ELECTRONICS
sourcing
NOVEMBER/DECEMBER 2017
NORTH AMERICA

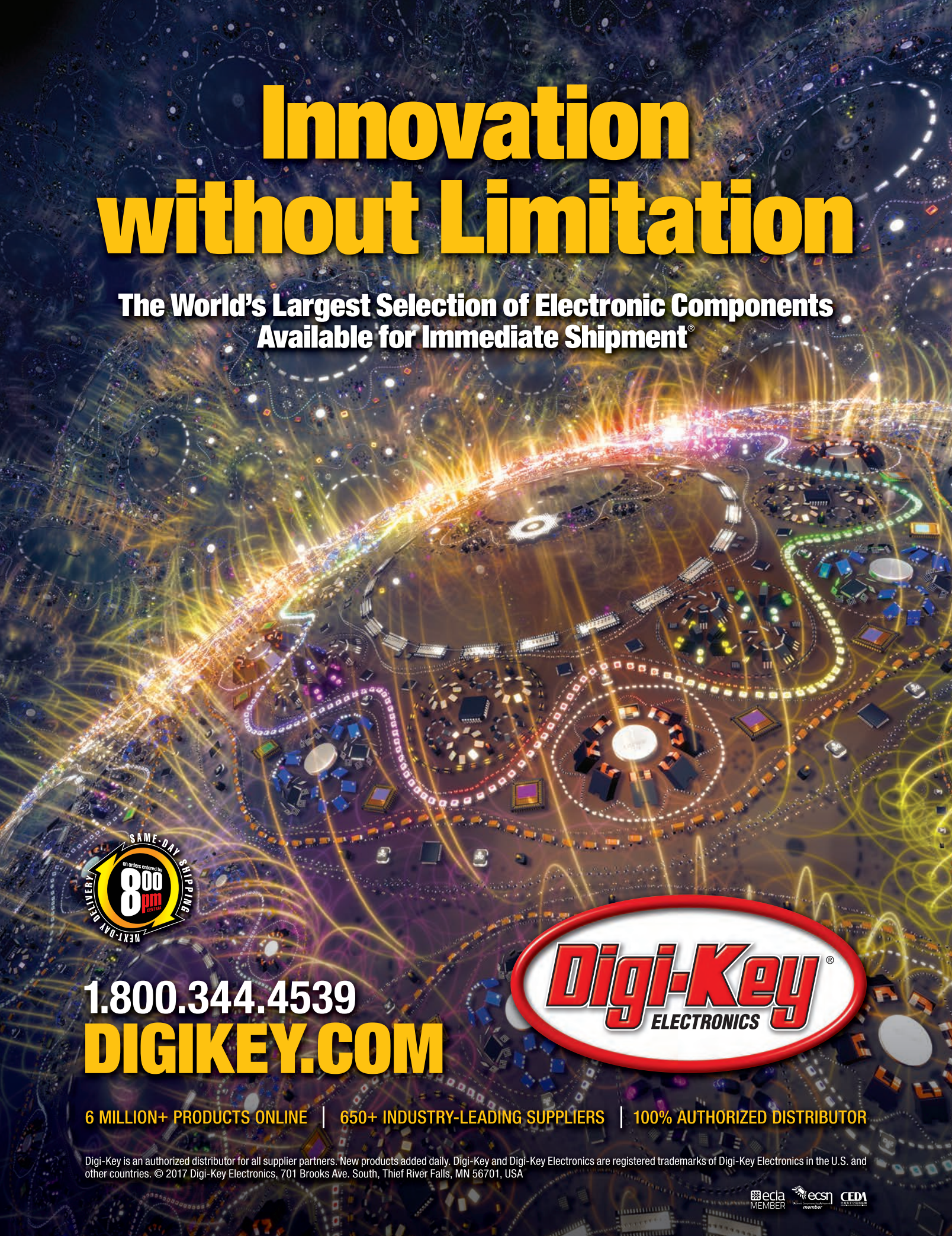
2018 Forecasts



ALSO INSIDE: News • Purchasing • Enclosures • Market Watch • Buyers' Guide

Digi-Key ELECTRONICS
Access to
6 Million
Products Online
DIGIKEY.COM

AN MMG PUBLISHING TITLE


Innovation
without Limitation
The World's Largest Selection of Electronic Components
Available for Immediate Shipment®
SAME-DAY SHIPPING
on orders entered by
8:00 pm CENTRAL
NEXT-DAY DELIVERY
1.800.344.4539
DIGIKEY.COM
Digi-Key®
ELECTRONICS
6 MILLION+ PRODUCTS ONLINE | 650+ INDUSTRY-LEADING SUPPLIERS | 100% AUTHORIZED DISTRIBUTOR
Digi-Key is an authorized distributor for all supplier partners. New products added daily. Digi-Key and Digi-Key Electronics are registered trademarks of Digi-Key Electronics in the U.S. and other countries. © 2017 Digi-Key Electronics, 701 Brooks Ave. South, Thief River Falls, MN 56701, USA
ecia MEMBER
ecsn member
CEDA



On the cover – November/December

2018 Forecasts
page 10

Contents

04
News
E-mech box build simplifies BOM management

08
Feature
Cut out the commodity gamble

10
2018 Forecasts
Focused on adding value

20
Enclosures
Eliminate uncertainty

32
Buyers' Guide
All the facts and figures to help you buy

Contact

ELECTRONICS sourcing mmg PUBLISHING US LLP

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

ADVERTISING
Director of Sales: Charlotte Morgan
charlotte.morgan@electronics-sourcing.com
Area Sales Executive: Emma Poole
emma.poole@electronics-sourcing.com

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

DESIGN
Graphic Designer: Jeremy Roberts
jeremy.roberts@electronics-sourcing.com

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

Issue 65, Vol.8 No.10

Published 10 times per year
by MMG Publishing US LLP

MMG PUBLISHING US LLP
Normandale Lake Center
8400 Normandale Lake Boulevard
Suite 920, Bloomington MN 55437
Tel: 866.364.0951
Fax: 952.378.2770

Printed in the United States
© 2017 MMG Publishing US LLP

ELECTRONICS SOURCING IS INDEPENDENTLY ABC AUDITED 2005/2016

ecia
Electronic Components Industry Association

Articles appearing in this magazine do not necessarily express the views of the Editor or the publishers. Every effort is made to ensure the accuracy of information published. No legal responsibility will be accepted by the publishers for loss arising from articles / information contained and published. All rights reserved. No part of this publication may be reproduced or stored in a retrieval system or transmitted in any form without the written consent of the publishers. Cover image – ©shutterstock.com/vectorfusionart



Automating distribution's future

This issue of *Electronics Sourcing* features a section on forecasts for 2018. Having read them all several times, and made notes along the way, ten very different things caught my eye. Let me summarise nine and focus on one.

In no particular order, trends include:

- Bigger line cards to accommodate IoT style bills-of-materials
- More digitization of the supply chain
- Increasing sales volumes thanks to new electronics applications
- Increasing lead times and pricing due to rising sales volumes
- A focus on value added services
- Concentration on core business values
- Accelerating rate of change
- Supplier consolidation
- Component obsolescence

And now the big one: skills shortages. With the supply chain moving ever closer to a predictive, machine-to-machine system, the human skills required to support this infrastructure involve designing, implementing, configuring, operating and maintaining software controlled, lights-out, automated warehouses.

Try finding such hardware and software engineers: not easy. Add the mass retirement of the first wave of baby boomers and the reluctance of many young people to embrace engineering and things are going to get messy.

In the future, success in distribution may depend less on the sales team as software becomes better at automatically predicting demand and placing orders. Likewise, it may have less to do with design support as software plays an increasing role in the selection, simulation and application of component parts. The answer may lie in squeezing every ounce of efficiency from robotised warehouses of every shape and size.

I see room for an academy focussed on automation in electronics distribution.

Jon Barrett

ES News

View current editions online – www.electronics-sourcing.com











Expanding the future for passives

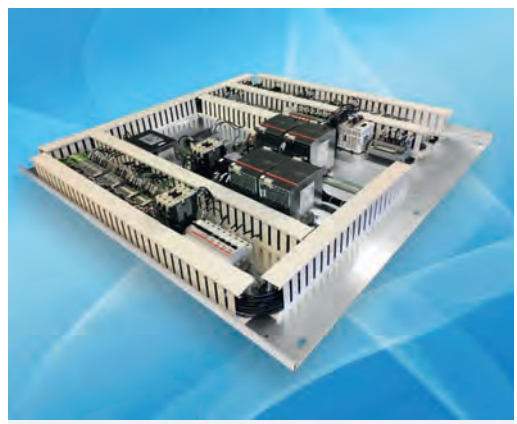
Ohmite Manufacturing has signed a global distribution agreement with Future Electronics, which also includes Ohmite's affiliates, Arcol Resistors and Davies Molding. The partnership will expand Ohmite's distribution network to better serve purchasers of its electronic resistors, heat sinks, heaters and custom assemblies.

Director of sales for Ohmite, Kurt Devlin, commented: "Future Electronics is a proven leader in the marketing and support of resistors and other passive components."

The distributor offers commercial and technical competencies through all stages of the design-production cycle.

Corporate vice president marketing for passives at Future Electronics, Jacques Hing, added: "Future Electronics is proud to add the entire product lines of Ohmite, Arcol and Davies Molding to our portfolio. We are confident that customers will welcome this manufacturer, along with our best in class supply chain programs and technical expertise."

www.ohmite.com



E-mech box build simplifies BOM management

Aved Electronics can now supply custom engineered, sourced and manufactured electro-mechanical box build assemblies complete with connectors. Products are 100 per cent tested and supplied as one stock keeping unit, which can simplify the bill of materials and procurement.

In addition to design benefits, OEMs will find that sourcing is based on real-world experience. They also have access to Aved's process control, 3D modeling, documentation and fully evolved manufacturing procedures. Further advantages are listed as reduced handling and quality control inspection.

Box builds are suitable for a variety of new product introduction and prototype electromechanical applications including instrument and power distribution panels and fan tray assemblies.

www.aved.com



MEMs sensor inspires IoT development

Mouser Electronics is now stocking the BME680 environmental sensor from Bosch Sensortec. Thanks to the internal compensation and calibration of gas, pressure, temperature and humidity sensors, the BME680 is designed to deliver superior environmental measurement performance. This enables new capabilities for mobile devices such as air quality measurement, personalized weather stations, fitness monitoring, home automation and other internet of things applications.

Specifically, this low-power microelectromechanical system integrates a gas sensor with air pressure, humidity and ambient air temperature sensing functions. The gas sensor can detect a range of gases, including volatile organic compounds from sources such as paints, cleaning supplies, furnishings and adhesives, down to the parts-per-million range. The BME680's pressure accuracy also provides precise altitude information for new applications, such as personalized weather information.

An integrated IIR filter eliminates short-term measurement fluctuations caused by potential environmental influences.

www.mouser.com

Find memory chips fast

Alliance Memory is making it easier for purchasers to find its DRAM memory chips, including scarce allocated devices and uncommon packages and densities. The initiative is facilitated by a new website that shows part inventories at worldwide distributors such as Avnet, Digi-Key, Future and Mouser.

According to, Alliance Memory, the service will be an essential lifeline for customers that need an ongoing source of DRAMs for established products like embedded systems, industrial automation and wireless base stations. By offering memory ICs for which there are few other reliable sources, Alliance helps eliminate the need for redesigns and part re-qualifications.

Alliance Memory president and chief executive officer, David Bagby, said: "Our focus on supporting customers with SRAM and DRAM memory ICs is crystal clear, so we're continuing to serve them with high stock levels, despite the difficult supply situation of the past several quarters."

www.alliancememory.com



When it comes to service excellence,
we give our customers complete confidence.

FUTURE
ELECTRONICS

www.FutureElectronics.com 1-800-FUTURE-1

N ES News

In Brief

Haptics hit the US
Ultrahaptics has officially opened its first US office in Silicon Valley in response to US demand for its mid-air haptics solution. The company's focused ultrasound technology enables users to feel virtual objects with their bare hands. It can be used in applications from automotive to controls and is particularly popular in the virtual and augmented reality spaces.
www.ultrahaptics.com

Supporting expansion
Digi-Key has begun work on a new million square foot warehouse in Thief River Falls, Minnesota. This will expand the distributor's existing multi-million dollar facility, boosting its footprint and enabling it to help more customers. To support the expansion, which will be online in three years, Digi-Key expects to hire 100 people this year, and for the next nine years.
www.digikey.com

Putting memory first

Digi-Key Electronics can now offer immediate worldwide shipment of Viking Technology's advanced memory technologies including non-volatile memory, solid state drives (SSD), DRAM modules, high density stacking solutions and custom memory engineering. The solutions are ideal for enterprise storage, industrial or embedded, telecom, networking and defense and aerospace applications.

President of Viking Technology, Hamid Shokrgozar, explained: "The combination of our innovation and Digi-Key's expertise in assisting engineers through the design process will help customers develop solutions that optimize value and performance and bring products to market quickly."

Vice president, global semiconductor at Digi-Key, David Stein, commented: "Manufacturers will value Viking Technology's support of standard off-the-shelf solutions and customized form factors."
www.digikey.com





Distributor supports design freedom

Premier Farnell's offering now includes Xilinx All Programmable devices. Designed to provide a flexible route to system integration, these blank canvas devices can be configured using development tools and libraries to create a custom product with faster time to market.

Speaking about the appointment of development distributor, Premier Farnell, vice president channel sales for Xilinx, Mike Barone, said: "We recognize the support Premier Farnell provides its customers from concept through to volume production, with design services, bespoke development and integration platforms, as well as evaluation kits and continuity of supply."

To support the All Programmable devices, Premier Farnell has developed a new Xilinx technical resource accessible via livechat, email and phone and supported by All Programmable technical champions in each region. This will help developers drive programmable devices into mass market products.
farnell.com

RF distributor expands off the shelf options

RFMW and Aethercomm have announced a worldwide distribution agreement. Specialist distributor, RFMW, will now supply Aethercomm's RF and microwave amplifier modules, high power RF switches, subsystems and systems designed to serve industrial, military and space applications from DC to 40GHz.

Alongside its portfolio of RF and microwave components, RFMW offers specialized component-engineering support and an array of RF and microwave test and measurement solutions.

Chief executive officer of RFMW, Joel Levine, commented: "With in-stock, broadband platforms from Aethercomm, RFMW offers solid state power amplifiers and high-power switching solutions for a range of applications in a timely manner. Our customers have continued to request off-the-shelf solutions and we're delighted to offer them Aethercomm products."
www.rfmw.com



It All Started in 1887 as a Small Boston Storefront Selling Speaking Tubes.



130 years later, Sager Electronics has grown into a leading North American distributor of interconnect, power and electromechanical electronic components. Acquired 5 years ago by TTI, Inc., a Berkshire Hathaway, Inc. company, Sager continues to operate with the same dedication to its core values – integrity, service and adaptability.

130 YEARS SAGER ELECTRONICS 1887 - 2017

Celebrating 130 Years of Distributing Confidence®

© 2017 Sager Electronics, 19 Leona Drive, Middleborough, MA 02346 • 1.800.724.3780 • www.sager.com

Cut out the commodity gamble

Availability of commodity parts is often taken for granted, but pricing can be volatile. A proactive purchasing strategy can minimize the risks, says microchipDIRECT global sales manager, Martin Warmington



microchipDIRECT global sales manager, Microchip Technology, Martin Warmington

Watching manufacturing lead-time trends on single-source products can become an obsession. When there is no other source for a part, the manufacturer's lead-time will dictate an original equipment manufacturer's procurement strategy. So, for example, when lead times go out, stocks may be depleted faster than forecast, but when lead times come in, the OEM may need to push out scheduled deliveries and relax its inventory levels. This obsession with proprietary parts is understandable, but it can mean that commodity parts are not given the same level of attention. Where there are pin-for-pin replacements, there are usually multiple sources for devices such as low pin-count microcontrollers or standard memories. For this reason, manufacturers tend not to treat commodity parts as strategic devices.

Pricing fluctuations

But, while the availability of commodity parts is often taken for granted, pricing can be more volatile. Buyers will often have two or more sources for the same part at similar pricing levels, at least until one manufacturer cannot supply anymore. A single large order is all it takes to reduce market availability and increase pricing significantly, which is why commodity parts should carry the same importance as proprietary devices.

At a minimum, buyers should regularly check lead-times from the manufacturer, but there are more proactive methods that can provide greater protection against volatility.

Plan procurement

Including commodity parts in a distributor supply agreement is a useful tool for managing volatility. OEMs can ensure the supplier is ordering those parts into stock, rather than using back-to-back orders on the semiconductor manufacturer, as this practice will still leave the OEM susceptible to risk.

Alternatively, microchipDIRECT can send a lead-time email at the start of each week providing information on all the parts in the order book. This gives buyers a timely way to plan their commodity procurement for the months ahead.

Purchasers can also utilize microchipDIRECT's standard 30-day cancellation policy, whereby any order for standard non-custom parts can be cancelled up to 30 days before the shipping date. This allows buyers to secure availability without the risk of over-ordering and being left with unnecessary stock.

OEMs can access their order-book online, 24/7, to check the real-time status of each item and make changes immediately. This allows buyers to respond rapidly to dynamic changes in the market.

Treating all components with equal importance and sourcing from multiple suppliers brings many benefits because just below the surface of easy availability and low unit cost, there is always the potential for volatility. Many manufacturers in the semiconductor and passive markets have had 26-week lead-times for the simplest of commodity devices.

Commodities should therefore never be ignored — it's not worth the gamble. By applying simple procurement techniques, buyers can minimize their risk and greatly lessen the volatility inherent in the commodity component market.

www.microchip.com





Since 1992 TTI has set New Standards for Supply Chain Performance

We're Continuing to Lead with the Industry's First AS9100-D Certification

Recently, TTI celebrated the 25th anniversary of our Total Quality Forum, marking 300 monthly reviews of how our team performs to quality benchmarks. It's an ongoing commitment that has even been recognized nationally for our fight against unauthorized, counterfeit components.

What does this mean for you? Call your nearby TTI Specialist and rest assured you'll get the right parts, in the right place, at the right time.

tti®

ttiinc.com
1.800.CALL.TTI

A Berkshire Hathaway Company

ecia MEMBER

ISO

TQM 300

Forecast

Focused on adding value

An expanded line card and new production facilities help PEI-Genesis focus on creating value-based solutions now, and in the future

Across North America, PEI-Genesis' business thrived in 2017, with sales up more than 20 per cent from prior years. The company also cites above-average growth in market sectors such as military, aerospace and transportation. But to what does the assembler of connector and cable assemblies attribute these increases?

Firstly, the company has continued to expand its line card offering, adding solutions to address demand for high reliability in harsh environments. It added harsh environment sensors for gas, temperature and pressure, for example, as well as creating custom solutions built for harsh environments, such as military, oil and gas and industrial environments.

Director of North American sales, John Rozanski, said: "We're obsessed with creating value-based solutions for customers. No other competitor has our global scope and solution-providing capabilities, which we supply at lightning speeds with a minimum order quantity of one piece."

A newly opened production facility in Nogales, Mexico, gives PEI-Genesis additional capacity and flexibility in handling demand volatility, with the ability to provide solutions closer to customers in the region. The company also maintains production facilities in Indiana, Arizona, United Kingdom and China, plus sales offices across the Americas, Europe, and Asia.

