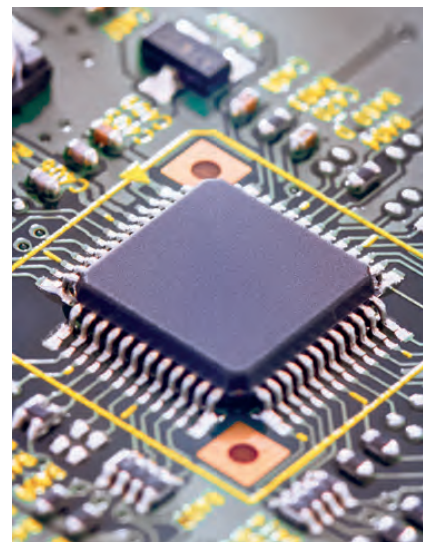


## Delivering solutions through Technology and Partnership

Jaltek is a leading AS 9100 and ISO 13485 accredited, UK based, contract electronics manufacturer with over 35 years' experience. We provide a complete design and manufacturing solution serving a range of industries, including developing resilient systems ideal for harsh and safety-critical environments.

Our services include conceptual design, PCBA layout, fast turnaround NPI, manufacture and test and final product assembly. Using advanced systems Jaltek supports products throughout their lifecycle, from concept, through value engineering - the optimisation of PCBA design and layout by our engineers - to volume production. We offer a single service or complete solution.

We supply a diverse range of customers, from well known multinational companies to start-up ventures, many of whom have worked with us for over 15 years - testament to our customer focus and support. We work in collaboration with our customers to create groundbreaking solutions as well as prioritising capital investment in order to support our customers in an ever-changing market place. Our aim is to make the world a better place one product at a time.



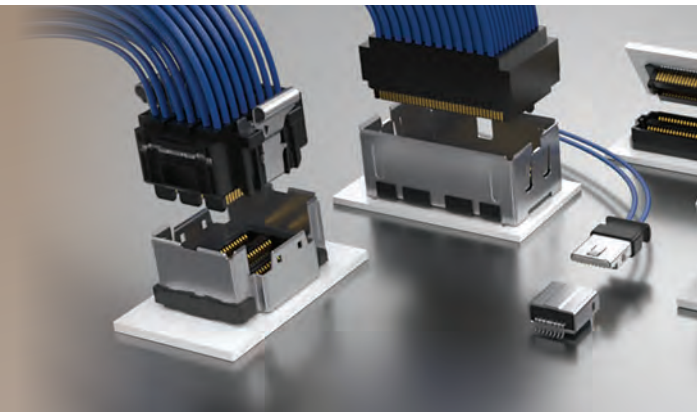
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# Huge interconnect choice, fast delivery

To underpin interconnect buyers' supply chain goals of product choice and fast delivery, Samtec highlights its Sudden Service model and Samtec Reserve program



Following the turmoil of recent years, supply chain security has become as important as innovation for many original equipment manufacturers.

Unlike other types of electronic components, availability of connectors is made more difficult by interconnect market complexities. Connectors must provide reliable performance across a range of applications from high voltage to high speed, while usually functioning as a mating pair. In the

face of delivery delays and component shortages, customers cannot simply swap a connector for one from another supplier. If an equivalent connector needs to be sourced, both halves should be replaced.

Customers therefore need suppliers who can respond quickly to their requirements and provide a complete mated pair of connectors. This Sudden Service concept has been at the heart of Samtec's business model since the company's foundation. The modular nature of many of its products lets Samtec

assemble products quickly from a broad inventory of subcomponents, resulting in a short lead time.

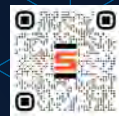
Samtec has taken the Sudden Service model further, introducing the Samtec Reserve program, in which over 200,000 products are held in stock in completed form, ready for one-day shipping. These products are clearly identified on the Samtec.com website, making the procurement process easier.

The Sudden Service model and Samtec Reserve program

are designed to work with the existing distribution network. However, direct access to the manufacturer with such a broad range of products provides the supply chain security that customers need in today's rapidly evolving marketplace.

[www.samtec.com](http://www.samtec.com)

## SUDDEN SERVICE<sup>®</sup> ADVANTAGE

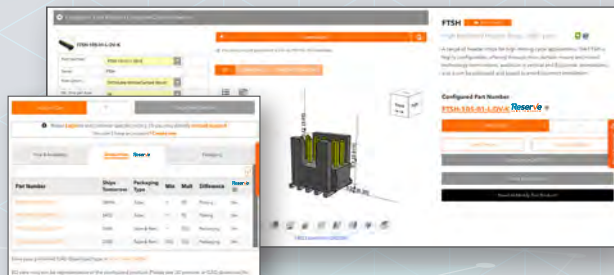


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# Powering innovation in 2024

# RELEC 2024

In this article, Relec Electronics announces the introduction of innovations including automotive power converters, configurable power supplies and USB-C LCM displays

Stepping into 2024, Relec Electronics remains at the forefront of B2B distribution in power supply and display technologies. While maintaining its commitment of offering a versatile range of AC-DC, DC-DC power supplies and advanced display technologies, the company is excited to introduce several innovative additions to its product lines.

Setting a new industry standard, 2024 additions to the automotive sector include DC-DC power

converters which are specifically designed to meet the evolving needs of the sector. The converters are engineered for optimal efficiency and reliability, ensuring they rise to the challenges of vehicle applications.

Configurable power supplies represent another significant leap forward. Offering unparalleled flexibility, these compact power modules operate over a broad range of environments, allowing customers to tailor solutions to their specific needs.

From its extensive range of display technology, Relec Electronics is proud to introduce the latest in USB-C LCM displays and smart displays. These products integrate the best in connectivity and interactive features, providing crisp, clear visuals and enhanced user experiences.

Furthermore, understanding the needs of professionals in challenging environments, the company is continuing the roll out of its Rugged Tablet portfolio. These durable, high-performance devices are built to

withstand the rigours of industrial and outdoor use, ensuring reliability where it's needed most.

During 2024, Relec Electronics will be focused on bridging innovation with practicality and guiding customers through the complexities of power and display integration with expert advice and market leading products.

[www.relec.co.uk](http://www.relec.co.uk)

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# Guaranteeing supply

*Antistat explains how its focus on listening to customers is helping the company develop products and services that meet business, technical and environmental needs*

As an ISO:9001 manufacturer to the electronics sector, Antistat has been helping its customers meet electrostatic discharge challenges for over 35-years. The company's focus has and always will be its customers, spending time listening to customers' needs and evolving its processes and supply chain to ensure timely delivery.

Post Covid, guaranteed supply is a key factor in customers' decision making, recently compounded by

geopolitical, financial and environmental factors. With the desire to reduce reliance on China and the resultant investment in semiconductor manufacture nearer home, Antistat has been working hard expanding its distribution network within Europe and North America to provide an efficient streamlined supply chain without compromising on quality.

In addition, 2024 sees the launch of new carrier tapes. Developed in accordance with the EIA, JIS and EIAJ standards, the range offers

widths from 8 to 72mm, with over 600 sets of open tools. Custom designs and sizing will be available with fast turn arounds.

Supply chain sustainability is a core strategy for 2024. Antistat is committed to promoting a positive impact socially, environmentally and economically throughout its global operation. The company strives to reduce carbon miles through stock consolidation and in-plant stock programs. Freight time and carbon miles are reduced thanks

to a global distribution network, while innovative replenishment modules remove the need for external packaging during transit which reduces waste.

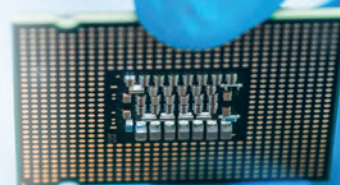
Regarding products, Antistat is developing a range of 100 per cent recycled ESD packaging with the potential to replace 15 million single use pink antistatic bags per annum.

[www.antistat.co.uk](http://www.antistat.co.uk)



Antistat has 35 years experience in the specialist supply and global distribution of ESD and antistatic consumables.

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## Supplier & Distributor Focus

# Enhancing SMT line precision with solder paste inspection

*Pektron explains how a significant investment in integrating solder paste inspection is improving end product quality and reliability*

The Surface Mount Technology Association states 74 per cent of PCB manufacturing process defects are solder paste related. This is why integrating solder paste inspection (SPI) machines into an SMT line is essential to ensure the quality and reliability of electronic components.

Consequently, Pektron has made a significant investment in adding the latest 3D SPI machines to all its lines. This gives control, facilitates optimal solder paste use, improves quality and provides cost savings.

A key feature of SPI is the ability to accurately measure solder paste deposits in 3D. This allows reliable detection of defects such as insufficient or excessive paste volume, bridging and misalignment. Importantly, this wealth of information is used to continually improve and actively prevent issues.

Using the SPI data, the solder paste print process is controlled in a real-time

closed-loop system. The SPI machines provide 'live' performance feedback enabling monitoring and prompt rectification of issues.

SPI machines contribute to increased product reliability with precise measurement ensuring solder paste is accurately applied, to prevent short circuits or poor connectivity that can lead to product failures. This is crucial in industries where electronic devices are subjected to harsh conditions or stringent performance requirements, such as agriculture, off-highway, automotive or safety.

Pektron's proactive inspection approach significantly improves product reliability and customer satisfaction. The integration of SPI machines into its SMT lines lets the company stay ahead in competitive markets where this level of manufacturing precision and quality control is essential for meeting the demands of modern electronics.

[www.pektron.com](http://www.pektron.com)



# Ready for a new wiring experience?

*Original equipment manufacturers looking for a quick, reliable and tool-free method of making PCB connections should explore Phoenix Contact's new Push-X technology*

**W**ith new Push-X technology, Phoenix Contact makes connection technology for PCB connectors direct, tool-free and automation-capable. Thanks to compatibility with Phoenix Contact's headers, XPC provides a fast, alternative connection solution.

XPC series connectors enable secure and fast connection of conductors. Rigid and flexible conductors with/without ferrules are connected directly, effortlessly and tool-free thanks to Push-X technology. The stripped conductor is inserted directly into the open terminal point. An acoustic signal provides confirmation the connection is secure.

Phoenix Contact states Push-X technology also provides a high level of reliability and user-friendliness due to the clamping chamber being in the open state when delivered. Demanding test procedures ensure the connectors remain ready for direct connection even in the case of severe impacts.

The XPC 1.5 range is plug-in compatible with existing headers within the Combicon product portfolio enabling easy integration into existing printed circuit board layouts.

[www.phoenixcontact.com](http://www.phoenixcontact.com)



## NeXt level for all everyday heroes



### Experience the new Push-X technology

With the new Push-X technology, Phoenix Contact makes the connection technology or PCB connectors a real experience: direct, tool-free, and automation-capable. Thanks to compatibility with the proven headers, XPC now provides an extremely fast alternative connection solution.

For additional information call 01952 681700 or visit [https://phoe.co/push-x\\_uk](https://phoe.co/push-x_uk)



# It's the people that make the difference!

Electronics Direct states its ability to source those tough components which block production lines, can save their clients time, energy and resources whilst ensuring quality and reliability of the supply chain. Electronics Sourcing asks Founder and Managing Director, Craig Hopwood, what makes them different



It's the people and the deep-rooted culture. If you view a company as an iceberg then people from the outside will see things like location, environment and people but the majority of the company's culture is below the surface and unseen, such as learning opportunities, core values, discipline, purpose, flexibility, enjoyment and work ethic to name a few. Some of these are deep-rooted and therefore embedded over a long time which has helped 40% of our team hold 5 years service and many with more than 10 years. We have a

particular focus on our team because they are the driving force of the business and they work closely with our customers and suppliers.

"Now in our 25<sup>th</sup> year we have proved time and again to be a valuable component sourcing solution to both our loyal and new customers. This is because we are obsessed with customer service and ensure we get things right the first time."

In 2021, they strategically expanded into Netherlands to fortify European operations and are proud to announce

the recent launch of their USA hub in Cleveland, Ohio, facilitating direct shipping for their American clientele. These expansions compliment the 3rd UK extension since 2018, more than doubling the footprint.

"Being a private family-owned entity grants Electronics Direct unparalleled flexibility, enabling them to adapt swiftly to customer needs. Hopwood asserts, "The ability to source those hard-to-find parts, our compelling pricing structure, rapid responses, quick quotes, and dependable

delivery times, positions us as the go-to solution for those seeking a reliable supply chain partner."

As the industry evolves, Electronics Direct remains at the forefront, working harder and smarter to overcome supply chain challenges. With a near quarter-century of proven excellence, the company's dedication to customer satisfaction, innovative solutions, and global expansion sets the stage for continued success.

[www.electronics-direct.com](http://www.electronics-direct.com)

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Our core competencies far exceed just manufacturing; this encompasses design, engineering support, global procurement and supply chain, manufacturing, test, configuration, warehousing and distribution. In short, we are able to take on board the management of customers' products in their entirety.

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## Investing for growth

Texcel Technology explains how the company's planned investments set the scene for continued growth across industry sectors ranging from medical to instrumentation

Knowing where you're going is always referenced to where you have been. For Texcel Technology, the last three years have seen continuous investment in equipment and staff. This has resulted in sustained sales growth across both existing and new customers. Clearly there have been many challenges over this period and Texcel was not immune to this, but it is how the CEM responds to solving an issue that is important.

Texcel's future plans include continued equipment investment and expansion of the manufacturing capacity to facilitate £20M of sales.

