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On the cover – January/February 2021

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Editor's Word



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Press go for growth

I always look forward to the January issue of *Electronics Sourcing Europe*. It's an opportunity to ask a wide range of manufacturers and distributors for their experience over the past 12-months and their expectations for the coming year.

Every year, for the last decade, these Forecast features have typically delivered a diversity of views. Some contributors are bullish, others are bearish. Some see growth in one industry, others in a different sector. Not this year. This year is different.

Looking back, all the contributors seem to have had a common experience. The pandemic hit hard and hit fast. It disrupted supply and demand simultaneously. However, it also quickly became clear that big problems create equally big opportunities. Likewise, distributors are like smoothing capacitors, they exist to manage disruption. Distributors drew on their skills, experience, systems and stock and 'managed the problems away'.

Looking forward, all the contributors have a common expectation. 2021 is going to be a gangbuster year, driven by 5G, electrification, IoT, medical, AI and more. As one commentator put it 'even a global pandemic can't stop the mega trends'. Likewise, some distributors which monitor new design activity have said 2020 was a record year.

Summarising all the comments, distribution questions for 2021 will be more about pricing and availability than where is the next order coming from.

To be honest, the above is not what I imagined I'd be writing back in March. It just goes to show how resilient the world, the people and this industry really is.

Jon Barrett

Contact

ELECTRONICS **sourcing** **mmg** PUBLISHING LIMITED

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

ADVERTISING
Advertisement Manager: Emma Poole
emma.poole@electronics-sourcing.com

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

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

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

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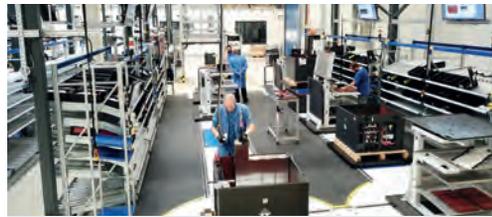
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Lithium-ion battery production starts

Kion Battery Systems has started production of lithium-ion batteries for industrial trucks. The production lines at the 4,000m² factory can manufacture over 12,000 batteries a year, mainly for heavy-duty and high-performance forklifts and industrial trucks made by the Kion Group brand companies.

CEO, Carsten Harnisch, said: "Following the successful start of production, we will now focus on increasing capacity and developing new battery systems."

Joint managing director, Christian Hasenstab, added: "The new production facilities at KBS will allow us to meet the increasing demand for modern lithium-ion batteries and offer customers a highly reliable supply of products."

Lithium-ion batteries offer a particular advantage in electric vehicles. Compared with traditional lead-acid batteries, there is no need to swap batteries because lithium-ion technology supports rapid charging and top-up charging. The batteries are suitable even for heavy-duty trucks that carry substantial loads.

kiongroup.com

More semiconductor solutions

EBV Elektronik is now supplying key products from Cypress Semiconductor's portfolio including programmable system-on-chip solutions, the Traveo MCU family, connectivity components from the IoT Compute and Wireless business unit and Flash/RAM memory devices.

EBV Elektronik's senior vice president sales and demand creation, Thomas Staudinger, said: "This expansion of our Infineon range to incorporate Cypress parts is a simple adjustment to our longstanding partnership that will deliver commercial and technology benefits to customers throughout Europe. Our technical sales and application specialists are experts in complex semiconductor technologies, and they will continue to provide the in-depth engineering support that our customers value and expect from us."

Infineon's head of distribution partner management EMEA, Mathias Roettjes, added: "EBV is a trusted franchised partner in Europe, and our existing relationship, along with our combined technical know-how of semiconductor technologies and the industry at large, will ensure a smooth transition for existing Cypress customers and an assurance of continued high quality of service for customers old and new."

www.ebv.com/infineon



Space fuses successfully requalified

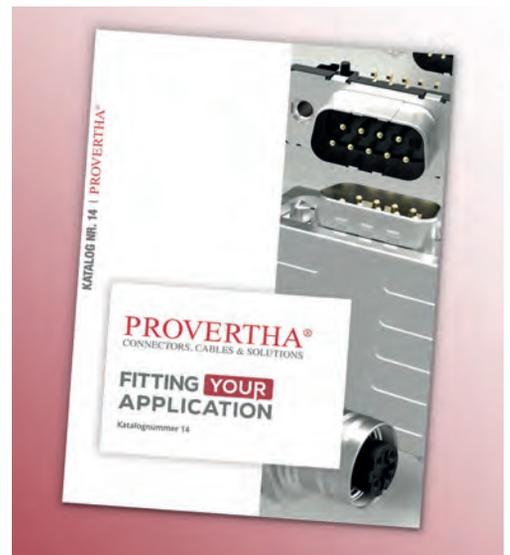
For more than a decade Schurter has been the exclusive supplier of fuses to the European Space Agency (ESA). Requalification, which is due every two years, took place in 2020 without objections.

Schurter's MGA-S fuse had been tested and certified by ESTEC (European Space and Research and Technology Center). The MGA-S is an SMD fuse manufactured using thin film technology and hermetically sealed in a robust ceramic housing. Similarly, the certified HCSF fuse (High Current Space Fuse) was developed for applications with higher rated currents.

Both fuses meet the demanding requirements of the space industry, such as consistent operation in high vacuum or accelerations up to 1600g.

Space fuses are used to protect redundant systems in satellites against short-circuits or to switch them off selectively so that a replacement system can take over the function. Communication systems are also switched on and off selectively, for example to send data packets at a specific time.

schurter.com



200-pages of connector products

Provertha's new catalogue is designed to make it easier to find products, while also offering detailed technical information and product photographs. This 200-page catalogue is available in print and digital formats. As major additions, it includes the TMC series with high-performance PCB D-Sub connectors, and the M12-Mini series for field assembly.

provertha.com

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Data exchange on steroids

Avnet EMEA's vice president digital, Brian Wilken, explains how support for BOM Connector and direct APIs provides customers with data above and beyond price and availability



AVNET EMEA'S VICE-PRESIDENT DIGITAL, BRIAN WILKEN

Advanced programming interfaces are not new but have the potential to radically streamline information exchange between distributors and customers. While electronic data interchange (EDI) has an established base, it always faced the limits of a complicated messaging system. APIs on the other hand are barely structured, flexible, extendable and available to many customers via portal solutions like BOM Connector and others.

Make no mistake, EDI has huge pros: primarily being structured and trusted. However, the implementation effort is huge, costly and limited to certain message types. Building an EDI bridge needs a certain business size and system readiness the same goes for Rosettanet. Distributors are using it for a variety of information exchanges with suppliers. In components distribution it never crossed the chasm to customers.

So, what could complement EDI? Looking at customer data requirements, flexibility, scalability and simplicity are key.

When preparing manufacturing projects, customers collect many data from a variety of sources with varying formats. The question is how to simplify this and eliminate human errors on both sides of the fence?

Thus, APIs have evolved. Simple configuration architectures or messaging types have been developed, like REST (Representational State Transfers) and SOAP (Simple Object Access Protocol), whereby REST is taking off more recently as quasi-standard, addressing the limits of SOAP.

APIs exist in two major forms, via platforms like BOM-Connector that offer many-to-many interchange on subscription base or through direct APIs that are developed to interface two parties with a potentially customized set of data.

Avnet EMEA, which has worked with BoM tools via its website for more than 15-years, has gone in both directions to enable a wider group of customers to enjoy the data exchange on steroids, depending on the complexity of their needs. For BOM Connector, Avnet is a content provider with certain data points per part number. This connection type is ready to use, if you are looking at outsourcing your BOM creation, are a customer of BOM Connector (CircuitByte GmbH) and can make use of the provided info. Direct APIs are on the company's roadmap, too, but need a different size and type of customer relationship, plus the willingness to tightly connect systems at a sophisticated level.

Why platforms, if they make a distributor more comparable regarding price and availability? Well, a certain, if limited default is preferable to a world of chaos. The challenge might not be the comparability but the availability of multiple platforms. With limited resources, you have to make a choice at some point.