The past year also had its challenges, as Rozanski highlighted: "The Defense Logistics Agency placed stop shipment orders on products from some of our manufacturing partners, which created a challenge. However, because of our broad inventory and product knowledge, we provided solutions that allowed customers to keep their production lines flowing."

In a move which further strengthened the company's expertise, PEI-Genesis also increased its sales engineering staff across North America by more than 200 per cent. This provides customers with quick access to knowledgeable, trusted advisors, ensuring the outlook for 2018 is bright.

Rozanski concluded: "We're optimistic. We are experiencing increased activity levels across a variety of markets and expect to outperform the industry again."

www.peigenesis.com



Director of North American sales, PEI-Genesis, John Rozanski

> **"We're obsessed with creating value-based solutions for customers**

Coilcraft

We won't claim to be the #1 Magnetics Company.

Industry engineers did that for us!

Coilcraft Company M Company B

Here are some of their reasons:

- High-performance products manufactured 100% by Coilcraft
- Easy-to-use website with powerful online selection tools
- Responsive technical support and customer service
- Fast, free evaluation samples



Preferred Magnetics Supplier
(Source: Electronic Design Magazine Brand Study)

Buy direct @ coilcraft.com



YOUR SOURCE FOR GLOBAL FRANCHISE DISTRIBUTION

In addition to our supply chain services, cost-saving programs, and inventory solutions, ***America II provides a wide range of franchise lines*** for industries ranging from telecommunications, industrial and lighting to healthcare, automotive and military.

800.833.6276
www.americaii.com
A2Efranchise@americaii.com

AMERICA II ELECTRONICS®
The power of distribution™



James Carbone
contributing editor

Distributors see opportunity in automotive

As electronics content in vehicles increases, many distributors are servicing the automotive segment with components and design and supply chain services *By James Carbone*

It's no secret that automotive is becoming a more significant customer segment for electronics component manufacturers. As more electronics systems are designed into vehicles, electronics component content in vehicles is rising resulting in healthy sales for many semiconductor, passives and connector manufacturers.

However, the increase in demand for components from automakers and their system suppliers is also welcome news to distributors, both large and small. Distributors point out that automotive is part of the transportation category, which also includes electric vehicles, large trucks, agricultural vehicles and other off-road vehicles, and rail, all of which are using more electronics.

While the big automakers purchase directly from manufacturers, many tier two, three automotive suppliers, purchase components from distributors. The lower-tier suppliers build subsystems and modules for automotive electronic systems such as Wi-Fi, solid-state lighting, crash avoidance, lane change notification, rear view backup cameras and other systems.

Such customers not only need components, but design and supply chain services that distributors provide. Some may need technical expertise and purchase small volumes of parts for design and prototype builds and may turn to smaller volume catalog distributors such as Mouser and Digi-Key.

In addition, as more electronics systems are designed into vehicles, the number of lower-tier automotive suppliers is growing. Up-and-coming startup companies develop new technologies and design products that automakers will use in future models. Such startups purchase components and look to distributors for design and supply chain expertise. As a result, many distributors are seeing double- digit annual sales growth from the automotive segment.

Kevin Hess, senior vice president of marketing for Mouser, said that while transportation represents a small percentage of Mouser's total sales, "it is one of our fastest-growing businesses."

Investing in automotive

The same is true with other distributors and some are making investments to better serve automotive customers. "Automotive has always been important to Future," said Karim Yasmine, corporate vice president, strategic supplier development. "It is the fastest-growing segment and it is a global segment for Future," he said.

Yasmine said Future is investing more to support automotive customers. "You do need to invest more to be successful in automotive. You need to invest in customer-facing people that understand the automotive space," he said. "You have to invest in quality, regulatory compliance, distribution centers and people that understand automotive design and support," said Yasmine.



"Automotive has always been important to Future. It is the fastest-growing segment and it is a global segment for Future," said Karim Yasmine, corporate vice president, strategic supplier development

He said automotive is different from the industrial segment, but similar to defense and aerospace in some ways.

"Customer contracts are much more complex in automotive. It's also necessary to have an understanding of ISO processes, testing processes which only exist in certain segments. Automotive is one, medical is one, mil-Aero are the others," said Yasmine.

It's not just large distributors like Future, Arrow and Avnet that are growing sales to automotive customers. Some small, niche distributors are seeing growth opportunities in automotive.

"We've been closely monitoring the automotive segment to see what new developments there are," said Mark Baker, director of business development for Integra Electronics, a small, specialized distributor based in Anaheim, Calif.

One of Integra's fastest-growing lines is Andromeda, which makes displays for electric vehicles, said Baker. "Andromeda makes a standard base display product that can easily be customizable to any vehicle that operates on a CAN Buss communication interfacing with the battery management system," said Baker. He said there has been an "explosion of small vehicle manufacturers that are targeting specific markets, like military bases and trucking manufacturers focused on shorter range hauls where electric is a desirable alternative."

The EV opportunity

Another distributor that is bullish about electric vehicles is Premier Farnell. Ralf Buehler, chief sales and marketing officer for Premier

MOUSER ELECTRONICS
The Newest Products for Your Newest Designs®
Widest Selection

Farnell, said that automotive, including electric vehicles, is a growing segment for Premier Farnell.

"The electric vehicle market is a major driver for us and not just for component demand," he said. "There is also demand for surrounding products such as test equipment. We sell everything from components to test equipment and development tools," said Buehler.

He said EV is an opportunity for Premier Farnell because 'there's lots of development going on and there are new entrants into that segment and it's not focused on tier 1 OEMs or tier 1 subcontractors," he said. "We clearly have EV as a main agenda item and it's not just the car," said Buehler. "It is the charge stations around EV that get designed by many different companies."

Another opportunity for Premier Farnell and other distributors will be the autonomous self-driving car. "Autonomous driving is the next big wave for automotive electronics," said Buehler. He said it will involve greater use of sensors and cameras in vehicles and there will be infrastructure needed to enable autonomous driving.

Supporting prototype builds

For some distributors, the auto industry is helping to grow sales, but does not represent a large percentage of total revenue.

"For us, the auto industry is not any larger than any other horizontal market that we have," said Dave Doherty, president and chief operating officer for Digi-Key.

He said Digi-Key is involved in early prototype design in the auto industry and services the automotive aftermarket. "We service tier 2 and tier 3 automotive suppliers."

Doherty noted that the amount of electric content in automobiles "continues to explode it is good for our suppliers and allows them to invest," said Doherty. "Over the last couple years, automotive has done a good job of driving consumption. However, because of strong growth, automotive is causing some constraints in the supply bases.

He added that the auto industry is a very demanding customer for suppliers. "When they (automakers) have upsides, it can cause disruptions down the food chain to tier 2 OEMs and distribution.

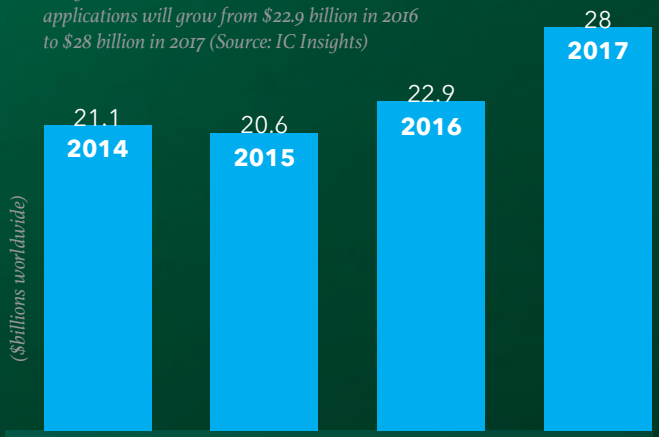
Doherty said automotive is impacting other customer segments. "The automotive business is known historically for demanding more "ruggedized components that can operate at higher temperatures. "It has driven demand for ruggedized components in other industries. We've taken on more automotive grade components for non-automotive applications."



"The electric vehicle market is a major driver for us and not just for component demand," said Ralf Buehler, chief sales and marketing officer for Premier Farnell

Auto ICs post 22.4% growth

Integrated circuits used in automotive applications will grow from $22.9 billion in 2016 to $28 billion in 2017 (Source: IC Insights)



Automotive drives semiconductor demand

One reason electronics distributors are bullish about the automotive market is the continuing growth in use of semiconductors in automotive electronic systems.

The automotive integrated circuit market is expected to grow from $22.9 billion in 2016 to $28 billion in 2017, a 22.4 per cent growth rate, according to researcher IC insights. Growth rates of some semiconductors used in vehicles will increase 40-50 per cent. For instance, the growth rate for logic chips will increase 43 per cent to $4.1 billion, while memory ICs will rise more than 50 per cent $2.6 billion.

Analog ICs are the most widely used semiconductors in vehicles, will have a growth rate of 20.5 per cent in 2017, as sales increase to $13 billion, according to IC Insights.

Integrated circuits used in automotive applications accounted for only about 8 per cent of total IC market share in 2016, but will increase to more than 10 per cent in 2020, the researcher said. Automotive will become the third largest end-use category for ICs, trailing only the communications and computer segments in 2020.

The biggest user of automotive ICs will be advanced driver-assistance systems (ADAS). ADAS systems help cars and drivers remain safe on the road and are essential building blocks to semi-autonomous and autonomous vehicles that are being proposed for the next decade, according to IC Insights.

No Minimum Order Quantites

Worldwide leading authorized distributor of semiconductors and electronic components.

mouser.com

Is this the end of forecasting?



Executive vice president, sales and supplier management at Digi-Key Electronics, Chris Beeson

Forecasts are not always accurate. Going into 2017, the general feeling was that market conditions would be much aligned to 2016, with perhaps some small growth overall. Yet this was not the case. In fact, we are currently witnessing global 20 per cent plus growth numbers. Furthermore, the trend for 2017 has been an increase of demand by each quarter in all global regions, and has been especially strong in North America as compared to historical benchmarks. Thank goodness for Digi-Key's service model and strong in-stock and available to sell inventory, which has been valuable to both customers and suppliers in this growth environment.

So, can we get a more accurate forecast this year, or do we need to provide greater consideration for flexible, speed-based, automated processes to stay aligned to the industry?

Supply chain evolution

Customers will continue to require web-based tools to aid business processes and speed communication. Companies will rely more on machine-to-machine environments and engage with many forms of machine learning or artificial intelligence to stay competitive. This will place new requirements on the overall supply chain, which will be entering an unfamiliar environment and will alter many enterprise resource planning systems in place today. Those organizations leading the industry will be the ones that understand the personalized user experience and can add value to this ever-changing manufacturing activity.

Embracing digital business

Moving into 2018 we see sustained momentum as business models continue to evolve. The movement in digital remains a key driver and challenges our abilities to provide a traditional forecasting model.

Trends are evident, however, and we continue to see a movement toward micromanufacturing, which focusses on cost effectively producing products in smaller lot sizes while providing mass customization within a speed-based structure. Management of inventory has always been the main focus, but this is now coupled with the management of intelligence or data, which is a new aspect of industry transformation.

Overall, global activity in design has never been stronger, particularly in the maker and internet of things markets. Front-end design support requirements are also more complex, with demands for greater self-serve content. In addition, applications for devices continue to change as noted in the capacitor market, where the number of multi-layer ceramic capacitor components in an application is rising quickly. A smartphone which recently required 750 devices, for example, could now include around 1,000, while in automotive designs, the numbers have risen from one to three thousand devices to as many as 10 thousand.

Understanding forecasts

Ultimately, business relies on the ability to sense and be prepared to exploit new digital business moments. Business events reflect notable state changes, such as the completion of a purchase order, while some events constitute business moments, whereby a situation is detected that calls for some specific action. Forecasting therefore becomes more challenging if some supply channels are prepared for digital business moments, while others lag in their business offering.

Digi-Key Electronics is excited about what 2018 will bring as we continue to partner with both our suppliers and customers to stay ahead of this fast-paced industry.

www.digikey.com

Defending predicted growth



President, Lansdale Semiconductor, R. Dale Lillard

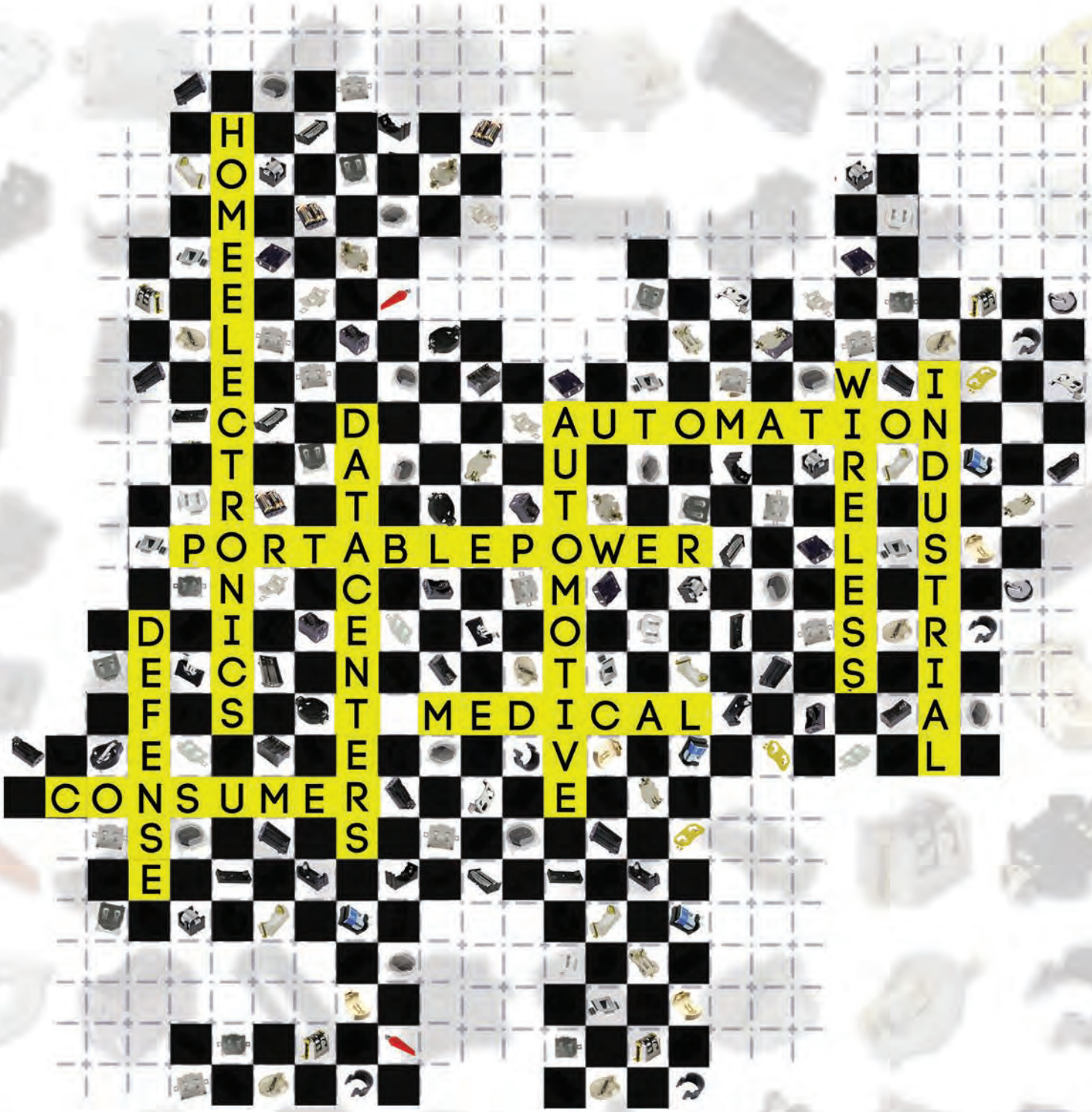
Although sales in 2017 were lower than in previous years, Lansdale Semiconductor has seen strong bookings for 2018 and early 2019. This, among other factors, leads us to expect 2018 to be a good year.

Lansdale supplies a majority of its product into military related systems, with our most active products going into new missile defense systems. Considering the threats in the world today, particularly from North Korea, we expect sales in this area to grow in 2018. Congress also anticipates increasing military budgets, including spending to improve hardware readiness. With Lansdale's integrated circuits maintaining older military systems, this is another area where more sales are expected.

We are also optimistic about an improving world economy next year, which will increase sales of our commercial family of radio frequency integrated circuits in consumer products.

For all these reasons, plus our good backlog, we expect 2018 sales to be very good.

www.lansdale.com



MPD

MEMORY PROTECTION DEVICES

BATTERYHOLDERS.COM

Riding the changes



President and chief executive officer, Dove Electronic Components, Matt Waite

Looking back on this year, which is quickly coming to a close, one word comes to mind: change. The electronic component industry is changing as rapidly as the technology sold and it seems that four years of industry shift is now packed into one. Yet, despite the fact that too much change can be unsettling, ultimately, you must embrace it as there is no other choice.

In 2018, specialized distributor of frequency control products, Dove Electronic Components, will enter its 36th year in business. While many things have changed in the distribution channel during this time, it is possible to approach change with less uncertainty by sticking to core values. In Dove's case, that means a focus on product knowledge, being responsive, adapting to innovative ways of doing business and, most importantly, doing business with integrity. Dove has several customers with which it has done business for over 30 years, which is a source of both pride and motivation.

Opportunity beckons

Fortunately, Dove is extremely optimistic about 2018. There are challenges to overcome, but this is far outweighed by the opportunity that lies ahead. The explosion in internet of things designs is particularly interesting, but there are also opportunities in traditional component markets such as medical, industrial and military.

Distribution challenges going into 2018 would be lead-times, supplier consolidations and components going end of life because of those consolidations. Distributors can address these issues by getting way out in front on component purchases and in fact, Dove has been doing this for several months now. As for supplier consolidations, Dove has been fortunate to end up on the right side of them throughout its history, as well as helping purchasers to address component end of life situations though last time buys. This gives customers time to redesign, while still being able to ship their systems, so that they too can adapt to a market packed with change.

www.doveonline.com

> **There are challenges to overcome, but this is far outweighed by the opportunity that lies ahead**

Solution Selling is the Future



Rich Davis, President, WPG Americas Inc

For WPG Americas, 2017 has been a year of momentum, new partnerships, and expanding presence — a growth that has been gaining speed since 2015 and is expected to continue into 2018. As an electronics distributor, our strategy has been to focus on a limited number of technologies, namely storage, lighting, embedded, intelligent connectivity, power and PEMCO. This specialized approach has been a key factor in our growth.

While our competitors in the North American market have more extensive line cards, narrowing our line card has worked well for us. The specialized line card has enabled us to truly understand the technologies and products of our suppliers and forge deeper relationships with them, creating an even better situation for our customers.

In what has been a predominantly buyers' market, we've observed a strong potential for solution selling. Companies focused on solving customers' problems with a combination of the right products, services, and technologies, will be better positioned to seize growth opportunities and capitalize on new business.

The future holds yet more promise, mainly because end-customers will continue to gain leverage as lead times and supply hold steady. In a mature industry as this, there are many opportunities for distributors to create growth, innovate and differentiate themselves.

One trend we foresee in the coming year is that customers will become more reliant on distributors for design and supply chain expertise. With this, there will also be a shift in focus from selling individual components to selling complete solutions. The biggest challenge for distributers will be to remain nimble and respond quickly to customer requirements.

