TECHDesign

A BETTER EXPERIENCE FOR PURCHASING ELECTRONIC COMPONENTS ONLINE

Preface

The Digital Revolution has laid the groundwork for the world we live in today. It's nearly impossible to imagine how our lives would function without our computers, mobile phones and the internet. Similarly, none of our digital lives would be possible without all the tiny electronic components that make our widgets go. Ironically, while consumers are buying more and more items online, the purchase of electronic components themselves remains a predominantly offline exercise. This may seem odd given how the current trend in digitization is making everything more automated and more efficient.

There are many reasons for the predominance of offline sales of electronic components. We believe that chief among them is that the overall experience of purchasing components online still leaves procurement professionals wanting. Prices often do not meet their expectations. Availability of stock is unstable. Delivery times are too long. And customer service is non-existent. We believe that our TECHDesign Corporate Account Program solves these issues and creates a better online experience that will accelerate the shift to online purchasing of electronic components.

In this paper, we will provide an overview of the electronic components industry and the results of our research on the current online purchasing experience. We will then discuss how our Corporate Account Program will change the game and how you can take advantage.

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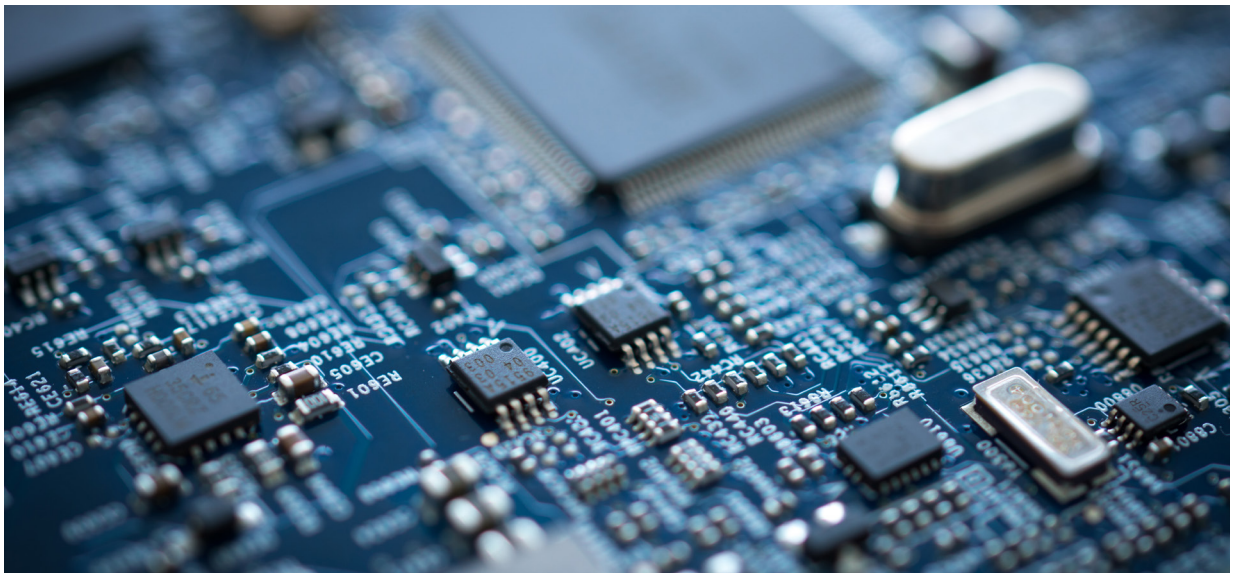
1. Introduction to the Electronic Components Industry

1.1 Overview of the Electronic Components Industry

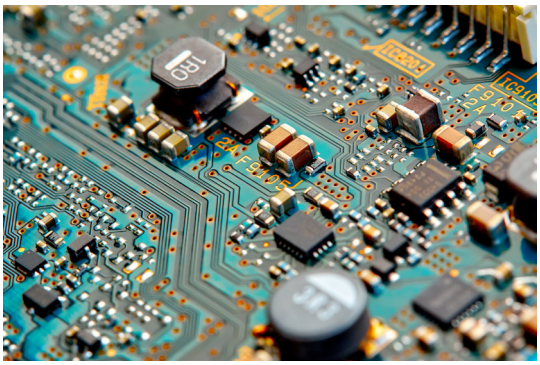
Electronic components are packaged with multiple electrical terminals, and they are connected to printed circuit boards (PCB) to create various electrical functions including signal transmission, receiving, oscillation, amplification, and other functions.