The company is expecting increased demand for full box build, RF assembly/test and HV power systems. Medical, military and instrumentation sectors are showing strong growth. Working with customers as part of a team to achieve a positive result, where both make a profit, is the only way to succeed and exciting. Here's to a positive 2024.

[www.texceltechnology.com](http://www.texceltechnology.com)

## Making connections in harsh environments

Electronics purchasing professionals can benefit from Bulgin's in-house manufacturing and testing capabilities when sourcing connectors for harsh environments

With technology driving the realms of what is possible in a more connected and automated world, demand for reliable and adaptive cabled solutions is ever-increasing.

This becomes more challenging when these requirements are needed in harsh environments, such as agriculture, food preparation, marine and mining. Here the environmental extremes of temperature, particular matter and water add a layer of complexity needed to maintain seamless communication

and power transmission, protecting critical systems.

From concept to delivery, Bulgin can provide a solution tailored to customers' needs and budget to help deliver their designs. With in-house manufacturing of connectors/cabling solutions and extensive testing, Bulgin can guarantee rapid turnaround and quality of build, giving peace of mind from design and prototyping to volume manufacturing.

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# 2024: the year for affordable reliability?

*In 2024, MH Connectors is introducing a new range of tough push-pull and Micro-D connectors designed to offer reliability without a high price tag*



**M**odern connectors face demanding applications often in harsh environments. With the adoption of 5G communications and a big jump in automation this year, designers must provide reliable connectivity for many different environments. Can this be done at any cost?

High reliability is the gold standard of connectors, often including products with a military pedigree or those from established premium brands. For

decades, manufacturers have developed connectors to conform to the highest specifications, which are subjected to rigorous testing and designed to deliver superior reliability in severe environments.

Whilst these high-performance connectors deliver reliability, often measured in mating cycles, this superior performance comes at a price. However, in an era of extended lead-times, rising costs and logistical challenges, will 2024 be the time to ask whether this gold

standard is critical or will designers be considering whether their connector solution is over specified?

Mating cycles are not the only measure of a connector's performance. We talk regularly of IP ratings, shock/vibration and resistance to electromagnetic interference. Performance under these conditions impacts connector design but there are plenty of affordable and extensively tested connectors that will provide excellent service.

For MH Connectors, 2024 sees an exciting new range

of affordable, yet tested and highly reliable push-pull and Micro-D connectors designed to provide a cost-effective alternative without compromising on performance. Designed for applications where failure is not an option, but without a military standard or premium brand price tag, these connectors will deliver in tough conditions.

[www.mhconnectors.com](http://www.mhconnectors.com)

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# Finding the right CEM partner

There are many UK-based CEMs, selecting the right one is vital. Esprit provides some things to consider when shortlisting providers.



**Technology:** Select a CEM that is an expert, covering all the solutions required now and in the future. Esprit are always striving to look ahead and have recently invested in the ProtectoXC conformal coating and Versaflow 455 selective soldering system machines.

**Certifications and accreditations:** Do products need to meet industry standards and accreditations - consider providers who can meet these requirements.

**Logistics and inventory:** Many CEM providers can

procure, stock and manage materials and deliver the end product in exact quantities. Others may require the OEM to manage the supply chain and provide materials on a free issue basis. Selecting a CEM with end-to-end logistics capabilities can streamline processes.

**Size:** It is vital to select the right size CEM. Most customers don't want to be more than 20 per cent of their CEM's turn-over. Less and they may feel that they don't receive the best customer service, more than 20 per cent and there

is a risk that they are too reliant on the business.

**Investment:** The electronics industry moves fast, so a CEM should commit to continually investing in their equipment, training and technology to ensure the best output.

**Stability:** This covers two aspects, is a CEM financially stable, profitable and can demonstrate growth, and is it well established.

**Technical support:** The best CEMs provide solutions to problems. Especially

where there is huge pressure on the supply chain, look for a partner who can provide options and advice when needed most.

**Partnership:** The best relationships are established when the customer sees its CEM as an extension of its own business. A good CEM will be flexible, quick to respond and provide excellent customer service to ensure a high-quality output with on-time delivery.

[www.espritelectronics.com](http://www.espritelectronics.com)

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# Tough connectors suit medical applications

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With up to 5,000 mating cycles, plus IP50, IP64 and IP67 protection in mated condition with an IP68

unmated receptacle available, this versatile range can be used in any application.

Thanks to its space-saving design, high contact density and right-angle options, the product ensures performance even in the smallest available space. Touch protection is in accordance with IEC 60601-1 (2 MOPP / 2 MOOP). Transmission of various media is possible with this range and the plastic housing is fully sterilizable.

There are new, high voltage inserts for this range, enabling reliable transmission of up to 1,000VAC to IEC 60664. In addition, they can prevent 'hot plugging' by featuring a special pin layout design with lagging contacts in the smallest installation space.

Corresponding switching units in the device can use the clear identification of the connection status. This can be used to switch the power on and off in a targeted way. This means the electric voltage is only applied at the interface once connection has been fully and correctly established. This rules out both mating and unmating connectors under load and therefore also prevents any resulting damage to the device. This also ensures the long-term reliability of the interface as well as the connected device.

To complement this range, cable assemblies and silicon overmoulding are available.

[www.selwyn.co.uk](http://www.selwyn.co.uk)



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**At Selwyn, we use our vast knowledge and experience of connectors along with our wide range of products to offer our customers a full design and development support service for all of their interconnect requirements.**

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## To out-source or not out-source?

Just Electronics explains how its flexible, small to medium batch manufacturing services offer answers to original equipment manufacturers' production needs

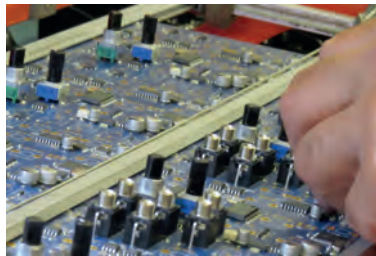
When it comes to getting your product made, out-sourcing to contract manufacturers can remove some of the headache but also poses a number of problems of its own.

How many do you need and how fast? Is the design ready for full production? Do you have some in-house capability, so only need certain stages done? Is the product aimed at a niche market and will only ever be made in small batches?

Some of these questions make it difficult to choose

whether to out-source and, if so, which contract manufacturer to use. Just Electronics specialises in smaller and medium batch sizes, and in doing any or all the process stage customers need to complement any in-house manufacturing and existing suppliers.

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## Temperature sensing issues? Consult the experts

ATC Semitec's MD, Rob Savin, explains how the company prides itself on its innovative, high-quality product ranges and extensive market/product knowledge

ATC Semitec works with world leading innovative suppliers providing high quality, reliable sensors with the added opportunity to create bespoke versions to suit manufacturers' needs. As a result of its close supplier relationships, the company can quickly respond to sample requests helping keep engineers' tight development timetables on track, working with customers until the optimum solution is found.

More importantly is ATC Semitec's ability to drive the launch of innovative new products. Listening and working closely with customers and suppliers, the

company can identify new customer requirements and expedite a solution—whether it's sensor size, response speed, temperature ratings or specific housings.

Responding to the question 'what is the role of a temperature sensing distributor' Rob Savin said: "The obvious answer is making sure that customers have the right high-quality product, at the right price, at the right time. Most importantly specialist distributors, such as ourselves, are experts whom engineers rely on to provide the latest technical solutions which best fit their projects."

[www.atcsemitec.co.uk](http://www.atcsemitec.co.uk)

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# Extending semiconductor component life

With electronics purchasing professionals facing increasing component obsolescence, Rochester Electronics outlines three options to extend lifecycles

**S**emiconductor-driven electronic applications are integral to modern society. Analysts project

substantial growth in the global semiconductor market by 2030\*, particularly in the automotive and industrial sectors. However, these

markets have significantly longer lifecycles, potentially necessitating semiconductor supply continuity for decades. This poses a dilemma for

many customers, as the applications' lifespans exceed component supply.

Customers have three key options in extending component lifecycles, each with their own challenges:

Last time buy and in-house long-term storage:

- Requires accurate forecasting and funds tied up in last-time-buy stock represent a significant financial investment
- Demands appropriate in-house storage facilities, which most organisations lack

Purchase of long-term stored components from an authorised distributor:

- Must ensure components are authentic and properly stored, ensuring reliability in the field and high quality well past their date codes

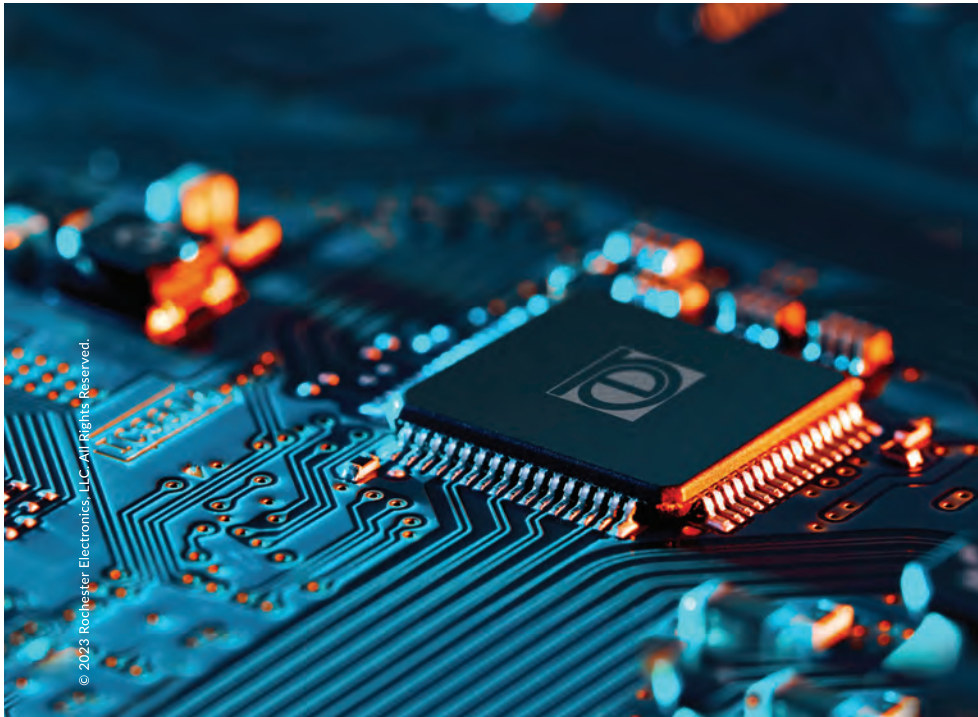
Work with a licensed manufacturer and supplier:

- Acquire components manufactured to the original supplier datasheet, possibly with the option to build-to-order
- Partner with a manufacturer possessing the experience and relationships with original component manufacturers

Rochester has facilitated semiconductor product transfers since 1992, manufacturing over 20,000 device types, with over 12 billion die in stock and the ability to produce over 70,000 device types. Licensed to manufacture devices no longer produced by the original component manufacturer, Rochester collaborates directly with OCMs for a seamless transfer of products approaching end-of-life. The end-product is a form, fit and functional replacement guaranteed to original datasheet performance.

[www.rocelec.com](http://www.rocelec.com)

\*(Source: McKinsey, Chip hunting: "The semiconductor procurement solution when other options fail" - April 4, 2023)



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## SOLVING SUPPLY CHAIN AND OBSOLESCENCE CHALLENGES.

As an authorised distributor, Rochester Electronics provides the world's most extensive range of end-of-life (EOL) and broadest range of active semiconductors to keep the medical, defence and infrastructure industries moving worldwide.

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Authorised Distribution | Licensed Manufacturing | Manufacturing Services

# Inspiring innovation and growth

Midas Displays highlights how investments in people and facilities will underpin the company's ability to support customers with innovative display solutions

Midas Displays' mission is to provide customers with full, bespoke, visual solutions that enhance user experiences and elevate industry standards. Through a blend of creativity, precision engineering and customer-centricity, the company strives to exceed expectations, enabling customers to stand out and succeed in a dynamically evolving world.

The business saw 2023 as a year of investment, with several talented individuals—

with years of experience working in the display technology industry—joining the sales and engineering teams. As well as this, the company invested in new branding, a new website and planning for a new purpose-built building.

2024 is an opportunity for Midas to further build on the solid foundations that have been set. The company will move into its new building early this year, which will give the teams a refreshed, larger workspace to inspire further innovation and growth. Expectation is that

the business will continue to grow this year, with the team working on some highly technical, exciting projects across automotive, medical and industrial sectors where customers have sought Midas out specifically for its engineering capabilities and customer support.

[www.midasdisplays.com](http://www.midasdisplays.com)



**2024 is an opportunity for Midas to further build on the solid foundations that have been set**



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# Investing in training

ART explains how training demonstrates commitment to quality, meets customer expectations, gains industry recognition and supports international trade



2024 will be a busy time for Advanced Rework Technology, working with industry members and IPC to ensure the release of new and revised IPC documents/standards and associated training programmes to maintain the quality of the products and services offered to the electronics industry.

Expected releases for 2024 include IPC-A-610 and J-STD-001 Revision J, 7711-7721 Revision D and IPC-A-620 Revision E Space Addendum training programme.

Standardisation is a dynamic function of the electronics industry and is constantly evolving. ART works with IPC to continually move forward with improvements and best practices to support manufacturing.

