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UNAVOIDABLE UPTURN

TIGHT SUPPLY
EXPECTED FOR
32-BIT MCUS
PAGE 12

MEDICAL PURCHASING,
IT'S A LONG GAME
PAGE: 18

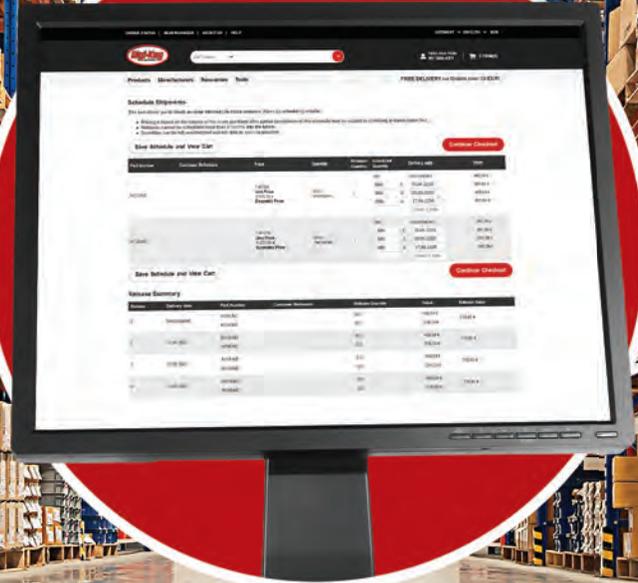
5G: JUST IN
TIME FOR WORK
FROM HOME
PAGE 16



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On the cover – March/April 2021

Unavoidable upturn

Contents

04

News

EMC products ex-stock in Europe

10

Anti-counterfeiting

Decade of fighting counterfeits

14

Circuit protection

Purchasing's role in board protection

22

Connectors

Take a peek at 2021 connector trends

IBC

Buyers' Guide

All the facts and figures to help you buy

Editor's Word



What's under the label?

I've spent most of my life confused by the concept of branding. So, I did some research and constructed a simple explanation which I could remember. Here goes: 'a successful brand is anything which triggers a positive emotion when I encounter it'. Simple really.

On that basis, a brand could be a colour, shape, word, smell, texture and more. Likewise, a positive emotional response could range from amusement to serenity.

If I'm designing a product that includes electronic or electrical components, the emotion I'm looking for when I encounter a manufacturer's brand is 'safety'. This is why counterfeiting is so insidious. It is an attack on our primal emotions, housed at the base of our brains. Nasty.

So, I had negative emotions triggering left, right and centre when I watched a video of someone opening a counterfeit miniature circuit breaker (MCB) to discover nothing other than some wires and a mechanical switch. No bi-metallic thermal protection, no electromechanical protection, no arc chamber, nothing.

This product was essentially a death sentence. Yet, its shape, colour and label were designed to make you think otherwise. From the video narrative, it sounded like the MCB had been part of a larger subsystem and the customer initially queried it due to its light weight.

Distributors have many roles but arguably the most important is making sure the products we order are the ones we receive. This magazine features endless articles on anti-counterfeiting best practice. Use them to your advantage.

Jon Barrett

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Instant access to semiconductor innovations

RS Components has signed a global franchise agreement with Infineon Technologies, allowing purchasing professionals to quickly access Infineon's product portfolio featuring innovations in power, automotive, security ICs, wireless and MCUs.

Infineon's VP distribution and EMS management Europe and global e-Tailer, Susanne Horn, said: "With the expansion of our direct e-Tailer network we are very confident of broadening our customer base as a result of the complementary customer access of RS."

RS' VP global product and supply management, Andy Keenan, added: "As a world leader in semiconductors, Infineon has a key role to play in developing products and technologies that link the real and the digital world, enabling smart mobility, efficient energy management and the secure capture and transfer of data. We are aligned in our goals to shape a better future for our planet through technology, and this agreement will strengthen our ability to support engineers across the globe in their quest for sustainable designs."

www.rs-online.com



EMC products ex-stock in Europe

Powell Electronics has signed a Pan-European franchise distribution agreement with P&P Technology, a manufacturer of radio frequency and EMI screening products, both standard and custom.

Powell is stocking a broad portfolio of P&P's products at its warehouse facilities outside Dublin, Eire. Products include: gaskets for all standard connector profiles; honeycomb EMI shielded vents and air filters; and filters using oriented wire in silicone rubber that combine environmental protection and shielding effectiveness.

Powell Electronics' European MD, Gary Evans, said: "P&P offers one of the most extensive ranges of EMC filtering and shielding products on the market, offering high degrees of attenuation. They are also very responsive, offering fast turnaround and short lead-times, and can be up to 30 per cent more cost-effective than other producers."

P&P Technology's sales manager, Lewis Richmond, added: "Most of our products are custom-fabricated so it is important that we have a distribution partner that is able to provide technical design-in support and be very flexible. With the opening of its new European HQ and warehouse, Powell is the perfect partner for P&P."

www.powell-electronics.eu



Enclosure manufacturer expands production plant

Responding to demand for additional production capacity, Polyrack is expanding its Ettlingen plant. Investment in welding, bending, grinding and deburring technology is designed to offer higher production capacity and improve product quality.

Polyrack Tech-Group's CEO, Andreas Rapp, said: "The aim of the expansion was to create more space for production equipment and processes and to upgrade the mechanical operation to the next technical level. We are in the position to realise the constantly rising demands on the quality of the components. Thanks to the optimization of production processes, through the centralization of the mechanical production, as well as continued progress in fully automatic production equipment."

Polyrack's enclosures are used in applications including safety, measurement, control, railway, aerospace and medical.

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Strategies for EMS providers in current crisis

Perzeptron's co-founder and CEO, Markus Renner, argues that process optimisation is the secret to higher liquidity, shorter lead times and better delivery in these troubled times

Perzeptron's co-founder and CEO,
Markus Renner



Many EMS companies have opted to maintain high inventory levels to ensure availability of rare parts. However, high inventory levels do not guarantee delivery excellence

Declines in sales of up to 25 per cent, empty order books and cancelled orders: the Covid-19 crisis is having a dire impact on many electronics companies. If you're not in the medical industry, you need to cut costs hard. However, there are also opportunities. Take the time to optimize your materials management and order processing. Build transparency and a consistent data pool. Leave Excel lists behind. If this crisis has taught us anything, it's to value our time.

How much time is wasted by purchasing teams looking for missing parts, bottlenecks in materials management or the status of a manufacturing order? How much energy does distribution pour into internal calls to provide customers a reliable delivery date? How much effort does production expend determining which orders need to be fulfilled this week? All this while short-time work and sick leave are eating organizations' manpower. Over 20-years consulting

experience in the electronics and EMS industries has taught us it takes courage and will power to achieve these goals, including absolute transparency in materials management and order processing.

Regarding courage and will power, it should be noted that EMS material costs account for 60 to 80 per cent of manufacturing costs, making them a crucial factor. Many EMS companies have opted to maintain high inventory levels to ensure availability of rare parts. However, high inventory levels do not guarantee delivery excellence. In fact, they curtail a company's flexibility. Even worse, if manufacturing orders are cancelled or fail to materialise, the effect increases exponentially. This ties up money needed for purchasing materials for new orders.

The picture might seem gloomy, but the potential for savings is enormous. Information management and material handling are

areas where companies can use simple tools to boost productivity and liquidity. Process efficiency is the quotient of an order's processing time and its total lead time, which in electronics manufacturing is often well below 10 per cent. The trick is aligning the scheduling frameworks with the appropriate bottlenecks.

Instead of starting manufacturing orders with ordering all materials, order start dates and purchasing orders should be aligned with the date on which eliminating bottlenecks for critical components becomes possible. The result: shorter lead times and decreased idle times for orders. This means reduced capital commitment and more productivity by focusing on those manufacturing orders which can realistically be fulfilled. This also leads to greater delivery date transparency and better on-time delivery.

Keeping an eye on orders, purchasing on time and detecting/eliminating
Continue on page 08 »

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bottlenecks must be based on a transparent, common data pool which is available to purchasing, manufacturing, logistics, distribution and management.