As we move into 2018, I believe the electronics component landscape will offer better growth to companies that remain prepared and agile in the ever-changing landscape. For WPG Americas, this translates into building stronger customer relationships and providing well-rounded technology solutions from industry leading manufacturers.

www.wpgamericas.com

Breaking the cycle of stagnation



Senior vice president marketing, Sager Electronics, Faris Aruri

For the past five years, the industry has seemed locked in a cycle of a strong first quarter, sometimes extending into April and May, followed by a drop off in the last two quarters that neutralized early year gains. As a result, the industry has experienced low overall growth rates during this period.

Demand increases

This year, however, the cycle has been broken as consumption and investment align. Customers, who never went away but bought less throughout this period, have seen their demand increase and large, scheduled orders are back, reflecting the confidence in this demand. Momentum from earlier in the year has also continued with robust growth in September and October, which will result in much higher overall growth for 2017, compared to the last five years.

Furthermore, there is potential for additional growth thanks to businesses that may be holding their investments to see which way the wind blows on certain policy issues. Overall, consumer and business expectations are increasing and driving predictions of higher GDP growth in 2018.

Directionally speaking, lead-times for some electronic components are extending. Although this phenomenon is somewhat selective, even pushouts on products like capacitors can have a ripple effect on other components upstream such as power supplies that rely on certain capacitors. Inventory has therefore proved to be very valuable and those in a strong position have outpaced the market.

Growth markets

A look at some of our key markets will show that medical devices, instrumentation and lighting continue to lead the way. One interesting development on the medical front is an increase in 'telehealth.' Stay-at-home medicine is attractive to a consumer base that has become comfortable with stay-at-home everything and it seems patients are ready for remote diagnosis, home testing, and instant results. One can envision a basic set of diagnostic medical equipment in every home, in the same way we have personal computers. The volume associated with this portable consumer type equipment has the potential to drive this industry to even greater heights.

Other trends that extend across multiple industries include remote sensing and energy efficiency, both of which will drive extraordinary demand for electronic components. Even investment in mining exploration, an area that got hit the hardest recently, has begun again as oil prices have firmed, although they remain below 2014 levels.

All in all, the evidence points to a strong, healthy outlook for the market in 2018. At Sager Electronics, we expect the combination of economic conditions, trends in our key markets, and our own targeted strategies to make 2018 the best of the decade.

www.sager.com

> **Trends that extend across multiple industries include remote sensing and energy efficiency, both of which will drive extraordinary demand for electronic components**



Just like the legendary Ford Built GT500 Mustang classic design…

Lansdale Semiconductor still manufactures some of the most popular… and timeless commercial wireless, telecommunications, military and aerospace integrated circuits (ICs) classic designs.

As a global pioneer in IC products life cycle management, Lansdale manufactures over 3,000 classic design ICs in the original package, exactly as they were created and produced by AMD, Farchild, Freescale Semiconductor, Harris, Intel, Motorola, National, Philips (formerly Signetics), and Raytheon.

Our exclusive life cycle management program assures you of a dependable, continuous, cost effective, and high quality source of classic designed ICs today… and tomorrow!

This means Lansdale eliminates the need to go to the time or expense of designing in a replacement part or even doing a complete product redesign – not when we still make 'em… exactly like they used to.

Log on to our Web site at www.lansdale.com to review our up-to-date product listings and data sheets.

Contact Sandi@Lansdale.com today.
5245 South 39th Street • Phoenix, AZ 85040-9008
Phone: 602.438.0123 • Fax: 602.438.0138

LANSDALE Semiconductor, Inc.

Fueling future innovation



Senior vice president of marketing, Mouser Electronics, Kevin Hess

Electronic products that were unimaginable a few years ago are now becoming commonplace and are, in turn, fostering a new generation of exciting technological developments. Accelerating this innovation are creative, problem-solving engineers, designing a myriad of end products containing new, revolutionary, electronic components.

With its focus on introducing new products for over 600 component manufacturers, Mouser Electronics helps fast-track that design process, so more products can be developed that will save time, money, labor and resources.

Empowering ideas

Ultimately, the designs created improve our lives. Technology is making driving safer, staying in shape easier and diagnosing medical conditions more precise. All these amazing developments begin at the component level, where tiny devices and computer programs work together to deliver solutions that were previously just a vision. Mouser's Empowering Innovation Together program highlights many of these technological advances.

By providing millions of leading-edge components every year across the globe, Mouser helps customers find technical solutions that will someday shape our futures.

The internet of things, for instance, is quickly changing from promise to reality. Like the internet, IoT will change how we interact, but with a major difference: IoT will greatly remove the human element from interaction, creating more of a 'set it and forget it' operation.

At the component level, IoT comprises embedded sensors, wireless modules, low-power processors and single board computers — categories that will help fuel tremendous growth. Whatever the future holds, Mouser will be ahead of industry trends, working hard to support design and speed time to market.

www.mouser.co.uk

> **"The internet of things is quickly changing from promise to reality**

Get ready to shift up a gear



President, ECCO Electronic Connector Company, Bernard Gizzi

In our industry, the only 'sure thing' is change. 2017 saw distribution mergers, material shortages, stretched lead times and upward pricing pressures. Although customers are experiencing firm pricing in a more balanced market than ever before, price increases are not uncommon and perhaps, 'allocation' may once again become part of our vocabulary.

For 2018, several things will continue to accelerate: more applications for LED lighting, further installation of electric chargers, smarter cities, personal robots and an emphasis on customized packaging and logistics.

Assuming the economy continues at pace, material will remain constrained and upward pricing trends will prevail. If distribution cannot negotiate more flexible pricing models with its customer base, margins will get compressed as they are saddled with higher cost of goods sold, without corresponding higher resales to match.

Interestingly, the war for labor acquisition will also re-enter the spotlight as baby boomers retire and industry complains its has too many job openings and not enough talent.

Electronic Connector Company will focus on three key initiatives to compete and grow: expanding our product portfolio, enhancing our digital footprint, and increasing our value-added assembly services to both customers and suppliers alike. In fact, we recently took over a third shift for one of our connector suppliers as it could not find the labor to cover its workload. With our recent qualified parts list approval to build D38999 series III from Aero Electric and the Defense Logistics Agency we have also broadened our reach and assembly services.

With a keen focus on these three areas, ECCO will shift into higher gear in 2018.

eccoconnectors.com

E-commerce continues to underpin growth

Looking at Schurter's distributor lineup, there is an interesting phenomenon afoot. Those distributors where business to business revenue represents more than 50 per cent of their business have grown their sales at a faster rate than traditional distributors.

Unsurprisingly, these B2B distributors account for an increasing percentage of Schurter's total distributor sales. In 2006, they made up 24 per cent, 30 per cent in 2010 and 41 per cent in 2015. By the end of 2017, the group is expected to represent 49 per cent of the company's total distributor sales. In fact, according to Gartner Research, within the next two years, B2B companies with effective e-commerce personalization are projected to outsell competitors without such strategies by 30 per cent.

Monitoring performance

To coat-tail this trend, Schurter has implemented e-commerce performance metrics. This scorecard monitors the number of Schurter part numbers in distributor e-commerce systems and the total inventory. It also assesses engagement in new product introductions, as well as monitoring the accuracy and integrity of the distributor's product representation, including product descriptions, images, and engagement in co-operative promotional programs.

The performance system is thereby used to shore up the company's franchised distributor line up and to focus on those distributors that are creating demand by engaging with customers using solid e-commerce systems and promotions.

Engaging new customers

For 2018, Schurter has expanded the number of distributors being measured to include those ascribing to the trend and developing their e-commerce business. We see an enormous potential here, to support the development of best-in-class e-commerce systems as a critical part of our distributor's ability to reach existing and new customers. Our tracking system, which also measures the number of point of sale customers, will continue to provide key data that enables us to work more closely with our supply chain.

Overall, it seems business to consumer e-commerce has set high standards for the online experience. To attract customers, distributors must therefore provide an equally great B2B e-commerce experience.

www.schurter.com



Vice president marketing, Schurter, Diane Cupples

Business to consumer e-commerce has set high standards for the online experience. To attract customers, distributors must therefore provide an equally great B2B e-commerce experience



Eliminate uncertainty

Selecting an enclosure can be daunting. Purchasers must consider price and lead time to decide whether custom or standard products are best. CamdenBoss offers valuable advice to buyers facing this choice

It can be difficult to know which enclosure best suits a particular product or need. Price and lead times often dictate whether it is worth customising a standard product or creating a unique design, but it can be tricky when customers are unsure of the full details of their enclosure requirements. CamdenBoss aims to help, using its know-how to bridge the gaps created by any uncertainties.

With over 40 years' expertise in enclosures, the company's efforts span the design, production and distribution arena, ensuring it understands and can advise on many enclosure manufacturing needs.

Bespoke benefits

CamdenBoss specialises in three forms of enclosure manufacture, one of which is flat sheet plastic technology. This requires no tooling, ensuring unit prices are competitive in low to medium volumes. No tools are required for FSPT as the enclosures are manufactured using CAD/CAM files and CNC machining processes. This provides a fast and flexible manufacturing solution, allowing designs to be made quickly and easily.

Custom injection moulding is another option. This method produces high-quality products quickly, in large volumes, and with great accuracy. Consequently, this does mean that it requires tooling, unlike FSPT.

On the plus side, custom injection moulded enclosures give customers the freedom to develop original ideas, so products have the potential to be unique and easily distinguished from an off-the-shelf enclosure. With this freedom, there is no compromising on the desired aesthetics and functionality. Unfortunately, such creative freedom can bring complexity in production, usually leading to longer lead times.

Off-the-shelf advantages

The final option is to choose a standard off-the-shelf enclosure. Standard enclosures are usually high-volume products so the user often benefits from lower unit costs. Standard enclosures also require no design work as parts can be readily picked from stock without extended lead times.

Despite the advantages of affordability and speed, customers may miss out on aesthetic preferences by choosing a generic design. If holes and modifications are required, this has to be post-machined. Sometimes this means that specifying a custom enclosure can actually be a more cost-effective approach.



FSPT requires no tooling, ensuring unit prices are competitive in low to medium volumes

Standard enclosures require no design work as parts can be readily picked from stock



WHEN THE DESIGN MATTERS
PEI-Genesis DELIVERS
Application-Focused Connector and Cable Solutions for Harsh Environments
Challenge us to solve your most complex interconnect problems
www.peigenesis.com | 1-866-734-9111
PEI-Genesis™
Amphenol ITT cinch TE Esterline SOURIAU • SUNBANK LEMO

Planning ahead
Before deciding which option is best, requirements for the enclosure need to be established early on. Purchasing professionals need to gather all requirements for the enclosure's design, however, this is often easier said than done. CamdenBoss' engineers can therefore guide purchasing professionals through the key decision points to establish requirements for their ideal enclosure.

These initial conversations are important as they can help navigate the customer to their ideal enclosure design fast and from the outset of the project. To ensure the enclosure ticks all the right boxes, making a prototype is a priority. A prototype gives a good indication of what customisation can be achieved and how the end result will look. If the result is not ideal, there is time for changes, yet too often, developing a prototype is an afterthought.

Delivering on design
All aspects are taken into consideration when designing an enclosure, from aesthetics and functionality to manufacturing, installation and maintenance.

CamdenBoss offers a full design service, which includes concept design with 3D modelling. Concept designs present ideas for the customer who has yet to determine how they want their enclosure to look. The team will produce visuals and supply a variety of examples, which may help generate more ideas, or solve design complexities. Alternatively, if the customer has their own drawings or ideas, CamdenBoss can use these to create an ideal product.

Fortunately, this experience in enclosure design means costs can be kept to a minimum. Enclosures are designed for optimum low unit price in all volumes.

Talk about timing
Timing is often a crucial factor. Custom FSPT prototypes can be made within one week and volume orders for manufacturing take two to four weeks depending on complexity. Custom injection mould designs require one to three weeks depending on complexity. Tooling requires a further six to eight weeks and volume manufacturing then takes two to three weeks.

Although this process can be overwhelming for customers who may lack knowledge, CamdenBoss can help answer any queries and guide even the most unsure purchaser towards their ideal enclosure.

www.camdenboss.com

> **Custom injection moulded enclosures give customers the freedom to develop original ideas**





CONNECT ENCLOSURES
Ergonomic housings for wire connected electronics such as handheld controllers and medical devices. 3 sizes with apertures at each end for fitting cable glands or end panels. Holding clamp for bed frames.
OKW ENCLOSURES INC
800 965 9872 | www.okwenclosures.com
Request a free sample today!
OKW

Pole kits extend mounting options



Hammond Manufacturing has introduced five initial sizes of its new pole mounting kit, which enables sealed enclosures from three different product families to be attached to round, square or rectangular poles. The kit is compatible with poles measuring 38 to 381mm diameter.

The initial range of kits are sized to fit the 1554/1555 IP67 ABS and polycarbonate range, the 1590Z IP66 heavy duty die-cast aluminum family and the 1590ZGRP IP65 glass reinforced polyester range.

Developed to support the installation of small electronic monitoring and control systems in a variety of locations, each kit consists of two brackets, two clamps and mounting hardware. The corrosion resistant stainless-steel kits are said to reduce installation time and secure the enclosure against twisting once installed.

www.hammondmfg.com



Holding bracket supports vertical installation

Rolec has added a new vertical holding bracket to the range of accessories available for its mobilCASE aluminum electronic enclosures. The new holder, which is molded from black polyamide, can be fitted to walls or machines.

Designed primarily for handheld electronics with an IP 65 rating, mobilCASE can also be used for desktop and wall mounted applications in an IP 54 sealed configuration. Two versions are available: a one-part closed profile for rapid insertion of PCBs or a two-part open profile for easy installation of components. Case bodies are recessed on both sides to accommodate a membrane keypad or product label.

Available in three standard widths, each case is manufactured from extruded aluminum with black powder coated diecast zinc alloy end covers. Thanks to its extruded construction, customers can specify their preferred length.

www.rolec-usa.com

Meet DC, AC's little brother.



Visit us and see our line of thermal management components operated with DC voltage.



DCT010 NC / NO



DCR030 / DCR130



External Sensor

STEGO INC.
SIMPLY INNOVATIVE. BETTER FOR SURE.

STEGO, Inc.
1395 South Marietta Pkwy., Bldg. 800
Marietta, GA 30067

770.984.0858 | info@stegousa.com



Desktop enclosure set for growth

OKW's Evotec desktop plastic enclosures are now available in a larger 250 size measuring 9.84 by 6.10in.

Designed for tough working environments, Evotec enclosures are ideal for applications such as measurement and control engineering, IT, medical, laboratory and environmental technology. Enclosures are molded from ASA+PC-FR for UV stability and can also be wall mounted for access control installations.

Three variants are available: Version I has a flat top with a large operating area for switches, push buttons and touch displays; Version II features a smooth sloping top inclined at 12deg for desktop applications; while Version III also has a sloping top but is recessed to accommodate a membrane keypad or product label.

All three versions feature PCB screw pillars in the top and base. Self-adhesive rubber feet ensure stable positioning and Torx assembly screws prevent tampering, which is ideal for medical electronics. Accessories include an IP 65 seal, a wall mounting kit and self-tapping screws for installing PCBs.

www.okwenclosures.com

Central Semiconductor Corp.

Rethink the Possibilities™

Using legacy devices?



Central has what you need.

2N3055 in TO-3

2N2857 in TO-72

1N5420 in GPR-4AM

As other semiconductor manufacturers increasingly discontinue **legacy discretes**, Central continues to manufacture these devices for designers who need them. Eliminate burdensome life time buys and extend your product's life cycle with the over 3,000 legacy devices from Central's extensive inventory.

Up-screening services available

For more information, call Central at: 631.435.1110
or view devices online: www.centralsemi.com/dps21

Legacy devices are also sold through the following franchised distributors:

AVNET Reach Further™ | AVNET USI | Digi-Key ELECTRONICS | FUTURE ELECTRONICS | MOUSER ELECTRONICS

Diodes & Rectifiers	Bipolar Transistors	MOSFETs & JFETs	Protection Devices	Multi Discrete Modules (MDMs™)	Thyristors

Discretes Do Matter™

Central Semiconductor Corp.
145 Adams Ave • Hauppauge, NY • 11788 • USA
631.435.1110 • www.centralsemi.com

Require a custom solution?

Just Ask — Challenges welcome

Automotive and other embedded systems will help drive microprocessor growth

While most microprocessors are used in computers, more MPUs are being designed into industrial equipment, including Internet of Things applications

By James Carbone

The microprocessor market is not just about computers anymore.

Robust demand from servers, PCs and embedded applications will drive 9 per cent revenue growth in 2017 as sales rise from $49.6 billion in 2016 to $54.4 billion in 2017, according to IHS Markit. Longer term, the global MPU market will post a compound annual growth rate of 4.7 per cent as revenue increases to $65.4 billion in 2020, the researcher said.

With healthy demand, buyers can expect prices to increase. The average price for a microprocessor in 2016 was $27.61. By 2021, the price will rise to $29.42, an annual average price increase of 1.6 per cent from 2016 through 2021, according to market research firm IC Insights. The average price also includes application processors used in cell phones and tablets.

"Lately MPU average selling prices have been creeping upward across almost all categories," said Rob Lineback, senior research analyst for IC Insights. "But on the embedded side you might see more of a decrease."

He said the reason average selling prices for microprocessors are increasing is there is continuous addition of functions. He said MPU manufacturers will be embedding artificial intelligence into microprocessors which will further increase the value of the chips and the price.

While higher prices help drive revenue growth for MPUs, underlying growth in demand from computer and embedded systems manufacturers remain the main reason for healthy growth.

Volume demand for microprocessors is still dominated by data processing equipment, including servers, desktops, mobile computers, mainframes and workstations. However, the growth rate of MPU use in embedded systems is higher than data processing equipment.

"In data processing, the microprocessor growth rate for 2017 is 9.1 per cent," compared to 16.4 per cent for industrial applications, 11 per cent for wired communications and 13.6 per cent for automotive, said Tom Hackenberg, principal analyst, embedded processors for IHS Markit.

More opportunities

"The embedded space is offering a lot more opportunities for growth," he said. However, data processing dominates the MPU market.

"The data processing category is over $43 billion in microprocessors where all these other categories are around 1.5 to $2 billion each. So, you can combine all these other categories and you're not even up to a quarter of what data processing means to microprocessors," said Hackenberg.

Within the data processing segment, there has been greater demand for MPUs in mobile computers rather than desktops. In addition, more people are using tablets and smart phones, which use application processors

"This has had a big impact on the desktop computing market over the past several years," said Hackenberg. It is also resulted in less MPU demand by desktop manufacturers.

"But what we're finding now is that trend has plateaued," said Hackenberg. The growth rate for smart phones has slowed. In addition, there is a transition from tablets to PCs that are "transformable," he said. Such computers have a tablet style form factor with PC performance because "there is MPU in the device," said Hackenberg. He said the Microsoft Surface is an example.

The trend is "helping to bolster the mobile PC platforms," he said.

In the cloud

Cloud computing may also be having an effect on the computer market and on microprocessors. "We are seeing a considerable surge in the fixed PC market from mobile platforms," said Hackenberg. "The transition from applications on your PC to cloud-based solutions and all of the services that are being pushed out on cloud platforms are making PCs a little more desirable," said Hackenberg.

While computers still dominate the MPU market, Intel, AMD and other microprocessor factors are looking to embedded systems for further sales growth.