Advanced Rework Technology has been established for over 30-years and progressed within the industry to becoming a world leader as an IPC and bespoke training provider.

Whether manufacturers require certified or bespoke training courses, ART has the knowledge and trainers to support their needs. Many companies often don't need certified training but would like to provide evidence their personnel have received industry-based training to support their product or process needs. ART

specialises in preparing and presenting bespoke syllabuses working closely with each customer to ensure the content, duration and theory versus practical proportions meet their exact needs.

ART can offer bespoke courses based around many industry lead subjects including but not limited to:

- Introduction to hand soldering
- Rework of surface mount devices
- Rework and repair of printed circuit assemblies
- Wire and terminal assembly and soldering
- Cable and wire harness assemblies

Investing in IPC training and certification programmes can help manufacturers: demonstrate to current and potential customers that their company considers rigorous quality control practices very important; meet the requirements of electronics manufacturing companies that expect their suppliers to have important credentials; gain valuable industry recognition for their company and themselves; and facilitate quality assurance initiatives that have become important in international trading.

Individuals can become certified to six key IPC standards:

- IPC 6012, Qualification

and Performance Specification for Rigid Printed Boards

- IPC-A-600, Acceptability of (Bare) Printed Boards
- IPC-A-610, Acceptability of Electronic Assemblies
- IPC/WHMA-A-620, Requirements and Acceptance for Cable and Wire Harness Assemblies
- J-STD-001, Requirements for Soldered Electrical and Electronic Assemblies
- IPC-7711/7721, Rework, Modification and Repair of Printed Boards and Electronic Assemblies.

For manufacturers building aerospace products or trying to gain contracts within this field, Advanced Rework Technology is the only IPC Accredited Training Partner (IPC Training Centre) in the UK who is authorised to teach both of the IPC Space Addendum training courses for J-STD-001 and IPC-A-620.

To enhance the training and consultancy services offered, ART has invested in state-of-the-art soldering and rework equipment, keeping pace with ever changing industry and technologies.

[www.rework.co.uk](http://www.rework.co.uk)



**Advanced Rework Technology has been established for over 30-years and progressed within the industry to becoming a world leader as an IPC and bespoke training provider**



**SITES NOW IN UK AND ITALY**



As an Authorized Training Center, A.R.T Ltd can offer Certified Training to the IPC Standards listed below. A.R.T Ltd are the only training center in the UK able to offer CID PCB Design and IPC-6012 training and Space Addendum training for J-STD-001 and IPC-A-620.



Acceptability of Electronic Assemblies



Requirements for Soldering Electrical and Electronic Assemblies



Repair Rework and Modification of Electronic Assemblies



Requirements and Acceptance for Cable and Wire Harnesses



Qualification and Performance Specification for Rigid PCB's



Acceptability of Printed Boards

# The Vital Component

## At The Heart Of Our Industry

Gone are the days when an electronic component distributor simply quoted on a parts list, took an order and shipped the product. Customers demand much more now from distribution to help address the challenges of present-day supply chains. Whether it be regulatory requirements, environmental demands or sourcing and obsolescence issues, you need trusted partners with the technical knowledge, connections and adaptability to solve problems you can't solve alone.

### LINKING UP THE ELECTRONICS COMMUNITY

A good distribution partner aims to address every aspect of your supply chain requirements. The technical specification of a component, and engineering support during the design in phase, are clearly vital to ensure a solution delivers the functionality your engineers require. Over and above that, however, there may be regulatory hoops to jump through, performance challenges for harsh environments, quality and test issues, and sourcing and obsolescence problems to overcome. The more of these challenges a distributor can help you tackle, the better a distribution partner they become.

Solsta's team of experienced engineers and product experts focuses on providing not just component parts, but complete system support. By taking a deep dive into the additional challenges you face beyond your technical and functional requirements, they can then connect you to the methodologies, technologies, suppliers and products you need to turn your idea into reality.

added services has evolved over the years in response to what you, our customers, have asked us to do. For example, we have responded to an increase in demand for our sourcing and obsolescence solutions by strengthening our component sourcing team. Our specialist SOS business unit offers a comprehensive sourcing service for obsolete and hard-to-find electronic components, utilising the latest anti-counterfeit detection methods and over 20 years of industry knowledge to help you overcome supply chain issues and keep your production running.'

### PARTICULAR CHALLENGES IN MEDICAL AND DEFENCE

Nowhere are regulatory, environmental and sourcing challenges more apparent than in the medical and defence sectors. Very specific requirements and standards apply here, and the typically longer lifetimes of medical and defence equipment mean that component obsolescence poses a particular headache.

The team at Solsta has years of experience supplying top tier defence and medical OEMs and is well aware of the hoops they must jump through. If, for example, production of vital optoelectronic sensors or medical display panels has been discontinued, replacement products must be sourced that are 'like for like' both mechanically and electronically, to avoid lengthy and costly re-validation processes. In this situation, finding a new manufacturing partner for replacement parts can be preferable to investing in a large last-time-buy of stock that could degrade and become unusable.

Baxter adds: 'Our Custom Solutions Centre has the resources and capabilities to design and build completely new components and displays to replace obsolete parts. As we have taken on higher value and more complex projects, the rigour and business disciplines we have adopted are all part of ensuring that we can deliver our products and services robustly as a business.'

[solsta.co.uk](http://solsta.co.uk)



Customisation is frequently the key to a successful project completion. Suitable component parts may simply not be available off the shelf, but a distributor familiar with the potential of the customisation process, ideally with in house custom manufacturing capability, can suggest ways around this to come up with a solution.

As Jon Baxter, Sales & Marketing Director at Solsta, observes: 'Part of the reason we changed our name recently is that our previous brand, Solid State Supplies, simply no longer represented everything we do for our customers. Your supply chain will run more smoothly and efficiently if you can come to us for more than just 'solid state' components, and we now offer a much wider portfolio incorporating non-solid state parts such as magnetic sensors, resistors and antennas.'

'We also recognise that you need us to do more than just 'supply' components, and as a result, our range of value-







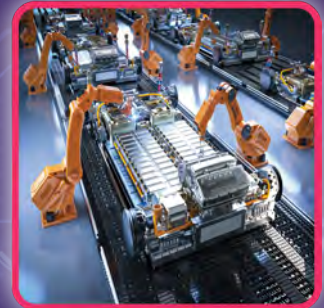
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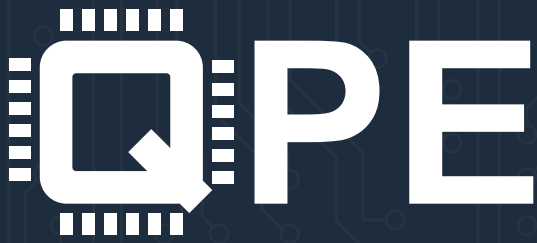
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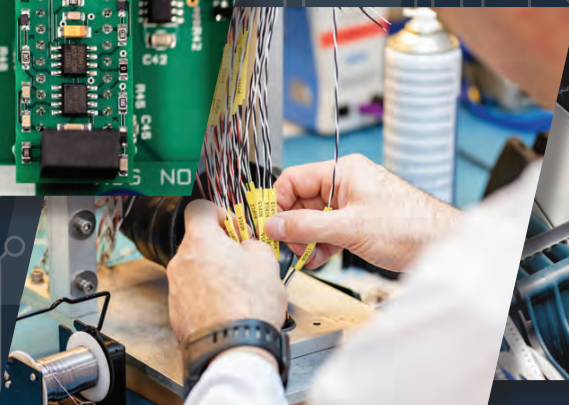
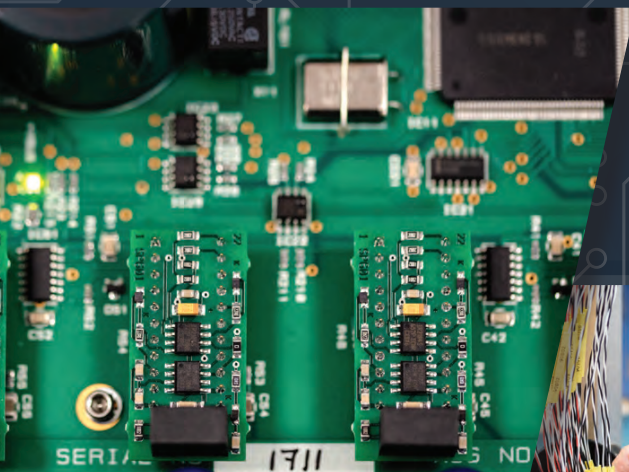
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# Versatile, reliable interconnect solutions

January 2024 sees Cambridge Electronic Industries launch its new range of M Series circular connectors, designed to provide reliability in a range of applications

Featuring M5, M8, M12, M16 and M20 versions, Cambridge Electronic Industries' new M Series circular connectors cater to a wide range of applications and needs, from lower pin densities for power applications, to high-density signal pins offering speeds up to 10Gbps.

The connectors come in shielded and non-shielded variants letting users select the appropriate connector for their specific requirements. The quality connectors feature gold

plated pins ensuring good electrical conductivity and durability. Robust bodies mean the connectors can withstand harsh environments and with the waterproof rating of IP67, connections are protected from ingress of moisture and dust. Panel mounting options are available in front and rear allowing versatile installation configurations. M Series Connectors also come with the option for ready-made or bespoke cable assemblies, saving time and effort when integrating these connectors into projects.

These features make the M series Circular connectors from Cambridge Electronic Industries a versatile and reliable solution for different electronic and electrical connectivity needs.

[www.cambridgeelectronics.com](http://www.cambridgeelectronics.com)



**Robust bodies mean the connectors can withstand harsh environments and with the waterproof rating of IP67, connections are protected from ingress of moisture and dust**

**M Series**

CAMBRIDGE ELECTRONIC INDUSTRIES

The New Circular Connector Range in M5, M8, M12, M16 and M20 Sizes

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## Next-day delivery on vast connector range

With a multi-million-pound connector and piece-part stockholding, Lane Electronics is the connector distributor of choice for OEMs across many industrial sectors.

Lane Electronics, a market-leading franchised stocking and assembling distributor for many of industry's

major electrical and electronic connector manufacturers is the preferred connector supplier across many industry sectors including defence, avionics, motorsport, marine, communications, medical, test and measurement, general industrial solutions and geophysical.

A major source for all key connector types, Lane Electronics

has a multi-million-pound connector and piece-part stockholding and can offer next-day delivery on over 127 standard product ranges. Various types of accessories such as backshells, dust caps, nut plates, gaskets, telescoping bushing and heat shrink boots are also available.

The company's recently updated website provides improved keyword and part number search functionality, with suggestions of typical part numbers and related accessories. Quick access is provided to product types

or product ranges filtered by: type, manufactured by, market sectors and specification.

[www.fclane.com](http://www.fclane.com)





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SCHURTER walks readers through its broad product offering which includes solutions for a wide range of industry sectors from industrial to medical and automotive

**S**CHURTER manufactures and distributes circuit protection components, connectors, switches and EMC products. In cooperation with customers, the company also develops and manufactures input systems and HMI's.

In the industrial sector, the company offers over 20,000 products. In the medical industry, SCHURTER's products include safe power supplies and specific user interfaces designed to meet the needs of this exacting market.

Automotive controls and power supplies depend on component reliability and long-term stability. Chip fuses are precise, reliable, temperature resistant

and robust against vibrations. Specifications in space and avionics are significantly higher than regular international standards. SCHURTER provides zero defect solutions to meet the highly specific requirements of electronic systems used on aircraft, satellites and spacecraft.

In data and communications, consistent, high-quality components are required for the creation of systems in data centers. In energy, uninterrupted electricity supply represents a key competence in the 21st century.

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### Rail converter features ultra-wide input

Flex Power Modules is launching its PKM7200W series DC-DC converters with an ultra-wide input range of 16 to 160V, ideal for world-wide rail applications. Measuring 62 by 40 by 13mm the products provide 150W continuous output power and 12, 24 or 54VDC fully regulated single outputs. The parts achieve up to 89 per cent efficiency and feature 4kVDC isolation, meeting the requirements of EN 50155 for rail, as well as IEC/EN/UL 62368-1 for IT and audio/visual applications.

The series features a VBUS pin, an input-referenced connection that is boosted to around 100V, irrespective of input voltage. This can be used to charge a user-supplied capacitor which the DC/DC switches in when the input power is interrupted. The feature enables long hold-up time with a relatively small capacitor, to meet the 10 to 30ms requirements of EN 50155.

Operating temperature range is -40 to 100°C baseplate temperature with derating, depending on attached heatsink and airflow.

[www.flexpowermodules.com](http://www.flexpowermodules.com)



### More smart enclosure choice

OKW has extended its range of Smart-Panel wall-mount and desktop enclosures for building monitoring and control. New size S114 fits flush-mount cavity wall boxes up to 100 by 100mm. The design is ideal for applications including building services systems, electrical installations, smart homes, offices, security, IoT/IloT, wireless communications, measuring and control, medical and laboratory technology.

The enclosures have a highly polished bottom section with a flat, recessed area for interfaces such as USB or mini-USB. The top has a fine surface structure and is recessed to accommodate a touch screen or membrane keypad.

Electronic components such as PCBs can be fitted in the top section of the enclosure using the four mounting pillars provided. Self-tapping PCB screws are available as accessories. Screwless snap-together assembly speeds up installation times. The enclosures can then be reopened for inspection and maintenance using a pair of dedicated tools available as an accessory.