The key to using any API is data readiness and a certain system sophistication. There are decisions to be made on data types, single or multi-site connections, single or multiple accounts etc. Expect a month of implementation time and you may be ready to enjoy.

The benefits of entering the API era are in clear sight, once you pass through the learning curve: a faster, more efficient way to more reliable BoM and RFQ building, with cleaner data, less errors and a data-to-decision process that is faster than you can say API.

www.avnet.com

Strategies to extend product lifecycles

Rochester Electronics' technical sales manager EMEA, Ken Greenwood, investigates how companies can take control of component obsolescence

The semiconductor industry is evolving regarding manufacturing technology and consolidations.

This typically means old components reach end-of-life sooner; and more applications and industry segments are being affected by obsolescence.

Systems in markets such as mil-aero, industrial, energy, transportation and medical often have lengthy product and service lives and customers need long-term support for the original system design without modification. However, semiconductors used in these systems tend to have much shorter life cycles. The challenge for the system supplier is how to manage the gap between these two conflicting timelines.

Traditionally, customers made large last-time-buy (LTB) purchases of finished components and then attempt to store components for the life of the project: with varying degrees of success. A forecast LTB is almost guaranteed to be wrong. Fluctuating market demand and uncertainty of long-term storage yields, can lead to premature system discontinuations, shortened service-lives, full

re-designs driven only by component obsolescence or unused components which are subsequently scrapped.

In desperation, some customers turn to last-time supply by purchasing finished components through the non-authorised markets which introduces a range of new risks such as: pre-used, damaged, contaminated or pre-programmed components, many sold as new.

The only way to guarantee long-term semiconductor availability is wafer storage and long-term packaging and test.

For over 35-years Rochester Electronics has offered a range of wafer storage and processing services at its facilities in Newburyport MA, USA. Wafers are either stored in wafer form (known-good-die tested from the original fabs with full die maps) or in die form.

Nitrogen storage provides almost unlimited storage life. This means long-term customer delivery programmes can be guaranteed, with no appreciable changes in production yield.

In parallel, Rochester's long-term relationships with over 70 leading semiconductor manufacturers, allows for the transfer of the original assembly and test specifications after component discontinuation. Many of these manufacturers authorise Rochester to continue production, guaranteeing 100 per cent identical parts and even allowing Rochester to use the original part numbers.

Increasingly, where future market demand is visible, Rochester is funding the purchase of fully tested known-good-die for key 'heart-beat' components at the core of customers' most critical long-term systems.

Rochester's in-house packaging capabilities, including ceramic, metal-can and plastic DIP, are supplemented by relationships with other leading packaging companies, allowing Rochester to identify best-in-class sourcing for most historical packages.

A key customer benefit of authorised long-term production from wafer is improved cash-flow because a wafer/die reservation fee is significantly more economical than the upfront purchase

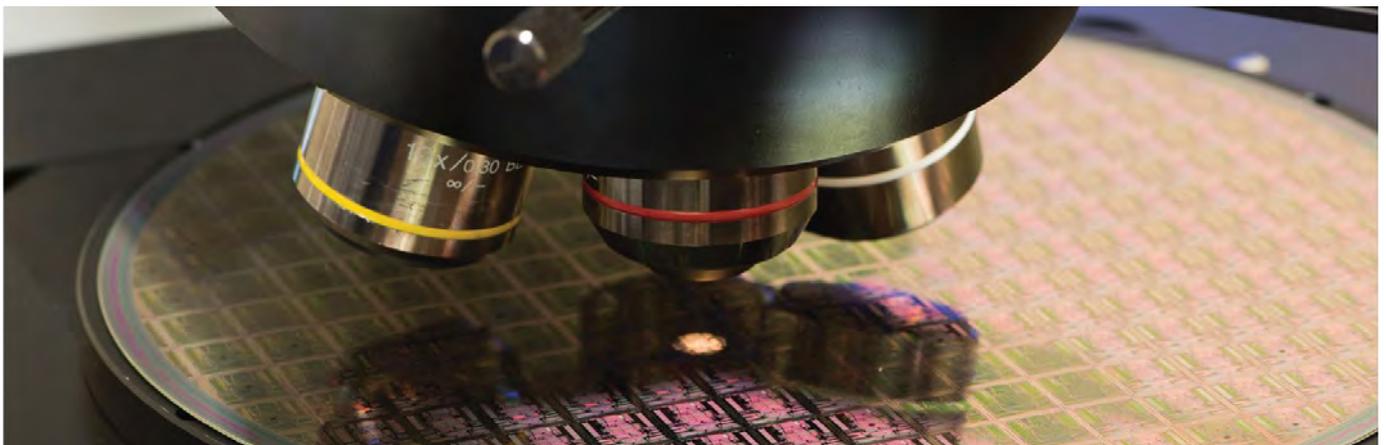


Rochester Electronics' technical sales manager EMEA, Ken Greenwood

of finished goods. Also, long-term storage costs are minimised because wafer storage is more economical than finished goods. Other benefits include guaranteed long-term production yields and no quality/solderability risks.

This means customers who purchase from Rochester, can be 100 per cent confident that components are authorised and compliant with the original supplier's specification, not only fit-form-function but also errata/software compliant as well. No further testing or qualification is required.

www.rocelec.com





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Purchasing tools at your fingertips

Mouser's VP of EMEA Customer Service, **Graham Munson**, and VP Marketing EMEA, **Graham Maggs**, offer readers a tour of the company's Customer Resource Centre

Mouser Electronics' new Customer Resource Centre is designed to help customers take advantage of the company's online purchasing services and tools through one centralised hub that contains everything necessary to optimise the purchasing process.

Customers simply click the name of the desired tool and then view or request what they need. From the Centre, customers can: access and learn how to view or track orders; request technical support and data sheets; or place orders via

API or EDI through order automation. Mouser's order automation helps customers reduce their workload by providing enterprise resource planning (ERP) systems such as simple API integrations, PunchOut solutions and more sophisticated electronic data interchange (EDI) integrations.

Mouser's VP of EMEA Customer Service, Graham Munson, said: "Mouser continually assesses and improves the online resources that we offer to help buyers and engineers manage their product specifications and

purchasing. We are very excited to make this new Customer Resource Centre available on our website for customers as we continue to make it our mission to provide best-in-class service around the world."

Productivity tools including the Forte intelligent BoM tool which quickly validates part numbers, product availability and price, and recommends alternative products to reduce design and product lifecycle risks. The tool also provides a Risk Evaluator feature based on a unique relevancy engine that analyses partial part numbers and descriptions to suggest the best options for customers.

Another tool is the Price and Availability Assistant, which allows customers to easily check prices and availability on millions of semiconductors and electronic components. Using this tool, customers can drag-and-drop spreadsheet files or copy and paste order data (up to 200 part numbers) with up to three different quantities per part number. For even easier online ordering, the Centre also provides a link to create a My Mouser account, which helps customers further save time by saving contact, payment, order and subscription information.



Mouser's VP Marketing EMEA, **Graham Maggs**

Mouser's VP Marketing EMEA, Graham Maggs, added: "With this centralised services hub, Mouser greatly improves and speeds navigation for our customers looking for resources to simplify their buying process, with the added bonus of alleviating much of the research involved on their part."

Maggs also hinted at the wealth of Conversion Calculators that can be found in the Technical Resource Centre, saying: "Every engineer will be glad to have something like this at their fingertips."

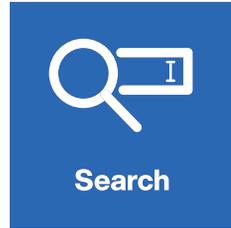
www.mouser.eu



Mouser's VP of EMEA Customer Service, **Graham Munson**



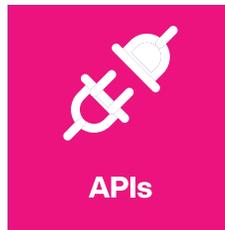
Mouser continually assesses and improves the online resources that we offer to help buyers and engineers manage their product specifications and purchasing



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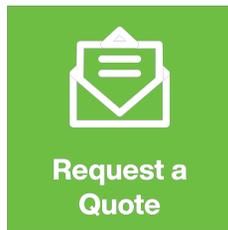
Inventory Management



APIs



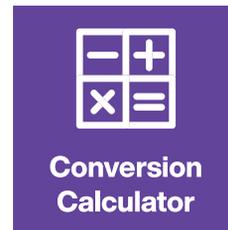
P&A Assistant



Request a Quote



Cart/Project Share



Conversion Calculator

Ordering made easy

Tools to search, check stock and purchase

mouser.com/servicesandtools





Despite pandemic, executives say North American distribution is strong

The state of North American distribution is healthy because distributors are essential links in the electronics supply chain



James Carbone

Electronics distribution executives say the state of North American distribution is robust and will continue to grow because its role in the electronics supply chain is essential and growing in importance to both electronics component buyers and component manufacturers.