To this end, Perzeptron has developed MiG Materials Management in Balance. MiG is an add-on for existing ERP systems designed to analyse and visualise data in those systems. Separate views, analysis and optimisation are offered for different departments. This is designed to improve coordination between departments and improves collaboration. As every user has access to the same data set, there is no room for ambiguity or doubt.

MiG is all about setting priorities, highlighting orders with missing parts in the manufacturing overview so production management and logistics can adjust the manufacturing processes. Simultaneously, purchasing can react to ensure all

materials required by the order are available when needed. Employees continuously monitor material movement, making strategic decisions to optimise the procurement process. Spending hours searching for parts and information is eliminated, as is hurriedly ordering missing parts at inflated prices or rescheduling the manufacturing process at short notice. MiG's advanced edition includes integration with components distributors. At a glance, purchasing can see inventory levels and prices.

Introducing a few simple measures can have a noticeable effect on improving materials management and the manufacturing process at contract manufacturers, suppliers and OEMs. In times of economic turmoil, optimisations like these are often crucial to a company's survival. At the same time,

MiG offers greater transparency in order processing and materials management



they create a new way of collaborating within the organisation and interacting with the customer: helping employees shift from being mere operators to contributing constructive strategies to further the company's long-term development.

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Uncovering the truth about semiconductor counterfeiting

In this article, Rochester Electronics discusses why authorisation is the ultimate tool in the fight against counterfeit components

In times of supply shortage, or where component obsolescence limits availability, counterfeit devices are more prevalent. Counterfeiters have moved beyond incorrect logos and packages with no die inside, caught by the simplistic visual inspection testing used by those following AS6081. Counterfeiters now have more sophisticated operations.

Customers whose normal supply chain proves insufficient may assume unauthorised or gray market sources are the only solution and that 'testing' can eliminate risks. Nothing could be further from the truth.

One type of counterfeit semiconductor is non-functional or scrap product which is re-marked as good and re-sold. Likewise, functional yet sub-standard product purchased by a counterfeiter is remarked and re-sold as full grade product at an increased price.

Recycled and recovered components are also sold as new. The process of removing

parts from boards and altering logos can cause long-term damage not seen on first power-up. Chemical residues from the cleaning process can slowly enter and contaminate the device, causing bond-pad or bond-wire failures in-service. Heat and mechanical damage (from part removal) can result in long-term reliability issues. Exposure to excessive humidity, water and salt air atmosphere is often routine in used part recovery. This process can produce an authentic used product that has questionable reliability. Authenticity does not ensure reliability.

Identifiable surplus stock and traceability provide no guarantee regarding the storage conditions encountered during the component's complete shelf-life.

Customers may incorrectly assume testing provides a 100 per cent genuine guarantee. At its most basic, third party testing comprises one or some of the following techniques. Paperwork and visual

inspection is unlikely to identify professional counterfeit devices. Traceability documents and certificates are regularly forged to support the overall deception. X-ray inspection is unlikely to identify fraudulently up-screened, well-marked recovered and re-used, or recovered failed-test devices. Basic continuity or functional testing will not identify the fraudulently up-screened or well-marked recovered and re-used devices. Finally, regarding full functional testing, the datasheet only provides a subset of the characteristics tested by the original chip manufacturer. Test houses do not have the original manufacturer's test program.

Effective test requires high fault coverage and accurate fault modeling done by the OCM. AS6171 calls out far greater testing for parts bought through independent distribution and yet is rarely fully followed.

Authorised after-market suppliers and manufacturers,



such as Rochester Electronics, provide the only 100 per cent guaranteed and counterfeit-free source for active-shortage and obsolete semiconductors. Finished devices stored and supplied by authorised sources are guaranteed to come only from the OCM and to have been stored in-line with the OCM's recommendations. These products offer a 100 per cent conformance guarantee.

As a licensed manufacturer, Rochester can offer ongoing production of obsolete devices. Built from known-good-die, these products are tested using the OCM test procedures and, in many cases, the original test equipment: guaranteed 100 per cent compliant to the original specification.

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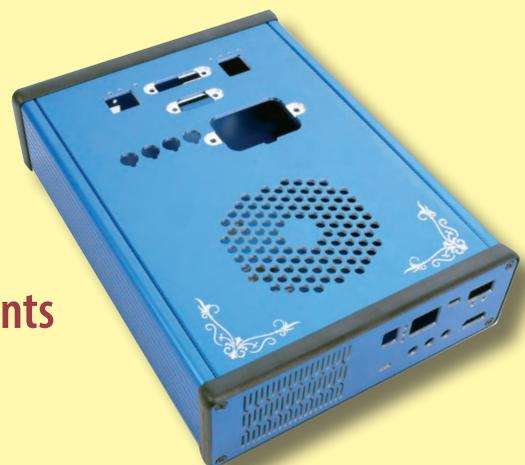


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Decade of fighting counterfeits

Lansdale Semiconductor's president, R Dale Lillard and Electronic Components' president, Rich Nadeau, highlight how 10-years of effort has reduced counterfeiting problems

Counterfeits began to increase in the 1990s and 2000s, primarily through purchases from brokers and distributors sourcing components on the internet. The largest market was long-life applications where the system outlived the component's life cycle. The aerospace and defense industries have the longest system lives and were targeted by counterfeiters when component supplies dried up.

Counterfeiters also filled the void for popular parts when lead times were long or supply was scarce. Purchase awards were often given per the DFAR to the lowest bidders regardless of the supplier's trustworthiness.

In 2007, industry and government recognised counterfeit problems were growing and formed a representative team initiated by the Aerospace Industry Association. It included industry associations, contractors and government agencies and was set up to establish recommendations to mitigate counterfeits. It formed an Integrated Project Team and reported its recommendations in 2011. Among the recommendations were:

- 1: Implement specification SAE AS5553 in organisations.
- 2: Establish a Government audited Qualified Supplier List of Distributors and Qualified Test Supplier List who follow SAE AS6081 specifications. These distributors and brokers will be trusted suppliers. The Defense Logistics Agency established a new system to audit, qualify and monitor brokers and distributors. This reduced the suppliers capable of selling to the DLA significantly. It required a DLA audit to JEDEC specifications AS9120 and testing requirements AS6081 and AS6171. DLA purchases were focused on QSLD suppliers.

As a result, when the National Defense Authorisation Act of 2012 Section 818 (which worked to minimise purchases of counterfeit components) was passed, purchasing electronic components for defense and aerospace contracts changed dramatically. The law significantly tightened the procurement rules for components, passing financial responsibility back to the contractors for any costs to mitigate and rework problems

associated with counterfeits. In the event a contractor or supplier intentionally purchases counterfeits for government contracts, the individual or company can be fined up to \$15,000,000 and imprisoned for up to 20-years. With the NDAA 2012-818 passed by Congress, purchasing guidelines established by industry and government to mitigate counterfeits became mandatory, not suggestions.

The NDAA revised the Department of Defense Federal Acquisition Regulation to address detection and avoidance of counterfeit electronic parts. It required government departments and department contractors and subcontractors to have a counterfeit mitigation plan. It required them to purchase components primarily from the original manufacturers or their authorised dealers and obtain electronic parts not in production or not currently in stock from trusted suppliers. It established a procedure for qualification of trusted suppliers to be audited by department officials. It also utilised the Government Industry Data Exchange Program to communicate about suspect counterfeit components in the supply chain.



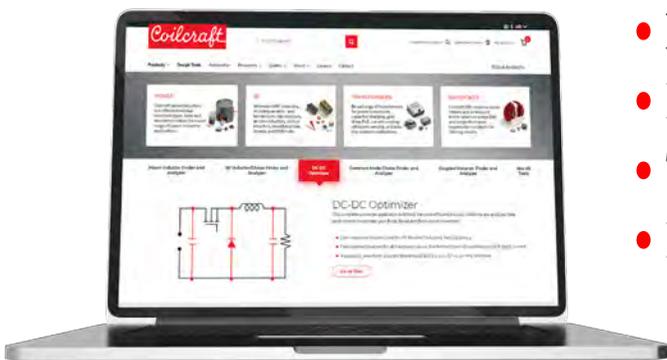
Lansdale Semiconductor's president R. Dale Lillard

Industry and Government procurements of electronic components are now more focused to prevent counterfeits entering the supply chain. They are more concerned about purchasing from original manufacturers and their sales channel, authorised aftermarket manufacturers and their sales channels and trusted QSDL distributors to minimise counterfeits. This has led to a reduction in the problems caused by counterfeits in the supply chain and greater reliability for the systems that use them.