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Receptacle with wider front nut

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## Obsolescence Management



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## Obsolescence Strategy



Component Roadmap / BOM Analysis



Centralised Data Management



Leverage Goods Demand Forecasting



Align with a Trusted Partner



Rebound Electronics





Exclusively sponsored by Anglia Components PLC

# Vigilance is the keyword to navigating the challenges ahead

*As we start 2024, the components supply chain appears robust, with ample inventory and short lead times. However, Steve Rawlins, the CEO of Anglia Components PLC, urges caution against complacency, emphasizing the economic headwinds that may disrupt the current favourable conditions.*

Inflation remains a persistent concern, exerting sustained pressure on the economy. While limited growth is still possible in the industrial sector, markets driven by consumer spending are expected to contract. The build-up of inventory in the component supply chain as a consequence of economic factors, has led to decreased demand. Rawlins anticipates this situation will persist until the second half of 2024, at which point we should have a clearer picture of the market and will review sales budgets accordingly.

The current oversupply scenario is tempting customers to opt for a spot market sourcing approach rather than placing forward orders. Rawlins warns that market conditions are transient, the oversupply situation will correct itself as inventory is depleted and lead-times may start to extend. Prudent customers are advised to forecast based on their demand and consider using services like Anglia 80/20 which can

mitigate risks by offering dedicated production line-side inventory accessible when needed, without immediate costs.

Anglia recognises the importance of a healthy work-life balance and has implemented measures to support its workforce. Reduced working hours, early Friday closure, increased holiday allowances, and comprehensive health plans are among the initiatives aimed at nurturing employee well-being. Despite these changes, customer service remains unaffected, underscoring the company's commitment to both its employees and customers.

In response to the escalating effects of climate change, Anglia has partnered with ClimatePartner to measure its carbon footprint, the company now offsets its carbon emissions and has made a commitment to a proactive plan to reduce future emissions. The adoption of unbranded recyclable packaging aligns with their sustainability policy, emphasizing the growing importance of environmental responsibility.

Even in a challenging market Anglia continues to invest for growth, initiatives include opening its Anglia Live eCommerce platform to Europe. This expansion, supported by significant

investments in logistics infrastructure and website enhancements, aims to bring the company's successful online digital model to the European market. The move benefits both European and UK customers, with increased inventory storage and improved accessibility.

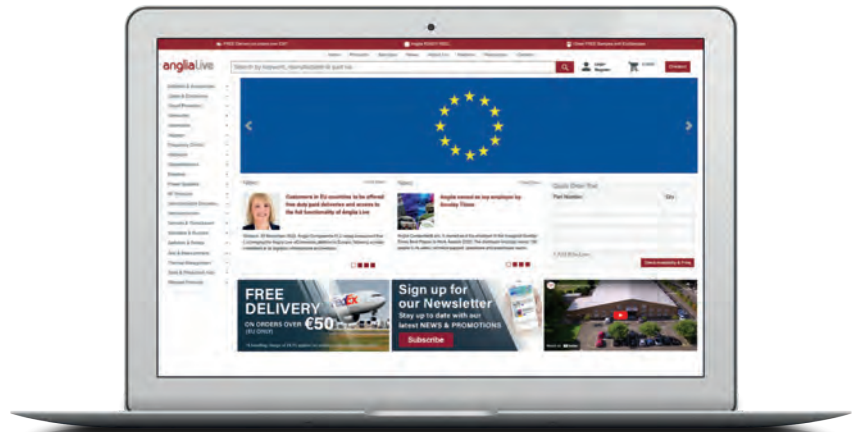
Despite anticipating a challenging year for the industry in 2024, Rawlins expresses confidence in Anglia's ability to navigate uncertainties. Investments made in the business, including the expansion of the distribution centre and the introduction of the Anglia Live platform to Europe, position Anglia to support customer needs effectively. Collaboration and proactive planning are identified as key elements to ensure a consistent supply of inventory for production.



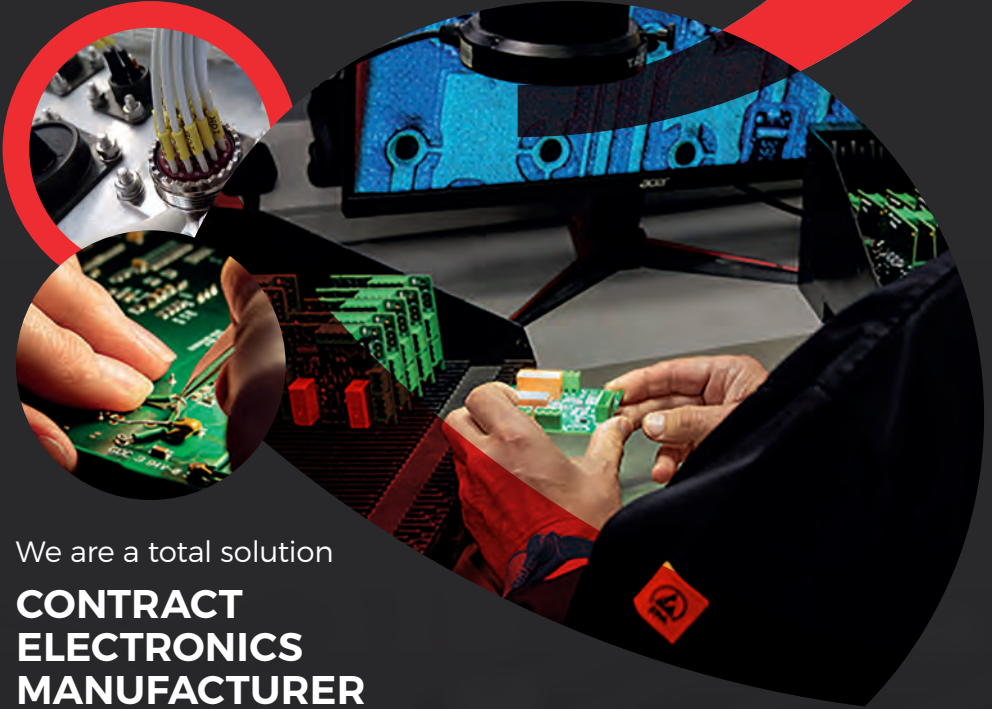
Anglia Components' CEO, Steve Rawlins

In conclusion, vigilance and strategic planning are essential for businesses to weather the challenges of 2024. As economic uncertainties persist, Anglia are proactively addressing issues related to supply chain dynamics, employee well-being, environmental responsibility, and strategic growth to ensure resilience and sustained success in the ever-evolving market landscape.

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conformal coating & encapsulation to final product assembly, test and repair. Through these excellent resources, we offer a comprehensive contract electronics manufacturing service that is tailored to our customers' exact needs, including fast track prototyping, project management and full turnkey manufacture.



# Five lessons when manufacturing space products

*Plexus' space technology manager, Ellie Ebrahimi, shares five key lessons for new space companies and startups as they embark on their growth journey*

Scaling up manufacturing for space applications can be daunting for new space companies and startups. It's essential to ensure production can meet growing demand while maintaining quality and reliability.

## **Lesson 1: Knowing your market approach**

Traditional space industry approaches have been effective at minimising risk but can be time-consuming, costly and document-heavy. The shift to 'new space' has brought changes. The need to launch satellites into LEO in a shorter timeline, while minimising costs, has led to a more balanced approach between development and qualification time, non-recurring expenses, product cost and residual risk. This balance needs to be achieved early in the project definition stage, allowing for efficient and focused engineering and product realisation.

To achieve this, a risk-based approach can be employed, where the system architecture, mission profile and targets are assessed to

determine the acceptable level of risk. A useful tool is FMEA (failure modes and effects analysis)/FMECA (failure mode, effects and criticality analysis), which identifies potential failure modes and their effects, plus their criticality. This helps identify the required design margins to meet relevant qualification requirements.

This approach facilitates the necessary trade-offs and allows for efficient development and testing while minimising costs and risks. Experienced suppliers can help ease the challenges in assessing trade-offs and ensure development and mission needs are met.

## **Lesson 2: Optimizing the design process**

When it comes to space manufacturing, getting the design right is crucial. A tried and tested Design for Excellence (DfX) integration process helps streamline the design phase, reducing costs/time-to-market and eliminating surprises during new product introduction.

DfX reviews should be conducted by dedicated professionals at various stages of the design cycle, making it easy to implement changes efficiently and cost-effectively. This process relies on a network of downstream stakeholders, including supply chain solutions, test, manufacturing, and sustaining services, which are best served through a comprehensive engagement model tailored to business needs.

In the space industry, where supply chains are intricate and lead times longer, engaging with a third-party bespoke DfX expert can be valuable. It ensures the product is optimised for manufacturing, leading to reduced costs, improved quality and higher reliability—ultimately resulting in increased product longevity.

In addition, the design phase is an opportunity to maximise sustainability and Plexus encourages space technology companies to consider and evaluate all



Plexus' space technology manager,  
Ellie Ebrahimi



**It's essential to ensure production can meet growing demand while maintaining quality and reliability**

possibilities at this stage. Doing so ensures each new product manufactured is fully functional but not at a cost to the environment.

By optimising the design process through DfX integration, ensures the manufacturing process is streamlined, efficient and cost-effective, while maintaining high levels of quality and reliability.

**Lesson 3: Optimising the supply chain**

In an industry as fast-paced and complex as new-space, ensuring secure and reliable supply chains is crucial. The pandemic's lasting effects and ongoing geopolitical tensions only add to the risks to mitigate. This isn't just about finding alternative resources and logistics at short notice; it's about developing a comprehensive network that reaches across all areas of the supply chain.

Quick turnaround times are critical for space products, which often require numerous iterations. The importance of maintaining quality and pace cannot be understated. Selecting the right suppliers and ensuring they meet quality and regulatory requirements is vital, as is having the ability to scale production with distributors who can grow and keep pace with technical changes.

Partnering with experts can make all the difference.

It is not just about having the resource knowledge to know where and how to locate suitable alternatives for components and logistics at pace but incorporating an understanding of pain points likely to impact efforts to do this. This is where a partner can really help—by acting as an extension of your team to address these issues in a timely and cost-effective fashion.

**Lesson 4: Developing the test strategy**

Developing a comprehensive and cost-effective test strategy is essential to ensure success. With the high complexity and high value of space products, even the smallest defects can have significant consequences. This is why detecting defects early in the manufacturing process is crucial. The test strategy should encompass all available test and inspection processes, accounting for regulatory requirements and the manufacturing process that affects the testability and defects.

Developing the right test strategy will avoid issues down the line as repair costs for a faulty module increase by a factor of ten for each additional process step (Rule of Ten). A partner can add extra capacity to support test strategy implementation, combining different test methods to ensure all bases are covered.

**Lesson 5: End-of-life plan**

As space manufacturing continues to expand and innovate, so does the responsibility of space manufacturers to consider their products' end-of-life. Limiting space debris, minimising the possibility of collisions and maintaining satellites in orbit are all critical aspects of a broader commitment to sustainability and environmental standards. Interrogating and exploring the extent to which products can be reused or recycled at the design stage will maximise capacity for meeting these responsibilities head on.

By taking a risk-based approach and engaging experienced partners, space companies can achieve an efficient and cost-effective route to market while also mitigating the risks inherent in space manufacturing.

[www.plexus.com](http://www.plexus.com)

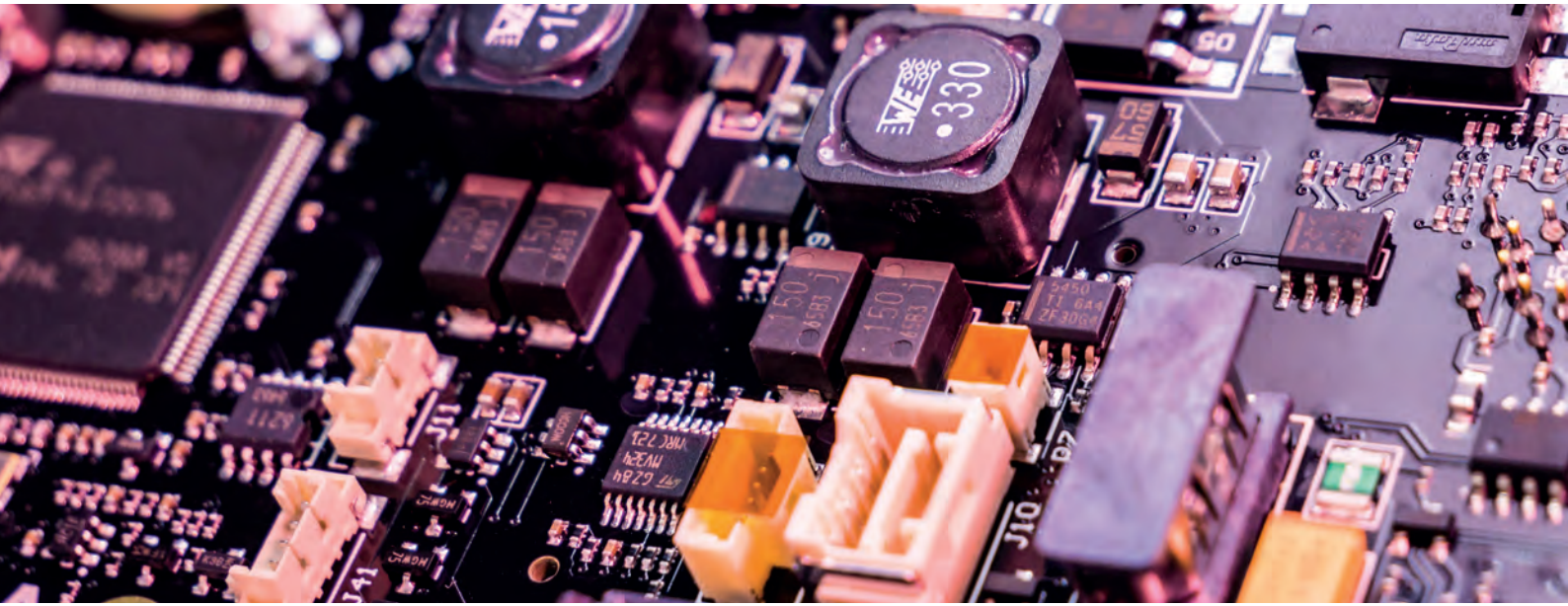


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# What's the cost of your supply chain?