While the coronavirus pandemic resulted in double-digit declines in sales for some distributors in the second quarter of 2020, the pandemic will not have a long-term impact on sales growth. Distributors say they have weathered the downturn caused by the pandemic and North American business started to recover in the second half of the year.

Distributors say the recovery shows the resilience of the North American distribution industry and confirms how important the role of distribution is in the electronics supply chain. When the pandemic hit North America last March, “we did not miss a day,” said Phil Gallagher, Avnet CEO. “Everybody thought the supply chain was going to be disrupted. The silver lining for us is we did not miss a day,” he said. “I think it further explains the positive value that we bring to the technology supply chain. We’re in the center of the technology supply chain. It reinforces the importance of what

we bring to the market for our suppliers and our customers,” he said.

Some distributors reported sales increases for the year, while others say their businesses bounced back in the third and fourth quarters and they expect strong sales growth in 2021. Longer term, distributors expect continued healthy sales growth in North America because of stronger component demand from such segments as 5G, medical, artificial intelligence and alternative energy. At the same time more traditional customer segments such as industrial and automotive, will continue to grow in North America.

“American distribution is very strong,” said Mark Burr-Lonnon, senior vice president EMEA, Asia and global service at Mouser Electronics. “Part of the reason it’s been strong for us is we are more involved on the design side. The U.S. remains a powerhouse of design.”

He said while Mouser is seeing strong growth in Asia and Europe because it is “fertile ground for us to grow, we see good growth in the Americas. This year (2020) were going to be up over six per cent in the Americas in terms of dollars and the number of buyers,” he said.



“American distribution is very strong. Part of the reason it’s been strong for us is we are more involved on the design side”

Mark Burr-Lonnon, senior vice president EMEA, Asia and global service at **Mouser Electronics**

Distribution differences

Distribution in Asia is different than in North America in some ways. “The Americas distribution business is more similar to the European market than it is to Asia, specifically with our concentration of mid-sized industrial OEMs that work to provide solutions across a broad range of applications,” said Rick Marano, president of Arrow Electronics’ Americas components business.

Consumer does not play as significant a role in the Americas

as it does in Asia,” he said. Other customer segments such as Internet of Things, industrial and medical are strong segments with distributors worldwide. Burr-Lonnon added the military-aerospace market is a “strong market for distribution in North America and Europe,” but not in Asia.

Don Akery, president, TTI Americas, said emphasis on total cost of ownership (TCO) is another way North American distribution is different than distribution in Asia. He said Asian



customers focus more on piece price and immediate stock than on cost of ownership.

North American and European customers "require competitive pricing, but it is not the only data point in their procurement decisions," said Akery. They seem to value distributors' support of their design efforts as TCO.

He added North American customers are buying more components through distribution than they were 10 years ago. "The component shortages from 2017 and 2018 helped drive the distribution value proposition of assurance of supply, especially on the low average selling price components," said Akery.

Many buyers analyzed the "cost of missing components to the cost of having a distributor inventory and pipeline inventory and determined that it is much less expensive to work with a distributor," he said. Buyers moved from using only purchasing price variance (PPV) as the sourcing reason to total cost of acquisition/ownership.

Smoothing demand cycles

Distribution's role in the supply chain will continue to grow in importance. "Distribution will continue to be a key provider in the electronic supply chain in the

future," said Akery. As electronic content continues to increase, distribution will be needed to help smooth the demand cycles, he said.

Distribution will play a key role in managing the supply chain for the largest customers but will also continue to support the long tail of smaller customers, Akery added. TI has seen its customer base in the Americas and globally increase for years as more "electronic capabilities are being added to many products," he said.

The role of distribution will evolve especially with how distributors interface with customers. "We are seeing a large increase in customers connecting directly with our systems via APIs (Application Program Interface) to receive real-time information required to support their business," said Akery. "This digital interface is an opportunity and a risk for distributors," he said.

The use of APIs is an example of how the distribution business is changing. However, change is a constant in electronics distribution and has had an impact on the role of distributors. One big change in distribution and the electronics industry has been consolidation.

"The distribution world has

Avnet CEO Phil Gallagher

"Relationships and trust matter. Our customers and suppliers have choices and they will choose to do business with people they trust"



consolidated in terms of suppliers and distributors over the last 10 years, and over that time, expectations from our customers and suppliers have increased," said Marano.

Customers expect that distributors "supplement their efforts across a broad range of new and existing technologies" such as embedded, security and cloud," he said.

Suppliers, meanwhile, want to broaden their customer bases into the "mass market of OEMs and we've had to adapt our approach to ensure that we provide them the scale they expect from us," he said. As a result, Arrow has invested in engineering and technical resources and tools, ERP systems, and a broadened sales team and digital platform.

More design activity

Marano said there has been a significant increase in customer design activity as "our customers have continued to innovate even during the pandemic period." "Specific market areas where we have seen activity is aerospace and defense, communications, consumer and industrial," he said. Arrow is seeing "broad adoption and interest in new technologies such as silicon carbide, security and cloud deployments," said Marano.

Gallagher noted that distribution design support is growing in North American and other regions of the world. "For years all the designs were done in the West and all the production was done in Asia-Pac. That's not the case anymore," he said. While there is still a lot of design in North America, more design work is also being done in Asia, he said.

"We're still doing a lot of design work and our customers expect us to do design here and service the supply chain wherever they manufacture," he said.

Buyers can expect distributors to invest in services such as design, value added and cloud capabilities. Digital platforms will continue to proliferate to provide customers with a full on-line product development experience.

While change is inevitable in the electronics industry, there are aspects of distribution that will never change. One example is relationships between distributors and their customers and suppliers.

In distribution, "relationships and trust matter," said Gallagher. "People do business with people they like and trust. Our customers and suppliers have choices and they will choose to do business with people they trust, he said. "That will never change."



Shock proofing your supply chain

Diversifying vendors and locations allows manufacturers to be more adaptable to changing markets and less affected by supply chain disruptions

The pandemic has had a largescale impact on demand and supply, exemplifying the need for stronger supply chains. A second wave could result in further global disruption, making supply chain resiliency even more crucial. Despite this, a recent Gartner survey showed that only 21 per cent of respondents stated they have a highly resilient network, which includes the ability to shift sourcing and manufacturing activities around quickly.

To successfully accomplish a resilient supply chain, sourcing components from various suppliers and geographically diversifying production stages is key. Though supply chain diversification is vital in protecting manufacturers against shocks, its importance is usually only reminded when weaknesses start to show.

According to PwC, CFOs expecting to change the breadth of their supply chains went from 30 to 42 per cent from the beginning to the end of March. This correlates

with the spike in factory shutdowns caused by force majeure put in place by governments.

Fusion Worldwide's COO, Paul Romano, said: "Companies normally look to introduce secondary suppliers during chaotic events but quickly forget the necessity once the issue is resolved. With the pandemic, companies will also need to geographically diversify their supply chains to lessen their dependence on a single location."

Geographical diversification is a long-term solution due to the time and investment required. Despite this, it is a powerful step in securing supply chains. By strategically placing and out-spreading where product is produced, procured and stored, companies are more able to safeguard against unexpected future catastrophe.

In the short term, companies can diversify their vendor base and products. As disruption escalates, it is important to start improving strategic sourcing strategies. Vetting processes need to

be conducted without delay to ensure new suppliers are compliant and reliable.