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FBDI CHAIRMAN, GEORG STEINBERGER

Unavoidable upturn

Chairman of the Board FBDi, Georg Steinberger, argues that despite all the challenges of 2020, there remains a basic confidence that gives hope for 2021

The European component market's 2020 upturn was a non-starter. Instead of a rally, driven by IoT, AI, electromobility and digitalization, we experienced a pandemic. The growth drivers are still there, but not the growth: at least not in Europe and not in component distribution.

However, let's take it one step at a time. According to market researchers, the global semiconductor market has grown by about five per cent to around \$430 billion last year. DRAMs and NAND flash increased over 20 per cent and processors/ASSPs for smartphones and tablets were also up over 20 per cent. For the rest, 65 per cent of the market, a zero at best.

Since Europe is not the production hub for memory, mobile communications and tablets, SIA and WSTS recorded a minus for 2020 of around eight per cent. With the dollar weakening against the euro, the real minus in Europe in 2020 was likely double-digit.

Component distribution declined by 11.6 per cent in 2020. Europe is bringing up the rear. Asia is recovering faster and the US seems more resistant to the downturn and, according to WSTS, in 2020 saw a double-digit increase.

At the beginning of 2021 the virus is still circulating and all variants of lockdown are practiced throughout Europe. Cross-border trade is taking place but difficult where traveling personnel are necessary to make business possible, such as assembly services. Then there's Brexit.

There was confidence in manufacturing up to and including October. The PMI survey was just under 55 points. By comparison, in October 2019, blatant recession scenarios prevailed, with PMIs around 45. However, in November with hard lockdowns in many countries, confidence fell fast, only to recover in December.

If the numbers are realistic, market prospects look OK. The US election is over, a certain normality will return to transatlantic relations, and perhaps tariff skirmishes between the US and the EU will disappear. Brexit will leave its mark but, being honest, Germany's economy opportunities lie internally or in the East.

Regarding the European component market, the pre-pandemic backlog after the 2019 slump has not disappeared, it has merely been shifted backwards. Signs of recovery are there. WSTS expects 8.4 per cent growth for the global components market, with a total volume of \$470 billion. Of this, \$38.5 billion is forecast for Europe.

So, what can we expect in distribution next year and beyond? Looking at Germany, 2020 was underwhelming in an already weak Europe. FBDi reported a book-to-bill rate of 0.88 for the third quarter. However, the trend turned around at the end of 2020 and 2021 is not expected to be so bad.

Distribution is not decoupled from the market. The next few years will be characterized by significantly more investment in new technology in private and public sectors. For example, a 'digital twin' of Germany is possible and there is a lot of capital available to realize this. Even the automotive industry

is waking up from its diesel and SUV rigidity and competing for e-mobility supremacy.

Distributors are involved in many sectors, something which could pay off as early as 2021. The least that could be expected would be the nearly six per cent plus that WSTS forecasts for the European semiconductor market. In my opinion, it will not stop there. The potential to return to pre-pandemic level is there. This would correspond to growth of around 15 per cent.

There are plenty of reasons for optimism: vaccines instead of lockdowns; business with China picking up; the USA seeking new trade relations; and simply a lot of catching up to do. If the EU is serious about climate change, it will require gigantic investments in new technologies emerging from consortia comprising hardware/software producers, suppliers, financiers, insurers, energy providers, municipal utilities and more.

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Tight supply and less price erosion is expected for 32-bit MCUs

Growing demand from key customer segments and the transition from 16-bit and 8-bit MCUs to 32-bit microcontrollers will result in robust sales growth for 32-bit controllers



James Carbone

Semiconductor buyers can expect constrained supply of 32-bit microcontrollers at least through the first half of 2020 because of strong demand from automotive, medical and industrial equipment OEMs and their contract manufacturers.

Lead times have stretched since the first of the year and could stretch further in the second quarter, according to industry analysts.

Strong demand will result in nearly 9 per cent revenue growth for the 32-bit MCU market as sales rise to \$11.9 billion in 2021, according to researcher Gartner, Inc.

Such growth will be welcome news to MCU manufacturers because MCU sales grew modestly in 2020 because of the impact of the coronavirus

pandemic. "MCUs kind of followed the overall semiconductor market," said Jim Feldhan, president of Semico Research.

Thirty two-bit unit shipments in 2020 increased 7.3 per cent to about 14.8 billion units, he said. However, prices "were a little bit under pressure" resulting in revenue growing just 3.5 per cent to \$9.8 billion, he said. Unit shipments increased in 2020 despite taking a nose-dive in the first quarter of 2020.

"MCUs fell off in the first quarter," said Feldhan. They had a big hole to crawl out of," he said.

The electronics industry started to recover in the third quarter and demand for 32-bit MCUs started to come back and business was near normal in the fourth quarter, especially in the automotive segment.

MCU sales to automotive manufacturers ended up being a "little less than in 2019" when sales grew strongly, according to Chris Morris, senior market analyst for researcher Omdia. Automotive is the single biggest customer segment for MCUs.

MCU recovery has continued and "we see the 32-bit market bouncing back in 2021" and sales will be higher than in 2019, he said. Segments that were solid in 2020 such as storage, and computing will continue to be strong.

Foundry capacity remains tight
While MCU demand is rising, supply and production capacity, especially at foundries, is constrained in the first quarter.

"MCU demand is being driven by "growing electronic equipment demand from industrial

automation" equipment for unmanned operations and surveillance cameras as well as PC peripherals and the automotive market, said Amy Teng, senior research director at Gartner. In addition, migration away from 16- and 8-bit controllers is resulting in greater 32-bit MCU demand.

Rising semiconductor demand and constrained capacity at foundries will cause lead times to stretch and prices to decline less than in previous years. Thirty two bit MCU prices typically decline each year.

Foundry capacity is constrained for chips made on 300mm and 200mm wafers for several reasons including rising semiconductor demand from PC and smart phone manufacturers making 5G handsets. Demand for servers and PCs increased

By the Numbers



\$0.63

The projected average selling price of a 32-bit microprocessor in 2024. Source: Semico



7.3%

The growth rate of 32-bit units shipments in 2020. Source: Semico



\$0.15

The amount the price of a 32-bit microcontroller will decline in 2021. Source: Omdia



\$14.5 billion

The forecasted size of the 32-bit microcontroller market min 2024. Source: Semico



51%

The share of the microcontroller market held by 32-bit MCUs in 2020. Source: Omdia





last year as more people worked at home and attended school virtually because of the pandemic.

"Foundries have not added capacity for 200mm wafer production" which impacts legacy automotive and industrial MCU supply, said Teng. Because of limited foundry capacity "many semiconductor foundries, both 200mm and 300mm, and packaging/testing companies announced price increases," said Teng.

MCU tags to dip

Despite strong demand and constrained supply, buyers can expect prices for 32-bit MCUs to fall in 2021, although not as much as in 2020 and previous years, according to Morris. In recent years, 32-bit MCU tags have declined sharply and the price difference between 32-bit and 16-bit and 8-bit MCUs has narrowed.

The average price for a 32-bit MCU fell about \$.20 in 2020 and will decline about \$.15 in 2021, according to Morris. He added that prices for 32-bit microcontrollers have been falling since 2015 when the average price was about \$3.00. "In 2020, it was down to \$2.10," said Morris.

The average price of a 32-bit device is going to drop more and be closer to 8- and 16-bit MCUs. In fact, by 2025, 4-bit MCUs will cost \$.72 on average and "you will be able to get a 32-bit MCU for 63 cents", according to Feldhan. As a result, more 32-bit devices will be designed into more equipment that previously used 8- and 16-bit MCUs and 32-bit MCU's share of the overall MCU market will grow.