*NOTE's UK business development director, Andy Thwaites, explains how a thorough examination of landed costs is driving OEMs to take tighter control of their supply chains*

Some may be aware there is a substantial change occurring on the world stage of electronics manufacturing. Following the challenges of the pandemic and global component shortages, the now volatile geopolitical situation is causing many companies to revisit their manufacturing strategies.

Innovation within the world of electronics has continued at a fast pace and whilst some companies may have seen a slowing in 2020/21, in 2023 we found ourselves dealing with accelerated product development plans and re-designs to mitigate risks such as component availability and obsolescence.

The challenges of recent years have really shone a spotlight on the UK's reliance on overseas manufacturing. Add Brexit into the mix and regardless which side of the fence you sit on, we cannot deny the changes in

customs duties and general increases in landed costs some have experienced. For some companies this has really highlighted the need for manufacturing to return to the UK, or at the very least have a near-shoring strategy in place. Why, you may ask?

The cost of convoluted supply chains and extended lead times due to shipping delays and cost of shipping, has really brought a focus back to true landed cost. Added to that, when supplying product into certain geographies it often now carries a much higher import duty if it is manufactured in Asia. This in turn makes local sourcing more appealing.

We are all aware of the rich heritage that this country has for innovation and manufacturing. There is a great deal of admiration and respect for the products made in the UK and our capabilities have become synonymous

with quality, integrity and trustworthiness from all stages in the supply chain, so it really does pay to invest in the manufacturing at home.

NOTE is seeing a trend of OEMs seeking to take back control of their supply chains by moving to a more regional strategy and using CEMs with sites in more local geographies. The trend seems to be driven by a focus to look at updated landed cost comparison of local manufacturing versus managing their supply chains and product fulfilment at arm's length. The key word here is 'landed' as some have omitted to consider the cost of engineering support, ease of communications, different time zones and two key elements: flexibility and agility.

Today we are gaining momentum as the UK gears up for projected growth in the next three years and with the availability



**NOTE's UK business development director, Andy Thwaites**



**There is admiration and respect for UK manufactured products, with our capabilities synonymous with quality, integrity and trustworthiness**

of buffer stock returning to suppliers, this will enable us to re-start our Kanban fulfilment model for many customers which offers a greater degree of flexibility and reduces lead times to a minimum. A well-engineered Kanban system self regulates by pulling higher level build when demand dictates and conversely slows up when demand falls. Meaning valuable resources are never wasted.

Reshoring manufacturing mitigates a lot of risk and so businesses can avoid rising costs and the additional administration. Even if manufacturing returning to the UK is born of necessity, there are many advantages to bringing the manufacturing process back to British shores:

**Fast and flexible response:**  
By choosing to manufacture in the UK, customers can cut the time it takes to receive their products. Local supply means short response times and a greater degree of agility when OEMs require flexibility.

**Reducing carbon footprints:**  
NOTE is committed to decreasing its carbon footprint and is constantly looking to improve its sustainability policies. Sourcing manufacturing locally can significantly reduce the distance that products must travel.

**Relationship partnering:**  
Having a local partner and being able to have in-person visits comes with a whole host of intangible benefits. At NOTE we aim to build up a rapport with customers face-to-face, generate ideas with the team and shake hands with the team creating the products. The company aims to sit on the same side of the table as its customers when it comes to fulfilling their product requirements.

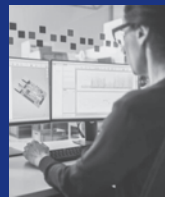
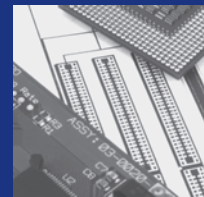
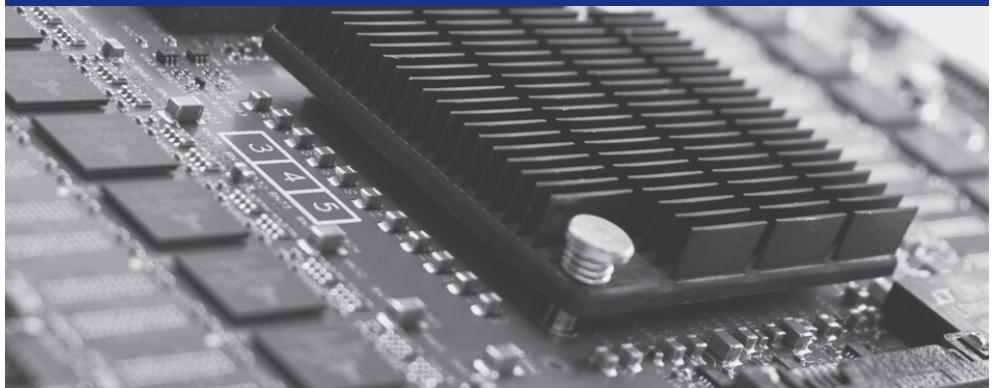
There is no escaping global uncertainty, but we can put things into effect to mitigate risk and use of the right supply chain technologies can dramatically reduce the worst impacts of disruption.

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# The Future of Automotive Technology

by **Matt Mielke**, applications engineer, **DigiKey**



Technology is changing so much in our daily lives – including how we get around. The electrification of vehicles, autonomous vehicles and connected systems within cities are no longer far-off dreams, these technologies and a more connected automotive eco-system are more of a reality than ever before.

So how do we ensure we're ready and what technology is on the horizon? That's what our team at DigiKey, along with our suppliers, are working to understand.

## **Vehicles of the Future**

There are many ways technology has improved how we get around, the efficiency in which we do so and the safety of our cars. I'm excited about these advancements and how they're changing and improving transportation for all of us.

• **Eliminating the need for a human driver** – To maintain

a competitive edge, many companies are looking toward driverless vehicles to cut costs and increase efficiency. With autonomous capabilities, we will see material transport and rideshare services operating with nobody in the driver's seat.

• **Battery optimization** – Similar to how AI learns your phone use, patterns and behaviors and charges your phone accordingly to best utilize your battery and increase its longevity, I expect this to be possible with car batteries in the future. Batteries are expensive and an important factor that dictates the lifespan of a car, and these advancements will help keep EVs on the road for longer.

• **Predictive maintenance** – This is the ability to estimate, or predict, when maintenance should be performed on a vehicle. There are already sensors within cars and trucks, and I

expect that we'll continue to see more and more of this, monitoring the different parts of a vehicle – like the engine, brakes and any other moving component. If problems can be detected early and repairs can be made, this avoids costlier, and often time-consuming, catastrophic failures down the line.

• **In-cabin assistance** – Technologies utilized on the outside of vehicles for environment perception, such as machine vision and mmWave radar sensors, may also be used inside the cabin to monitor the driver's heart rate, breath rate, head movements, eye movements, etc. to determine whether they are tired or unable to operate a vehicle safely.

• **IoT and cars** – When you bring your car to a mechanic, they will be able to connect to it via their phone, getting a full rundown of what's going on before ever

opening the hood of the car. They can start diagnosing problems faster and more efficiently.

## **How DigiKey is Supporting Automotive Technology**

At DigiKey, we understand the importance of having the right products available to enable technology and innovation. We have a huge selection of automotive products, along with application details, articles and technical resources, that keep the smartest minds in the industry moving us forward.

With seemingly endless opportunities ahead, it's an exciting time to be in this space and help create a connected ecosystem and be a part of the future of the automotive industry.

For more information about procuring automotive products from DigiKey, visit [www.digikey.co.uk](http://www.digikey.co.uk).





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

Power by John Denslinger

## Power grid abyss

*In this article, John Denslinger explores the scale of investment required to match the US' electrification goals and deadlines with the power transmission infrastructure itself*

**A**chieving a clean energy economy won't be possible without major upgrades to the US power transmission infrastructure. That is the assessment of America's investor-owned electric utilities and the Department of Energy. Most of the electrical grid was built in the 1960s and 1970s and it's estimated that 70 per cent of the grid is at least 25-years old. The average large power transformer is more than 40-years old nearing its 50-year useful life. It's an old grid. It's a high maintenance grid. It's simply outdated for tomorrow's green energy demand.

The Federal government is driving an ambitious timeline of eliminating or offsetting carbon emissions in the power generation sector by 2035 and from the total economy by 2050. The electrification of America is well underway and the need for more power generation is bound to surge year-over-year. But can the grid keep up with increasing demand plus climate change and the apparent rash of severe weather patterns (wildfires, heat waves, snowstorms, floods, hurricanes)? Can the grid manage sophisticated cyber threats? Can the grid tolerate the complexities of state and federal regulators as many projects are slow-walked for years? Are consumers willing to tolerate power outages that have already plagued several states? Are they also willing to pay higher energy prices?

Building out the new grid is a sizeable undertaking considering there are more than 3,100 utilities in the US serving a patchwork of small geographic areas according to the Department of Energy. Criss-crossing transmission lines involve multiple municipalities, states and federal agencies. As one would expect, discussions are often politically motivated sacrificing both efficiency and

optimization. Acquiring rights-of-way with landowners is another issue, as well as overcoming objections from environmental coalitions on many new installations. As troublesome as these issues seem, it's the sheer size of capital investment that staggers the mind. A 2020 study published by Princeton University estimates it will take a massive \$2.4T (before inflation) to build-out a viable grid by 2050. For perspective, today's electric utilities collectively spend \$25-30B a year on transmission infrastructure.

Marsh & McLennan Consultants identified 140,000 miles of US transmission lines that must be replaced by 2050. But that's only half the story. The location of existing transmission lines is also problematic. Our grid was built on fossil fuel, not green energy sources like solar and wind. Power plants are located near cities with oil, coal and natural gas delivered by railroads or pipelines thus shortening the transmission distance to users. Solar and wind can only generate electricity where environmental conditions yield maximum output. Its use point may be quite distant from the generating source necessitating miles and miles of new transmission lines.

Electrification of America is a national priority now, but there's no national strategy for the grid (the backbone of electrification). By the federal government's own admission, no one is in-charge of the grid. There is no comprehensive plan, no short term/long term schedule, no coordination of national interests, and no one clearly owning decisions at the Federal level. That's the abyss. With a mere \$2.5B allocated to grid modernization so far, America is miles from the transformation it needs.



## Rail profiles are fire protected

EMKA is offering expertise in processing materials certified to currently valid fire protection standards for rail vehicles including: DIN EN 45545-2, ASTM E1354, ASTM E662, ASTM C1166, BSS 7239 and SMP 800C. EMKA's conformity with these standards forms a secure foundation for sealing applications leaving design and installation engineers to check the material meets their specific requirements.

EMKA engineers advise there are advantages of profiles made of EPDM fire protection compound including flame retardant properties, plus significant cost savings compared to silicone seals. They also offer the ability to provide customised frames and rings with sealed joints ready for instant installation.

Standard sections for railway application include spring-cored clip-on P-types D-types, edge protectors and channel-fitted sections for enclosures, cabinets and access panels where sealing or protection is an important part of their function. Custom profiles are developed for individual applications, with product geometry to specific customer requirements.

[www.emka.com](http://www.emka.com)



## Eliminate connection errors in multi-fibre systems

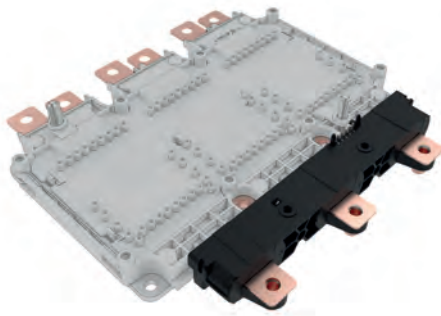
OMC's new family of key coded SMA fibre optic connectors offer clockface style multiple keyways in up to 50 different orientations as standard. Originally designed in response to a customer request for a keyed connector for a four-channel installation, the new family overcomes installation errors by effectively engineering them out.

The master keyway at the 12 o'clock position fixes the orientation and a second keyway, which can be in one of multiple other positions around the clock, fixes the channel number. Using this system, it is impossible to connect the wrong fibre optic cable to the wrong transmitter or receiver device. Connectors and device housings with custom keyway positions for greater numbers of channels are also possible on request.

The key-coded system is available on OMC's full range of SMA device housings, including its H22 PCB-mount housing, plus its H1 turret-style receptacle and proprietary Vertical SMA housing which occupies only 7 by 8mm of board space.