Fusion Worldwide's EVP of trade, Tobey Gonnerman, added: "Strong vendor partnership with open market suppliers are critical to an OEM's ability to deal with supply chain adversity. Those who wait until the shortages occur are the ones most severely impacted: in terms of over-cost and quality assurance."

One mitigation strategy is to establish alternative sources with the ability to supply components normally produced by a single source.

Another option is to expand the approved vendor list or AVL. This offers more options when supply chain disruptions occur. A company with a large AVL can more easily solve component shortages and is more able to leverage suppliers.

Understand what supply chain links are vulnerable, then set up risk management and contingency plans. Companies should be aware

of what will be affected, the gravity of the impact and how prepared they are.

By closely monitoring market events and the status of their supply chains in relation to it, companies are equipped to take proactive actions and immediately react.

Finally, with manufacturers of certain components condensed in one region, one type of product will be greatly affected by political events and natural disasters. By spreading out factory and supplier location, companies will be more protected against condensed shocks.

www.fusionwww.com

The top three places capacitors are being manufactured account for 56 per cent of its global production. Source: z2data.com





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MLCC supply is beginning to tighten

As lead times grow, expect the MLCC market to tighten throughout 2021. By TTI's vice president of product and supplier marketing, Jeff Ray

After a prolonged lull during 2019 and most of 2020, the supply of MLCCs is beginning to tighten. Lead times are extending across many case sizes and suppliers, both in commercial and automotive-grade components.

Factors causing this tightening include: increased demand from the communications and transportation sectors; depleted global inventories; and supply chain challenges due to increasing manufacturing facility absenteeism and increased transit times. Expect the MLCC market to intensify consistently throughout 2021.

Increased demand from the communications and transportation sectors can generally be attributed to advancements in 5G infrastructure and cellular handsets in Asia, and to a lesser degree the global automotive market's move toward the electrification of drive trains along with more robust safety and infotainment applications. The communications sector is a large consumer of small case size MLCCs (≤ 0402) in both commercial and automotive grades.

For the most part, the remaining factors can be

attributed to supply chain issues in 2020. This has been a year of adjustment in the global supply of MLCCs, with customers, distributors and manufacturers correcting their inventory levels, maybe even overcorrecting in some cases. The lower-than-market demand for MLCC inventory has left some customers' supply chains exposed to the recent uptick in the communications and transportation markets.

This combination of increased demand and recent developments of increased absenteeism at factories have placed a strain on MLCC supply chains. As distributors and customers shift into catch-up mode, the increase in demand will foster further MLCC lead-time extensions.

Capacity limitations may seem unlikely in light of well-documented MLCC manufacturing capacity increases in 2019. While it's true most MLCC suppliers increased capacity through factory expansion and additional manufacturing equipment, an unfortunate result of the soft 2019 and 1H 2020 MLCC market is that many manufacturers reduced their workforces. Re-staffing trained MLCC production operators and inspectors has remained a challenge.

Here is what we see developing in the market right now:

Current market conditions see small case size (≤ 0402) low-CV commercial grade MLCCs being available, with few exceptions by type or manufacturer.

Small case (0201 and 0402) low-CV and high-CV automotive grade MLCCs are less stable: lead times are extending by eight to 10-weeks into the 24-week range.

Large case (≥ 0603) high-CV automotive grade MLCC lead times have remained extended throughout 2020 and are currently in the 20 to 24-week range.

Large case (≥ 0603) low-CV commercial grade MLCC lead times are also extended, typically in the 17 to 22-week range. Note that lead-times for 1206-2220 case size components (which are on the upper end of the large-case MLCC portfolio) have remained extended throughout 2020 as less additive capacity has come online to address this market demand. Lead times remain in



TTI's vice president of product and supplier marketing, **Jeff Ray**

the 20 to 24-week range for both low-CV and high-CV commercial and automotive grade components.

As we move from a difficult 2020 into a new period of market uncertainty, the importance of having a distribution partner becomes even more apparent. As the market leader in MLCC distribution, we're committed to communicating today's evolving market conditions to help you make the best supply chain decisions.

www.tti.com



Capacitors: popular and in demand

Readers ask why capacitors are often the first component type to experience shortage when the market rises. We asked Anglia Components' CEO, Steve Rawlins, for clarification

Your readers are absolutely right, capacitors, traditionally tantalum and in more recent years ceramic MLCCs, are almost always the first to be hit when there are shortages. Some of the reasons behind this can be specific to capacitor technology, but others relate to the market structure and long-term trends.

Tantalum and MLCC capacitors are widely used and extremely popular components. As markets rise, so does demand. High volume consumer electronics like games consoles, phones and tablets can contain thousands of MLCC chip capacitors. There are some potential alternatives to both MLCC and tantalum, especially low ESR polymer capacitors. However, these often require circuit redesign and are larger and/or more expensive on a like-for-like cost basis but can lower overall system cost in some instances.

The supply chain for tantalum has an added vulnerability because tantalum is mined in a

limited number of locations which happen to be in some of the more unstable parts of the world.

When shortages arise, available supplies are inevitably routed to the largest volume customers. This is the market we're in right now. High volume users in the automotive and consumer sectors are ramping up quickly. New consoles are coming up and demand for 5G is kicking in.

There are now only three or four large manufacturers of tantalum chips. While there are many more MLCC manufacturers the main global production volumes are controlled by the top five manufacturers. Given the miniscule margins on such devices, they need to manufacture billions to amortize their production costs and return a profit. Essentially, they service the industrial market when they can. It simply isn't economic to build sufficient capacity to support peaks, only to mothball it when demand drops.

To make matters worse, high volume users don't actually use the same devices as most industrial customers. This is true for capacitors, resistors and the like. To reduce their products' size and cost, mobile phone manufacturers are continually moving to smaller devices and are now set up to place 01005 (0.4 x 0.2 mm).

The sizes most of our customers ask for (0603 and 0402) are legacy products as far as many passive manufacturers are concerned. They are sold at a premium and only produced when there is spare capacity. The larger sizes consume more raw materials and production anyway, creating an active disincentive for manufacturers to produce the larger sizes. It is no surprise that manufacturers are increasingly reluctant to commit scarce capacity to produce larger sizes given the relatively small demand that remains.

As manufacturers discontinue or reduce production of larger size chip passives, component users need to

explore their options to ensure they aren't caught out by shortages and unworkable lead times. They should consider moving to smaller sizes such as 0402 and 0201 for current and new designs if they work within necessary voltage and value requirements.

www.anglia.com



Anglia Components' CEO, Steve Rawlins

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2021 outlook: the curve is key



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

In this article, John Denslinger explores the impact of different recovery curves on 2021 growth projections for the electronics distribution and manufacturing sector

2021 Forecast • By John Denslinger

Presidential elections often introduce near-term forecast uncertainty but 2020 may be one for the record books. No one could possibly script a more confusing set of circumstances as we enter 2021. Will the government be a house divided? Will there be financial aid for individuals caught in the Covid downdraft? Will there be stimulus to keep America's small businesses operating? Will trade policies, tax rules and regulatory restraint abruptly change? Will Main Street ever be the same again? One fact is certain, the Covid hangover will continue.

On the macro level, US GDP in 2021 is projected at 3.8 per cent according to a Bloomberg consensus forecast. Interestingly, Goldman Sachs is more bullish suggesting 5.3 per cent GDP. The variance is related to one's view of the recovery curve. Goldman's is based on a V-shaped recovery, the most optimistic. Others seem based on U-curve, W-curve, reverse L-curve and probably some other shapes I missed. Regardless the recovery shape, the good news is the forecast stands robust and positive. Growth this year should be above average for the electronics industry.

While curve shape garners the most media attention, two forthcoming actions will ultimately determine which curve prevails. Simply stated: vaccines versus lockdowns.