In 2015, 32-bit MCUs represented about 43 per cent of the microcontroller market. In 2020, the percentage grew to 51 per cent and in 2024, 32-bit devices will account for 55 per cent of the overall MCU market, according to Omdia.

With more electronics equipment transitioning to 32-bit MCUs, revenue for 16-bit, 8-bit and 4-bit controllers is declining. 16-bit sales in 2020 declined 33 per cent, 8-bit fell 23 per cent and 4-bit declined 18 per cent, said Feldhan.

Smart cards move to 32-bit

One reason for those decreasing sales is declining use of the smaller density MCUs in smart cards. "It wasn't too long ago where 8- and 16-bit were common for smart cards," said Feldhan. Now 32-bit MCUs are used, he said. Thirty two-bit MCUs offer higher performance, functionality and security than 8-bit or 16-bit MCUs, although they cost more.

Four- and 8-bit MCUs are used in legacy applications in such consumer goods as televisions remote controls and inexpensive toys. Legacy industrial applications also use 4- and 8-bit MCUs.

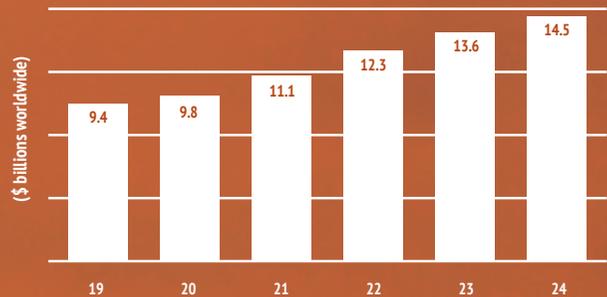
Besides smart cards and automotive applications, two other customer segments that will drive the transition to 32-bit devices are consumer and industrial IoT. "Consumer products in general are going to begin to shift to 32-bit MCUs as products become 'smarter' and more IoT focused," said Morris. Industrial IoT applications will mean more demand for 32-bit MCUs. "It will be interesting because currently 16-bit is strongest in industrial. That's probably just an engineering preference," he said.

However, 32-bit devices will be a better solution for IoT because "the drive in industrial IoT is to connect more things at a central location. We are also going to start seeing artificial intelligence at the edge being done with 32-bit MCUs," said Morris.

"IoT is a great fit for 32-bit MCUs," said Feldhan "You can do quite a bit with a 32-bit microcontroller. You don't

Strong demand for 32-bit microcontrollers will drive revenue past the \$14 billion mark in 2024.
Source: Semico Research

Strong revenue growth for 32-bit MCUs



need advanced performance system on chip (SoC)" in many applications such as fitness and health devices," he said.

One reason the 32-bit MCU market is growing is because of rising demand from OEMs for higher levels of precision in embedded systems and the need to connect sensors along with nearly everything else to the Internet of Things, according to researcher IC Insights. Many new 32-bit MCU designs support wireless connections and Internet protocol (IP) communications. More 32-bit microcontrollers are being used in a wide range of consumer and industrial equipment applications as IC suppliers introduce powerful MCU designs that cost nearly the same as 8-bit and 16-bit devices in consumer electronics and other high-volume systems, the researcher said.

More 32-bit processors for cars

Automotive, which is the single biggest segment for 32-bit MCUs, will continue to drive MCU demand for years. Feldhan said in 2020, automakers and

automotive system manufacturers bought 2.3 billion MCUs of the 14 billion that were shipped to all industries worldwide. However, of the \$9.8 billion MCU in sales revenue in 2020, automotive accounted for \$4.8 billion of that total, according to Feldhan.

"It's the lion share of the revenue but not the units," he said.

Sales revenue and unit shipments of 32-bit MCUs will continue to rise over the next 5 to 10 years because of the electrification trend in the auto industry. Some automakers, including General Motors, have said they will phase out internal combustion engines in favor of electric vehicles. "With the new administration in the U.S., there's momentum building pushing electrification of cars even faster," he said.

That is good news for MCU manufacturers because electric vehicles use about 50 per cent more 32-bit microcontrollers than internal combustion engine vehicles according to Feldhan.



Purchasing's role in board protection

Rutronik's senior manager product marketing standard products and purchasing, Reza Maghdounieh, explains how circuit protection devices protect your wallet and reputation

Did you know that without noticing, your daily activities can cause your body to charge with up to 10,000V. Even more surprising, discharges below 3,500V will go completely unnoticed. However, just 100V is enough to cause significant damage to sensitive ICs.

Thus, having the right ESD protection is important to protect your company's money and reputation. Often underestimated, is purchasing professionals' responsibility when it comes to selecting and purchasing protection components.

Finding the right protection device can be a challenging task for purchasing professionals. In today's market, there are many solutions and the number of protection parts can be overwhelming. Customer requirements, the speed of innovation, availability, cost, quality and issues beyond a purchaser's control, such as geopolitical challenges, need consideration. Purchasers who have a distribution partner helping them solve these challenges have an advantage. More than three-quarters of global companies take a systematic and comprehensive approach to getting themselves fit for the future.

The wide range of protection components purchasing professionals can choose from varies depending on

the application and the space their engineering department has provided. Purchasers in the automotive segment may be tasked with sourcing protection components for data lines, load-dumps, antenna ESD protection and more, while ensuring the components fulfill the industry's high requirements. While fuses and circuit breakers might be a solution for some industrial applications, TVS diodes, rectifiers or varistors may offer a solution to ESD protection as well.

More purchasing choice means more potential for cost savings and better availabilities to keep lines running. However, this also means more responsibility for the purchaser who needs to understand the advantages and disadvantages of a variety of protection components. Distributors who offer support to procurement and engineering departments can make sure the customer finds the right balance between technical and budget requirements. This may be through a field sales engineer who supports purchasers and engineers alike and understands the challenges both departments face.

Rutronik's field sales engineers have a technical understanding, making them an asset to a customer's design department, while appreciating a

component's cost and availability to also support purchasing departments.

It is important to work with a distributor which can offer qualified personal support, supply a variety of protection products and knows which will best suit a customer's application. This includes offering well-known manufacturers such as AVX, Vishay and Yageo, plus smaller specialized manufacturers such as Panjit or Diotec, all available at Rutronik. Since circuit protection is an important topic for manufacturers, it has become an important matter for Rutronik as well. The company sells over 350 million TVS and ESD protection devices annually and also has a circuit protection team at its corporate headquarters whose task it is to provide technical and commercial support to customers. This includes monitoring lead times and prices.

Moreover, the e-commerce platform Rutronik24 is designed to make it easy to order small quantities online in minutes. Rutronik understands the responsibility that comes with being a purchasing professional for protection components and is determined to help customers protect their wallet, board and reputation.

www.rutronik.com



Rutronik's senior manager product marketing standard products and purchasing, **Reza Maghdounieh**



More purchasing choice means more potential for cost savings and better availabilities to keep lines running



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The screenshot shows a search form with the following fields and options:

- Name ***: First and Last name input fields.
- Business Email ***: Email input field.
- Country ***: A dropdown menu with "Please Select" as the current selection.
- Please select the component types you are looking for: ***: A grid of checkboxes for various component categories:
 - Circuit Protection
 - Frequency Control
 - Interconnection
 - Power & Batteries
 - Thermal Management
 - Enclosures
 - ICs & Semiconductors
 - Opto Electronics
 - Sensors
 - Wireless Solutions
 - Ferrite Cores
 - Industrial Grade Memory Modules
 - Passives
 - Switches & Keyboards
 - Other
- Please upload your BOM**: A file upload area with a "Click or drag files to this area to upload" instruction and a note "You can upload up to 4 files".
- Part Number**: Input field.
- Quantity**: Input field.
- Preferred Manufacturer**: Input field.
- Preferred Currency ***: A dropdown menu with "Please Specify" as the current selection.
- Valid For ***: A dropdown menu with "Please Specify" as the current selection.
- Tick to receive your free monthly copy of Electronics Sourcing magazine
- Please tick to confirm that you are happy for your data to be used to provide quotations
- Submit**: A button.