Hackenberg said computers are a mature market and growth has slowed. "Companies like Intel and AMD they have to have a long-term

By The Numbers

9%: *The percentage growth rate of the worldwide microprocessor market in 2017* Source: IHS Markit

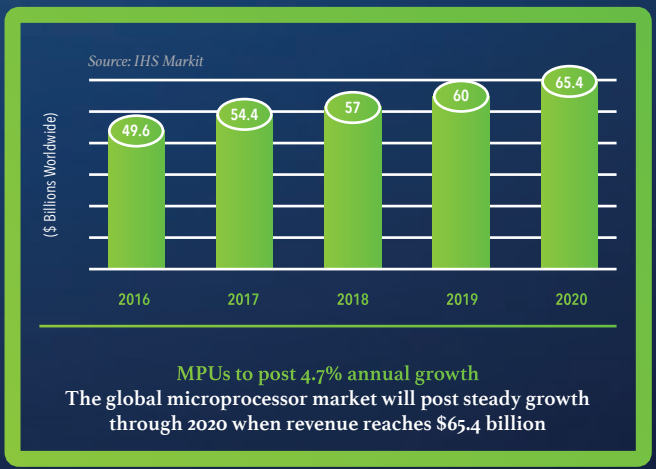
65.4 billion: *The forecast size of the microprocessor market in 2020* Source: IHS Markit

1.6%: *The expected average selling price increase for microprocessors through 2021* Source: IC Insights

$43 billion: *The size of the data processing equipment microprocessor segment* Source: IHS Markit

14%: *The percentage of microprocessors used in embedded systems*

MOUSER ELECTRONICS
The Newest Products for Your Newest Designs®
Same-day Shipping



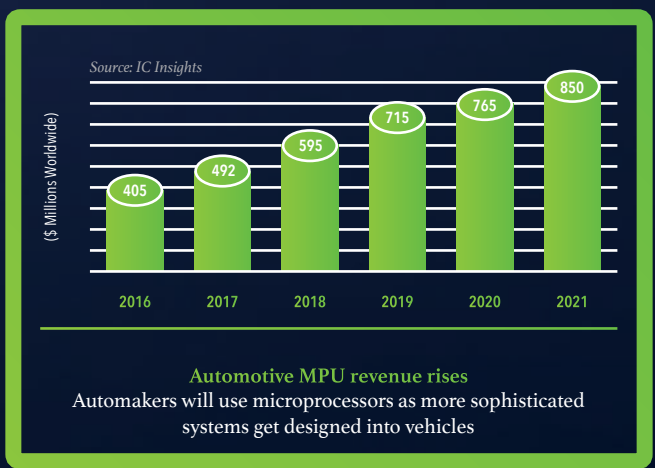
MPUs to post 4.7% annual growth

The global microprocessor market will post steady growth through 2020 when revenue reaches $65.4 billion



Processor tags will rise

Average selling prices for microprocessors will increase 1.6% per year on average through 2021



Automotive MPU revenue rises

Automakers will use microprocessors as more sophisticated systems get designed into vehicles

strategy for growth and there's only a couple ways to achieve growth," he said. MPU makers either have to grow the market and "somehow get people to buy more PCs or servers or they have to expand their product lines into other markets that have additional potential," said Hackenberg. "That is what we are seeing over the last five years with the embedded market."

Microprocessor makers are focusing more on industrial and home automation, digital signage, medical applications, automotive defense systems, consumer equipment, emerging Internet of Things applications among others.

"These are segments that may not be anywhere near the market size of the server and PC market but they represent opportunities for good growth," he said.

Many microprocessors used in embedded applications are RISC processors rather than Intel's x86 MPUs, although Intel is trying to become a bigger player in the embedded market.

Embedded rising

In 2016 embedded represent about 14 per cent of the microprocessor market and that percentage will grow to 19-20 per cent by 2021, according to IC Insights. MPU use in embedded systems will rise at a compound annual growth rate of 12 per cent through 2021.

MPU use in automotive is growing and will continue to rise for years as more electronics systems become more sophisticated and require greater processing power.

Hackenberg said there are two evolutions occurring with vehicles which will impact MPU use in vehicles. Automakers are trying to make electronics systems in vehicles that have a customer interface similar to computers or smart phones.

"That means consumers expect to be able to look at a touch-screen environment and have the same comfort level that they have using the smart phone or tablet," said Hackenberg. "They want to look at the heads-up display or the instrument cluster and see it graphically like they would expected to see a smart phone or tablet. That means higher performing microprocessors are needed, he said.

Hackenberg said under the hood, there is an evolution towards advanced driver assistance systems (ADAS). Such systems provide warning to hazards on the road such as vehicles changing lanes.

MPUs needed for self-driving car

But the trend is towards autonomous vehicles, which in theory would be self-driving, but in the short term, would involve cars that can park themselves or perhaps operate on automatic pilot when a motorist is driving on the highway.

"There won't be self-driving cars in the next few years, but we will continue to progress in that direction," said Hackenberg. Autonomous driving will help drive more microprocessor use in vehicles as such systems will require greater processing power.

Great processing power may drive inclusion of artificial intelligence technology into microprocessors.

"We're in the beginning stages of it right now, but everyone is talking about embedding artificial intelligence into processors going forward," said Lineback. "Right now, we are seeing machine learning which is a form of artificial intelligence."

"Intel plans to use artificial intelligence in processors to "protects its microprocessor base."

Intel acquired Nervan Systems, a startup that is developing AI technology. Intel plans to embed the technology into some of its processors.

Nervan's chip technology is designed for "neural networks." Neural networks are used in various tasks, such as computer vision, speech recognition, machine translation, social network filtering, medical diagnosis among other areas. Neural networks learn to do tasks by considering examples, generally without task-specific programming. For example, in image recognition, they might learn to identify images that contain cars by analyzing example images that have been labeled "car" and using the analytic results to cars in other images.

Authorized Distributor

Worldwide leading authorized distributor of semiconductors and electronic components.

mouser.com

OEMs rely on EMS purchasing expertise

OEMs depend on their contract manufacturing partners to handle tactical and strategic purchasing of many components and other production materials • By James Carbone

When an OEM evaluates an EMS provider as a potential manufacturing partner, it needs to assess not only the manufacturing capabilities the provider offers, but the purchasing expertise as well.

That's because over the years, the requirements and expectations of OEMs of their external manufacturing partners have evolved. In the 1990s, large electronics OEMs would outsource to contract manufacturers when they had an upside in demand and could not fulfill orders in-house. Over time, OEMs would outsource board assembly to EMS providers even if they did not have an upside and gradually contract manufacturers were trusted with subsystem and system assembly fulfillment and aftermarket service.

As OEMs outsourced more manufacturing to EMS providers, they gradually began to rely on their manufacturing partners to purchase commodity components such as resistors and capacitors and lower value discrete semiconductors.

Today, EMS providers handle virtually all the purchasing of components on bills of materials (BOMs), including higher value semiconductors. In some cases, the EMS provider also handles strategic sourcing of production materials.

"In most cases the OEM customer owns the design and source selection for the approved vendor list (AVL)," said Jamey Mann, director of global purchasing for EMS provider Kimball Electronics, based in Jasper, Ind. "It's our responsibility to insure the procurement side is actioned effectively."

"We work closely with several customers on sourcing, supply chain, risk management, and supply," added Mann. "Any time you can collaborate with both the customer and supply base, then you can develop a more robust supply chain."

He said about 98 per cent of Kimball's customers entrust the EMS provider with purchasing all their components needed for production, both lower value and higher value semiconductors. Many OEM customers also look to Kimball to "strategically source" materials such as bare printed circuit boards, items, packaging and lower value commodity components, according to Mann,

"Typically, on higher-value semiconductors, the customer decides the AVL and then expects us to execute based on the AVL," said Mann. In cases where there are multiple sources on the AVL, "then we can determine which source to use as long as the source can achieve the correct price point and supply," he said.

Relationship management

For instance. with printed circuit boards, Kimball has preferred suppliers that it recommends to its OEM customers. It is Kimball's responsibility to own and manage that relationship for the customer.

Stephanie Martin, senior vice president, global supply chain for EMS provider Vexos, based in Markham, Ontario. Canada, said about 98 per cent of Vexos' businesses is full turnkey, meaning it purchases the production materials for its OEM customers as well as manufactures for the OEM. OEM customers typically specify the electronic components and the manufacturers, but leaves it up to Vexos to purchase the components, many of which are bought from distributors.

"Because we are high-mix, medium-to-low volume, we buy through distribution although we do have a few manufacturers that we work with on specific parts when we have enough volume," said Martin.

With few exceptions, Vexos can purchase from any distributors that it chooses. The exceptions are for parts manufactured by Xilinx and Micron which must be purchased from specific authorized distributors.

She said for other material such as raw printed circuit boards, Vexos purchases directly from board manufacturers. "We do the selection for the board house and most of the metal, plastics, cable harnesses and the build-to-print items," said Martin.

Although Vexos has to use the AVLs of its customers, with resistors, capacitors and other passives "we try to steer the customer to suppliers that we are already buying



"Any time you can collaborate with both the customer and supply base, then you can develop a more robust supply chain

– Jamey Mann, director of global purchasing for Kimball Electronics

from because we can get better prices and service from them," said Martin. She said that Vexos will work with OEM customers, evaluating their BOMs to identify which components are sole-sourced by the OEM. Such parts may have alternate suppliers that may sell the component for a lower price.

Looking for alternatives

Mann said there are times when an OEM will request that Kimball provide potential alternate suppliers "to help reduce risk as well as create better productivity," he said. "However, in all cases, it is the customer that must provide approval before any new supplier is introduced," he said.

Alternate sourcing has become more of issue this year because many passive components are on allocation or have long lead times, according to Martin. "We are making suggestions to OEM customers moving them to component manufacturers with available inventory and shorter lead times," she said.

Vexos buyers will contact the buyer or commodity manager at the customer and the customer will contact the OEM's engineers to discuss alternate suppliers for a part, said Martin.

"We also have a quarterly market newsletter that we send out to all of our customers to their key executives and to their supply chain people and try to let them know what's going on with the market at each manufacturer," she said.

Kimball also collaborates with suppliers when there are instances "where we might recommend alternatives to reduce the risk of single sourced material," said Sherri Roos, materials manager for Kimball. Often that will occur during the quoting stage to ensure procurement strategies of the customer Kimball are aligned, she said.

"We work closely with several customers on sourcing, supply chain, risk management, and supply," added Mann. "Any time you can collaborate with both the customer and supply base, then you can develop a more robust supply chain."

Advantage: OEM

Besides a stronger supply chain, there are other advantages for an OEM to outsource strategic and tactical purchasing to EMS providers, including reduction of manpower and system resources, greater efficiency and improved productivity, said Mann.

OEMs will often have access to world-class purchasing expertise because EMS providers have invested in purchasing personnel as well as purchasing and supply chain software, said Sam New, principal research analyst with researcher Gartner Inc.

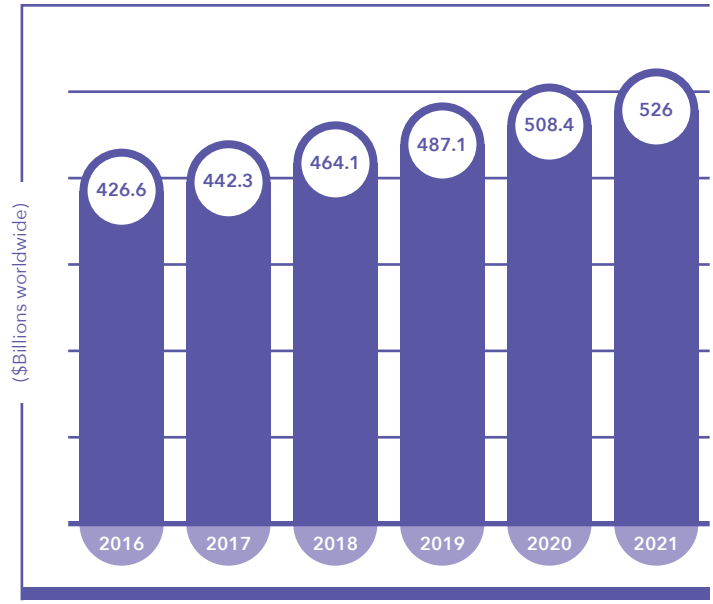
In addition, EMS providers have many OEM customers and hundreds, if not thousands of suppliers, which helps give them keen insight into the electronics supply chain. Often EMS providers can identify early market or supply chain trends such as component shortages and price increases because of their relationships with many customers and suppliers. In some cases, they can also identify emerging suppliers of new technology and help OEM customers to diversify their sources of supply.

Martin said cost reduction is a key benefit for an OEM when it entrusts its EMS provider to handle purchasing. "For one thing, they don't have to carry inventory," which helps reduce OEMs' total cost, she said. In addition, an OEM typically needs fewer purchasing people on staff when it outsources.

"When organizations start to outsource they tend to cut back on their expertise on the buying side for that commodity," said Martin.

With newer companies it's a different scenario. "Now what we're seeing is you have a lot of new companies that have

▶▶ *(continued on page 28)*



EMS market to post 5.5% annual growth

The global electronics manufacturing services market, including original design manufacturing (ODM), will post strong revenue growth through 2021 when total EMS sales will reach $526 billion

Resistor Technology

Resistor Specials for sophisticated Applications

Sensor Electronics
- Extremly high resistance values in small sizes – 100 Giga-Ohm up to 10 Tera-Ohm

Medical Electronics
- Non-magnetic design for MRI
- Customized variants

Measuring Electronics
- High temperature loadability up to 300 °C
- Close tolerances, high stability

High Voltage Electronics
- Leaded up to 80 kV
- SMD up to 6000 V

SRT Resistor Technology GmbH
active at passive components
D 90556 Cadolzburg, Germany – Ostlandstr. 31
Phone: +49 9103 79520 - Fax: +49 9103 5128
www.srt-restech.de

no expertise in electronics procurement" to begin with, she said. They don't hire a buying team, but rely on their EMS provider to source and purchase parts.

"Whereas in the past companies had the expertise, then started to outsource and then got rid of the purchasing expertise because they did not need it anymore," said Martin.

In some cases, companies that never manufactured electronics are now building some products that have electronics subsystems. Those companies also don't have in-house electronics expertise. As a result, they also are relying on EMS providers for that expert.

"That is happening a lot actually," said Martin. "We've seen three or four customers that have been purely mechanical moving towards electronics and don't have the expertise in-house. Some of them are just pure design firms and don't have any manufacturing at all," she said.

She said while there are advantages for an OEM having their EMS partners handle purchasing, there are advantages for the EMS provider as well.

More buying clout

Being able to combine the component requirements from numerous customers gives EMS providers more purchasing clout with suppliers. "It gives us more leverage with distributors, or component manufacturers," said Martin. "It gives us more buying power when you go full turnkey.

Such buying power is more important than ever to EMS providers because EMS is a low-margin business. By combining the purchasing volumes of multiple OEM customers, EMS providers obviously can negotiate a better price for components which can positively impact the EMS providers bottom line.

EMS purchasing on behalf of OEM customer is "kind of a win-win for everyone," said New.

Martin added handling purchasing for OEMs also "gives us more control over our production cycle." Years ago, an EMS provider would have to wait for the OEM customer to supply material needed for production. "Sometimes our customers would be our suppliers," she said. "They would hold us up from going into production" because customers would buy the components and their purchasing "cycle was not aligned with ours," said Martin. Now we are more in control of our own destiny to meet the committed needs of our delivery," she said.

While there are advantages for EMS providers when an OEM outsources purchasing, there are also challenges because there is increased responsibility and scale that must be managed effectively, according to Mann.

Mann said with many OEM customers "bringing new suppliers to the table, it is an always changing landscape." He said because Kimball has to use the suppliers on its customers' AVLs, it can make it more difficult to concentrate spend with the fewest number of suppliers, which is necessary to get a better price for parts.

"However, there are always opportunities to consolidate spend to a smaller subset of suppliers, mainly driven by multi-sourced AVLs," said Mann.

He added that OEMs are placing their trust in "our abilities to ensure not only a competitive solution, but also to deliver world-class supply chain programs." To do so, EMS providers must continuously develop strong supplier relationships. "Then managing the expectations become a much easier task. It takes hard work and diligence, but it is a challenge we accept every day," said Mann.

Managing design registrations

Another issue for EMS buyers purchasing from distributors is design registration. Martin noted a distributor may work with an OEM customer and design in a particular part from a component manufacturer. When that happens, the distributor registers the part and then the distributor "receives a premium for maintaining the registration," said Martin

When the OEM outsources manufacturing of the system that contains the registered part, "we have to be able to find out which distributor holds the registration for the part because the price delta between a registered part and a nonregistered part with a particular distributor that does not hold the registration is very large," said Martin.

She said Vexos needs to work with all of the distributors who could potentially have designed those parts in. "It's kind of a fishing expedition to find out. The customer's engineering people typically do not know or do not understand how the design registration process works," said Martin.



"Because we are high-mix, medium-to-low volume, we buy through distribution although we do have a few manufacturers that we work with on specific parts when we have enough volume

– Stephanie Martin, senior vice president, global supply chain for EMS provider Vexos



YOUR SOURCE FOR GLOBAL FRANCHISE DISTRIBUTION

In addition to our supply chain services, cost-saving programs, and inventory solutions, ***America II provides a wide range of franchise lines*** for industries ranging from telecommunications, industrial and lighting to healthcare, automotive and military.