Depending on the source referenced, the US is now in the second or third Covid wave as we enter 2021. Cases are rising, but testing is widely available with three day or less feedback. Death rates among all age groups have steadied at near flu-like levels, but dreadfully high. Unfortunately,

hospitalisation rates are still climbing and that is expected to remain at emergency levels. Let's assume everyone by now wears a mask in high contact areas, maintains proper social distancing, washes their hands regularly and quarantines when exposed. What's next? Once again, Governors are taking strikingly different approaches to safeguard citizens as this new wave approaches. Some see lockdowns as the main line of defense, but recent experience shows a marginal control of spread. It seems the only real solution is large scale vaccination, and that is well within the 2021 horizon.

The Covid mitigation options chosen by state Governors will impact 2021 outlook and results. That, in my way of thinking, sets up a direct correlation between the recovery curve shape and a 2021 Q by Q forecast. I would argue, a vaccine offers the best economic upside while persistent or intermittent lockdowns the least. The relationship can be summed up in the accompanying table.

The 2021 forecast for the electronics industry should easily blow by 3.8 per cent (the consensus GDP rate) given the solid demand fundamentals already existing in telecom, automotive and healthcare. With a V-shaped recovery, I foresee doubling the 5.3 per cent (Goldman Sachs projected GDP rate) as the real growth outlook for our industry, a strong year indeed.

The curve is key in 2021. Let's hope multiple vaccines are FDA approved soon, quickly distributed and show effectiveness among the general population. The fewer lockdowns, the better.

COVID-19 Mitigation Options	Expected Recovery Curve	Resultant 2021 Forecast	2021 Growth Outlook
Persistent Lockdowns	Reverse L-shape	Hockey-stick	Weak
Intermittent Lockdowns	W-shaped	Erratic growth by Q	Irregular
One-time Lockdowns + Vaccines	U-shaped	Best growth Q3 & Q4	Late steady
Mass Vaccination	V-shaped	Consistent growth Q on Q	Strong

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Expecting a hard bounce back

Astute's owner & managing director, Geoff Hill predicts the world will bounce back, and when it does it will bounce back hard

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

We're maintaining a positive outlook for 2021 with an expectation of a hard bounce-back during Q2. We're anticipating an industry-wide back-to-business response on two fronts: to stimulate and regain the momentum of fast-growing industries as well as reinvigorating the worst affected industries: automotive, aerospace, aviation, rail and industrial automation.

Disruption and shortages are likely to continue. We'll

need to remain versatile and responsive: mixing short-term ordering to fill gaps with longer-term commitments put in place as production returns to normal. The period will be marked by shorter forecasting as customer demand fluctuates, and probably more urgency to make short-term decisions.

How do you envisage Brexit will impact your business and within the supply chain?

Brexit's impact on our electronics distribution business will be minimal, as we're highly experienced at global supply-chain planning. However, there may be some aspects which, try as we might, we can only minimise such as

shipping and short-term delays with customs processes.

We protect our customers by ensuring we understand and observe the latest changes within export controls, tariffs, trade agreements and geo-politics, and we advise them accordingly. UK and Japan have already signed a free-trade agreement and we remain hopeful there will be many more deals struck at least at bi-lateral level in 2021, particularly within the Commonwealth.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?



Astute's owner & managing director, **Geoff Hill**

We live in a world increasingly defined by electronics with greater consumption every year. There's no stopping the continuous innovation of AI, IoT, 5G, cyber applications, driverless vehicles, wearable electronics, medical devices, consumables, satellites and even space travel applications. Yes, it's been a difficult year, but the world will bounce back, and when it does it will bounce back hard.

www.astute.global

Plan and forecast for a strong 2021

Fusion Worldwide's sales director EMEA, Behzad Monfared list the 5G, automotive, datacentre and AI/IoT sectors as leading drivers in 2021

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

With 2021 quickly approaching, we are expecting a lot of volatility in supply chains due to the unpredictability of global markets. Because of the uncertainty of the pandemic, the biggest challenge is market planning and forecasting. It is difficult to predict what may be affected and when. As governments mandate additional shutdowns due to spikes in cases, factories

around the globe will be impacted on varying levels, causing supply shortages and significant uncertainty for manufacturers, transportation providers and suppliers.

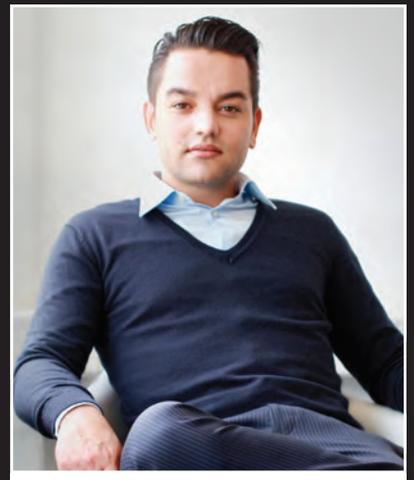
How do you envisage Brexit will impact your business and within the supply chain?

It's difficult to say how exactly Fusion Worldwide will be affected without the details of a final Brexit deal, but what we do know is that it will have an impact on the way we do business with UK customers. Because of the additional taxes, import charges, currency fluctuations

and likely rise in long-term freight cost, the overall cost of trade for both importing and exporting parties is expected to rise.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?

The biggest industries that will push the industry forward in the coming year includes: the rollout of 5G; rebound of the auto sector; increased need in datacentres; and an increasing reliance on AI/IoT. Also, demand for applications



Fusion Worldwide's sales director EMEA, **Behzad Monfared**

like 5G base stations, gaming applications, servers and computers/notebooks has remained strong and is expected to continue in the coming months. The growth of these industries will lead to a strong 2021.

www.fusionww.com

5G, IoT and sensing push ahead

As demand rises, Mouser Electronics' Mark Burr-Lonnon urges buyers to focus on authorised distribution to ensure supply chain continuity and part traceability

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

Against the backdrop of a global pandemic and economic downturn, we remain cautiously optimistic. It's really too soon to predict how manufacturing will play out as we come out of the global shutdowns from the pandemic, but at Mouser we are planning for growth ahead in 2021. The use of electronic devices and systems still seems to be strong worldwide.

What are your thoughts on the global economic outlook?

As an essential infrastructure business and part of the global supply chain, Mouser is still shipping hundreds of thousands of components weekly. We are continuing to receive and ship products for our customers around the

world and we expect to see our international business continue to increase steadily, particularly as the global economy rebounds from the pandemic.

Fully operational at all 27 of our global locations, the entire Mouser team is working diligently to provide the world's broadest selection of electronic components, in stock and available. Keep in mind, we always consider the needs of our customers and make it our focus to stock and ship the newest products from our 1,100 manufacturer brands. Currently, we have over \$855 million (USD) of inventory, ready to ship same day.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?

Combined with the onset of 5G technology and increasing

numbers of IoT-enabled applications and smart sensor technologies, we will likely see an acceleration of the digital revolution across many industries. Once market stability returns, the biggest challenge will be keeping up with demand. This is why it's more important than ever to purchase components from an authorised distributor to ensure continuity and traceability in the supply chain.

Mouser is excited and poised to handle the growth ahead. We've just completed a major expansion at our global corporate headquarters and distribution center in Texas, where we are stocking over one million different SKUs. We're investing heavily in state-of-the-art automation to streamline our logistics operations to serve our customers with inventory, accuracy and speed.

www.mouser.com



Mouser Electronics' senior vice president of global service & EMEA and APAC business, **Mark Burr-Lonnon**



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Strong demand from medical and industrial

Charcroft Electronics director, Debbie Rowland, predicts new opportunities will emerge for applications supporting deep cleaning, sterilisation and safe working

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

Inspiration and flexibility will be the drivers for 2021. For customers in harsh and high-end sectors, there have been changes in the pattern of demand which will continue into next year. The down-hole and rail sectors have seen lower demand or had projects pushed out, but demand has been strong from the military and industrial sectors.

Next year, new opportunities will emerge for applications which are designed to support deep cleaning,

sterilisation and safe working conditions. A response to these opportunities will be seen in the medical and industrial sectors.

How do you envisage Brexit will impact your business and within the supply chain?

For Charcroft, the impact of Brexit will be minimised because all inventory will be held and shipped from the UK, rather than from the European warehouse hubs used by global distribution. The profile of the inventory has been matched to meet predicted demand in addition to customer forecasts. The combination of UK-based, in-house manufacturing

and specialist technical support will provide alternative components to help customers to overcome potential delivery issues.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?