The market for electronic components is one of the most essential industries worldwide. All electronic devices, smartphones, refrigerators, air conditioners, and electricity stations are made from electronic components. According to a report from Market Reports World, the global electronic components market size will reach $630.9 billion by 2028, with a CAGR of 4.7% compared to $455.7 billion in 2021. North America will still be the market leader, and the market in the Asia Pacific region will grow the fastest.

The rising demand for smartphones, wearables, and other IoT-related products fuels market growth, while the outburst of COVID-19 and the Russian invasion of Ukraine make electronic components even more important. This chapter introduces key segments of electronic components and the industries' value chain.



1.2 Key Segments



Electronic components are categorized into active, passive, and electromechanical components. These parts work together in PCBs to accomplish multiple functions.

1.2.1 Active Electronic Components

Active electronic components can produce energy or actively control electricity. They depend on an external power source to control, amplify, or reduce signals. Common active electronic components are transistors, diodes, rectifiers, microcontrollers, memory ICs, optoelectronic devices, and power sources.

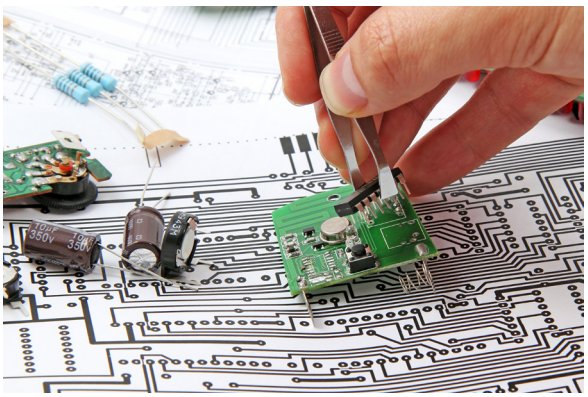
1.2.2 Passive Electronic Components

Passive electronic components do not produce energy nor control electricity actively. They influence the flow of electric current by restricting, reallocating, or storing energy without requiring an external power source. Common passive electronic components are resistors, capacitors, inductors, and transducers.

1.2.3 Electromechanical Components

Electromechanical components have both the characteristics of electronics and mechanics. They are devices with the capability of conducting electrical operations, materials with the piezoelectric effect, and other components with both mechanical and electrical characteristics. Common electromechanical components are piezoelectric devices, terminals, connectors, cable assemblies, switches, and mechanical accessories.

1.3 Value Chain



A value chain indicates all the business stages and processes of a product or service. In the electronic component industry, A value chain includes research and development (R&D), manufacturing, testing, marketing, sales, supply, procurement, and other related activities.

1.3.1 Research and Development

The process of research and development (R&D) is the base of an electronic component fabrication. Before manufacturing an electronic component, adequate research should be done to evaluate its estimated electrical specifications and verify its future feasibility. If the stage of research and development is complete, the electronic component will optimally balance performance and cost.