This is a smaller version of the search form shown on the desktop monitor, displaying the same fields and options as described above.

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5G: just in time for work from home



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

John Denslinger shows how 5G is turning the 'work from home' phenomenon from an emergency solution to a sustainable and infinitely more productive alternative

Work from home • By John Denslinger

Covid is once again rewriting 'business as usual'. The virus single-handedly triggered the great workforce reformation of 2020 where the central office vanished and a dispersed 'work from home' (WfH) alternative took its place. Temporary? Hardly! That trend is not likely to change anytime soon. If you think about it, the WfH movement largely succeeded because a reliable, fast, robust communications network was available. Business teetered but more than survived thanks to time-tested WiFi and LTE grids.

It's easy to take for granted the ease, speed and quality of our communication systems. Connectivity rarely fails. However, as we all know, demand is surging and America is thirsting for more and more capacity especially data handling. Building-out the next generation network is not only critical to economic recovery but advancing our society in general.

In my view, 5G is rolling out just-in-time. Although the WfH labor force has ample voice capability, the growing need is instant access to data streams that bolster remote productivity. 5G offers that and more.

However, before 5G becomes the de facto 'next generation network', its ecosystem must evolve further. By that I mean, a 5G network requires new componentry, transitional devices, broader coverages, massive infrastructure integration, and above all, advances in technology that optimize billions of connections.

The launch of such a large-scale network is daunting and as expected there are limits to rapid deployment. Consider for a moment: (1) availability of ultra-miniaturized components; (2) long term performance of active and passive devices under extreme thermal, battery life and low latency demands; (3) 5G smartphone designs that place mmWave and LTE side-by-side

in one package; (4) design compression that satisfies consumer device sentiment for current form, fit and function; (5) network build-outs that still show sizeable coverage gaps; and (6) a 5G coverage map that favors large metropolitan areas over rural. The good news from my perspective, a number of well-known companies are already developing and releasing practical solutions.

On the technology front, 5G is spec'd to deliver speeds up to 10Gbps and latencies less than 10ms. Impressive? Yes, that is impressive provided the system includes EDGE computing technology truly enabling 5G optimization. EDGE adds structural complexity, but the remote user needs the full 5G speed and latency benefits to manage anticipated data flows of the future. Here again, many companies are already developing and releasing solutions for EDGE integration.

And, thanks to billions of new connections, massive amounts of data will flow. A recent Industry Insight article identified the key connectivity drivers as IoT, artificial intelligence, smart cities, smart factories, autonomous vehicles and medical technology. The list keeps growing as we apply 'smart' to just about every human activity.

On the home front, 5G will offer increased flexibility and greater productivity to every connected household. With improved access to data streams 5G extends that WfH viability to many business functions: sales, marketing, product engineers, customer service, procurement and even some product design groups. Technically speaking, 5G fundamentally equalizes the benefits of working from home or office.

5G is just-in-time. Seamless communications and instantaneous access to mountains of data make the WfH phenomenon not just sustainable, but infinitely more productive and here to stay as a working alternative.

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Medical purchasing, it's a long game

Pacer International's divisional manager, components, Matthew Ashton, advises medical buyers to work with small, dedicated suppliers invested in a long-term supply relationship

When sourcing components for medical applications, there are several critical factors that purchasing decision makers must consider.

Firstly, when medical approval is secured for a finished product, the design and supply chain are completely locked and cannot be significantly changed without re-approval: a process that can be extremely costly. This applies to all the sub-components in the design. The supplier, manufacturing process and even the manufacturing location must stay the same as in the original approval.

Once approved, medical devices will have a typical sales life of over 10 years. During this time, the medical device manufacturer must be able to source the same parts, made in the same way, from the same source or face potential re-approval of the whole project.

Step one is to work with a supplier that can guarantee longevity of supply and a stable down-stream supply chain to ensure changes or obsolescence do not occur. This can be difficult

to achieve if your supplier is a large commodity-driven manufacturer whose product ranges are likely to change over the lifespan of the device. Or worse, the product range becomes obsolete due to wider market forces and the manufacturer does not consider the medical device manufacturer as strategic to them. It can often be far more advantageous to work with a smaller dedicated supplier who is invested in a long-term supply relationship.

It's important to note that whilst supplier longevity is key, even the most agile of suppliers with a proven track record in supplying into the medical industry can still face obsolescence to some degree. We can never eradicate this issue completely but what is important is that, to address any potential risk to the product, your supplier is able to offer a contingency plan that would explore a direct replacement to minimise any design re-certification.

Step two is to avoid off-the-shelf components, as generally the requirements for medical products will be different to those for commercial ones. A commercial product is trying

to address many different applications in many different markets and will often be over-designed or under-specified for a specific medical application. In addition, the medical OEM is buying a product to facilitate a process that forms part of their IP, so it's unlikely the sub-component itself contains much IP. To optimise price, aid production efficiency and simplify the design, the medical OEM would do well to work with a supplier who can remove unnecessary functionality and add specific features (connectors, harnesses, housings etc) to make the product they purchase much more modular.

A strong supplier will also be able to pre-configure and test a more modular product to ensure it can be shipped straight to the medical OEM's production line for integration. The supplier can additionally take ownership of its own production quality through compliance with ISO 13485 and relieve the burden on the OEM's own quality assurance department to control the source of supply.

Lastly, it is a fact of life that parts do become obsolete,



Pacer International, divisional manager, components, **Matthew Ashton**

companies cease trading and designs are removed from the market. Flexible suppliers with their own design and manufacturing capability can replicate processes, re-source raw materials and reproduce designs so that the original form, fit and function of the part is unaffected and the re-qualification process for the medical OEM is significantly reduced. If the supplier meets the criteria mentioned above and can offer over 10-years production lifetime for the resulting part, the medical OEM in turn, has secured their supply chain for the future life of the product.

www.pacer.co.uk



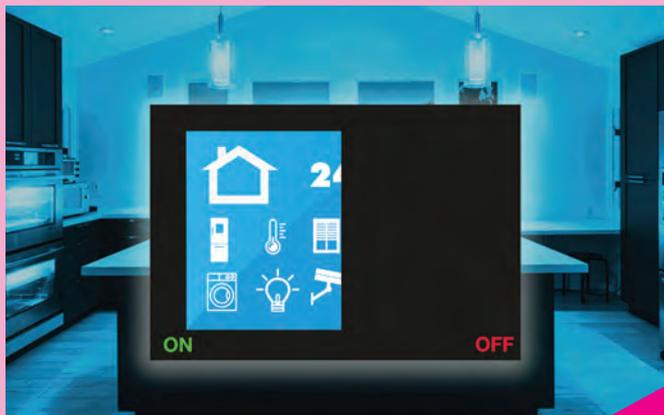
Current monitor suits medical installations

Danisense has launched the RCMH070IB+ series residual current monitor. Type B/B+ RCM can measure DC and AC residual currents from 30mA to 2Arms at frequencies of up to 100kHz. The RCM complies with IEC62020-1 which means it can be used for remote monitoring without periodic onsite checks.

Danisense's VP marketing, Loic Moreau, said: "These new RCMs use our Fluxgate current measurement technology with fixed excitation frequency to provide enhanced accuracy and stability. Applications include: condition-based monitoring of insulation health; high voltage insulation testing; mission-critical installations in data centres and medical facilities; DC power systems and high frequency loads."

Featuring a 70mm primary cable/busbar aperture and user-selectable settings for frequency range, integration time and rated residual operating current, the RCMH070IB+ RCM product also features an analogue 4-20mA output. This represents the real-time True RMS (TRMS) value of the measured residual current for interfacing to, for example, a PLC.

www.danisense.com



Enhanced medical display aesthetics

Review Display Systems has introduced Dead Front Effect, a new opaque optical cover glass for front panel designs. For equipment and systems using high brightness TFT display modules with graphical user interfaces, implementing a Dead Front Effect enables a clean, uncluttered, front panel to be easily created.