Across all quality-led and industrial sectors, customers must rely on distribution to maintain the highest levels of on-time delivery to enable the industry to react to a changing world.

www.charcroft.com



Charcroft Electronics director, **Debbie Rowland**

Projects moving forward

Digi-Key's director EMEA Business Development, Ian Wallace, has seen good recent momentum of customers wanting to move their designs to manufacturing

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

September and October showed strong growth for Digi-Key in EMEA. Whilst I see challenges ahead for our lives in general and the electronics industry, I have seen good recent momentum of customers wanting to move their designs and projects forward and commence manufacturing. For 2021 I feel there will be strong activity from markets such as IoT, medical, IT

infrastructure, AI and factory/home automation.

How do you envisage Brexit will impact your business and within the supply chain?

Brexit seems to have taken a backseat whilst Covid disrupted our lives. The transition period ends January 1, 2021 and there are still many points to clarify. The one point I would like to clarify for our customers is that we don't have a warehouse location in the EU or the UK. Therefore, we won't be shipping product from either region to the other. All our

product is shipped out of the USA, so I don't foresee any major disruption to our current service.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?

Customers have been adapting, showing flexibility and resilience during a tough 2020. Building on that, I see many companies progressing in 2021, maintaining or increasing productivity despite the difficult situation. I think there will be some



Digi-Key's director EMEA Business Development, **Ian Wallace**

extending lead times on specific product categories so Digi-Key is investing in more inventory.

www.digikey.com

Investing in customer support

As PEI Genesis' senior vice president & MD Europe, Jonathan Parry, explains, the company is investing in phone, online and in-person support for a post Covid/Brexit world

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

I see that businesses are learning to adapt and continue to trade with established and reliable supply chain partners who have the strength, experience and capabilities to provide a dependable service. With the combined uncertainty around Brexit it has never been more important to have solid contingency plans, good communications and of

course, great people in your organisation.

How do you envisage Brexit will impact your business and within the supply chain?

We now need to just get Brexit done. PEI Genesis has been planning for Brexit ever since the 2016 referendum and as an established global company we are already exporting to the four corners of the world. We are staying close to the final stages of the UK/EU negotiations to be able to respond to any last minute deals, but

even in the case of a hard Brexit we have worked with our supplier partners and our logistics companies to ensure we maintain an uninterrupted service to all of our customers.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?

There are undoubtedly many projects and industries in a holding pattern right now. As we move beyond Covid and Brexit, I believe that we



PEI Genesis' senior vice president & MD Europe, **Jonathan Parry**

will see growth coming back and a more optimistic return to business sentiment. We are tailoring our customer services to support customers in person, over the phone or online with significant investments coming onstream in 2021.

www.peigenesis.com

Recovery will not be linear

ECIA's president & CEO, David Loftus reminds readers that distribution demonstrates its highest value at inflection points in the economy

Covid has impacted the electronic component supply chain in 2020, how do you envisage the market will perform in 2021?

The timing of the worldwide pandemic has been particularly troubling for our ECIA members and the entire electronics industry. After a nearly two-year downturn, Covid stalled the nascent electronics rebound that had begun December/January and significantly disrupted the supply chain through Q2 2020. The good news is that demand is bouncing back strongly in late Q3 and Q4, and prospects for 2021 are looking highly favorable.

US consumer spending, durable goods and new home sales continue their strong recovery and the Fed is likely to keep interest rates near zero to further stimulate the economy. Worldwide, 2021

semiconductor growth is projected at five per cent. The IP&E markets tend to lag the semiconductor market by a couple of months, so 2021 looks favorable across the board for electronic components.

With the result of the election now in, what are your thoughts on the US economic climate?

With the presidential election of Biden/Harris, the US economic outlook is mixed. On the plus side, Biden is highly likely to roll back Trump's China trade war by eliminating tariffs and lifting restrictions against Huawei and other major Chinese manufacturers. This move will immediately improve short term growth, longer term will depend on China's well-publicized initiative to become more self-sufficient for electronics technology.

But Biden's promise to reverse the Trump era corporate tax reductions could reduce US corporate earnings, likely dampening growth and investment prospects for most US companies. Control of the Senate will be a key pivot point. If the remaining runoffs maintain Republican control, a divided government will likely slow radical tax changes that could derail the recovery. Recovery will be sustained with Q4 GDP growth projected at three per cent annualized, with four per cent growth expected for the whole of 2021.

What are the positive forces that will push the electronic component distribution industry forward over the next 12 months?

Worldwide economic recovery will not be linear.



Electronic Components Industry Association's president & CEO, **David Loftus**

There will certainly be fits and starts as countries continue to struggle with additional Covid outbreaks and partial lockdowns. Customers already suffering from the economic carnage of the last three years will need strong partnerships with their distributors to access inventory and assist with value-added services. Distribution demonstrates its highest value at inflection points in the economy, and the continued volatility due to Covid and political change will reinforce the importance of component distributors.

www.ecianow.org



2021 semiconductor outlook: Chip market will rise 8.4 per cent, but average prices will fall for many parts

Despite the coronavirus pandemic, worldwide semiconductor sales grew 5.1 per cent in 2020 and will continue to rise this year because of robust demand from a range of customer segments



James Carbone

The worldwide semiconductor market will grow 8.4 per cent in 2021 to \$469.4 billion, with memory ICs, optoelectronics and analog chips posting the strongest growth rates, according to World Semiconductor Trade Statistics (WSTS).

Despite the coronavirus pandemic, the global semiconductor market was expected to finish 2020 growing 5.1 per cent to \$433.1 billion from \$412.3 billion dollars in 2019, according to the WSTS' 2021 forecast.

Memory ICs, including NAND and NOR flash, DRAM, SRAM and several other memory chips, will post the highest sales growth in 2021. Memory chip revenue will rise 13.3 per cent from \$119.4 billion in 2020 to \$135.3 billion in 2021, said WSTS. In 2020, memory ICs were expected to end the year with 12.2 per cent revenue growth.

Optoelectronics sales revenue will rise 10.1 per cent to \$44.6

billion in 2021 from \$40.4 billion in 2020. Analog IC sales will grow from \$53.9 billion in 2021 to \$58.5 billion in 2021, according to WSTS.

Many industry analysts and semiconductor industry executives were expecting 2020 to be a flat year after the coronavirus pandemic shut down or slowed production of a lot of electronics equipment and components in the first and second quarters of 2020. In June, WSTS downgraded its earlier 2020 forecast of 5.9 per cent revenue growth to 3.3 per cent growth in June because of the impact of the pandemic on the electronics industry.

However, higher sales of notebooks, Chromebooks and servers increased in the second and third quarters resulting in robust demand for many semiconductors. Demand was also strong for semiconductors from communications equipment manufacturers building new 5G network infrastructure. As a

result of increased demand, WSTS upgraded its forecast for 2020 to 5.1 per cent.

Chip demand to rise in '21

Most industry analysts and semiconductor executives say growth will even be stronger in 2021. Mario Morales, program vice president for researcher IDC, noted that a lot of semiconductor sales growth in 2020 was driven by memory ICs such as NAND and DRAM. Demand for memory will be more robust in 2021 further driving the overall semiconductor market in 2021 despite an expected price decline for NAND.

He said memory IC prices increased in 2020, but now we're "beginning to see a price correction and we think that will continue into 2021, at least for the first half of the year," he said. Prices were declining about 10 per cent per month. "We expect that we'll see the same type of price pressure for DRAM," he said.

Jim Handy, general director at semiconductor research firm

Objective Analysis, based in Los Gatos, Calif., said the good news for buyers is that there will be ample supply of memory ICs in 2021. "Capital spending by memory IC manufacturers has been heavy ever since 2016," said Handy. Increased spending has boosted memory chip production.

"The reason why we had a price collapse in DRAM in 2019 was largely because of 2017 capital spending," especially by Samsung, he said. "Samsung just never stops." Samsung said it will make \$26 billion in capital expenditures in its semiconductor business this year. The capital expenditures in its memory business will exceed last year's total as it increases capacity to address future demand and to migrate to advanced process nodes, the company said.