[www.omc-uk.com](http://www.omc-uk.com)

## Speeding EVs to market



Developers of automotive traction inverters are increasingly using three-phase power modules such as Infineon's Hybridpack Drive. These modules are adopting SiC MOSFET technology, letting vehicles use 800V battery systems that offer faster charging and longer driving range.

LEM's new HAH3DR S07/SP42 compact three-phase current sensor is designed to fit these 800V modules. Calibrated over temperature and stable over the unit's lifetime, they enable quick time-to-market with little R&D effort. This suits companies developing small passenger vehicle

platforms, trucks and buses, while restrained by limited R&D resources.

The sensor offers a wide selection of current measuring ranges from 700A to 1,200A. Compared to existing units in the HAH3DR family, the package isolation characteristics have been upgraded to cope with the challenge of 800V power modules.

The product offers a unique enlarged aperture to accommodate busbars up to 1.5mm thick, making it compatible with the newest generation of power modules.

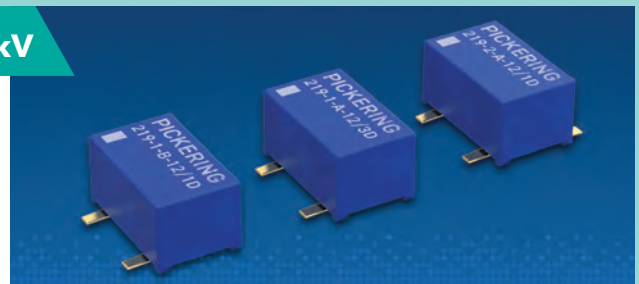
[www.lem.com](http://www.lem.com)

## High voltage SMD reed relays switch up to 1kV

Pickering Electronics has announced its first high voltage surface mount reed relays, known as the Series 219. Available in multiple package types, these relays can switch up to 1,000V in 1 Form A (SPST), 2 Form A (DPST) and 1 Form B (SPNC) contact configurations. Switch stand-off is up to 3,000V, while switch-coil isolation is up to 5,000V stand-off.

The relays suit high voltage applications including mixed signal semiconductor testers, medical equipment testing, EV charge point testing and monitoring solar cell photovoltaic efficiency.

Pickering Electronics' product development manager, Robert King, said: "Only Pickering makes surface mount high voltage relays with 2 Form A and 1 Form B packages. The 2 Form A configuration optimises board



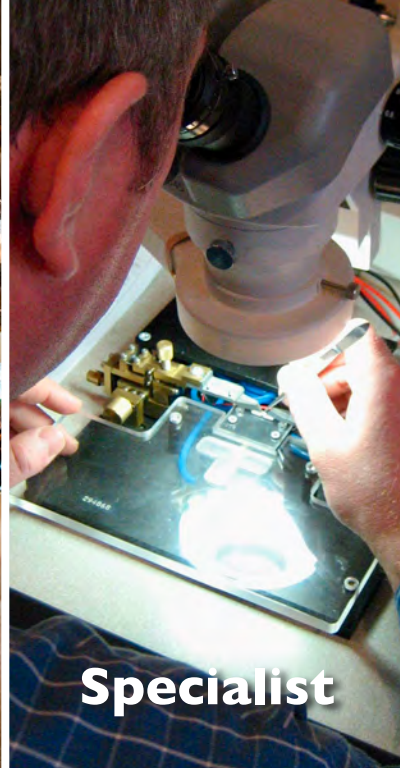
space, providing two switches in the same footprint. With 1 Form B, users can have a normally closed relay option that is not available elsewhere in the market."

[www.pickeringrelay.com](http://www.pickeringrelay.com)





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## Rely on Charcroft for your toughest procurement challenges

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Director

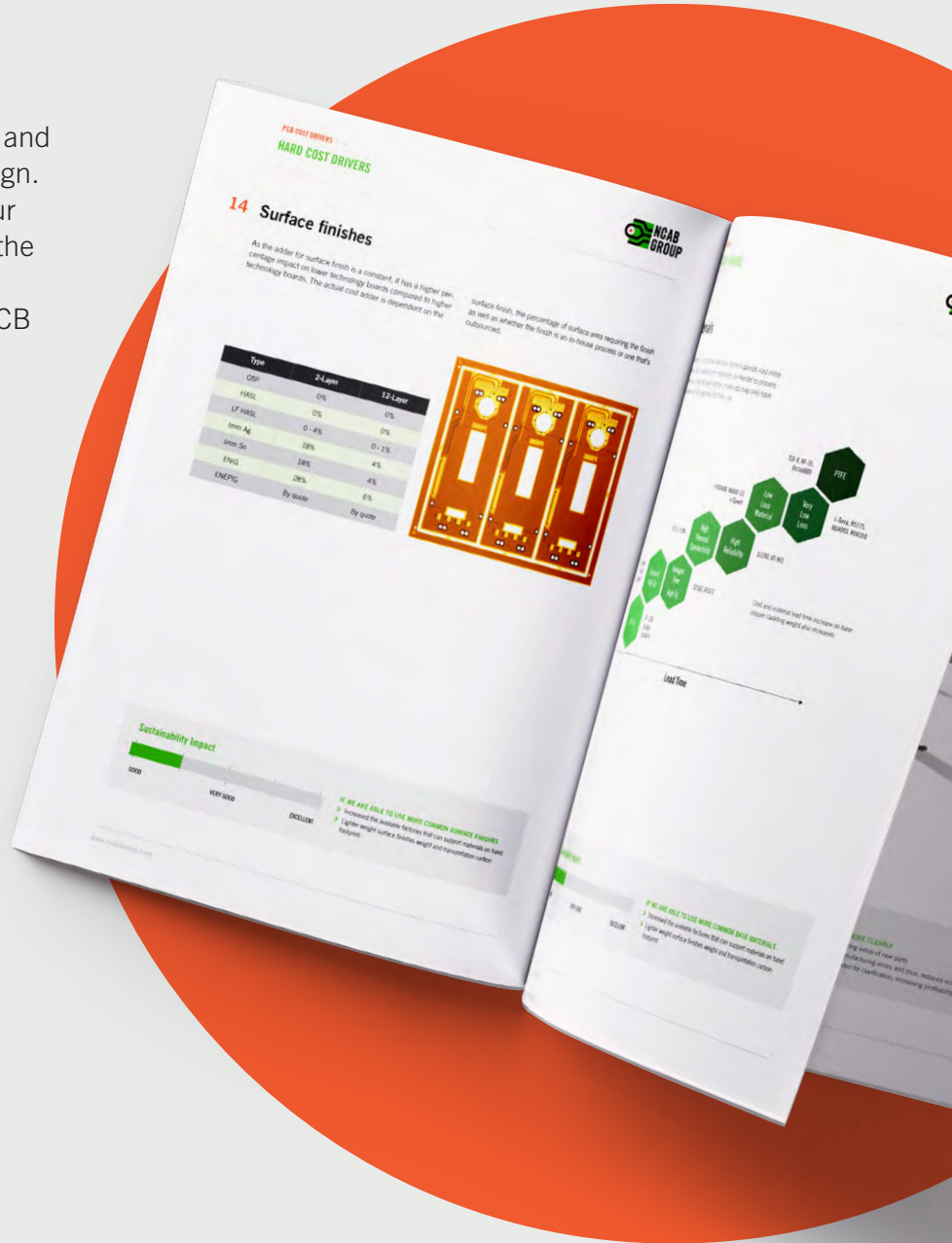
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# PCB design tools

– for reliable printed circuit boards

Nothing affects the PCB's total cost and reliability as much as the initial design. That is why we have put together our PCB design tools for all involved in the PCB design or production process. Our current PCB design tools are PCB design guidelines, PCB design tips, PCB design checklist and PCB cost drivers.

All tools can be downloaded from [ncabgroup.com](http://ncabgroup.com)



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Meet us and discuss PCB design and other interesting topics!

# What drives the cost of a circuit board?

## And how do those factors in turn impact the sustainability?

The majority of the cost – 80-90%- is built into the product in the early stages of the design phase – before either the PCB supplier or EMS company has sight of the design. We have also found that many of the cost drivers directly impact all aspects in producing and delivering a more sustainable product.

To guide you regarding this, we have made a tool – PCB Cost drivers – which also includes the sustainability aspect. In our Sustainability Impact meter, you can see the effects for each cost driver. We have divided the cost drivers into two categories, the 'hard costs' and the 'soft costs.' The hard cost drivers are covering aspects that relate to the physical printed circuit board itself. In these cases the impact on sustainability is more tangible. The soft cost drivers are those elements that unless considered can lead to delays in engineering, lost time and mis-specified demands that only serve to either drive cost upwards or fail to identify what is needed to achieve the desired quality or long-term reliability – this is not sustainable PCB production in our eyes. Many times, these factors are a little less quantifiable, but can certainly have just as much of an impact on cost and sustainability.

### Focus on sustainability in all areas

Matt Surman, Field Application Engineer (FAE) at NCAB UK, has been working in the PCB Industry for 20+ years and has supported thousands of technical queries. “More often than not, there are boards that need to be re-designed or adjusted to be manufactured for the best outcome,” he says. Therefore, we prefer to work closely with our customers as early as possible in the process, to ensure that we get it right from the start. This is one of our unique selling points, which we have heavily invested in to ensure best practices throughout NCAB's global network.

“Our journey towards more sustainable PCBs has only just begun” say's Matt. “This is a long process. We are working with improvements in many different areas, one example is our technical council - a team of 60 technicians from all NCAB companies - who are looking at emerging technologies as alternatives to the traditional etching method that we see today. “

Alongside the work we do within our factories, design processes, and business practices, we are also mindful of other areas where we can make a positive impact. “Re-educating our network, alongside welcoming new talent into the industry, is paramount for us,” says Matt. “It not only enhances the overall efficiency and reduces costs, but it also results in a more sustainable PCB. This is the direction we need to, and have to work towards, and the sense of urgency to act is upon us.”

### About NCAB Group

We are a leading global PCB supplier founded in 1993. Today, we have local presence in 16 countries in Europe, Asia and North America and customers in approximately 45 countries worldwide. Our mission is to produce reliable PCBs for demanding customers, on time with zero defects, in a sustainable way at the lowest cost.

# All roads lead to Farnborough

*Southern Manufacturing & Electronics 2024 offers electronics professionals the opportunity to explore and learn. Read on to discover innovations on display*

The Southern Manufacturing & Electronics 2024 show opens from 6 to 8 February at the Farnborough International Exhibition & Conference Centre. The event serves as a pan-European platform for cutting-edge technology in production machinery, inspection equipment, electronic components and assemblies, electro-mechanical systems, diverse subcontract services and more.

With stands evenly distributed between the mechanical engineering and electronics sectors, the show operates an open-access policy that ensures accessibility for both major manufacturers and engineering SMEs. Visitors can move freely between the engineering disciplines and perhaps discover unfamiliar technologies and services that they were not expecting.

Hundreds of exhibitors will be displaying electronic products, ancillaries and services. Accelonix will focus on PCB assembly with its Parmi 3D automated optical inspection platforms and VCCount x-ray component counter. SMT production equipment, wire bonding, dispensing and testing will also be promoted. Alantys Technology will present its electronic distribution services. The company's focus on efficient supply chains, cost savings and flexible inventory management will be highlighted.

Anglia Transformers will exhibit products tailored to customer specifications, including power conversion, audio, three-phase and PCB mounting transformers.

Additionally, its subsidiary firm MS Electronics will feature energy-saving controls such as anti-ligature thermostats, PIR occupancy detectors and time delay switches.

Deval, a UK-based specialist manufacturer of bespoke cable assemblies, harnesses and looms, will be showcasing its capabilities in providing personalised solutions. Relec Electronics will unveil the latest developments in power supplies and display technology and will introduce new products from Vox Power and rugged tablets and panel PCs from Mactron.

Jakob Hatteland Computer, the creator of RamBase, an ERP system designed for the electronics industry, will promote its solutions designed to address the challenges faced by electronics manufacturing and wholesale distribution companies. Japan Automatic Machines will feature its automatic wire processing machines, terminals, connectors, electronic components and related products. ODU will show new products at the exhibition, including Mini-Snap and Medi-Snap space-saving connectors. COAX Connectors will display a variety of 50 and 75ohm RF connector products.

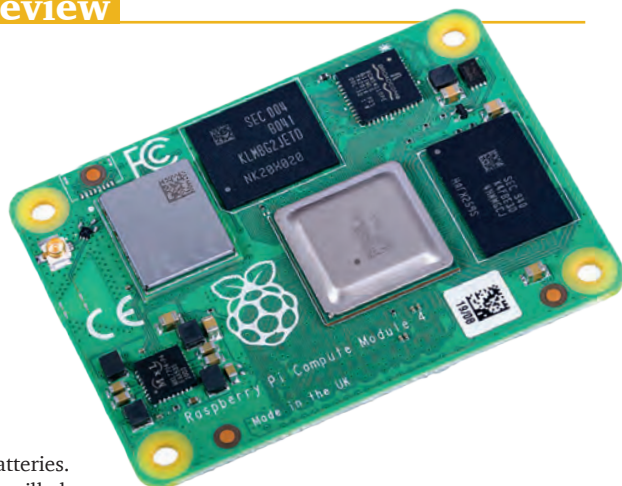
Conro Electronics, specialising in the global supply chain for consumables and chemicals, will present its expertise in supporting electronic manufacturing. Jauch Quartz, a manufacturer of battery power supplies and frequency control products, will focus on

primary lithium batteries. DMS Technologies will also offer standard batteries and custom-built power solutions.