1.3.2 Manufacturing, Testing, Supply, and Procurement

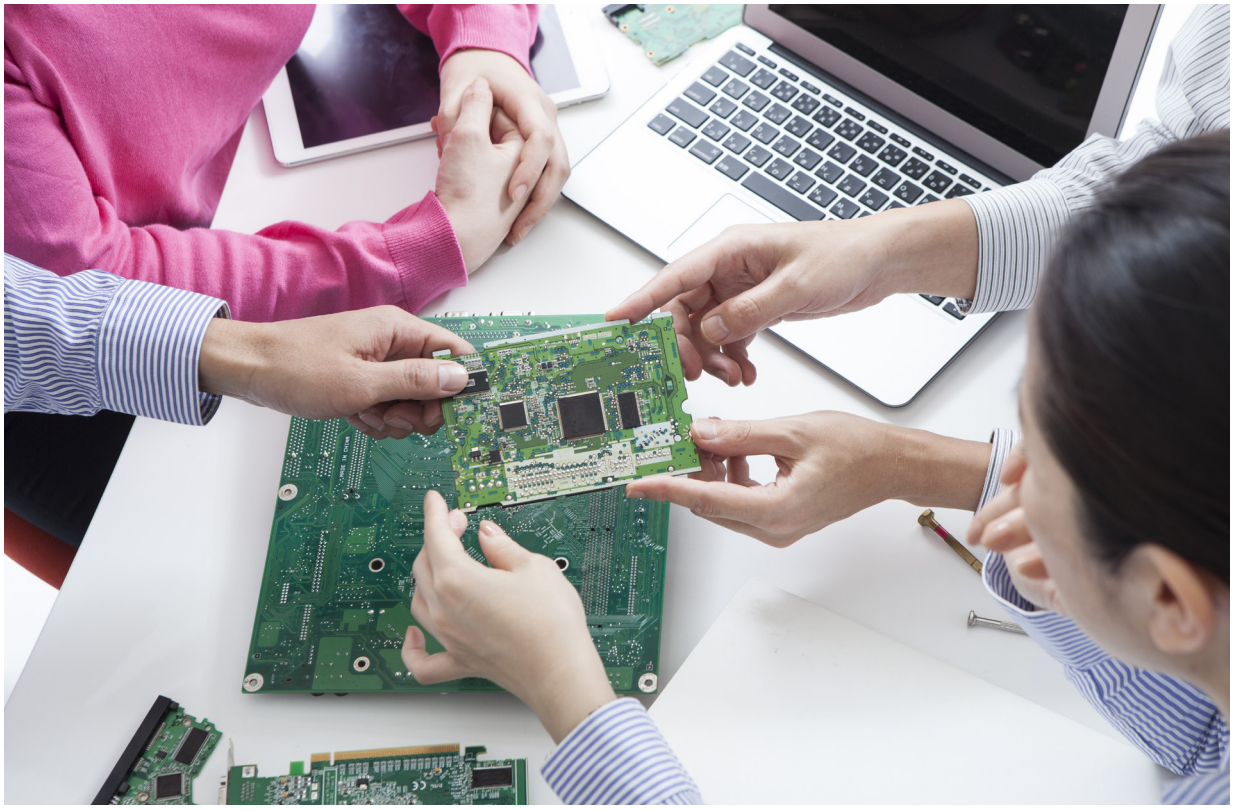
The manufacturing process of an electronic component is complicated, especially when it comes to semiconductor components. It may take months to manufacture a single IC, so a testing step after several manufacturing processes is necessary. A series of reliability tests are needed when an electronic component is manufactured.

The supply and procurement of electronic equipment and raw materials also need consideration as they are indispensably important in manufacturing.

1.3.3 Marketing, Sales, and Customer Services

After an electronic component product is produced, marketing, sales, and customer services can grow the potential business. The marketing team decides how to promote the product through various means to help drive sales, and the sales team sells the product to raise revenue with the assistance from customer service.

In summary, the key segments of electronic components include active, passive, and electromechanical components. They all have their own functions and can work together in a product. The value chain in the electronic component industry includes R&D, manufacturing, testing, marketing, sales, supply, and procurement. All the above stages are necessary to create a product that generates profit.



2. Data Research: Current State of Online Purchase of Electronic Components

2.1 The Emergence of Purchasing Electronic Components Online

Purchasing products offline is no longer the only way to purchase electronic components, as it is common practice to purchase these components online. More than 1/3 of procurement professionals from a variety of industries, such as medical, computing, and consumer, purchase electronic components online.

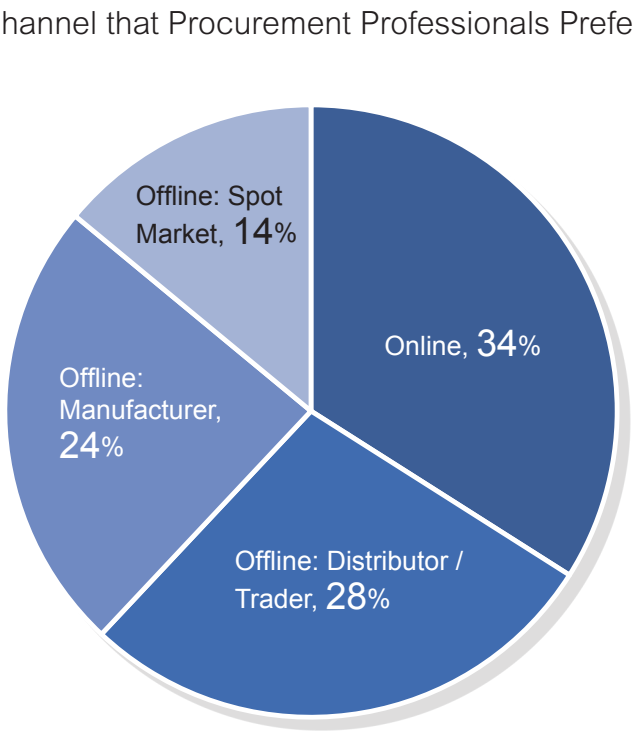


Fig.1 Channels that procurement professionals prefer (Source: TECHDesign)