The Chinese threat

One reason Samsung is investing so much is they are concerned about China entering the memory IC business. "China's strategy to get into the semiconductor

By the Numbers

Source WSTS



\$469.4 billion

The size of the worldwide semiconductor market in 2021.



5%

The average rate of decline for prices of discrete semiconductors in 2021.



8.4%

The projected sales growth rate for the global semiconductor industry in 2021.



\$135.3 billion

The forecast size of the worldwide memory IC market in 2021.



5.1%

The rate of growth of the global semiconductor industry 2020.





market in a big way is to make commodity products and the biggest commodities are DRAM and NAND flash,” said Handy.

Samsung may be concerned that China will try to take away the memory business from Samsung and other Korean memory companies the way Korean companies took the business away from the Japanese in the 1990s and the Japanese companies took the memory chip business away from U.S. memory manufacturers in the 1980, said Handy.

By investing in new capacity, Samsung and other memory companies are producing more products, which has resulted in price declines.

“They are trying to make it as unpalatable for Chinese manufacturers as they can,” said Handy.

It remains to be seen if this strategy will work, but “if you look at the initiative in China to get into DRAM and flash memory business, they were supposed to begin shipping appreciable quantities by this year and that has not happened,” said Handy. However, if Chinese semiconductor manufacturers start making memory chips in large volumes in 2021, “it could

cause the market to become oversupplied and that could cause prices to collapse,” said Handy.

Declining prices obviously would be good news for memory chip buyers, especially purchasers who work at cell phone OEMs and their EMS providers. One of the drivers for memory ICs and other semiconductors in 2021 and for the next several years will be 5G handsets.

In 2020 about 200 million 5G handsets will have shipped, said Morales. In 2021, 400-500 million 5G handsets will ship. The increase will help boost the semiconductor market.

More chips for cell phones

The dollar value of semiconductors sold or used in 5G cell phones will rise from \$28.1 billion in 2020 to \$52.3 billion in 2021, according to IDC. Chips sold for cell phone use will continue to rise through 2024 when the dollar value will reach \$86.1 billion and have a compound annual growth rate of 110 per cent, the researcher said.

Cell phones use a range of semiconductors including DRAM, NAND, baseband processors, filters, power amplifiers and antennas, among other chips. “Five-G handsets have more

memory than 4G handsets. In some cases, more than double,” said Morales. For instance, with 4G phones the “sweet spot” for the amount of NAND flash in the phone has been 64 GB. For 5G phones it will be close to 128 GB, he said.

Servers will also help drive semiconductor sales in 2021. Revenue of semiconductors used in servers will rise from \$43.9 billion in 2020 to \$49.4 billion in 2021. By 2024, the value of semiconductors used in servers will swell to \$60.5 billion, an 8 per cent compound annual growth rate, said IDC.

Integrated circuits will not be the only semiconductors that will have healthy growth in 2020. The discretes market will recover after declining 1.2 per cent in 2020 and 0.9 per cent in 2019, according to WSTS. Revenue from discretes will grow 7.2 per cent to \$25.2 billion in 2021, said WSTS after declining 1.2 per cent in 2020 and 0.9 per cent in 2019, said WSTS.

Discrete semiconductors include transistors, diodes, thyristors rectifiers and MOSFETS, among others.

“The discretes market was not doing well before the virus” and sales further declined when the virus hit because two of the biggest customer segments for discretes – industrial and automotive – were severely impacted by the pandemic, said Rob Lineback, senior market analyst for IC Insights.

A bounce back year

Lineback said the discretes market will bounce back in 2021 as the automotive and industrial markets recover, but the recovery won’t be as spectacular as it was in 2020 when sales skyrocketed following the 2009 financial

crisis. The discretes market had fallen 16 per cent in 2009, but then soared to new heights in 2010 when the market grew 40 per cent, said Lineback.

“We’re not going to see that happening this time around,” said Lineback. He noted that this year’s downturn is not “terrible. We’ve had worse,” he said.

The rebound will be “muted” because there is some question how quickly coronavirus vaccines will be widely available, he said. The sooner they are widely available throughout the world, the more likely there will be an overall economic turnaround, which is important for a recovery of the overall semiconductor industry, including discretes.

Still, the forecast for discretes is single digit growth. “For instance, we have the power transistor market growing about 4 per cent,” said Lineback. “It will tie or reach a new record high at about \$17.1 billion,” he said.

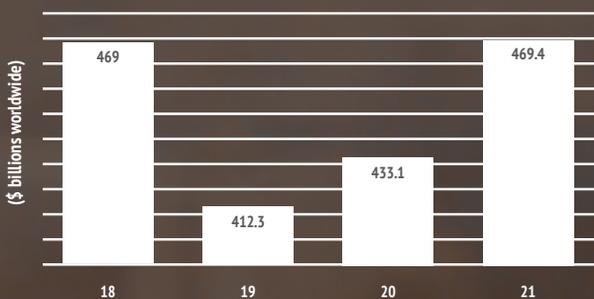
Power transistors represent about 60 per cent of the overall discretes market and that percentage will grow to about 67 per cent in 2024, according to Lineback.

While the power transistor market will rise, buyers can expect lower prices for them as well as other discretes.

“We have average selling prices being down about 5 per cent in 2021” although unit volume will be up quite a bit in the recovery year. Prices will decline in part because of high inventory levels.

“There’s plenty of supply in the supply chain and that will drive down average selling prices, said Lineback. However, supply will tighten later in the year and in 2022.

Chip market to post solid growth in ‘21



The worldwide semiconductor market will rise 8.4 per cent to \$469.4 billion in 2021. Source: WSTS



Independent distributors: Expect tight supply especially earlier in 2021

Electronics buyers will face longer lead times and some shortages in the first quarter, but it is unclear how long unfavorable buying conditions will last

Non-franchised distributors say there will be limited supply for some passives and semiconductors in the first quarter of 2021 but tight supply for some parts could last through much of the year.

Demand has increased as several key customer segments, which had slowed manufacturing of their products during the pandemic, have now increased production of electronics systems and are ordering more components. In addition, distributors and some OEMs have increased inventories because of uncertainty and potential strong demand later in the year.

However, there is disagreement in the outlook for 2021 beyond the first quarter. Some in the supply chain say that supply and demand will “normalize” after the first quarter with no severe shortages for most parts.

But others are forecasting tighter supply later in the year as people worldwide get vaccinated against Covid-19 and the impact of the virus wanes. The thinking is the overall economy will recover and displaced workers will return to their jobs and

demand for electronics equipment by consumers and businesses will bounce back, resulting in greater component demand and tighter supply.

Some independent distributors said in December they were already seeing shortages of components due to increased demand from the automotive industry and because of overall uncertainty in the supply chain, which is resulting in distributors and OEMs, increasing inventory levels.

Luke LaSaffre, director of sales - Americas for independent distributor Fusion Worldwide, based in Boston said: “Customers are coming to us with a long laundry list of parts” which are constrained. “Most shortages that we’ve seen have been from automotive customers. We expect that to broaden in the months ahead,” said LaSaffre.

Component demand is rising

He said demand is increasing from automotive customers for MCUs and some aluminum and electrolytic capacitors. Some automotive-grade MLCCs are also constrained, he said.

However, overall “right now we’re not seeing too much in terms of MLCC shortages but customers are calling that out as an area of concern,” said LaSaffre. MLCCs could be a problem for buyers later in 2021.

“We are hearing rumblings that we will start to see major shortages in the latter half of the Q1 and Q2 and have begun to look at lining up supply in anticipation of it,” he said.

LaSaffre said there has been some tightness with chip resistors. “Resistors and MLCCs often move in lockstep. We’ve actually seen more business on resistors than MLCCs. If one is tight than the other is likely to follow suit,” he said.

Some series of STMicroelectronics microcontrollers are highly constrained. “A lot of it is related to STMicro trying to allocate more capacity to some of their 5G oriented products,” said LaSaffre. “We’re expecting to see a pretty big uptick in demand related to 5G rollouts starting in middle of Q1.”