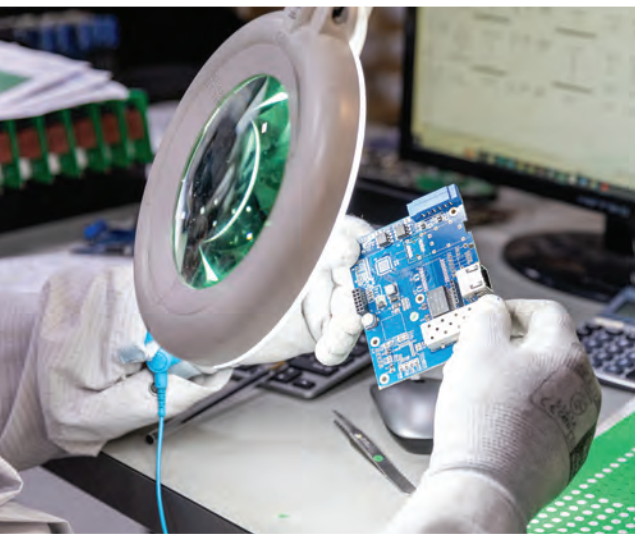
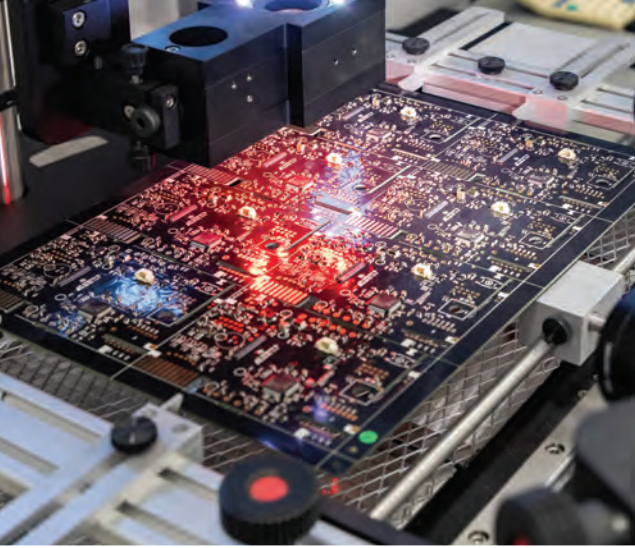
Kallista Electronics, a distributor of electronic components, will display a range of products including connectors, tools, wire, cable, relays, switches, circuit breakers and electromechanical items. Pillarhouse International will showcase the Jade MKII single point selective soldering system. Mycronic will launch the flexible, high-speed MyPro A40 placement machine able to mount large components. The company's offerings cater to the diverse needs of high-mix PCB assembly.

The show will co-locate with AutoAero, a specialist theme dedicated to aerospace and automotive engineering. Over the three days there will be an extensive technical seminar programme. With free admission, complimentary parking and easy access via road and public transport, the show remains an essential event for anyone involved in design, production or procurement.

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# Electronics Seminars at Southern 2024

## Tuesday, 6th February

Session 1 | 10:00am  
GRIPES AND GRINS OF A  
SMALL MANUFACTURER  
Richard Little, Jenton

Session 3 | 11:00am  
SUPPORTING INVESTMENT  
AND INNOVATION  
Grant Baker, Innovation Growth  
Specialist, for Innovate UK

Session 5 | 12:00pm  
THIS IS NO TIME FOR AMATEURS  
Antonio Falco, The Sales Director

Session 7 | 1:00pm  
HOW TO SUCCESSFULLY  
ADOPT ADDITIVE  
MANUFACTURING IN-HOUSE  
Simon Chandler, Managing  
Director, CREAT3D

Session 9 | 2:00pm  
CE AND UK MARKING,  
2024 AND BEYOND  
Tim Harrison, CE Marking  
Association

Session 11 | 3:00pm  
SCALING THE HEIGHTS  
OF ELECTRONIC  
PRODUCT DEVELOPMENT:  
A COMPREHENSIVE ROUTE  
MAP FOR DESIGN SUCCESS  
Robert Meeks, Business  
Development Manager,  
ByteSnap Design

## Wednesday, 7th February

Session 25 | 10:00am  
CREATE EFFECTIVE MARKETING  
CAMPAIGNS AND GENERATE  
MORE LEADS FROM LINKEDIN  
Rob Dando, Managing  
Director, FINALLY Agency

Session 27 | 11:00am  
CE AND UK MARKING,  
2024 AND BEYOND  
Tim Harrison, CE Marking  
Association

SESSION 29 | 12:00PM  
PCB'S – A MORE  
SUSTAINABLE FUTURE  
Anna Lothsson,  
Sustainability Director,  
NCAB GROUP UK LTD

Session 31 | 1:00pm  
BECAUSE WE'VE ALWAYS  
DONE IT THAT WAY! DOES  
THIS SOUND FAMILIAR?  
Tim Scurlock, Director, ALC

Session 33 | 2:00pm  
SCALING THE HEIGHTS  
OF ELECTRONIC  
PRODUCT DEVELOPMENT:  
A COMPREHENSIVE ROUTE  
MAP FOR DESIGN SUCCESS  
Robert Meeks, Business  
Development Manager,  
ByteSnap Design

Session 35 | 3:00pm  
HYBRID WORKING  
Ian Mercer, Merceric

## Thursday, 8th February

Session 49 | 10:00am  
ENGAGING TEAMS USING  
EFFECTIVE STRATEGY  
DEPLOYMENT  
Ailsa Carson, Onsite Insights

Session 51 | 11:00am  
INDUSTRY 4.0, AUTOMATION  
AND DIGITAL FACTORIES

Varun Manwani, CEO,  
Sahasra Group

Session 53 | 12:00pm  
CE AND UK MARKING,  
2024 AND BEYOND  
Tim Harrison, CE Marking  
Association

Session 55 | 1:00pm  
DEVELOPMENTS IN ADDITIVE  
MANUFACTURING  
PROTOTYPE TO END USE PARTS  
Kevin Askew, Additive-X

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6th to 8th February 2024



# Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
<b>CABLE ASSEMBLY &amp; HARNESSING</b>											
Amphenol	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,000	N/A	0 €	N/A	50	2,500+	Y
FTDI	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	50	N/A	0 €	N/A	50	2,500+	Y
Harwin	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	600	N/A	0 €	N/A	50	2,500+	Y
Molex	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,550	N/A	0 €	N/A	50	2,500+	Y
Phoenix Contact	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
<b>CIRCUIT PROTECTION</b>											
Bourns	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,800	N/A	0 €	N/A	50	2,500+	Y
EPCOS/TKD	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,950	N/A	0 €	N/A	50	2,500+	Y
Littelfuse	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	11,450	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,150	N/A	0 €	N/A	50	2,500+	Y
<b>DISPLAYS</b>											
Midas Displays		01493 602602	www.midasdisplays.com	N	3,300	N/A	£0	100%	10	17+	Y
<b>ENCLOSURES</b>											
Bud Industries	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,600	N/A	0 €	N/A	50	2,500+	Y
CamdenBoss	CamdenBoss	01638-716101	www.camdenboss.com	N	1,199	N/A	£0	N/A	10	106	Y
Hammond	Switch Electronics	01482-862255	switchelectronics.co.uk	Y	500	N/A	£0	70%	2	6	Y
Hammond	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,350	N/A	0 €	N/A	50	2,500+	Y
Metcase Enclosures	OKW Enclosures	01489-583858	www.metcase.co.uk	N	288	£40,000	£0	N/A	5	22	Y
New Age Enclosures	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
OKW Enclosures Ltd	OKW Enclosures	01489 583858	www.okw.co.uk	N	1,955	£40,000	£0	N/A	5	22	Y
Phoenix Mecano Ltd	BOPLA Enclosures & Accessories	01296 611660	www.bopla-enclosures.co.uk	Y	150	N/A	£0	N/A	3	2,000+	Y
Rolec Enclosures	OKW Enclosures	01489 583858	www.rolec-enclosures.co.uk	Y	935	£40,000	£0	N/A	5	22	Y
Teko Enclosures	OKW Enclosures	01489 583858	www.teko.co.uk	Y	1,860	£40,000	£0	N/A	5	22	Y
<b>FREQUENCY MANAGEMENT</b>											
ABRACON	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,750	N/A	0 €	N/A	50	2,500+	Y
Analog Devices Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y

## Services Sourcing

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# Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
ECS	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,050	N/A	0 €	N/A	50	2,500+	Y
Epson	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	900	N/A	0 €	N/A	50	2,500+	Y
Golledge Electronics Ltd	Golledge Electronics Ltd	01460 256 100	www.golledge.com	N	N/A	£800,000	£0	100%	12	24	Y
IQD Frequency Products	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,500	N/A	0 €	N/A	50	2,500+	Y
Jauch Quartz	Digi-Key Electronics	0800 587 0991	www.digikey.co.uk	Y	500	£250,000	0	100%	15	130	Y
Kyocera	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	950	N/A	0 €	N/A	50	2,500+	Y
Microchip	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	550	N/A	0 €	N/A	50	2,500+	Y
Silicon Laboratories	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	500	N/A	0 €	N/A	50	2,500+	Y
TXC Corporation	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	500	N/A	0 €	N/A	50	2,500+	Y

## HEATSINKS

Aavid	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
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## ICs & SEMICONDUCTORS

Alliance Memory	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	500	N/A	0 €	N/A	50	2,500+	Y
Analog Devices Inc	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	18,700	N/A	0 €	N/A	50	2,500+	Y
Broadcom Limited	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Central Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,250	N/A	0 €	N/A	50	2,500+	Y
Cirrus Logic	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Cree, Inc	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Diodes Incorporated	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	8,200	N/A	0 €	N/A	50	2,500+	Y
FTDI	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	100	N/A	0 €	N/A	50	2,500+	Y
Infineon	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	8,300	N/A	0 €	N/A	50	2,500+	Y
Intel	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,750	N/A	0 €	N/A	50	2,500+	Y
Maxim Integrated	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	14,050	N/A	0 €	N/A	50	2,500+	Y
Microchip	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	24,200	N/A	0 €	N/A	50	2,500+	Y
Micron Technology	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	600	N/A	0 €	N/A	50	2,500+	Y
Monolithic Power Systems (MPS)	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	850	N/A	0 €	N/A	50	2,500+	Y
Nexperia	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	7,600	N/A	0 €	N/A	50	2,500+	Y
Nordic Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	60	N/A	0 €	N/A	50	2,500+	Y
NXP	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,700	N/A	0 €	N/A	50	2,500+	Y
ON Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	18,700	N/A	0 €	N/A	50	2,500+	Y
Power Integrations	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	750	N/A	0 €	N/A	50	2,500+	Y
Qorvo	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	700	N/A	0 €	N/A	50	2,500+	Y
Renesas Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,550	N/A	0 €	N/A	50	2,500+	Y
ROHM Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,900	N/A	0 €	N/A	50	2,500+	Y
Semtech	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	350	N/A	0 €	N/A	50	2,500+	Y
Silicon Laboratories	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
Skyworks	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	550	N/A	0 €	N/A	50	2,500+	Y
STMicroelectronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	10,050	N/A	0 €	N/A	50	2,500+	Y
Texas Instruments	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	39,050	N/A	0 €	N/A	50	2,500+	Y
Toshiba	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,050	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	10,850	N/A	0 €	N/A	50	2,500+	Y
Xilinx	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,900	N/A	0 €	N/A	50	2,500+	Y

## INTERCONNECTION

3M	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,750	N/A	0 €	N/A	50	2,500+	Y
Amphenol	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	33,200	N/A	0 €	N/A	50	2,500+	Y
Cinch Connectivity Solutions	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,250	N/A	0 €	N/A	50	2,500+	Y
FCI / Amphenol	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	7,850	N/A	0 €	N/A	50	2,500+	Y
HARTING	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,800	N/A	0 €	N/A	50	2,500+	Y
Harwin	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,950	N/A	0 €	N/A	50	2,500+	Y
Hirose Electric	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	7,850	N/A	0 €	N/A	50	2,500+	Y
Intellconnect (Europe) Ltd		01245 347145	www.intellconnect.co.uk	N/A	N/A	N/A	N/A	100%	5	30	
JA Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
MH Connectors	Various	01933 427300	www.mhconnectors.com	n/a	500+	n/a	0	n/a	3	20	Y
Molex	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	23,600	N/A	0 €	N/A	50	2,500+	Y
Phoenix Contact	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	17,150	N/A	0 €	N/A	50	2,500+	Y
Radiall	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,350	N/A	0 €	N/A	50	2,500+	Y
Samtec	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	16,300	N/A	0 €	N/A	50	2,500+	Y



# Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
Souriau	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,300	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	41,850	N/A	0 €	N/A	50	2,500+	Y
Würth Elektronik	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,650	N/A	0 €	N/A	50	2,500+	Y
<b>OBSOLESCENCE / HARD TO FIND</b>											
MH Connectors	Various	01933 427300	www.mhconnectors.com	n/a	500+	n/a	0	n/a	3	20	Y
Rochester Electronics	Rochester Electronics	+44.1480.408400	www.rocelec.com	Y	299	N/A	\$250	N/A	10	400+	Y
<b>OPTO ELECTRONICS</b>											
Broadcom Limited	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,300	N/A	0 €	N/A	50	2,500+	Y
Cree, Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,800	N/A	0 €	N/A	50	2,500+	Y
Intel	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	20	N/A	0 €	N/A	50	2,500+	Y
Osram Opto Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,300	N/A	0 €	N/A	50	2,500+	Y
Toshiba	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	450	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,350	N/A	0 €	N/A	50	2,500+	Y
<b>PASSIVES</b>											
AVX	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	17850	N/A	0 €	N/A	50	2,500+	Y
Bourns	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	15,100	N/A	0 €	N/A	50	2,500+	Y
Coilcraft	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,750	N/A	0 €	N/A	50	2,500+	Y
EPCCS / TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,450	N/A	0 €	N/A	50	2,500+	Y
KEMET	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	23,650	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	18700	N/A	0 €	N/A	50	2,500+	Y
Ohmite	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,550	N/A	0 €	N/A	50	2,500+	Y
Panasonic	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	25,450	N/A	0 €	N/A	50	2,500+	Y
Taiyo Yuden	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,100	N/A	0 €	N/A	50	2,500+	Y
TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	13,050	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	11,500	N/A	0 €	N/A	50	2,500+	Y
TT Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,050	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	43850	N/A	0 €	N/A	50	2,500+	Y
Würth Elektronik	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,750	N/A	0 €	N/A	50	2,500+	Y
Yageo	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	21,450	N/A	0 €	N/A	50	2,500+	Y
<b>POWER &amp; BATTERIES</b>											
FRIWO Gerätebau GmbH	Haredata Electronics	01423 796240	www.haredata.co.uk	Y	250 - 500	€1M	£250	100%	7	14	Y
Jauch Quartz		01276 605900	www.jauch.com			£500,000	0	95	15	130	Y
Mean Well	Ecopac (UK) Power Ltd	01844 204420	www.ecopacpower.co.uk	Y	6,000	£2M	£0	100%	8	30	Y
Bel Power Solutions	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	600	N/A	0 €	N/A	50	2,500+	Y
CUI Inc	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
MEAN WELL	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,400	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1500	N/A	0 €	N/A	50	2,500+	Y
RECOM	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,150	N/A	0 €	N/A	50	2,500+	Y
TDK-Lambda	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,900	N/A	0 €	N/A	50	2,500+	Y
TRACO Power	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,000	N/A	0 €	N/A	50	2,500+	Y
Vicor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,300	N/A	0 €	N/A	50	2,500+	Y
XP Power	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
<b>SENSORS</b>											
ams	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
Analog Devices Inc	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	300	N/A	0 €	N/A	50	2,500+	Y
Bosch	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	25	N/A	0 €	N/A	50	2,500+	Y
Honeywell	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
Maxim Integrated	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	350	N/A	0 €	N/A	50	2,500+	Y
NXP	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	300	N/A	0 €	N/A	50	2,500+	Y
Sensirion	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	80	N/A	0 €	N/A	50	2,500+	Y
STMicroelectronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	75	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	650	N/A	0 €	N/A	50	2,500+	Y
Texas Instruments	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	850	N/A	0 €	N/A	50	2,500+	Y
<b>SWITCHES &amp; KEYBOARDS</b>											
Apem	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,850	N/A	0 €	N/A	50	2,500+	Y
C&K Switches	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,550	N/A	0 €	N/A	50	2,500+	Y
E-Switch	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,350	N/A	0 €	N/A	50	2,500+	Y

## Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
EA0	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,800	N/A	0 €	N/A	50	2,500+	Y
Honeywell	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,700	N/A	0 €	N/A	50	2,500+	Y
NKK Switches	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,000	N/A	0 €	N/A	50	2,500+	Y
Omron	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,700	N/A	0 €	N/A	50	2,500+	Y
Panasonic	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	550	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,350	N/A	0 €	N/A	50	2,500+	Y

### TERMINAL BLOCKS

CamdenBoss	CamdenBoss	01638-716101	www.camdenboss.com	N	930	N/A	£0	N/A	10	106	Y
Marathon Special Products	Global Supply Services	01904 436 488	www.global-supply-services.com	Y	8,000	£800,000	£100	100%	3	11	Y
Molex	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,850	N/A	0 €	N/A	50	2,500+	Y
Phoenix Contact	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	13,550	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,750	N/A	0 €	N/A	50	2,500+	Y

### THERMAL MANAGEMENT

Bergquist Company	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	250	N/A	0 €	N/A	50	2,500+	Y
Delta Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	700	N/A	0 €	N/A	50	2,500+	Y
ebm-papst	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
EMI Thermal	EMI Thermal	01992 510000	www.emithermal.com	N	800	N/A	£20	100%	12	200	Y
Multiple Manufacturers	Materials Direct	+44 (0)1908 222 211	www.materials-direct.com	N/A	N/A	£1,000,000+	£0	N/A	5	55	Y
Sanyo Denki	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
Sunon	G.English Electronics Ltd	0208 855 0991	www.gelec.co.uk	Y	3,500	£1,000,000+	£0	100%	10	28	Y
Sunon	Thermaco Ltd	01684 566163	www.thermaco.co.uk	Y	3,500	£450,000	£100	100%	7	15	Y
Universal Science	Universal Science	+44 (0)1908 222 211	www.universal-science.com	N/A	N/A	£1,000,000	£0	N/A	5	55	Y

### TRANSFORMERS & INDUCTORS

Best Windings	Best Windings	0044 (0)1394 448424	www.bestwindings.co.uk	N	300	N/A	£100	N/A	2	24	Y
Bourns	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,900	N/A	0 €	N/A	50	2,500+	Y
Coilcraft	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,500	N/A	0 €	N/A	50	2,500+	Y
EPCOS / TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,300	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,900	N/A	0 €	N/A	50	2,500+	Y
TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,050	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,200	N/A	0 €	N/A	50	2,500+	Y
Würth Elektronik	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,400	N/A	0 €	N/A	50	2,500+	Y

### WIRELESS SOLUTIONS

DIGI	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Espressif	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	30	N/A	0 €	N/A	50	2,500+	Y
Laird Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	100	N/A	0 €	N/A	50	2,500+	Y
Lantronix	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	25	N/A	0 €	N/A	50	2,500+	Y
Microchip	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	30	N/A	0 €	N/A	50	2,500+	Y
Silicon Laboratories	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
Texas Instruments	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	20	N/A	0 €	N/A	50	2,500+	Y
u-blox	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	10	N/A	0 €	N/A	50	2,500+	Y

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## Contract Manufacturers Buyers' Guide

Manufacturer	Telephone	Website	Turnover	Location	Employees	Number of Surface Mount Lines	Approvals	BGA Capacity	Lead Free Manufacturer	Prototyping	Design Capability	Full Turnkey	Cables and Harnessing
Alan Anderson Manufacturing Ltd	+44 (0) 333 322 7222	www.aa-manufacturing.co.uk	£21m	Hertfordshire UK	40	2	ISO9001:2015, IPC-A-610	Y	Y	Y	Y	Y	Y
Challenger Solutions Ltd	01245 325252	www.challengersolutions.com	£14m	Essex/SE	85	12	AS9100 Rev D, ISO9001:2015, ISO 14001:2015, UL, CCC, IPC-610-G Class 3, TUV	Y	Y	Y	Y	Y	Y
CML Innovative Technologies (uk) Ltd	01284 714700	www.cml-it.com	£12M	UK/EU/China	65		ISO9001, TS16949, UL ISO9001 2015, IATF 16949 2016	N	Y	Y	Y	Y	Y
Corintech Ltd	+44 (0)1425 655655	www.corintech.com	£16.9m	UK & Far East	80	6	AS9100, ISO9001, IPC-A-610 Class 3, J-STD-001	Y	Y	Y	Y	Y	Y
Custom Interconnect Ltd	01264 321321	www.cil-uk.co.uk	£18.6m	Andover (Hampshire)	130	6	AS9100 ISO13485 ISO9001 IPC-A-610 Class 3	Y	Y	Y	Y	Y	Y
Electronic Technicians Ltd	01202 897722	www.etluk.co.uk	£3.7m	SE	50	2	AS9100, ISO9001, ISO14001, IPC610/620 Class 3	Y	Y	Y	Y	Y	Y
FermionX Ltd	+44(0)1903 524600	www.fermionx.com	£6.5m	Worthing, W. Sussex	56	3	ISO9001:2015, ISO4001:2015, IPC-A-610 Class 2 & 3, IPC-J-STD-001	Y	Y	Y	Y	Y	Y
GSPK Design Ltd	01423 798254	www.gspkdesign.ltd.uk/	£1m	North Yorkshire, UK	12	2	ISO 13485:2016, ISO 9001:2015, GSATEX 7422	Y	Y	Y	Y	Y	Y
Hallmark Electronics Ltd	01782 562255	www.hallmarkelectronics.com	£4.1m	Staffordshire	27	2	ISO9001:2015, IPC-A-610 to Class 3, UL	Y	Y	Y	Y	Y	Y
Incap Electronics UK Ltd	01782 753200	www.incapcorp.com	£169.8m	UK, Slovakia, Estonia & India	2,500	22	ISO9100, ISO14001, ISO13485, AS9100D, ISO45001 & IATF16949	Y	Y	Y	Y	Y	Y
Industrial Electronic Wiring Ltd	+44(0)1793 694033	www.iiew.co.uk	£5.5m	Swindon, UK	60	N/A	ISO9001:2015, IPC610, IPC620	N	Y	Y	N	Y	Y
Jaltek	01582578170	jaltek.com	£15m	UK	105	3	AS9100, ISO9001, ISO13485, IPC-A-610 Class 3, Certified IPC Trainer (IPC-A-610, J-STD-001 & J-STD-001 Space Addendum)	Y	Y	Y	Y	Y	Y
Nano Electronic Services Ltd	01388 247152	www.nanoelectronicservices.com	£1M	County Durham	2	15	ISO13485, ISO9001:2015 & IPC610 to Class 3	Y	Y	Y	Y	Y	Y
Nemco Ltd	01438 346600	www.nemco.co.uk	£15.9m	SE	120	6	AS9100, ISO9001:2008, IPC610/620 to Class 3, ISO14001-2004, SC21	Y	Y	Y	Y	Y	Y
NOTE Group	01753 746700	www.note-uk.co.uk	£207m	UK/EU/China	1,200	20	IPC610 to Class 3, ISO9001:2015, 13485, 14001, 18001	Y	Y	Y	Y	Y	Y
M-TEK (Assembly) Ltd	01189 455377	www.mtek.co.uk	£2.4m	SE	30	4	ISO9001, ISO14001, IPC-A-610 Class 3, IPC-7711/7721, WHMA-3620, Certified IPC Trainer	Y	Y	Y	Y	Y	Y
Pektron	01332 832424	www.pektron.com	£50m	E-Midlands	350	8	ISO9001, ISO14001, TS16949, BEAB, VCA, TUV, UL	Y	Y	Y	Y	Y	Y
Simtek EMS Ltd	01843 233120	www.simtekems.co.uk	£8.2m	SE	77	3	ISO9001:2008, ISO13485, IPC-A-610 Class 3 & IPC-7711	Y	Y	Y	Y	Y	Y
Texcel Technology Plc	+44(0)1322621700	www.texceltechnology.com	£18m	SE	131	7	ISO9001, ISO14001, IPC610 Class 3,	Y	Y	Y	Y	Y	Y
Tioga Limited	01332 260884	www.tioga.co.uk	£20.50	Derby	150	4	ISO 9001/14001/27001- ISO 13485 -AS9100 -IPC 610/620/J-Std/7711/21	Y	Y	Y	Y	Y	Y
Wilson Process Systems	01424 722222	www.wps.co.uk	£12m	SE	100	5	ISO9001:2015, IPC-A-610 Class 3	Y	Y	Y	Y	Y	Y

## PCB Buyers' Guide

Manufacturer	Telephone	Website	Service Provided (ie. Board Manufacture &/or Repair)	Location	Approvals	Volume - Small, Medium, Large	Double-sided	Multi-layer 4-10/10-20-20-30	Metal PCBs	Ceramic PCBs	Heavy Copper PCBs	Flex / Flex-Rigid	Obsolescence Solutions	Modifications	Prototyping
Cambridge Circuit Company Ltd	01223 423100	www.cambridge-circuit.co.uk	M	SE	ISO9001:2015, UL, ISO 14001:2015	SML	Y	4-16	Y	N/A	N/A	Y	Y	Y	Y
DK-Daleba Printed Circuit Boards	01992 510000	www.dk-daleba.co.uk	M	UK, Europe, Asia	ISO 9001:2015, UL, TS16949, JOSCAR	SML	Y	4-58	Y	Y	Y	Y	Y	Y	Y
GSPK Circuits Ltd	+44 (0)1423 798 740	www.gspkcircuits.ltd.uk	M/R	UK, Europe, Asia	IS 9001:2015, IATF 16949:2016, EN (AS) 9100, Joscar	SML	Y	4-34	Y	Y	Y	Y	Y	Y	Y
Stevengage Circuits Ltd	01438 761811	www.stevengagecircuits.co.uk	M/B	UK/China	ISO 9001:2015, EN 9100:2018, EN 9104:2013, UL 796, ISO 14001:2015	SML	Y	4-44+	Y	N/A	N/A	F, F/R	Y	Y	Y
Tate Circuit Industries Ltd	01543 622 435	www.tatecircuits.com	M/B	UK/China	ISO 9001:2015, UL	SML	Y	4-20	Y	N/A	N/A	Y	Y	Y	Y

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