800.833.6276
www.americaii.com
A2Efranchise@americaii.com

AMERICA II ELECTRONICS®
The power of distribution℠

The World's Largest Selection of Electronic Components Available for Immediate Shipment®

6 MILLION+ PRODUCTS ONLINE | 100% AUTHORIZED DISTRIBUTOR | 1,300,000+ PRODUCTS IN STOCK

3M
4D Systems
Aavid Thermalloy
Abracon Corporation
ACKme (Zentri)
ACL Staticide, Inc.
Active-Semi
Adafruit
Adapteva
Adesto Technologies
ADI (Analog Devices, Inc.)
Advanced Linear Devices, Inc.
Advanced Photonix (Luna Optoelectronics)
Advanced Sensors / Amphenol
Advanced Thermal Solutions, Inc.
Advantech
Aearo Technologies, LLC – a 3M company
Aeris
Aeroflex (MACOM Technology Solutions)
Aerospace Defense and Marine / TE Connectivity
Affinity Medical Technologies - a Molex company
Agastat Relays / TE Connectivity
AIM-Cambridge / Cinch Connectivity Solutions
AKM Semiconductor, Inc.
ALCOSWITCH Switches / TE Connectivity
AlfaMag Electronics (AMGIS)
All Sensors Corporation
Allegro MicroSystems, LLC.
Alliance Memory, Inc.
Alpha and Omega Semiconductor, Inc.
Alpha Wire
Altera (Intel® Programmable Solutions Group)
American Electrical, Inc.
American Hakko Products, Inc.
American Technical Ceramics
Ametherm
Amgis
AMI Semiconductor / ON Semiconductor
AMP Connectors / TE Connectivity
Amphenol
Amphenol Advanced Sensors
Amphenol Aerospace Operations
Amphenol Anytek
Amphenol Audio
Amphenol Commercial (Amphenol ICC)
Amphenol Connex (Amphenol RF)
Amphenol Entertainment
Amphenol FCI (Amphenol ICC)
Amphenol Industrial
Amphenol Information Communication & Commercial
Amphenol LTW
Amphenol Pcd
Amphenol RF
Amphenol Sine Systems
Amphenol Spectra-Strip
Amphenol SV Microwave
Amphenol Tuchel Electronics
Ampleon
Amprobe
ams
Amulet Technologies, LLC.
Analog Devices, Inc.
Anaren
AnDAPT
Angstrohm / Vishay
Antenova
Anytek (Amphenol Anytek)
Apacer
APEM Inc.
Apex Microtechnology
Apex Tool Group
API Delevan
API Technologies Corp.
APM Hexseal
Aptina / ON Semiconductor
ARCOL (Ohmite)
Arcolectric (Bulgin)
Arcotronics (KEMET)
Arduino
Aries Electronics, Inc.
ARM
Artaflex Inc.
Artesyn Embedded Technologies
Asahi Kasei Microdevices / AKM Semiconductor
ASSMANN WSW Components
Astec America (Artesyn Embedded Technologies)
Astro Tool Corp.
Atmel (Microchip Technology)
Atop Technologies
ATP Electronics, Inc.
Ault / SL Power
Avago Technologies (Broadcom Limited)
Aven
Avery Dennison
AVX Corporation
Axicom Relays / TE Connectivity
Azoteq
Aztronic / Vishay
B B Battery
B&F Fastener Supply
B&K Precision
B+B SmartWorx, Inc.
BeagleBoard.org
Beau Interconnect - a Molex company
BEI Sensors
Bel
Bel Fuse, Inc.
Bel Power Solutions
Belden
Belden's Hirschmann
Bergquist
BI Technologies / TT Electronics
Birtcher / Pentair
Bivar, Inc.
BlueCreation
BlueRadios, Inc.
Bluetechnix GmbH
BNS Solutions
Bomar (Winchester Electronics)
Bopla Enclosures
Bosch CDS
Bosch Connected Device Solutions
Bosch Sensortec
Bourns, Inc.
Brad Harrison - a Molex company
Bridgelux, Inc.
Broadcom Limited
Buchanan Terminal Blocks / TE Connectivity
Bud Industries, Inc.
Bulgin
Burr-Brown (Texas Instruments)
Bussmann (Eaton)
C&D Technologies (Murata Power Solutions)
C&K
Caddock Electronics, Inc.
Cal Test Electronics
Califia Lighting (Bivar)
Calmark / Pentair
Cannon
Cantherm
Capital Advanced Technologies, Inc.
Carclo Technical Plastics
Cardinal Components
Carling Technologies
Catalyst Semiconductor / ON Semiconductor
CEL (California Eastern Laboratories)
Central Semiconductor
Cera-Mite / Vishay
CGS Resistors / TE Connectivity
CH Products
Chemi-Con
Chemtronics
Cherry Americas
Cherry Switches (ZF Electronics)
Chip Quik, Inc.
Cicoil
CII / TE Connectivity
Cinch Connectivity Solutions
Cirronet / RFM (Murata Power Solutions)
Cirrus Logic
Citizen Electronics Co., Ltd.
Citizen Finedevice Co., LTD.
Clarostat (Honeywell Sensing and Productivity Solutions)
CMD (ON Semiconductor)
CNC Tech
Cogent Computer Systems
Coiltronics (Eaton)
Comair Rotron
Comchip Technology
Comus International
Concept Technologie (Power Integrations)
Condor / SL Power
Conec
Connex (Amphenol RF)
Connor-Winfield
Conxall / Switchcraft
Cooper Bussmann (Eaton)
Copal Electronics (Nidec Copal Electronics)
Corcom Filters / TE Connectivity
Cornell Dubilier Electronics
Cortina Systems (Inphi)
Cosel
Coto Technology
CR Magnetics, Inc.
Cree
Cree Wolfspeed
Crescent
Critical Link
Crouzet
Crydom
Crystek Corporation
CSR PLC (Qualcomm)
C-Ton Industries
CTS Electronic Components
CUI, Inc.
Curtis Industries
Curtis Instruments
Custom Computer Services
CW Industries
Cynergy3
Cypress Semiconductor
D6 Labs
Daburn
Dale / Vishay
DAVE Embedded Systems
Davies Molding, LLC.
DecaWave
Delta Electronics
Delta Electronics / EMI
Delta Electronics / Fans
Delta Electronics / Power
Desco
DEUTSCH Connectors / TE Connectivity
DEUTSCH ICT / TE Connectivity
DFRobot
Dialight
Dialog Semiconductor
Dielectric Laboratories
Dielectric Laboratories (Knowles)
Digi International
Digilent, Inc.
Digital Six Laboratories, LLC
Digital View Inc.
Diodes Incorporated
Displaytech
DLI
DLP Design, Inc.
Draloric / Vishay
dresden elektronik
Dynastream Innovations Inc.
E Ink
EasyBraid Co.
Eaton
ebm-papst Inc.
Echelon
Econais
ECS Inc. International
EDAC Inc.
Elco (AVX)
Elcon Connectors / TE Connectivity
Electric Imp
Electro Corp (Honeywell Sensing and Productivity Solutions)
Electro-Films (EFI) / Vishay
Electronic Assembly GmbH
Electroswitch
Elna America
Embedded Artists
Emerson Connectivity Solutions
Emerson Embedded Power (Artesyn Embedded Technologies)
EMIT
Energizer Battery Company
Energy Micro (Silicon Labs)
EnerSys
enmo Technologies
EnOcean
EPC
EPCOS
Epcos / RF360
Epson
Equinox Technologies
EREM
ERP Power
Essentra Components
ESTA / Vishay
E-Switch
E-T-A
Ethertronics
Eupec (Infineon)
Eveready (Energizer Battery Company)
Everlight Electronics
EverSpin Technologies, Inc.
Exar Corporation
Excelitas Technologies
Excelsys Technologies Ltd.
E-Z-Hook
Fairchild (ON Semiconductor)
Fan-S Division / Qualtek Electronics Corp.
FCI (Amphenol ICC)
FCT Electronics - a Molex company
FDK America
Fedco Batteries
FEIG ELECTRONIC
FERROXCUBE
Finisar Corporation
FIT (Foxconn Interconnect Technology)
Flamar - a Molex company
Flambeau, Inc.
FLIR
Fluke Electronics
Formerica Optoelectronics Inc.
Fox Electronics
Foxconn Optical Interconnect Technologies
Free2move
Freescale Semiconductor, Inc. (NXP Semiconductors)
Fremont Micro Devices
FTDI (Future Technology Devices International, Ltd.)
Fujitsu Electronics America, Inc.
Future Designs, Inc.
Future Technology Devices International, Ltd.
GainSpan Corporation
GC Electronics
GE Critical Power
General Cable
General Semiconductor (Vishay)
GeneSiC Semiconductor
Genuino (Arduino)
GHI Electronics, LLC
Global Power Technologies Group
Global Specialties
Grayhill, Inc.
Greenlee Communications
GWConnect - a Molex company
H&D Wireless
Hakko
Hakko USA
Hamlin / Littelfuse
Hammond Manufacturing
HARTING
Harwin
Heatron
HellermannTyton
Henkel/Loctite
Heraeus Sensor Technology USA
HiRel Systems / Vishay
Hirose
Hirschmann
Hittite (Analog Devices)
Hoffman Enclosures, Inc.
Holsworthy Resistors / TE Connectivity
Holt Integrated Circuits, Inc.
Honeywell Microelectronics & Precision Sensors
Honeywell Sensing and Productivity Solutions
I/O Interconnect
IAR Systems Software Inc
ICCNexergy (Inventus Power)
IDT (Integrated Device Technology)
II-VI Marlow
Illinois Capacitor
ILLUMRA
Industrial Fiber Optics, Inc.
Infineon Technologies
Initial State Technologies, Inc.
Innovasic Semiconductor / Analog Devices, Inc.
Inphi
Insight SiP
Inspired LED
Integrated Device Technology (IDT)
Integrated Silicon Solution, Inc. (ISSI)
Intel® Programmable Solutions Group
Intematix
Interconnect Systems - a Molex company
Interlink Electronics
International Rectifier (Infineon Technologies)
Intersil
InvenSense / TDK
Inventek Systems
Inventus Power
IR (Infineon Technologies)
IRC / TT Electronics
IRTOUCH Systems Co., Ltd.
Isocom Components
ISSI (Integrated Silicon Solution, Inc.)
ITT Cannon, LLC
ITT Interconnect Solutions
ITW Chemtronics (Chemtronics)
IXYS Corporation
IXYS Integrated Circuits Division
J.W. Miller / Bourns
JAE Electronics, Inc.
Jinlong Machinery & Electronics Co. Ltd.
JKL Components Corporation
Johanson Dielectrics, Inc.
Johanson Technology
Johnson / Cinch Connectivity Solutions
Jonard Tools
JRC Corporation / NJRC
JST
Judco Manufacturing, Inc.
Keil (ARM)
KEMET
Kennedy Labs
Kester
Keystone Electronics Corp.
Khatod
Kilo International
Kilovac Relays / TE Connectivity
Kingbright
Kings (Winchester Electronics)
Klein Tools
Knowles
Knowles DLI
Knowles NOVACAP
Knowles Syfer
Knowles Voltronics
Kyocera
Kyocera Display
Laird - Embedded Wireless Solutions
Laird Technologies
Laird Technologies - Antennas
Laird Technologies - EMI
Laird Technologies - Signal Integrity Products
Laird Technologies - Thermal Products
Lantronix
LAPIS Semiconductor
Lattice Semiconductor
Leader Tech Inc.
LeCroy (Teledyne LeCroy)
LED Engin
LEDdynamics, Inc.
LEDiL
LEM USA, Inc.
LEMO
Lighting Science
Lime Microsystems
Linear Technology / Analog Devices
Link Labs
Linx Technologies
Lite-On, Inc.
Littelfuse
LMB Heeger, Inc.
LOCTITE / Henkel
Logic PD, Inc.
Logical Systems
LSR (Laird - Embedded Wireless Solutions)
LTW (Amphenol LTW)
Lumberg Automation
Lumex, Inc.
Lumileds
Luminary Micro / Texas Instruments
Luminus Devices
Luna Optoelectronics
Luxo
MACOM Technology Solutions
Macraigor Systems LLC
Macronix
Maestro Wireless Solutions
Mag-LED Solutions
Magnasphere Corp.
Mallory Sonalert Products
Marktech Optoelectronics

Marlow Industries, Inc.
Martel Electronics
Marutsuelec
Master Appliance Corp.
Matrix Orbital
Maxim Integrated
MaxStream (Digi International)
Maxwell Technologies, Inc.
MCB Industrie / Vishay
Measurement Specialties / TE Connectivity
MEC switches
Mechatronics
MegaChips
Melexis
Memory Protection Devices
MEMSIC
Menda
Mentor Graphics
Metelics (MACOM Technology Solutions)
MG Chemicals
Micrel / Microchip Technology
Micrium
Micro Commercial Components (MCC)
Micro/sys
Microchip Technology
microEngineering Labs Inc.
Micro-Measurements / Vishay Precision Group
Micron Technology
Micronas
Microsemi
Microwave Technology
Midcom / Wurth Electronics
Mide Technology
Midwest Microwave / Cinch Connectivity Solutions
MikroElektronika
Mill-Max
Mills / Vishay
Milwaukee / Vishay
MMB Networks
Molex
Molex Affinity Medical Technologies
Molex Beau Interconnect
Molex Brad Harrison
Molex FCT Electronics
Molex Flamar
Molex GWConnect
Molex Interconnect Systems
Molex NuCurrent
Molex Oplink Communications, LLC.
Molex Phillips-Medisize
Molex PolyMicro Technologies
Molex Temp-Flex
Molex Woodhead
Monolithic Power Systems
MPD (Memory Protection Devices)
MPS (Monolithic Power Systems)
Mueller Electric Co.
Multicore / Henkel
Multi-Tech Systems, Inc.
Murata Electronics
Murata Power Solutions
Nakagawa Manufacturing USA, Inc.
National Semiconductor / Texas Instruments
Navman Wireless (Telit)
NDK
Nearson
Neohm Resistors / TE Connectivity
Nesscap Co., Ltd
NetBurner, Inc.
Newava Technology
Newhaven Display, Intl.
Nexperia
Nichicon
Nidec Copal Electronics
NimbeLink
Nippon Chemi-Con
NJR Corporation / NJRC
NKK Switches
NMB Technologies Corp.
NorComp
Nordic Semiconductor
Noritake Co., Inc.
NOVACAP
NovaSensor / GE Measurement & Control
NuCurrent - a Molex company
Nuvoton Technology Corporation America
NVE Corporation
NXP Semiconductors / Freescale
O.C. White Co.
Octavo Systems
OEG Relays / TE Connectivity
Ohmite
OK Industries (Jonard Tools)
Olimex
OmniVision Technologies
Omron Automation & Safety
Omron Electronic Components
ON Semiconductor
On-Shore Technology, Inc.
Oplink, a Molex company
Optek Technology / TT Electronics
Option NV
Opto Diode Corporation
Opulent Americas
O'Reilly Media, Inc.
Orion Fans
OSRAM Opto Semiconductors, Inc.
Packet Digital LLC
Paladin Tools (Greenlee Communications)
Panasonic
PanaVise
Panduit
Parallax, Inc.
Parlex Corp.
Patco Electronics
Patco Services
PCD / Amphenol
Peerless by Tymphany
Pentair
Peregrine Semiconductor
Pericom Semiconductor Corp. (Diodes Incorporated)
Pervasive Displays
PHIHONG USA
Phillips-Medisize - a Molex company
Phoenix Contact
Phoenix Mecano
Phoenix Passive Components / Vishay
Phyton, Inc.
Pimoroni
PolyMicro Technologies - a Molex company
Polytech / Vishay
Pomona Electronics
Pontiac Coil, Inc.
Portescap
Potter & Brumfield Relays / TE Connectivity
Power Integrations
Powerex, Inc.
Power-One (Bel Power Solutions)
PowerStor (Eaton)
PRD Plastics
Preci-Dip
Precision Design Associates, Inc.
Precision Electronic Components Ltd.
Precision Technology, Inc.
ProAnt
Products Unlimited Transformers & Relays / TE Connectivity
Protektive Pak
PUI Audio, Inc.
PULS
Pulsar
Pulse Electronics Corporation
PulseCore Semiconductor / ON Semiconductor
PulseLarsen Antennas
Q-Cee's / TE Connectivity
QT Brightek
Quadcept
Qualcomm
Qualcomm (RF360 - A Qualcomm & TDK Joint Venture)
Qualtek Electronics Corp.
Quarton, Inc.
Quatech / B+B SmartWorx
Rabbit Semiconductor (Digi International)
Radial Magnet, Inc.
Radiocrafts
RAFI
Ramtron (Cypress Semiconductor)
Raspberry Pi
Raychem Cable Protection / TE Connectivity
RayVio
RECOM Power
Red Lion Controls
REDEL / LEMO
Renesas Electronics America
RF Digital
RF Solutions
RF360 - A Qualcomm-TDK joint venture
RFMD
Richco, Inc. (Essentra Components)
Richtek
Riedon
Rigado
Roederstein / Vishay
ROHM Semiconductor
Rose Bopla
Rose Enclosures
Rose+Krieger
Roving Networks / Microchip Technology
RPM Systems
Rubycon
RushUp
Sagrad
Samsung Electro-Mechanics America, Inc.
Samsung Semiconductor
Samtec, Inc.
Sanken Electric Co., Ltd.
Sanyo Denki
Sanyo Semiconductor / ON Semiconductor
Schaffner EMC, Inc.
Schrack Relays / TE Connectivity
Schroff / Pentair
Schurter
SCS
Seeed
Segger Microcontroller Systems
Seiko Instruments, Inc.
Semflex / Cinch Connectivity Solutions
Semtech
Sensata Technologies, Airpax
Sensirion
Sensitron Semiconductor / SMC Diode Solutions
Seoul Semiconductor
Serious Integrated
Serpac Electronic Enclosures
SGX Sensortech
Sharp Microelectronics
Sierra Wireless
Sigma Designs
Sigma Inductors / TE Connectivity
Signal Transformer
SII Semiconductor Corporation
Silego Technology
Silicon Labs
SINE Systems / Amphenol
Siretta
SiTime
SkyeTek
Skyworks Solutions, Inc.
SL Power Electronics - Manufacturer of Condor / Ault Brands
SMC Diode Solutions
Soberton, Inc.
Socle Technology Corporation
SolidRun
Souriau Connection Technology
Spansion (Cypress Semiconductor)
SparkFun
Spec Sensors
Spectra Symbol
Spectra-Strip (Amphenol Spectra-Strip)
Spectrum Digital
Sprague Goodman
SSI Technologies, Inc.
Stackpole Electronics, Inc.
Staco Energy Products Co.
Standex-Meder Electronics
Stanley Electric
Steinel
steute Wireless
Stewart Connector
STMicroelectronics
Storm Interface
Sullins Connector Solutions
Sumida Corporation
SunLED
Sunon
Susumu
SV Microwave (Amphenol SV Microwave)
Swanstrom Tools
Swissbit
Switchcraft / Conxall
Syfer
Synapse Wireless
Tadiran Batteries
Tag-Connect
Taitien
Taiwan Semiconductor
Taiyo Yuden
Talema
Tallysman Wireless
Talon Communications, Inc.
Tamura
Taoglas
TAOS / ams
TDK Corporation
TDK InvenSense
TDK RF360
TDK-Lambda Americas, Inc.
TE Connectivity
TE Connectivity Aerospace Defense and Marine
TE Connectivity ALCOSWITCH Switches
TE Connectivity AMP Connectors
TE Connectivity Corcom Filters
TE Connectivity DEUTSCH Connectors
TE Connectivity DEUTSCH ICT
TE Connectivity DEUTSCH INDUSTRIAL & COMMERCIAL TRANSPORTATION
TE Connectivity Measurement Specialties
TE Connectivity Potter & Brumfield Relays
TE Connectivity Raychem Cable Protection
TE Connectivity Raychem Circuit Protection / Littelfuse
TE Connectivity's Agastat Relays
TE Connectivity's Axicom Relays
TE Connectivity's Buchanan Terminal Blocks
TE Connectivity's CGS Resistors
TE Connectivity's CII
TE Connectivity's Elcon Connectors
TE Connectivity's Holsworthy Resistors
TE Connectivity's Kilovac Relays
TE Connectivity's Neohm Resistors
TE Connectivity's OEG Relays
TE Connectivity's Products Unlimited Transformers & Relays
TE Connectivity's Q-Cee's
TE Connectivity's Schrack Relays
TE Connectivity's Sigma Inductors
Teccor / Littelfuse
Techflex
TechNexion
Techno / Vishay
TechTools
Telcodium
Teledyne LeCroy
Telit
Temp-Flex - a Molex company
Tensility International Corporation
Terasic Technologies
Test Products International (TPI)
Texas Instruments
t-Global Technology
Thermometrics / GE Measurement & Control
ThingMagic
Thomas Research Products
TinyCircuits
TOKO / Murata
Torex Semiconductor Ltd.
Toshiba Semiconductor and Storage
Touchstone Semiconductor
TPI (Test Products International)
TPK America LLC
Transphorm
Trenz Electronic
Triad Magnetics
TRINAMIC Motion Control GmbH
Tripp Lite
Trompeter / Cinch Connectivity Solutions
Tronics
TRP Connector
TSC (Taiwan Semiconductor)
TT Electronics
TT Electronics / BI Technologies
TT Electronics / IRC
TT Electronics / Optek Technology
TT Electronics / Welwyn
Tuchel / Amphenol
Twin Industries
TXC Corporation
Tyco Electronics
Tymphany (Peerless by Tymphany)
U.S. Sensor
u-blox
UDOO
Ultra Librarian®
Ungar / Weller
United Chemi-Con
US-Lasers, Inc.
Varitronix International Ltd.
VCC (Visual Communications Company)
VEAM
Vector Electronics & Technology, Inc.
Verivolt
VersaLogic Corporation
VersaSense
Vicor
Vifa (Peerless by Tymphany)
Viking Technology
Virtium Technology Inc.
Vishay
Vishay / BCcomponents
Vishay / Beyschlag
Vishay / Dale
Vishay / Huntington Electric, Inc.
Vishay / Semiconductor - Diodes Division
Vishay / Semiconductor - Opto Division
Vishay / Sfernice
Vishay / Siliconix
Vishay / Spectrol
Vishay / Sprague
Vishay / Thin Film
Vishay / Vitramon
Vishay Foil Resistors
Vishay Precision Group
Vishay Precision Group / Micro-Measurements
Visual Communications Company, LLC
Vitelec / Cinch Connectivity Solutions
Volgen / Division of Kaga Electronics USA
Voltronics (Knowles)
VPG / Micro-Measurements
Wakefield-Vette
Walsin Technology
Wandboard
WeEn Semiconductors Co., Ltd
Weidmuller
Weller
Welwyn / TT Electronics
Wickmann / Littelfuse
Wiha
Winbond Electronics Corporation
Winchester Electronics
Wintec Industries
Wiss
WIZnet
Wolfspeed - a Cree company
Woodhead - a Molex company
Wurth Electronics
Wurth Electronics iBE
Wurth Electronics Midcom
Xcelite
Xeltek
Xilinx
XMOS
XP Power
Xsens
Yageo
Zentri (Silicon Labs)
Zetex Semiconductors (Diodes Incorporated)
ZF Electronics
Zilog