When integrated on the top surface of a TFT display module, Dead Front Effect creates a completely dark, black appearance enabling a sleek, high-end aesthetic to be achieved. The off state TFT display is effectively completely hidden from view underneath an opaque cover glass. When on, the display image can be clearly seen and the viewing of information, graphics, text, or images is unrestricted.

Further benefits include the ease of cleaning of the front surface of the DFE cover glass which can be wiped clean with a damp cloth, or for medical devices applications, sterilized with appropriate cleaning solutions.

www.review-displays.com



Medical pump benefits from coreless DC motor

An enteral feeding pump manufacturer has selected a coreless DC brush mini motor system to power and control its nutrition flow. Combined with a gearhead and encoder, Portescap's engineers integrated the customised package to provide high power density and smooth torque control.

Enteral feeding pumps are used to provide nutrition to patients. The pump needs to be compact and lightweight, yet deliver sufficient torque to ensure continuous flow. Feeding pumps also require accurate and precise flow rate adjustment.

Portescap engineers recommended the Athlonix 22N brush DC motor with the F16 magnetic encoder and K24 gearhead. With a continuous torque delivery up to 15.7mNm from the 22mm motor diameter weighing just 53g, the motor achieves a high-power density. The small footprint is largely a result of the coreless design, removing the need for the rotor's laminated iron core and replacing it with windings which create a self-supported design. The mini motor's neodymium magnets also add to its performance and high-power density within a compact package.

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4 INNOVATION AWARDS 



Medical connectivity: reliable, compact, disposable, durable

In this article, Fischer Connectors explores interconnect requirements in medical applications

In the medical sector, connectivity applications range from surgery and diagnostics, to imaging, surveillance and therapeutic monitoring. Fischer Connectors' product portfolio includes miniature, sterilizable/reusable and hybrid connectors. Disposable connectivity solutions are also available, while custom designs can be engineered for specific application requirements. Cabling options include silicone and low-friction coatings.

Requirements for medical connectors fall into several categories including: lightweight and easy to handle, even with gloves; secure locking systems; waterproof IP68/IP69 sealing or hermetic; and EMI/RFI shielding for reliable data transmission.

Medical connectivity solutions include brass push-pull connectors from the Fischer Core Series, also available in plastic (sterilizable, corrosion-resistant), disposable (high performance with each use)

or stainless steel (chemical and radiation resistant).

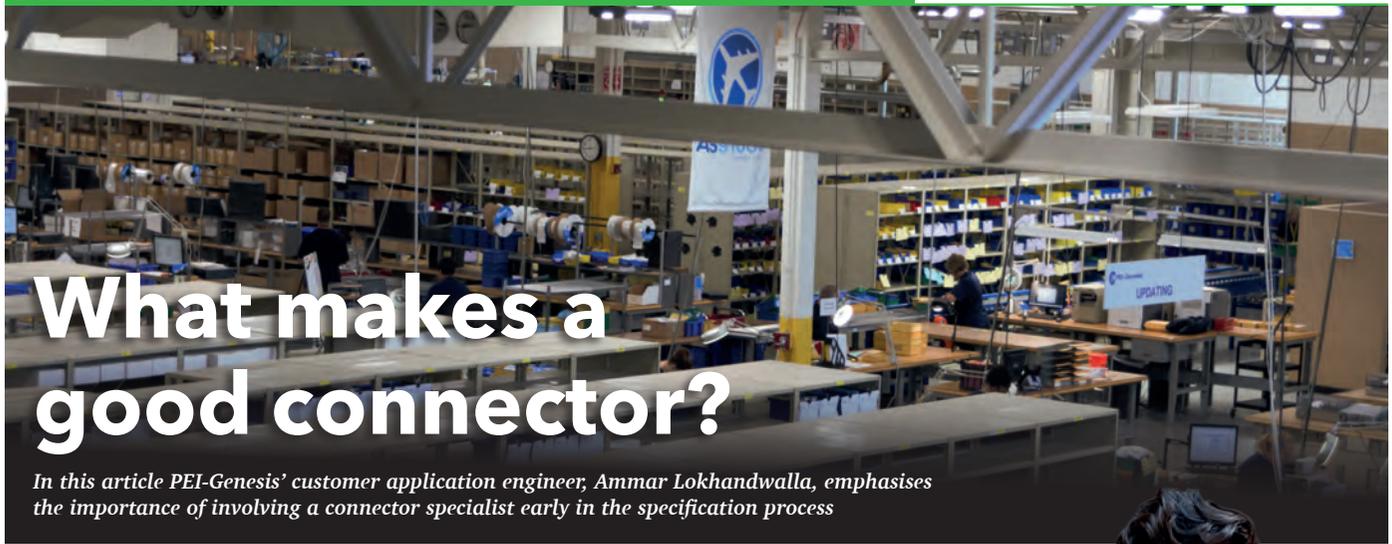
Miniaturized and suitable for medical applications requiring an optimal size, weight and power ratio, MiniMax Series connectors and cable assemblies are designed to offer a unique combination of signal and power supply at high density. Fischer's FiberOptic series ensures state-of-the-art optical performance in extreme environments.

The low-profile Fischer Freedom is designed to optimize cable management. With 360deg mating, cables can be routed in a straight line, without detours or tangles, in fixed or wearable communication devices or electronic ecosystems for Internet of Medical Things (IoMT) applications. Cable-free options are also possible, where the connector plug is integrated into the device housing, thus extended into wearable devices such as biometric sensors.

www.fischerconnectors.com

Fischer core series brass, plastic, disposable, MiniMax and Freedom Series





What makes a good connector?

In this article PEI-Genesis' customer application engineer, Ammar Lokhandwalla, emphasises the importance of involving a connector specialist early in the specification process

Connectors used in aviation and military applications must endure extreme conditions from rapid temperature fluctuations and changes in humidity, to persistent vibration, impacts and signal interference.

Take the industry standard D38999. This military-specification connector was originally designed in the 1970s and is now on its third generation. It comprises a hard outer shell, neoprene rubber insert (with holes for the contacts) and sometimes a backshell for additional shielding and durability.

Primary considerations include the materials for the terminations and housing. Although copper offers good electrical and thermal conductivity, aluminum is cheaper and easier to form and plate. So, copper may be chosen for high-voltage industrial applications

where heat dissipation and conductivity are vital, while aluminum may better serve aerospace and military applications where weight and corrosion-resistance are more important.

Ingress protection is another consideration. Connectors designed for industrial food and beverage manufacturing must be sealed against water jets to allow equipment and machinery washdown. This protection extends to marine applications where equipment may need to be submersible for long periods. Thus, a polycarbonate connector with O-rings and grommets may be the right choice here.

Aluminum may still require plating to improve its corrosion-resistance, to provide further electromagnetic shielding, and to meet camouflage and color needs. For example, some military applications

use olive-drab, a color historically achieved with a toxic cadmium coating. Recently this has been replaced with a black zinc nickel plating meeting RoHS and REACH regulations. This plating can match cadmium and withstand over 500 hours salt-spray.

One mistake a manufacturer can make is considering connector design too late. This can mean a product's time-to-market is delayed while the design is reworked. A connector may have constraints like a minimum wire-gauge, so it's important to consult with your supplier as early as possible. PEI-Genesis has simplified this by offering customers a 3D wire model which they can drop into their design to check the fit. If it doesn't, our engineering team can help with a refined or redesigned solution.

www.peigenesis.com



PEI-Genesis' customer application engineer, Ammar Lokhandwalla



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Take a peek at 2021 connector trends

2021 could be a wild ride, so Electronic Connector Company's president, Bernard J Gizzi, encourages connector buyers to talk to their suppliers early and often

We can wrap up 2020 with many hashtags, but my favorite is #LOCKITUP. We need to close the door on 2020, lock it and discard the key. A year ago, most of us would not have predicted this calamity, not just for humanity but also for our industry.

There have been pockets of stronger performance, such as 5G rollout, defense and medical equipment, along with signs of stronger than usual design activity in upstart technologies like artificial intelligence and virtual/augmented reality.