In addition, some NXP transceivers “have been tight in part due to resurgent



COVID injected a great deal of uncertainty into forecasting demand. There’s been more of a push to place orders and lock in supply for components

Todd Snow, vice president of purchasing for independent distributor **Smith**

automotive demand,” said LaSaffre. Some parts from Marvell and Texas Instruments also have long lead times.

Uncertainty in market

Matt Fonstein, vice president of trade at independent distributor NewPower Worldwide, based in Nashua, NH, said the majority of orders that NewPower has seen over the last six months are for parts that are in tight supply, including controllers, graphic RAM chips and MLCCs. Customers are buying the parts for buffer and hubbing programs that NewPower offers because of uncertainty in the market, he said.

“They are not sure where the market is going to be in 2021 so they are putting products in hubs so they know they have continuity of supply,” said Fonstein. Supply will remain tight for a number of components in the first quarter and perhaps beyond. Some of the shortages are not Covid-19 related.

“There are some big headaches for buyers not related to the pandemic, he said. For instance, a “huge” fire destroyed the Kasei Microdevices (AKM) factory in Nobeoka City, Japan in October, said Fonstein. The factory makes audio digital-analog and analog to digital chips used in audio and consumer electronics equipment and appliances. With production shut down, there are shortages for many AKM parts. Shortages could continue well into 2021. The company said the factory will not be rebuilt for at least six months, but some industry analysts think it will be longer than that.

The destruction of the AKM plant is causing other supply issues because AKM supplies raw materials for crystal oscillators. There are now shortages of those parts.

AKM customers are working to redesign boards, and are looking for alternative parts, he said.

There are also some shortages of low-end Intel and AMD processors because of strong demand for notebooks and Chromebooks. A shortage of substrates used in manufacturing of processors and other high-end integrated circuits could have an impact on processors made by AMD and Nvidia.

“There’s a handful of substrate manufacturers. We are heading into a situation where that material is going into a shortage,” said Fonstein. “Intel, AMD, Nvidia are fighting over supply. Intel consumes about 80 per cent of substrates and are willing to pay premiums to get their hands on the substrates,” said Fonstein.

LeSaffre said one reason buyers can expect tight supply of some semiconductors in 2021 is a shortage of 200mm wafer capacity. While many chipmakers have shifted from 200mm wafers to 300mm, there are still a lot of chips produced on the smaller 8-inch wafers. However, as of December 2020, there were “major constraints on supply of 8-inch wafers,” he said. Strong demand for power management chips, display drivers, sensors and analog chips and some controllers built on 200mm wafers has resulted in tight 200mm foundry capacity.

Fewer wafer starts

Another cause for tight supply was there were fewer wafer starts in early 2020. “It was very much Covid-19 related,” said LeSaffre. “There were shutdowns and reductions in workforce and things like that,” he said. “So, there was a limit on output and that affected the current supply situation.”

There are also “geopolitical factors contributing to a run on fab capacity,” said LaSaffre. As part of the U.S. trade war with China, Huawei Technologies faces restrictions on use of U.S. technology. As of 15 September of last year, the semiconductor companies were not allowed to sell semiconductors to Huawei if the chips were developed or produced with U.S. software or technology. Before the deadline, Huawei placed large orders to lock in future supply.

In addition, there is a lot of uncertainty right now going on with SMIC, the Chinese foundry, said LeSaffre. They may also face restrictions on U.S. technology. “If that happens that’s going to remove overall capacity at the foundry level,” he said.

Dave Valletta, executive vice president worldwide sales for components manufacturer Vishay Intertechnology, headquartered in Malvern, Penn., says buyers should expect tight supply conditions in the first quarter, but more normal buying conditions in the second quarter.

He said in the second half of 2020 component demand began to pick up in some segments such as automotive and industrial started to recover. Automotive in the fourth quarter was “scrambling” to replenish inventories which were depleted. “By inventories I mean finished goods. Cars on the lot. This is driving a sharp increase in component demand, which is putting some commodities into shortage situations,” he said. He said there are shortages right now on some optoelectronic devices and resistor chips.

“Some of the shortages will continue through the first quarter,” said Valletta. But demand will “smooth out”



Customers are coming to us with a long laundry list of parts which are constrained. Most shortages that we’ve seen have been from automotive customers

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

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later in the year, he said. “Will the level of demand that we’re seeing from automotive be sustainable all year? I think it will probably smooth out a little after the first quarter,” he said.

One reason demand may lessen is that the number of car shipments will increase in 2021, but not excessively. Valletta noted that vehicle production peaked in 2017, at about 94 million vehicles. In 2020, it was expected 70 to 75 million vehicles would ship and in 2021 about 80 to 85 million, said Valletta. Demand for components by the auto industry will rise, but not enough to cause severe shortages of many parts.

The same may be true with PC shipments. PC sales growth will be much less in 2021 compared to 2020. Last year PC sales increased sharply because more people worked and learned at home. Researcher IDC said PC sales would end 2020 growing 11.2 per cent to 291.3 billion units. However, in 2021 PC shipments will rise only 1.4 per cent although notebook shipments would rise 3.2 per cent, according to the researcher. While component demand from the computer industry may not decline in 2021, it won’t be overwhelming.

Valletta said another reason why component demand was high in the fourth quarter was “there was a lot of stocking going on. Our distributors were building stock,” because they were concerned there could be future shutdowns by component manufacturers because of new Covid restrictions imposed by governments.

The increases in component buying that occurred in the fourth quarter by the automotive and industrial supply chains and distributors will likely ease in the first quarter and supply will catch up with demand. So tight supply of some components will ease as more parts are produced.

Demand will remain strong

Todd Snow, vice president of purchasing for independent distributor Smith, Houston, Texas, agrees there will be strong demand in the first quarter of 2021 and it will be stronger

than the fourth quarter of 2020. However, he expects demand will remain robust through the second quarter of 2021 as well.

He said there are several reasons including the buildout of 5G networks and handsets, continued strong demand for notebooks, Chromebooks, and other computers from people working and learning at home and rising electronics content in vehicles, as well as higher vehicle sales.

“There’s a lot of optimism with 5G infrastructure,” he said. 5G networks are being built and sales of 5G handsets will increase sharply, which will help drive component demand.

Even with the beginning of the distribution of vaccines, the work-at-home and learn-at-home trends will not abruptly stop in the first quarter of 2021. “You have a lot of home computing activity going on right now,” said Snow. “PC sales are up as companies buy additional equipment to support their employees working at home,” he said.

With so much uncertainty, some electronics companies are changing their supply chain, and inventory strategies in 2021.

“Before Covid, inventory was managed very much on a just in time basis,” said LeSaffre. Companies operated lean, and “minimizing carrying costs was a common widespread strategy,” said LeSaffre.

But Covid has “injected a great deal of uncertainty into forecasting demand. There’s been more of a push to place orders and lock in supply for components,” he said. A lot of customers have changed their minds concerning inventory. “They no longer see it as a something that needs to be minimized but rather optimized and finding there’s more value in having inventory,” said LaSaffre.

Buyers' Guide

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

PCB Buyers' Guide

Manufacturer	Telephone	Website	Service Provided (i.e. Broker, Manufacturer &/or Repair)	Location	Approvals	Volume - Small, Medium, Large	Double-sided	Multi-layer 4-10/10-20-20-50	Metal PCBs	Flexi / Flexi-Rigid	Obsolescence Solutions	Modifications	Prototyping
Elvia PCB Group	+33 233 763 200	www.gepcb.com	M/B	France, Tunisia, China	AS9100, PRI-NADCAP, ISO-TS16949, ESA, UL, ISO9001, ISO14001	S/M/L	Y	1-30	Y	F, F/R	Y	Y	Y
Graphic Plc	00441363 774874	www.graphic.plc.uk	M	UK/China	AS9100, NADCAP, ISO 9001, AISO14001, OHSAS 18001, MIL 31032, MIL 55110, MIL 50884	S/M/L	N	4-10	Y	Y	N	Y	Y

Contract Manufacturers Buyers' Guide

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

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