DIGIKEY.COM LINECARD

Digi-Key is an authorized distributor for all supplier partners. New products added daily. Digi-Key and Digi-Key Electronics are registered trademarks of Digi-Key Electronics in the U.S. and other countries.
© 2017 Digi-Key Electronics, 701 Brooks Ave. South, Thief River Falls, MN 56701, USA

Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
ACOUSTIC COMPONENTS											
BeStar Electronics Ind. Co. Ltd.	BeStar Technologies Inc.	520-439-9204	www.bestartech.com	Y	N/A	$250,000	N/A	100.00%	50	900	Y
PUI Audio	PUI	1-800-551-4405	www.gopui.com	Y	1,256	N/A	$50	99.00%	5	33	Y
CABLE & WIRING											
Alpha Wire	Mouser Electronics	800-346-6873	www.mouser.com	Y	8,106	N/A	$0	93.00%	50	1,000+	Y
Belden Wire & Cable	Mouser Electronics	800-346-6874	www.mouser.com	Y	5,863	N/A	$0	97%	50	1,000+	Y
Molex	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CIRCUIT PROTECTION											
Bourns	Mouser Electronics	800-346-6873	www.mouser.com	Y	4,462	N/A	$0	68.00%	50	1,000+	Y
Cooper Bussmann	Mouser Electronics	800-346-6873	www.mouser.com	Y	19,689	N/A	$0	42.00%	50	1,000+	Y
EPCOS	Mouser Electronics	800-346-6873	www.mouser.com	Y	3,487	N/A	$0	100%	50	1,000+	Y
Littelfuse	Mouser Electronics	800-346-6873	www.mouser.com	Y	28,790	N/A	$0	67%	50	1,000+	Y
Vishay	Mouser Electronics	800-346-6873	www.mouser.com	Y	31,445	N/A	$0	68%	50	1,000+	Y
DISPLAYS & LEDs											
Avago Technologies	Mouser Electronics	800-346-6873	www.mouser.com	Y	403	N/A	$0	100.00%	50	1,000+	Y
Cree	Mouser Electronics	800-346-6873	www.mouser.com	Y	12,390	N/A	$0	99.00%	50	1,000+	Y
Dialight	Mouser Electronics	800-346-6873	www.mouser.com	Y	6,179	N/A	$0	84.00%	50	1,000+	Y
Kingbright Company, LLC	Mouser Electronics	800-346-6873	www.mouser.com	Y	301	N/A	$0	100.00%	50	1,000+	Y
LUMEX	Digi-Key	800-344-4539	digikey.com	Y	7,714	N/A	$0	96.42%	150	3,400	Y
Osram Opto Semiconductors	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,690	N/A	$0	100.00%	50	1,000+	Y
SunLED Company, LLC	PUI	1-800-551-4405	www.gopui.com	Y	1,351	N/A	$50	99%	5	33	Y
ELECTROMECHANICAL (continued on next page)											
AAVID	Digi-Key	800-344-4539	digikey.com	Y	1,585	N/A	$0	60.44%	150	3,400	Y
ALPHA WIRE	Digi-Key	800-344-4539	digikey.com	Y	25,593	N/A	$0	99.46%	150	3,400	Y
APEM	Digi-Key	800-344-4539	digikey.com	Y	6,926	N/A	$0	99.99%	150	3,400	Y
APEX TOOL GROUP	Digi-Key	800-344-4539	digikey.com	Y	2,649	N/A	$0	99.36%	150	3,400	Y
ARTESYN EMBEDDED TECHNOLOGIES	Digi-Key	800-344-4539	digikey.com	Y	10,349	N/A	$0	89.32%	150	3,400	Y
B&K PRECISION	Digi-Key	800-344-4539	digikey.com	Y	3,214	N/A	$0	99.94%	150	3,400	Y
BEL FUSE	Digi-Key	800-344-4539	digikey.com	Y	4,207	N/A	$0	83.53%	150	3,400	Y
BERGQUIST	Digi-Key	800-344-4539	digikey.com	Y	523	N/A	$0	95.98%	150	3,400	Y
BUD INDUSTRIES INC	Digi-Key	800-344-4539	digikey.com	Y	4,161	N/A	$0	99.93%	150	3,400	Y
C&K COMPONENTS	Digi-Key	800-344-4539	digikey.com	Y	29,271	N/A	$0	95.29%	150	3,400	Y
CHERRY	Digi-Key	800-344-4539	digikey.com	Y	1,200	N/A	$0	92.25%	150	3,400	Y

Advertisers Index

ADVERTISER ..... **PAGE #**

America II ..... 11 & 29
Central Semiconductor Corp 23
Coilcraft 10
Digi-Key Electronics ..... FC, IFC, 30 & 31
ECCO 6
Future ..... 5 & BC
Lansdale Semiconductor Inc 17
Memory Protection Devices (MPD), Inc 15
Mouser Electronics ..... 12, 13, 24, 25, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 & IBC
NTE Electronics Inc 8
OKW Enclosures, Inc 21
PEI-Genesis 20
Sager 7
SRT Resistor Technology 27
Stego 22
TNR Technical 19
TTI 9

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
CNC TECH	Digi-Key	800-344-4539	digikey.com	Y	4,553	N/A	$0	100%	150	3,400	Y
COMAIR ROTRON	Digi-Key	800-344-4539	digikey.com	Y	616	N/A	$0	100%	150	3,400	Y
COPAL ELECTRONICS INC	Digi-Key	800-344-4539	digikey.com	Y	4,121	N/A	$0	99.93%	150	3,400	Y
COTO TECHNOLOGY	Digi-Key	800-344-4539	digikey.com	Y	1,071	N/A	$0	99.72%	150	3,400	Y
CRYDOM CO	Digi-Key	800-344-4539	digikey.com	Y	5,459	N/A	$0	100%	150	3,400	Y
CTS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	31,504	N/A	$0	87.78%	150	3,400	Y
CUI CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	15,168	N/A	$0	91.34%	150	3,400	Y
DANAHER CORPORATION (Pomona, Fluke, Portescap, Amprobe)	Digi-Key	800-344-4539	digikey.com	Y	5,410	N/A	$0	96.65%	150	3,400	Y
DELTA PRODUCTS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	2,063	N/A	$0	99.90%	150	3,400	Y
DESCO CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	3,500	N/A	$0	99.83%	150	3,400	Y
E-SWITCH	Digi-Key	800-344-4539	digikey.com	Y	8,625	N/A	$0	99.99%	150	3,400	Y
EBM-PAPST INC.	Digi-Key	800-344-4539	digikey.com	Y	1,779	N/A	$0	99.89%	150	3,400	Y
ESSENTRA COMPONENTS	Digi-Key	800-344-4539	digikey.com	Y	16,594	N/A	$0	100%	150	3,400	Y
EXCELSYS TECHNOLOGIES LTD	Digi-Key	800-344-4539	digikey.com	Y	616	N/A	$0	100%	150	3,400	Y
GENERAL CABLE CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	7,109	N/A	$0	98.51%	150	3,400	Y
GENERAL ELECTRIC CORPORATION (GE Critical Power)	Digi-Key	800-344-4539	digikey.com	Y	1,751	N/A	$0	68.30%	150	3,400	Y
GRAYHILL INC	Digi-Key	800-344-4539	digikey.com	Y	12,569	N/A	$0	96.26%	150	3,400	Y
HAMMOND CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	13,303	N/A	$0	99.47%	150	3,400	Y
INVENTUS POWER	Digi-Key	800-344-4539	digikey.com	Y	514	N/A	$0	56.23%	150	3,400	Y
KEYSTONE ELECTRONICS	Digi-Key	800-344-4539	digikey.com	Y	6,089	N/A	$0	98.80%	150	3,400	Y
MEMORY PROTECTION DEVICES	Digi-Key	800-344-4539	digikey.com	Y	814	N/A	$0	99.63%	150	3,400	Y
MURATA CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	61,903	N/A	$0	99.72%	150	3,400	Y
NKK SWITCHES	Digi-Key	800-344-4539	digikey.com	Y	21,343	N/A	$0	97.59%	150	3,400	Y
NMB TECHNOLOGIES CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	3,003	N/A	$0	98.80%	150	3,400	Y
OMRON CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	70,119	N/A	$0	95.28%	150	3,400	Y
ORION FANS	Digi-Key	800-344-4539	digikey.com	Y	2,949	N/A	$0	100.00%	150	3,400	Y
PANASONIC CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	156,533	N/A	$0	93.83%	150	3,400	Y
PANDUIT CORP	Digi-Key	800-344-4539	digikey.com	Y	23,108	N/A	$0	99.92%	150	3,400	Y
PHIHONG USA CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	1,450	N/A	$0	100.00%	150	3,400	Y
QUALTEK	Digi-Key	800-344-4539	digikey.com	Y	209	N/A	$0	92.52%	150	3,400	Y
RECOM POWER CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	27,095	N/A	$0	100.00%	150	3,400	Y
SCHAFFNER EMC INC	Digi-Key	800-344-4539	digikey.com	Y	2,111	N/A	$0	100.00%	150	3,400	Y
SCHURTER INC	Digi-Key	800-344-4539	digikey.com	Y	9,910	N/A	$0	99.48%	150	3,400	Y
SL POWER ELECTRONICS MANUFACTURE OF CONDOR/AULT BRANDS	Digi-Key	800-344-4539	digikey.com	Y	3,159	N/A	$0	88.76%	150	3,400	Y
SUNON FANS	Digi-Key	800-344-4539	digikey.com	Y	1,850	N/A	$0	77.14%	150	3,400	Y
TDK CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	64,978	N/A	$0	99.30%	150	3,400	Y
TE CONNECTIVITY CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	437,107	N/A	$0	75.47%	150	3,400	Y



Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
ELECTROMECHANICAL (continued from previous page)											
TECHFLEX	Digi-Key	800-344-4539	digikey.com	Y	2,136	N/A	$0	99.72%	150	3,400	Y
TELEDYNE LECROY	Digi-Key	800-344-4539	digikey.com	Y	628	N/A	$0	92.99%	150	3,400	Y
THOMAS RESEARCH PRODUCTS	Digi-Key	800-344-4539	digikey.com	Y	1,361	N/A	$0	82.15%	150	3,400	Y
VICOR CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	195,706	N/A	$0	52.15%	150	3,400	Y
XP POWER	Digi-Key	800-344-4539	digikey.com	Y	4,155	N/A	$0	100.00%	150	3,400	Y
ENCLOSURES											
Bud	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bud Industries	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,325	N/A	$0	80.00%	50	1,000+	Y
Hammond Manufacturing	Mouser Electronics	800-346-6873	www.mouser.com	Y	2,839	N/A	$0	82%	50	1,000+	Y
New Age Enclosures	Mouser Electronics	805-595-1310	www.newageenclosures.com	M	1,000+	N/A	$0	100.00%	32	N/A	Y
FREQUENCY MANAGEMENT											
Abracon Corporation	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,780	N/A	$0	100%	50	1,000+	Y
Citizen	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,723	N/A	$0	N/A	50	1,000+	Y
CTS Electronic Components	Mouser Electronics	800-346-6873	www.mouser.com	Y	3,889	N/A	$0	100%	50	1,000+	Y
ECS Inc	Mouser Electronics	800-346-6873	www.mouser.com	Y	2,070	N/A	$0	100%	50	1,000+	Y
Epson Toyocom	Mouser Electronics	800-346-6873	www.mouser.com	Y	178	N/A	$0	100%	50	1,000+	Y
Fox Electronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	325	N/A	$0	100.00%	50	1,000+	Y
ILSI-MMD, Ecliptek	PUI	1-800-551-4405	www.gopui.com	Y	1,683	N/A	$50	99.00%	5	33	Y
Susumu Co Ltd	Mouser Electronics	800-346-6873	www.mouser.com	Y	2,500	N/A	N/A	N/A	N/A	N/A	Y
ICs & SEMICONDUCTORS (Continued on next page)											
ADAFRUIT INDUSTRIES	Digi-Key	800-344-4539	digikey.com	Y	1,153	N/A	$0	98.70%	150	3,400	Y
ADVANCED PHOTONIX (LUNA OPTOELECTRONICS)	Digi-Key	800-344-4539	digikey.com	Y	678	N/A	$0	29.94%	150	3,400	Y
ALLEGRO MICROSYSTEMS, LLC	Digi-Key	800-344-4539	digikey.com	Y	2,867	N/A	$0	86.22%	150	3,400	Y
ALPHA & OMEGA SEMICONDUCTOR INC	Digi-Key	800-344-4539	digikey.com	Y	2,830	N/A	$0	100.00%	150	3,400	Y
ALTERA	Digi-Key	800-344-4539	digikey.com	Y	10,502	N/A	$0	100.00%	150	3,400	Y
AMS	Digi-Key	800-344-4539	digikey.com	Y	2,911	N/A	$0	97.94%	150	3,400	Y
ANALOG DEVICES	Digi-Key	800-344-4539	digikey.com	Y	50,633	N/A	$0	73.33%	150	3,400	Y
Analog Devices, Inc	Mouser Electronics	800-346-6873	www.mouser.com	Y	18,749	N/A	$0	95%	50	1,000+	Y
APEX MICROTECHNOLOGY	Digi-Key	800-344-4539	digikey.com	Y	432	N/A	$0	75.23%	150	3,400	Y
Atmel Corporation	Mouser Electronics	800-346-6873	www.mouser.com	Y	3,840	N/A	$0	74%	50	1,000+	Y
ATP ELECTRONICS, INC.	Digi-Key	800-344-4539	digikey.com	Y	191	N/A	$0	100.00%	150	3,400	Y
B&B SMARTWORX	Digi-Key	800-344-4539	digikey.com	Y	2,414	N/A	$0	100.00%	150	3,400	Y
BIVAR	Digi-Key	800-344-4539	digikey.com	Y	17,303	N/A	$0	100%	150	3,400	Y

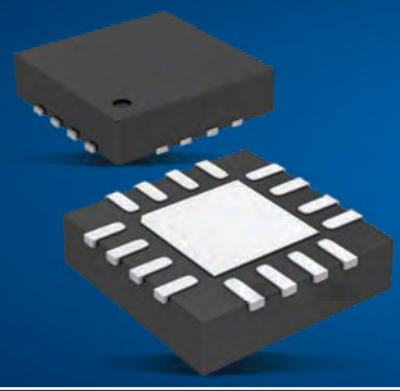


Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	No. of Lines for Principle	Stock Value for Principle	Minimum Order Value	% Lead Free for Principle Range	No. of Technical Support Staff	Total No. of Staff	Pack and Hold
BRIDGELUX	Digi-Key	800-344-4539	digikey.com	Y	1,177	N/A	$0	100%	150	3,400	Y
BROADCOM LIMITED (AVAGO)	Digi-Key	800-344-4539	digikey.com	Y	13,051	N/A	$0	89.20%	150	3,400	Y
CALIFORNIA EASTERN LABORATORIES (CEL)	Digi-Key	800-344-4539	digikey.com	Y	3,359	N/A	$0	85.23%	150	3,400	Y
CENTRAL SEMICONDUCTOR	Digi-Key	800-344-4539	digikey.com	Y	5,526	N/A	$0	92.45%	150	3,400	Y
Central Semiconductor Corp.	Future Electronics	(800) 675-1619	www.futureelectronics.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	Y
CIRRUS LOGIC	Digi-Key	800-344-4539	digikey.com	Y	2,759	N/A	$0	79.16%	150	3,400	Y
Cirrus Logic Inc	Mouser Electronics	800-346-6873	www.mouser.com	Y	325	N/A	N/A	N/A	N/A	N/A	Y
COMCHIP CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	6,678	N/A	$0	100%	150	3,400	Y
CREE INC	Digi-Key	800-344-4539	digikey.com	Y	26,398	N/A	$0	100%	150	3,400	Y
CYPRESS SEMICONDUCTOR	Digi-Key	800-344-4539	digikey.com	Y	26,030	N/A	$0	89.02%	150	3,400	Y
Cypress Semiconductor Corp	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,325	N/A	$0	81.00%	50	1,000+	Y
DIALIGHT	Digi-Key	800-344-4539	digikey.com	Y	10,510	N/A	$0	74.29%	150	3,400	Y
DIGI INTERNATIONAL CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	4,015	N/A	$0	89.51%	150	3,400	Y
DIODES INC	Digi-Key	800-344-4539	digikey.com	Y	32,186	N/A	$0	89.01%	150	3,400	Y
Etron Technology Inc	PUI	1-800-551-4405	www.gopui.com	Y	1459	N/A	$50	99%	5	33	Y
EXAR CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	3,605	N/A	$0	99.97%	150	3,400	Y
FAIRCHILD	Digi-Key	800-344-4539	digikey.com	Y	39,473	N/A	$0	98.81%	150	3,400	Y
Fairchild Semiconductor	Mouser Electronics	800-346-6873	www.mouser.com	Y	8,654	N/A	$0	98.00%	50	1,000+	Y
FINISAR CORP	Digi-Key	800-344-4539	digikey.com	Y	1,852	N/A	$0	98.38%	150	3,400	Y
Freescale Semiconductor	Mouser Electronics	800-346-6873	www.mouser.com	Y	5,866	N/A	$0	70.00%	50	1,000+	Y
FTDI	Mouser Electronics	800-346-6873	www.mouser.com	Y	94	N/A	$0	100%	50	1,000+	Y
FTDI	Digi-Key	800-344-4539	digikey.com	Y	486	N/A	$0	100%	150	3,400	Y
IDT (Integrated Device Technology)	Digi-Key	800-344-4539	digikey.com	Y	49,881	N/A	$0	63.29%	150	3,400	Y
Infineon	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,580	N/A	$0	63%	50	1,000+	Y
INFINEON TECHNOLOGIES CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	24,610	N/A	$0	73.25%	150	3,400	Y
International Rectifier Corp	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,980	N/A	N/A	N/A	N/A	N/A	Y
Intersil Corporation	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,782	N/A	N/A	N/A	N/A	N/A	Y
INTERSIL CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	24,063	N/A	$0	74.18%	150	3,400	Y
INVENSENSE	Digi-Key	800-344-4539	digikey.com	Y	200	N/A	$0	100%	150	3,400	Y
IXYS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	7,268	N/A	$0	99.55%	150	3,400	Y
KINGBRIGHT COMPANY LLC	Digi-Key	800-344-4539	digikey.com	Y	3,358	N/A	$0	99.85%	150	3,400	Y
LATTICE SEMICONDUCTOR CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	6,946	N/A	$0	64.44%	150	3,400	Y
LINEAR TECHNOLOGY CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	36,207	N/A	$0	76.91%	150	3,400	Y
LINX TECHNOLOGIES INC	Digi-Key	800-344-4539	digikey.com	Y	833	N/A	$0	91.72%	150	3,400	Y
LITE-ON INC	Digi-Key	800-344-4539	digikey.com	Y	3,563	N/A	$0	99.49%	150	3,400	Y
LOGIC PD, INC.	Digi-Key	800-344-4539	digikey.com	Y	195	N/A	$0	62.56%	150	3,400	Y
MACOM TECHNOLOGY SOLUTIONS	Digi-Key	800-344-4539	digikey.com	Y	1,376	N/A	$0	97.53%	150	3,400	Y



Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
ICs & SEMICONDUCTORS (Continued from previous page, continued on next page)											
MAXIM CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	65,795	N/A	$0	77.63%	150	3,400	Y
Maxim Integrated	Mouser Electronics	800-346-6873	www.mouser.com	Y	9,200	N/A	$0	89.00%	50	1,000+	Y
MELEXIS TECHNOLOGIES NV	Digi-Key	800-344-4539	digikey.com	Y	1,444	N/A	$0	94.94%	150	3,400	Y
MICRO COMMERCIAL COMPONENTS (MCC)	Digi-Key	800-344-4539	digikey.com	Y	11,183	N/A	$0	97.43%	150	3,400	Y
Microchip	Mouser Electronics	800-346-6873	www.mouser.com	Y	5,800	N/A	$0	100%	50	1,000+	Y
MICROCHIP CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	58,558	N/A	$0	90.13%	150	3,400	Y
MICRON CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	11,504	N/A	$0	88.34%	150	3,400	Y
Microsemi	Mouser Electronics	800-346-6673	Mouser.com	Y	6,099	N/A	$0	50%	50	930+	Y
MICROSEMI CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	27,580	N/A	$0	80.18%	150	3,400	Y
MULTI-TECH CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	922	N/A	$0	99.46%	150	3,400	Y
NEWHAVEN DISPLAY INTERNATIONAL CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	707	N/A	$0	100.00%	150	3,400	Y
NIMBELINK, LLC	Digi-Key	800-344-4539	digikey.com	Y	45	N/A	$0	100.00%	150	3,400	Y
NXP	Mouser Electronics	800-346-6873	www.mouser.com	Y	7,205	N/A	$0	100%	50	1,000+	Y
NXP SEMICONDUCTOR CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	38,701	N/A	$0	99.27%	150	3,400	Y
ON Semiconductor	Mouser Electronics	800-346-6873	www.mouser.com	Y	7,486	N/A	$0	96%	50	1,000+	Y
ON SEMICONDUCTOR CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	57,566	N/A	$0	79.85%	150	3,400	Y
OSRAM OPTO SEMICONDUCTORS INC	Digi-Key	800-344-4539	digikey.com	Y	6,045	N/A	$0	96.33%	150	3,400	Y
PEREGRINE SEMICONDUCTOR	Digi-Key	800-344-4539	digikey.com	Y	463	N/A	$0	99.57%	150	3,400	Y
POWER INTEGRATIONS	Digi-Key	800-344-4539	digikey.com	Y	1,447	N/A	$0	87.49%	150	3,400	Y
POWEREX INC	Digi-Key	800-344-4539	digikey.com	Y	3,395	N/A	$0	92.72%	150	3,400	Y
QUALCOMM TECHNOLOGIES INTERNATIONAL, LTD.	Digi-Key	800-344-4539	digikey.com	Y	4,984	N/A	$0	100.00%	150	3,400	Y
RENESAS ELECTRONICS AMERICA	Digi-Key	800-344-4539	digikey.com	Y	12,614	N/A	$0	84.65%	150	3,400	Y
RFMD CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	912	N/A	$0	87.17%	150	3,400	Y
SEGGER MICROCONTROLLER SYSTEMS	Digi-Key	800-344-4539	digikey.com	Y	45	N/A	$0	100.00%	150	3,400	Y
SEMTECH CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	3,694	N/A	$0	87.63%	150	3,400	Y
SEOUL SEMICONDUCTOR INC	Digi-Key	800-344-4539	digikey.com	Y	892	N/A	$0	88.98%	150	3,400	Y
SHARP CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	505	N/A	$0	62.18%	150	3,400	Y
SILICON LABORATORIES CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	17,747	N/A	$0	96.09%	150	3,400	Y
Silicon Laboratories Inc	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,141	N/A	$0	100.00%	50	1,000+	Y
SKYWORKS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	2,311	N/A	$0	99.61%	150	3,400	Y
ST Microelectronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	8,145	N/A	$0	96.00%	50	1,000+	Y
STMICROELECTRONICS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	43,448	N/A	$0	97.47%	150	3,400	Y
SWISSBIT NA INC	Digi-Key	800-344-4539	digikey.com	Y	865	N/A	$0	100.00%	150	3,400	Y
TAOGLAS LIMITED	Digi-Key	800-344-4539	digikey.com	Y	537	N/A	$0	100.00%	150	3,400	Y
Texas Instruments	Mouser Electronics	800-346-6873	www.mouser.com	Y	29,676	N/A	$0	94%	50	1,000+	Y
TEXAS INSTRUMENTS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	210,905	N/A	$0	89.60%	150	3,400	Y

The **widest selection** of the **newest STMicroelectronics products.**



life.augmented

MOUSER ELECTRONICS

Worldwide leading authorized distributor of semiconductors and electronic components.

mouser.com/stmicroelectronics

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
Toshiba	Mouser Electronics	800-346-6873	www.mouser.com	Y	800	N/A	N/A	N/A	N/A	N/A	Y
TOSHIBA CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	12,097	N/A	$0	88.81%	150	3,400	Y
VERSALOGIC CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	444	N/A	$0	95.50%	150	3,400	Y
Vishay	Mouser Electronics	800-346-6873	www.mouser.com	Y	53,781	N/A	$0	77%	50	1,000+	Y
VISUAL COMMUNICATIONS COMPANY (CML)	Digi-Key	800-344-4539	digikey.com	Y	5,698	N/A	$0	96.12%	150	3,400	Y
XILINX INC	Digi-Key	800-344-4539	digikey.com	Y	7,354	N/A	$0	51.78%	150	3,400	Y
INTERCONNECTION (Continued on next page)											
3M	Mouser Electronics	800-346-6873	www.mouser.com	Y	23,235	N/A	$0	46.00%	50	1,000+	Y
3M	Digi-Key	800-344-4539	digikey.com	Y	54,086	N/A	$0	93.83%	150	3,400	Y
Aero Conesys	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AMERICAN ELECTRICAL INC	Digi-Key	800-344-4539	digikey.com	Y	1,140	N/A	$0	100.00%	150	3,400	Y
Amphenol	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AMPHENOL	Digi-Key	800-344-4539	digikey.com	Y	426,945	N/A	$0	82.42%	150	3,400	Y
Amphenol	Mouser Electronics	800-346-6873	www.mouser.com	Y	165,853	N/A	$0	31%	50	1,000+	Y
ASSMANN WSW COMPONENTS	Digi-Key	800-344-4539	digikey.com	Y	10,433	N/A	$0	91.47%	150	3,400	Y
Cinch	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CONEC	Digi-Key	800-344-4539	digikey.com	Y	7,793	N/A	$0	99.99%	150	3,400	Y
CW INDUSTRIES	Digi-Key	800-344-4539	digikey.com	Y	8,384	N/A	$0	73.71%	150	3,400	Y
EDAC CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	9,720	N/A	$0	99.87%	150	3,400	Y
ELEKTRON TECHNOLOGY CORPORATION (Bulgin, ArcoLectric)	Digi-Key	800-344-4539	digikey.com	Y	3,936	N/A	$0	100%	150	3,400	Y
FCI	Mouser Electronics	800-346-6873	www.mouser.com	Y	3,394	N/A	$0	73.00%	50	1,000+	Y
Harting	Mouser Electronics	800-346-6873	www.mouser.com	Y	2,160	N/A	$0	51.00%	50	1,000+	Y
HARTING	Digi-Key	800-344-4539	digikey.com	Y	16,347	N/A	$0	99.96%	150	3,400	Y
HARWIN INC	Digi-Key	800-344-4539	digikey.com	Y	10,186	N/A	$0	89.51%	150	3,400	Y
Hirose Electric	Mouser Electronics	800-346-6873	www.mouser.com	Y	4,322	N/A	$0	86%	50	1,000+	Y
HIROSE ELECTRIC CO LTD	Digi-Key	800-344-4539	digikey.com	Y	39,499	N/A	$0	91.53%	150	3,400	Y
ITT Cannon	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ITT CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	141,017	N/A	$0	27.97%	150	3,400	Y
JAE Electronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	6,02	N/A	$0	100%	N/A	N/A	Y
JAE ELECTRONICS	Digi-Key	800-344-4539	digikey.com	Y	6,844	N/A	$0	100.00%	150	3,400	Y
JST	PUI	1-800-551-4405	www.gopui.com	Y	1,225	N/A	$50	99.00%	5	33	Y
JST SALES AMERICA INC	Digi-Key	800-344-4539	digikey.com	Y	4,320	N/A	$0	81.46%	150	3,400	Y
Kycon	PUI	1-800-551-4405	www.gopui.com	Y	1150	N/A	$50	99%	5	33	Y
LEMO	Digi-Key	800-344-4539	digikey.com	Y	27,601	N/A	$0	100.00%	150	3,400	Y
MILL-MAX MANUFACTURING CORP	Digi-Key	800-344-4539	digikey.com	Y	16,704	N/A	$0	61.28%	150	3,400	Y
Molex	Mouser Electronics	800-346-6873	www.mouser.com	Y	85,634	N/A	$0	89%	50	1,000+	Y

The **widest selection** of the **newest Infineon Technologies** products.

Infineon



MOUSER ELECTRONICS

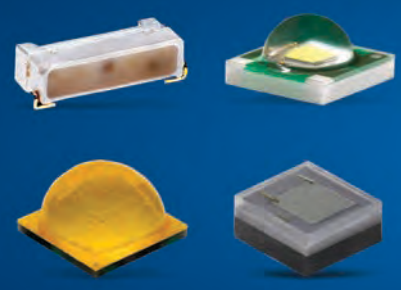
Worldwide leading authorized distributor of semiconductors and electronic components.

mouser.com/infineon-technologies

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
INTERCONNECTION (Continued from previous page)											
MOLEX CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	123,772	N/A	$0	95.41%	150	3,400	Y
Neutrik	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,563	N/A	$0	100%	50	1,000+	Y
ON SHORE TECHNOLOGY INC	Digi-Key	800-344-4539	digikey.com	Y	12,793	N/A	$0	99.99%	150	3,400	Y
PARLEX USA LLC	Digi-Key	800-344-4539	digikey.com	Y	785	N/A	$0	98.34%	150	3,400	Y
PHOENIX CONTACT	Digi-Key	800-344-4539	digikey.com	Y	49,643	N/A	$0	99.99%	150	3,400	Y
Phoenix Contact	Mouser Electronics	800-346-6873	www.mouser.com	Y	30,044	N/A	$0	77.00%	50	1,000+	Y
SAMTEC INC	Digi-Key	800-344-4539	digikey.com	Y	20,270	N/A	$0	99.91%	150	3,400	Y
Souriau	Mouser Electronics	800-346-6873	www.mouser.com	Y	10,744	N/A	$0	27%	50	1,000+	Y
SOURIAU CONNECTION TECHNOLOGY CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	19,134	N/A	$0	89.06%	150	3,400	Y
SULLINS CONNECTOR SOLUTIONS	Digi-Key	800-344-4539	digikey.com	Y	204,896	N/A	$0	97.59%	150	3,400	Y
Switchcraft Corporation	Mouser Electronics	800-346-6873	www.mouser.com	Y	300	N/A	$0	55%	50	1,000+	Y
SWITCHCRAFT CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	4,228	N/A	$0	80.39%	150	3,400	Y
TE Connectivity	Mouser Electronics	800-346-6873	www.mouser.com	Y	123,613	N/A	$0	69%	50	1,000+	Y
TENSILITY INTERNATIONAL CORP	Digi-Key	800-344-4539	digikey.com	Y	1,209	N/A	$0	100.00%	150	3,400	Y
WEIDMULLER	Digi-Key	800-344-4539	digikey.com	Y	42,770	N/A	$0	96.54%	150	3,400	Y
OBSOLESCENCE / HARD TO FIND											
	America II Electronics	800-767-2637	www.americaii.com	M	1,900	$1B	$0	75.00%	59	550+	Y
	Lantek Corp.	973-579-8100	www.lantekcorp.com	M	186,000	$22M	$0	75.00%	5	62	Y
OPTO ELECTRONICS (Continued on next page)											
Avago Technologies	Mouser Electronics	800-346-6873	www.mouser.com	Y	7,165	N/A	$0	87.00%	50	1,000+	Y
Cree	Mouser Electronics	800-346-6873	www.mouser.com	Y	582	N/A	$0	99.00%	50	1,000+	Y
LedEngin, Inc	Mouser Electronics	800-346-6873	www.mouser.com	Y	437	N/A	$0	100.00%	50	1,000+	Y
Osram Opto Semiconductors	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,927	N/A	$0	99%	50	1,000+	Y
Sharp Microelectronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,415	N/A	$0	97%	50	1,000+	Y
PASSIVES (Continued on next page)											
ABRACON CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	28,548	N/A	$0	98.89%	150	3,400	Y
AMERICAN TECHNICAL CERAMICS	Digi-Key	800-344-4539	digikey.com	Y	2,021	N/A	$0	84.02%	150	3,400	Y
API DELEVAN	Digi-Key	800-344-4539	digikey.com	Y	28,483	N/A	$0	46.93%	150	3,400	Y
AVX	Mouser Electronics	800-346-6873	www.mouser.com	Y	42,454	N/A	$0	72%	50	1,000+	Y
AVX CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	65,718	N/A	$0	83.48%	150	3,400	Y
BOURNS	Digi-Key	800-344-4539	digikey.com	Y	59,314	N/A	$0	82.47%	150	3,400	Y
Bourns	Mouser Electronics	800-346-6873	www.mouser.com	Y	38	N/A	$0	78%	50	1,000+	Y
CADDOCK ELECTRONICS INC	Digi-Key	800-344-4539	digikey.com	Y	492	N/A	$0	98.78%	150	3,400	Y

The **widest selection** of the **newest Cree products.**

CREE™
AUTHORIZED DISTRIBUTOR



MOUSER ELECTRONICS

Worldwide leading authorized distributor of semiconductors and electronic components.

mouser.com/cree

Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
CANTHERM	Digi-Key	800-344-4539	digikey.com	Y	823	N/A	$0	100%	150	3,400	Y
CITIZEN SYSTEMS AMERICA CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	4,309	N/A	$0	87.42%	150	3,400	Y
CONNOR-WINFIELD	Digi-Key	800-344-4539	digikey.com	Y	1,375	N/A	$0	98.62%	150	3,400	Y
Cornell Dubilier	Mouser Electronics	800-346-6873	www.mouser.com	Y	24,145	N/A	$0	71%	50	1,000+	Y
Cornell Dubilier	PUI	1-800-551-4405	www.gopui.com	Y	1420	N/A	$50	99%	5	33	Y
CORNELL DUBILIER ELECTRONICS	Digi-Key	800-344-4539	digikey.com	Y	25,597	N/A	$0	75.97%	150	3,400	Y
CRYSTEK CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	1,721	N/A	$0	100%	150	3,400	Y
EATON CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	28,434	N/A	$0	86.49%	150	3,400	Y
ECS INC	Digi-Key	800-344-4539	digikey.com	Y	8,236	N/A	$0	85.07%	150	3,400	Y
ENERGIZER BATTERY COMPANY	Digi-Key	800-344-4539	digikey.com	Y	453	N/A	$0	63.13%	150	3,400	Y
EPCOS	Mouser Electronics	800-346-6873	www.mouser.com	Y	26,533	N/A	$0	98.00%	50	1,000+	Y
EPSON CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	2,202	N/A	$0	82.60%	150	3,400	Y
FOX ELECTRONICS	Digi-Key	800-344-4539	digikey.com	Y	617	N/A	$0	100%	150	3,400	Y
HEICO CORPORATION (Ohmite)	Digi-Key	800-344-4539	digikey.com	Y	17,385	N/A	$0	64.94%	150	3,400	Y
HONEYWELL CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	26,319	N/A	$0	86.01%	150	3,400	Y
JOHANSON CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	5,039	N/A	$0	97.60%	150	3,400	Y
Kemet	Mouser Electronics	800-346-6873	www.mouser.com	Y	77,568	N/A	$0	66%	50	1,000+	Y
KEMET CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	48,025	N/A	$0	90.12%	150	3,400	Y
KNOWLES CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	2,987	N/A	$0	91.16%	150	3,400	Y
KOA Speer	Mouser Electronics	800-346-6873	www.mouser.com	Y	34,078	N/A	$0	58%	50	1,000+	Y
LAIRD CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	14,568	N/A	$0	97.21%	150	3,400	Y
LEM USA INC	Digi-Key	800-344-4539	digikey.com	Y	377	N/A	$0	98.41%	150	3,400	Y
LITTELFUSE CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	86,652	N/A	$0	82.87%	150	3,400	Y
MALLORY SONALERT PRODUCTS INC	Digi-Key	800-344-4539	digikey.com	Y	1,893	N/A	$0	92.92%	150	3,400	Y
Murata	Mouser Electronics	800-346-6873	www.mouser.com	Y	33,780	N/A	$0	99%	50	1,000+	Y
NDK	Digi-Key	800-344-4539	digikey.com	Y	936	N/A	$0	100.00%	150	3,400	Y
NESSCAP CO LTD	Digi-Key	800-344-4539	digikey.com	Y	24	N/A	$0	100.00%	150	3,400	Y
Nichicon	Mouser Electronics	800-346-6873	www.mouser.com	Y	20,389	N/A	$0	84.00%	50	1,000+	Y
NICHICON	Digi-Key	800-344-4539	digikey.com	Y	35,421	N/A	$0	96.30%	150	3,400	Y
NVE CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	617	N/A	$0	60.25%	150	3,400	Y
Ohmite	Mouser Electronics	800-346-6873	www.mouser.com	Y	14,293	N/A	$0	55.00%	50	1,000+	Y
Panasonic Electronic Components	Mouser Electronics	800-346-6873	www.mouser.com	Y	14,948	N/A	$0	100.00%	50	1,000+	Y
PUI AUDIO, INC.	Digi-Key	800-344-4539	digikey.com	Y	1,285	N/A	$0	75.55%	150	3,400	Y
PULSE CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	11,098	N/A	$0	93.56%	150	3,400	Y
RIEDON	Digi-Key	800-344-4539	digikey.com	Y	3,411	N/A	$0	99.82%	150	3,400	Y
ROHM SEMICONDUCTOR CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	63,003	N/A	$0	99.85%	150	3,400	Y
Samsung Electro-Mechanics	PUI	1-800-551-4405	www.gopui.com	Y	3,852	N/A	$50	99.00%	5	33	Y