However, most of us still got caught by material consumption reductions. Particularly hit hard was commercial air and industrial/energy, plus small to medium sized businesses. Nevertheless, we also know our industry is poised to grow year-on-year. In fact, according to forecasting firms QLRsearch & Research Markets, the global electronic connector market will grow over six per cent CAGR from 2021 to

2026, with NA near five per cent and Asia topping 11 per cent.

So, what trends might emerge given 2020's volatility coupled with 2021's technology adaption?

Commercial air will bounce back, strengthening the circular connector market and leading to faster adoption of newer, lighter, rugged EN style connectors thanks to easy installation, contact spacing and durability. Medical demand will remain high, driving a continued need for safety and reliability. This will continue to foster known brands with strong reputations for quality.

Some connector manufacturers will relocate facilities to more reliable locations, possibly closer to their customers. If Covid has done one thing, it has caused us to all 'operate anywhere'. For example, a large connector manufacturer moving final assembly to Mexico v Asia, avoiding potential tariffs and

supply chain delays for finished products.

Robotics, drones, 5G and IoT will use more surface mount lightweight connectors as consumers require more 'at home' cleaning technology and better 'at home or work' instant goods delivery services. Automotive electronics continues to accelerate giving rise to technologies such as USB-C, FAKRA and optical style connectors.

Mergers and acquisitions will likely double in 2021 given larger companies have been conserving cash, while smaller competitors are searching for working capital.

What does this mean for electronic connector buyers in 2021?

First, get a grip on your supply chain and forecasts because as hard as the downturn was, it can rise just as fast. You do not want to be your company's revenue growth chokepoint because suppliers let you down. Order early and often.



Electronic Connector Company's president, **Bernard J Gizzi**

Second, spend more time with your engineers to make sure multiple sources exist for key connectors and cable assemblies. Recently, a customer asked for help as its digital signal connector supplier had been bought and its deliveries forced six months of production delays and unhappy customers.

Lastly, increase your communications with your suppliers. Share more information on legacy, core and new product development. Bring them closer to your company's data and decision making. Ask for help early.

2021 could be a wild ride: #2021SEATBELTSFASTENED.

eccoconnectors.com



EN connectors are similar to MIL-DTL-38999 series III and MIL-DTL-26482 Series II connectors



Investing in European connector distribution

Powell Electronics is investing in its European capabilities to support the interconnect needs of customers ranging from defence and medical, to transportation and agriculture

For over 70-years, Powell Electronics has supplied electromechanical components for harsh environment applications such as defence, medical, energy, transportation and agriculture.

In addition to distribution, Powell also builds over two million connectors a year at its facilities. Trusted to build these parts by global leaders such as Glenair, Amphenol, TE, Conesys and others, Powell is also trusted by its global customer base to support their needs and evolve as those needs change.

The company aims to build to customers' needs and have

a broad stock holding of finished parts. Powell's staff offer a broad knowledge and know the vendors well as many of them come from the manufacturers they serve. Powell supports customers' projects and many parts are built to specifications devised with the customers.

In Europe Powell has been linked for over a decade with global leaders in the agriculture market based in Netherlands. The company's next growth phase is happening with a new facility in Ireland: a stocking location addressing the EME market.

The company's investment is enhancing its partnerships with Glenair, Conesys and

others, while allowing it to work closely with other partners such as Harwin and expand the Positronic relationship.

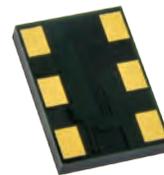
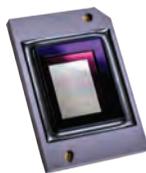
From relays, micro D, 38999, PCB connectors, cable, cable accessories and more, Powell looks forward to serving the European market for decades to come from its Ireland location chosen as it embodies the same ambition as Powell to be a dynamic business leader.

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In Europe Powell has been linked for over a decade with global leaders in the agriculture market based in Netherlands

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A single sourcing strategy can increase supply chain risk

While buyers prefer to have multiple suppliers for a key component, in some cases there is no choice but to use just one supplier

Most electronics buyers would prefer to have at least three suppliers for a key semiconductor or passive component to guarantee competition and to reduce the risk of disruption in continuity of supply if a natural disaster or other force majeure shuts down production of a supplier's factory.

However, there are times when a buyer is stuck with a single source for a part because there is only one supplier that builds a component such as a high-end microprocessor or an application specific integrated circuit (ASIC). In some cases, a part may be very mature and the number of manufacturers making the part has diminished to just one. In other cases, an electronics OEM may make a business decision to partner with one component manufacturer to make a part to get better pricing and preferential treatment during shortages.

While many buyers believe it is better to have multiple suppliers for a commodity component increased competition, some consultants say there are advantages to single sourcing which in some

cases outweigh potential risks. With a single source, a company can gain significant leverage with a supplier because it is buying a very large volume of a component from the one supplier rather than from multiple suppliers.

Another advantage of single sourcing cited by some consultants is administrative costs are reduced because buyers have to manage just one supplier for a component rather than several or many. When a company opts to have multiple suppliers for a component, those suppliers need to be qualified and qualification can be expensive and time consuming, especially with more advanced higher technology components.

Other administrative activity costs are reduced because there is not a need to send out and review bids from multiple suppliers. In addition, with a single supplier, there are fewer contracts to negotiate and renegotiate.

There is also less paperwork and fewer video chats, telephone calls and emails when there is a single supplier for a commodity.

However, many buyers believe single sources are too risky. One company that is not so keen on single sources is EMS provider Sanmina, based in San Jose, Calif. "From my perspective, there isn't a real advantage to having a single source," said Pierre Brossier, director, regional supply chain for Sanmina. When there are options for having multiple sources, it's always ideal for OEMs to take this approach and qualify all sources, so that EMS providers can utilize them," said Brossier.

Single sources happen

However, in some cases, single sources are inevitable. Brossier notes that Sanmina has single-source suppliers for components such as microprocessors, application specific integrated circuits (ASICs), plastic components and metal enclosures. "In these instances, the OEM customer is requiring that we use only one source, even if the components are available from other suppliers," he said.

In the case of microprocessors and some other patented components, OEM designers who use



We tend to see more opportunities in products that are sole sourced

Luke LeSaffre, director of sales, Americas for independent distributor **Fusion Worldwide**

those processors and patented parts build the architecture of their product around those components. In such cases, it's not possible for another supplier to "duplicate a patented device," he said.

ASICs require a huge investment by the OEM and selecting multiple sources is not an option, said Brossier. He added that plastics components are usually custom designed for a product and although the tooling investment isn't as high as an ASIC, it is still very expensive.

Unless the volumes and revenues are very high, it's typically not economically viable to duplicate tooling from a second source, said Brossier. In the case of metal enclosures, tooling is less expensive but it still takes additional time and overhead costs to set up a second metal supplier.

In some cases, an OEM may choose to have a single source for standard integrated circuits and even passive components which are built by multiple suppliers. "However, an OEM's design team may not have enough time or resources to select and qualify additional devices during the initial design timeline," he said.

Brossier says there are several advantages of having multiple sources including security of supply when there are part shortages. Multiple sources also provide "a major negotiating advantage and better purchasing power," he said. "If there are other sources for their products, strategic buyers can achieve better pricing conditions in situations because there is competition," said Brossier.

When one component

manufacturer is the only provider for a part, the supplier can demand a higher price in the short term. However, in the longer term the single source supplier "runs the risk of not being designed into the next product generation," he said. An OEM may seek a supplier which can build the part for a lower price.

Many sole-source parts are based on a new technology or innovative design and are protected by intellectual property. That means the supplier will be a sole source for a number of years. But after a certain amount of time, the design becomes public and other suppliers can duplicate it.

"It's a balancing act between securing an innovative component from a sole supplier that provides a major competitive advantage and the disadvantage of having less leverage and control related to supply and pricing," said Brossier.