The **widest selection** of the **newest AVX Corporation products.**



AVX
A KYOCERA GROUP COMPANY

MOUSER ELECTRONICS

Worldwide leading authorized distributor of semiconductors and electronic components.

mouser.com/avx

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
PASSIVES (Continued from previous page)											
Samsung Electro-Mechanics	Digi-Key	800-344-4539	digikey.com	Y	21,522	N/A	$0	100.00%	150	3,400	Y
STACKPOLE CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	55,938	N/A	$0	99.49%	150	3,400	Y
STANDEX-MEDER ELECTRONICS	Digi-Key	800-344-4539	digikey.com	Y	648	N/A	$0	99.69%	150	3,400	Y
SUMIDA AMERICA COMPONENTS INC	Digi-Key	800-344-4539	digikey.com	Y	7,157	N/A	$0	86.24%	150	3,400	Y
SUSUMU	Digi-Key	800-344-4539	digikey.com	Y	43,474	N/A	$0	99.98%	150	3,400	Y
TADIRAN BATTERIES	Digi-Key	800-344-4539	digikey.com	Y	65	N/A	$0	100.00%	150	3,400	Y
Taiyo Yuden	Mouser Electronics	800-346-6873	www.mouser.com	Y	4,620	N/A	$0	98.00%	50	1,000+	Y
TAIYO YUDEN	Digi-Key	800-344-4539	digikey.com	Y	16,677	N/A	$0	99.96%	150	3,400	Y
TAMURA	Digi-Key	800-344-4539	digikey.com	Y	1,355	N/A	$0	92.25%	150	3,400	Y
TDK	Mouser Electronics	800-346-6873	www.mouser.com	Y	6,663	N/A	$0	100.00%	50	1,000+	Y
TRIAD MAGNETICS	Digi-Key	800-344-4539	digikey.com	Y	1,608	N/A	$0	98.82%	150	3,400	Y
TRIPP LITE	Digi-Key	800-344-4539	digikey.com	Y	3,646	N/A	$0	88.65%	150	3,400	Y
TT ELECTRONICS CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	8,975	N/A	$0	80.34%	150	3,400	Y
TXC CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	9,066	N/A	$0	100.00%	150	3,400	Y
United Chemi-Con	PUI	1-800-551-4405	www.gopui.com	Y	1,145	N/A	$50	99.00%	5	33	Y
UNITED CHEMI-CON	Digi-Key	800-344-4539	digikey.com	Y	16,160	N/A	$0	87.44%	150	3,400	Y
Vishay	Mouser Electronics	800-346-6873	www.mouser.com	Y	102,917	N/A	$0	64.00%	50	1,000+	Y
VISHAY CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	275,942	N/A	$0	88.52%	150	3,400	Y
VISHAY PRECISION GROUP CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	28,238	N/A	$0	52.21%	150	3,400	Y
Wurth	Mouser Electronics	800-346-6873	www.mouser.com	Y	934	N/A	$0	99.00%	50	1,000+	Y
WURTH CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	22,245	N/A	$0	100.00%	150	3,400	Y
Yageo Corporation	Mouser Electronics	800-346-6873	www.mouser.com	Y	18,246	N/A	$0	100.00%	50	1,000+	Y
YAGEO CORPORATION	Digi-Key	800-344-4539	digikey.com	Y	141,986	N/A	$0	83.67%	150	3,400	Y
POWER & BATTERIES											
Emerson	Mouser Electronics	800-346-6873	www.mouser.com	Y	358	N/A	$1	85.00%	N/A	N/A	Y
Lineage Power	Mouser Electronics	800-346-6873	www.mouser.com	Y	301	N/A	$0	100.00%	N/A	N/A	Y
N2Power	PUI	1-800-551-4405	www.gopui.com	Y	1,241	N/A	$50	99.00%	5	33	Y
Power-One	Mouser Electronics	800-346-6873	www.mouser.com	Y	170	N/A	$0	60.00%	N/A	N/A	Y
TDK Lambda	Mouser Electronics	800-346-6873	www.mouser.com	Y	405	N/A	$0	80.00%	N/A	N/A	Y
REED SWITCHES											
HSI Sensing	HSI Sensing	405-224-4046	www.hsisensing.com	M	75	N/A	$200	100.00%	15	275	N
Standex-Meder Electronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	120	N/A	$0	82.00%	50	1,000+	Y
Standex - Meder	PUI	1-800-551-4406	www.gopui.com	Y	2,123	N/A	$50	99.00%	5	33	Y



Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor (Y/N/M)	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	Pack and Hold
SENSORS											
Freescale	Mouser Electronics	800-346-6873	www.mouser.com	Y	842	N/A	$0	97.00%	50	1,000+	Y
Honeywell Sensing and Control	Mouser Electronics	800-346-6873	www.mouser.com	Y	12,059	N/A	$0	64.00%	50	1,000+	Y
Maxim Integrated	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,379	N/A	$0	45.00%	50	1,000+	Y
Omron	Mouser Electronics	800-346-6873	www.mouser.com	Y	4,915	N/A	$0	59.00%	50	1,000+	Y
Standex-Meder Electronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	120	N/A	$0	82.00%	50	1,000+	Y
Texas Instruments	Mouser Electronics	800-346-6873	www.mouser.com	Y	914	N/A	$0	65.00%	50	1,000+	Y
SWITCHES & KEYBOARDS											
Apem, Inc.	Mouser Electronics	800-346-6873	www.mouser.com	Y	4,326	N/A	$0	83.00%	50	1,000+	Y
Apem, Inc.	PUI	1-800-551-4405	www.gopui.com	Y	988	N/A	$50	99.00%	5	33	Y
C&K Components	Mouser Electronics	800-346-6873	www.mouser.com	Y	27,230	N/A	$0	90.00%	50	1,000+	Y
Honeywell Sensing and Control	Mouser Electronics	800-346-6873	www.mouser.com	Y	15,149	N/A	$0	73.00%	50	1,000+	Y
NKK Switches	Mouser Electronics	800-346-6873	www.mouser.com	Y	13,976	N/A	$0	86.00%	50	1,000+	Y
Omron	Mouser Electronics	800-346-6873	www.mouser.com	Y	10,669	N/A	$0	89.00%	50	1,000+	Y
OTTO	ECCO	773-767-2200	www.eccoconnectors.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTTO	Mouser Electronics	800-346-6873	www.mouser.com	Y	500+	N/A	$0	100.00%	75	500	Y
Panasonic Electric Works	Mouser Electronics	800-346-6873	www.mouser.com	Y	2,748	N/A	$0	100.00%	50	1,000+	Y
Standex-Meder Electronics	Mouser Electronics	800-346-6873	www.mouser.com	Y	120	N/A	$0	82.00%	50	1,000+	Y
Switchcraft Corporation	Mouser Electronics	800-346-6873	www.mouser.com	Y	300	N/A	$0	55.00%	50	1,000+	Y
TEST & MEASUREMENT											
Fluke	Mouser Electronics	800-346-6873	www.mouser.com	Y	1,008	N/A	$0	94.00%	50	1,000+	Y
Teledyne LeCroy	Mouser Electronics	800-346-6873	www.mouser.com	Y	194	N/A	$0	96.00%	50	1,000+	Y
THERMAL MANAGEMENT											
Aavid Thermalloy	Mouser Electronics	800-346-6873	www.mouser.com	Y	826	N/A	$0	73.00%	50	1,000+	Y
Aavid Thermalloy	PUI	1-800-551-4404	www.gopui.com	Y	987	N/A	$50	99.00%	5	33	Y
Delta Products	PUI	1-800-551-4406	www.gopui.com	Y	1,421	N/A	$50	99.00%	5	33	Y
Orion Fans	PUI	1-800-551-4406	www.gopui.com	Y	1,242	N/A	$50	99.00%	5	33	Y
Sanyo Denki America, Inc.	PUI	1-800-551-4405	www.gopui.com	Y	2,122	N/A	$50	99.00%	5	33	Y
STEGO, Inc		770-984-0858	www.stegousa.com	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WIRELESS SOLUTIONS											
Panasonic Electronic Components	Mouser Electronics	800-346-6873	www.mouser.com	Y	48	N/A	$0	100.00%	50	1,000+	Y
RFM	Mouser Electronics	800-346-6873	www.mouser.com	Y	312	N/A	$0	90.00%	50	1,000+	Y

The **widest selection** of the **newest Honeywell products.**



MOUSER ELECTRONICS

Worldwide leading authorized distributor of semiconductors and electronic components.

Honeywell

mouser.com/honeywell

MOUSER MANUFACTURERS

0 - 9

3M
4D Systems NEW

A

AAEON UP
Aavid Thermalloy
Abracon
Adaptive Interconnect Electronics
Adesto Technologies NEW
ADI Engineering NEW
ADLINK Technology NEW
Advanced Linear Devices
Advanced Thermal Solutions
Advantech NEW
AIM
Alliance Memory
All Sensors
Alorium Technology NEW
Alpha Wire
ALPS
Altech
Altera / Intel
AME
American Technical Ceramics
Ametherm NEW
Amphenol
Amprobe
ams
AMSECO
Amulet Technologies
Analog Devices Inc. NEW
AnalogicTech
Anaren
Anderson Power
Antenna Factor
Antenova
Apacer Technology Inc.
APC by Schneider Electric
APEM
Apex Tool Group
API Delevan
APM HEXSEAL
Applied Motion
Arcol
Arduino NEW
Aries
Artesyn Embedded Technologies
Atollic NEW
Ault / SL Power
Avago Technologies
Avery Dennison
AVX
Axiomtek NEW
Azoteq

B

B&K Precision
BeagleBoard by CircuitCo
BEI Sensors
Bel Power Solutions
Bel Signal Transformer
Belden
Bellin Dynamic Systems
Bergquist
Bias Power
BI Technologies
BIVAR
Blackhawk
Bluegiga / Silicon Labs
Bluetechnix NEW
Bomar Interconnect
Bosch Sensortec NEW
Bosch Connected Devices NEW
Boundary Devices NEW
Bourns
BPS
Broadcom NEW
Bud Industries
Bulgin

C

C&K Components
Caddock
Califia Lighting
California Eastern Labs / CEL
Carling Technologies
Carclo Technical Plastics
CCS
Central Semiconductor
Chemtronics
CHERRY
Cinch Connectivity Solutions
Cincon
Cirrus Logic
Citizen Finetech Miyota
Clare
CMOSIS NEW
Code Red Technologies
Coilcraft NEW
Comchip Technology
Condor / SL Power
CONEC
congatec
Connect One
Continental Industries
Conxall
Cornell Dubilier
Coto Technology
Cree
Crocus Technology NEW
Crouzet
Crydom
CRYSTEK CRYSTALS
CSB
CTS Electronic Components
CW Industries
Cypress Semiconductor

D

D3 Semiconductor
Davies Molding
DBM Optix
Dell NEW
Delphi
Deltron
DFRobot
Dialight
Dialog Semiconductor NEW
Dielectric Laboratories
Digi International
Digital View
Diode Laser Concepts
Diodes Incorporated
DIOO Microcircuits NEW
Displaytech Ltd.
DLP Design
DMC Tools (Daniels Manufacturing Corp) NEW

E

Eagle-Picher
EasySync
Eaton
ebm-papst
Ecliptek
ECS
EDAC
EE Tools
Electronic Assembly
Electroswitch
Elna
Elprotronic Inc.
Embedded Artists
Energy Micro
Enterpoint, Ltd. NEW
EPCOS
Epson
Ericsson Power Modules
ERP NEW
E-Switch
Esquilo NEW
ETA-USA
E-T-A Circuit Breakers NEW
ETI Systems
Eupec
Everspin Technologies
Everlight
EXAR
Extech

F

Fairchild Semiconductor
Fair-Rite
Fascomp
Fastron
FCT Electronics
Finisar NEW
Flamar NEW
FlexiPanel
Fluke
Fox
FTDI
Fujitsu
Future Designs, Inc. (FDI)

G

GeneSiC Semiconductor
GE Critical Power
GHI Electronics
Glenair
Global Specialties
Gravitech
Greenlee
Greenliant
GSI Technology NEW
Guerrilla RF NEW

H

Hammond Enclosures
Hantronix
HARTING
Harwin
Heatron
Heyco
Hirose Electric
Honeywell
HUBER+SUHNER NEW

I

IAR Systems
ICE Components
IDI
iEi Technology NEW
IET Labs
Illumitex
Imagination Technologies NEW
Infineon
Inolux
Inspired LED
Intel NEW
Integrated Device Technology
International Power
Intersil NEW
Inventus Power
Ioxus
IQD Frequency Products NEW
IRC
ISSI
ITT Cannon
ITW Switches
IXYS Integrated Circuits

J

J.W. Miller
JAE Electronics
Jewell Modutec
JKL Components
Johanson NEW
Johnson / Cinch

K

Kamaya
Ka-Ro Electronics NEW
Kavlico NEW
Keil (ARM®)
Keithley
KEMET
KEMET / NEC TOKIN NEW
Kester
Keterex
Keystone Electronics
Kionix
Kingbright
Knowles Acoustics
KOA Speer
Kostal NEW
Kycon
KYOCERA / AVX

L

Laird Technologies
Lantronix
Lattice Semiconductor
LedEngin
Ledil
LedLink
LEMO
Leopard Imaging
Leviton
LHV Power
Linx Technologies
Lite-On
Littelfuse
LMB/Heeger
Lorlin
LPRS NEW
LS Research
Lumex
Lumileds NEW
Luminus Devices
Luxo Corporation

M

MACOM
Macraigor Systems
Maestro Wireless
Magnecraft
Mallory
Mallory Sonalert
Marquardt Switches
Matrix Orbital
Maxim Integrated
Maxwell Technologies
MCC
Mean Well
Measurement Specialties
Meder
Melexis NEW
Memsic NEW
Menda
Merit Sensor NEW
Metcal
MG Chemicals
Micrel NEW
Microchip
Micronas NEW
MicroSemi SoC Group
Microtips
Mide Technology NEW
MikroElektronika
Mill-Max
Mitsubishi Electric
Molex
Monolithic Power Systems (MPS)
MSI Sensors
Mueller Electric
Murata
Murata Power Solutions
Murata Wireless Solutions NEW

N

NEC Relays
NetBurner
Netduino
Neutrik
New Age Enclosures
Newhaven Display
Nexperia NEW
Nichicon
NJR
NKK Switches
NMB
NorComp
Nordic Semiconductor
Noritake
NOVACAP
NovaSensor / GE Sensing
NXP Semiconductors

O

Octavo Systems NEW
Ohmite
OK Industries
Olimex Ltd.
Omron
ON Semiconductor
Oplink NEW
Optek Technologies
Optrex-Kyocera
Opulent NA NEW
Orion Fans
OSRAM Opto Semiconductors
OTTO NEW

P

Pacific Silicon Sensor
PacTec
Panasonic
PanaVise
PandaBoard
Panduit
Parallax
Particle NEW
Pericom
Phihong
Phoenix Contact
Piher
Plato
Plessey Semiconductors NEW
PLX Technology
Pomona
Powercast
Power Dynamics NEW
Power Integrations
Power-Sonic
Precision Technology NEW
Protek
Protektive Pak
PUI Audio
Pulse

Q, R

Q-Cee's / TE Connectivity
Qualtek
Quatech
Radiall NEW
RAF Electronic Hardware Ramtron
RECOM
Rectron
Red Pitaya NEW
Redpine Signals
ReFLEX CES NEW
Renata
Renesas
RF Digital
RF360 Technologies
Ricoh Electronic Devices NEW
ROHM Semiconductor
Rosenberger NEW

S

Sagrad, Inc.
Samsung ARTIK
SanDisk NEW
Sanyo Denki
Sargent Tools
Schaffner
SchmartBoard
Schneider Electric NEW
Schurter
SEEED STUDIO NEW
SEGGER Microcontroller
Seiko Printers
Seoul Semiconductor
Semelab
Semflex / Cinch
Semitec USA
Semtech NEW
Sensirion
Serpac
Sharp Microelectronics
Shindengen
Silex Technology
Silicon Microstructures NEW
Silicon Labs
Simpson
SiTime
SkyeTek
Skyworks Solutions Inc. NEW
Smart Modular Technologies NEW
SMSC / Microchip
SolaHD
SolderCore
SOMNIUM Technologies NEW
Song Chuan
Souriau
SL Power
Spansion
SparkFun Electronics NEW
Spectra Symbol
Spectrum Control
Spectrum Digital
SPI Westek
Sprague Goodman
Staco
STMicroelectronics
Stratos / Cinch
Sumida
Susumu
Swissbit NEW
Switchcraft
Syfer

T

Tadiran
Taica NEW
Taiwan Semiconductor
Taiyo Yuden
Tamura
Taoglas
TDK
TDK-Lambda NEW
TE Connectivity
TechNexion NEW
Techspray
Tektronix
Teledyne LeCroy
Temp-Flex Cable
Terasic Technologies NEW
Texas Instruments
THAT Corporation
Thermometrics
Torex Semiconductor NEW
Toshiba
Triad Magnetics
Tripp Lite
TriQuint Semiconductor
Triune Systems
Trompeter / Cinch
TT Electronics
Tusonix
Twin Industries
TXC
Tyco Electronics

U

UDOO NEW
Ultralife
United Chemi-Con
United Silicon Carbide
US Sensor

V

Vacuumschmelze (VAC) NEW
Varitronix
VCC
Vector
Vectron International
VIA Embedded NEW
Vishay
Visiton
Vitelec / Cinch
Volex
Voltronics
VORAGO Technologies NEW

W

W.L. Gore
Wahl
Wakefield-Vette
Walsin
Wandboard NEW
Welwyn
White-Rodgers
Wi2Wi
WIMA
Wiremold
WIZnet
Wolfson/Cirrus Logic
Wolfspeed
Wurth Electronics

X, Y, Z

Xeltek
Yageo
Yamaichi
ZiLOG

mouser.com/supplierpage

MOUSER ELECTRONICS
The Newest Products for Your Newest Designs®
mouser.com
SAME-DAY SHIPPING
No minimum order required
Orders received by 8 p.m. CST



Janet worries about counterfeit products entering her company's supply chain. That's why she orders from Mouser, the semiconductor and electronic component selection leader with the top brands engineers know and trust. All available in prototype to production quantities and ready to ship same day.

Making Janet a real rock star at work.

MOUSER ELECTRONICS
Authorized Distributor

ORDER WITH CONFIDENCE

Call (800) 346–6873 or visit mouser.com



NOTHING ELSE MATTERS IF YOU ARE MISSING THE PART.

- On-time delivery exceeding 99.5%
- Customizable inventory programs and supply chain solutions
- 13 point inspection for product receipt and quality
- Globally integrated IT platform showing real-time inventory visibility
- Largest available-to-sell inventory in the world

Contact us today!

FUTURE ELECTRONICS

www.FutureElectronics.com 1-800-FUTURE-1