Avoiding sole sourcing

Brossier says sole sourcing is to be avoided as much as possible because of its potential to cause major problems. "Imagine if an OEM must use a certain supplier as a sole source for an innovative component and the volume for the product suddenly skyrockets," he said. The supplier may experience manufacturing issues and it escalates into a major problem for the OEM and its EMS provider because too much of the business is locked in with one supplier, said Brossier. Rather than have a single source for a part a better choice is to have five suppliers for each commodity to optimize competition. "In this scenario, far better terms and conditions and price

competitiveness can be achieved," said Brossier.

If five suppliers are not possible, having at least three suppliers for each component, ideally in different geographies, would allow "a balance of economies of scale and risk management in the supply chain," he said. If multiple qualified suppliers are located in different areas, it also "reduces dependence on a single supplier or region, ensuring security of supply and business continuity when unexpected events like COVID-19 occur," said Brossier.

However, there are cases when it is impossible to have multiple sources. "In these cases, it may be worthwhile to implement inventory programs to protect the supply chain against unforeseen force majeure events," said Brossier.

If an OEM or EMS provider does not have access to enough inventory when a catastrophic event hits a certain region and shuts down production of the supplier of the sole-source part, buyers often have to scramble to find parts. Often they will reach out to authorized distributors or independent distributors that have the parts in stock. At the same time buyers may look to qualify other sources for parts as quickly as possible.

Paying the price

If the part has to be purchased on the open market, buyers undoubtedly pay a premium price for the component, especially if there is only one supplier that manufactures the component. Independent distributors say single source and sole sourced parts represent a healthy

Continue pg 26 »



From my perspective, there isn't a real advantage to having a single source

Pierre Brossier, director, regional supply chain for Sanmina

» portion of their business. Often such parts use advanced technology and the parts have a higher price tag to begin with.

“We tend to see more opportunities in products that are sole sourced,” said Luke LeSaffre, director of sales, Americas for independent distributor Fusion Worldwide, based in Boston. “If there are products that are more like commodity products and interchangeable that limits our opportunity,” he said.

“Device complexity is a big factor in the sole-source dynamic. The more complex the device the less likely there is going to be a drop-in replacement” or an alternative supplier, said LeSaffre.

There’s a strong correlation between the complexity and level of intellectual property that’s in a device and whether or not there is going to an alternate. Such devices include microprocessors, FPGAs, ASICs, and PLDs which have a higher level of intellectual property.

How special

Matt Fonstein, vice president of trade for NewPower Worldwide, said often single source parts are for specialized systems made by the Department of Defense and aerospace companies. Parts used in those systems undergo a lot of testing and qualification. “It’s a very expensive process, said Fonstein. To qualify parts from multiple suppliers is cost prohibitive so an OEM may choose a part from one supplier to qualify.

“They know exactly how the part needs to work and they know what will work in extreme environments,” he said.

“You see single sourcing-with those real specialized products,” he said.

However, sometimes “popcorn” parts can also be singled sourced too, said Matt Snow, vice president of purchasing for independent distributor Smith, based in Houston, Texas. Parts such as resistors, capacitors, discrete semiconductors may have multiple manufacturers with pin-for-pin, drop-in replacements. “Still, as customer applications become more complex, most component manufacturers have developed products with unique features in an effort to gain market share. Even the most popular manufacturers have custom/unique parts, which can cause headaches for buyers,” he said.

The auto industry often buys commodity parts with unique features such as high reliability. Multilayer ceramic capacitors sold to the auto industry are an example. Automakers often have a single source for MLCCs. They need a supplier that can build a part that has high reliability and function in a harsh environment.

They may commit to a single supplier to guarantee a high-level business for many years at a price that may be higher than similar less robust parts sold to other industries. However, if the supplier has a production issue in making the part, the automaker may have to shut down.

“In the automotive segment, there isn’t as much interchangeability and that’s one of the reasons why the current shortages are biting so hard,” said Snow. With automotive manufacturers it takes a lot of work to qualify any part.

“Often we see more sole sourcing, single sourcing because the engineering qualification process is so involved,” he said.

Buyers in other industries also single source and sometimes end up scouring the supply-chain for parts or qualify new suppliers because of an unexpected disruption to the manufacturing of the part. That was the case with Asahi Kasei Microdevices (AKM) when fire destroyed the Japanese chipmaker’s factory last October.

“A lot of customers were just using AKM exclusively,” although similar parts were available from other semiconductor companies said LeSaffre. “AKM was their single source. I don’t know if their product is considered superior or better priced,” he said. But after the fire, Fusion sold more AKM parts “in a six-week period then we had several years previous,” said LeSaffre. In addition many AKM customers hurried to qualify other suppliers such as Cirrus Logic and Texas Instruments.

When customers choose to do single sourcing, it may come down to a business decision “where they decide to allocate a greater portion or all of their spend on a particular type of device for the sake of leveraging that direct supplier,” said LeSaffre.



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Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Location	Franchised Distributor	No. of Lines for Principle	Stock Value for Principle	Minimum Order Value	% Lead Free for Principle Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
ENCLOSURES												
Metcase Enclosures	OKW Enclosures	+44 (0) 1489 583858	www.metcase.com	EU	N/A	288	£40K	0 €	100%	5	22	Y
INTERCONNECTION												
Amphenol	PEI Genesis	+44 8716060	www.peigenesis.com	EU	Y	N/A	£1.3m	10 €	N/A	N/A	85	Y
Hirose Electric Europe B.V.		0031-(0)2 655 7460	www.hirose.com/eu	EU	Y	50,000	N/A	0 €	N/A	N/A	4,190	Y
ITT Cannon	PEI Genesis	+44 8716060	www.peigenesis.com	EU	Y	N/A	£1.3m	10 €	N/A	N/A	85	Y
ODU		+49 8631 6156-0	www.odu.de	EU, USA, ASIA			N/A	0 €	N/A	50	1,650	
PASSIVES												
Kemet	RS Components	08457 201201	www.rs-components.com	EU	Y	N/A	£161m	0 €	N/A	50+	2,500	Y
Würth Elektronik	Würth Elektronik	+49 (0) 7942 945 0	www.we-online.com	EU	Y	N/A	N/A	0 €	100%	250	4,000	Y
POWER & BATTERIES												
RECOM Power GmbH	Various Distributor	+43 7612 88 325 700	www.recom-power.com					0 €	100%	3	560	Y
Sanyo Electronic Industries Co., Ltd.	Sanyo Electronic Industries Co., Ltd.	+81 36699 8080	www.eta.co.jp	JP	N	1,000	€3000k	20 €	90%	10	100	Y
SWITCHES & KEYBOARDS												
CHERRY	RS Components	08457 201201	www.rs-components.com	EU	Y	600	N/A	0 €	N/A	50+	3,500+	Y
Rubbertech 2000	Rubbertech 2000	+44 1594 826019	www.rubbertech2000.co.uk	EU	N/A	N/A	£40k	100 €	N/A	N/A	25	Y

PCB Buyers' Guide

Manufacturer	Telephone	Website	Service Provided (ie Broker, Manufacturer &/or Repair)	Location	Approvals	Volume - Small, Medium, Large	Double-sided	Multi-layer 4-10/10-20-30	Metal PCBs	Flexi / Flexi-Rigid	Obsolescence Solutions	Modifications	Prototyping
Elvia PCB Group	+33 233 763 200	www.gepcb.com	M/B	France, Tunisia, China	AS9100, PRI-NADCAP, ISO-TS16949, ESA, UL, ISO9001, ISO14001	S/M/L	Y	1-30	Y	F, F/R	Y	Y	Y
Graphic Plc	00441363 774874	www.graphic.plc.uk	M	UK/China	AS9100, NADCAP, ISO 9001, AISI14001, OHSAS 18001, MIL 31032, MIL 55110, MIL 50884	S/M/L	N	4-10	Y	Y	N	Y	Y

Contract Manufacturers Buyers' Guide

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

Advert Index

Advert	Page	Advert	Page
Coilcraft	10	Interpower	28
Component Sourcing	15	Lemo	8
Digi-Key Electronics	FC, IFC & 16	Mouser Electronics	23
eBOM.com	17	PEI-Genesis	21
ECIA (Trusted Parts)	7	Rochester	5
Fischer	20		



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