2.2 Electronic Components that Can Be Purchased Online

Semiconductors can be commonly purchased online. Besides semiconductors, components that do not need detailed technical assistance such as passive components or electromechanical components are also popular online.

Online electronic component procurement is already trending. The figure below shows the component segments that procurement professionals are interested in purchasing online.

Percentage of Respondents Interested in Purchasing this Component Online

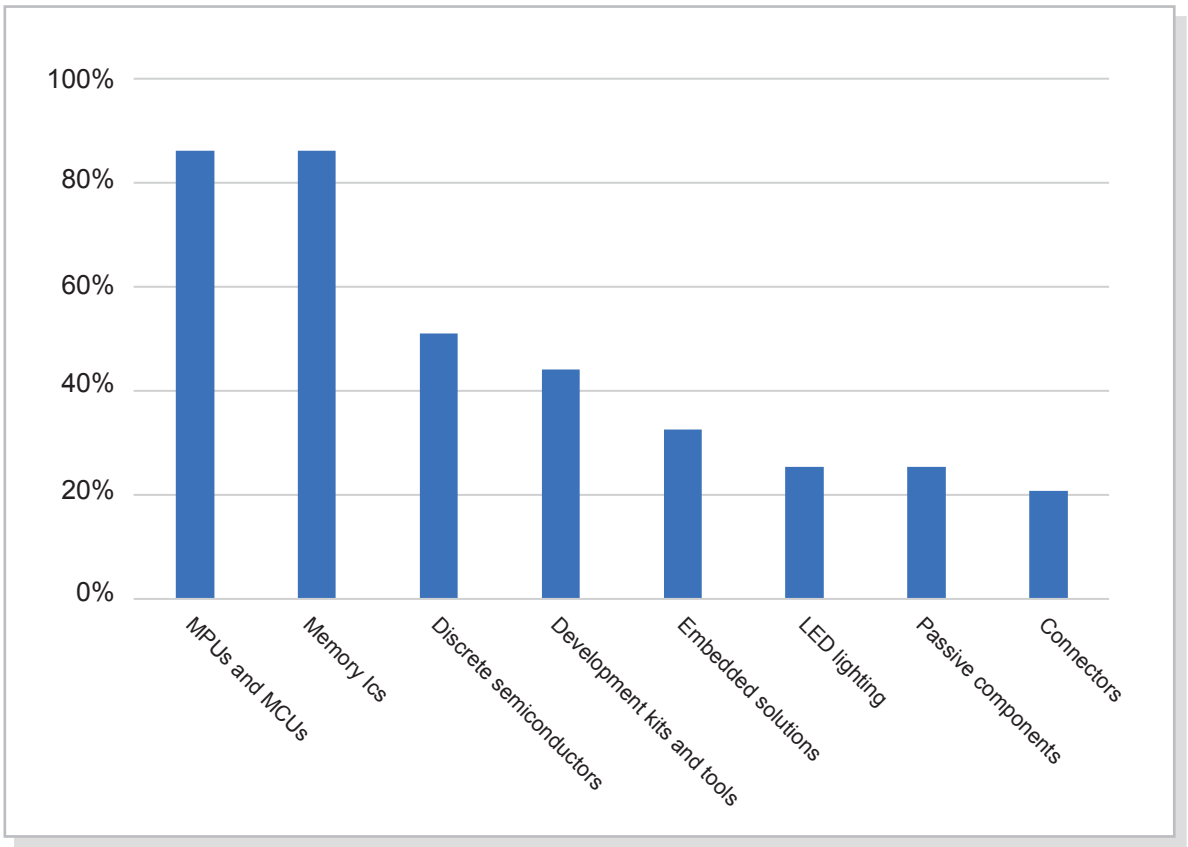
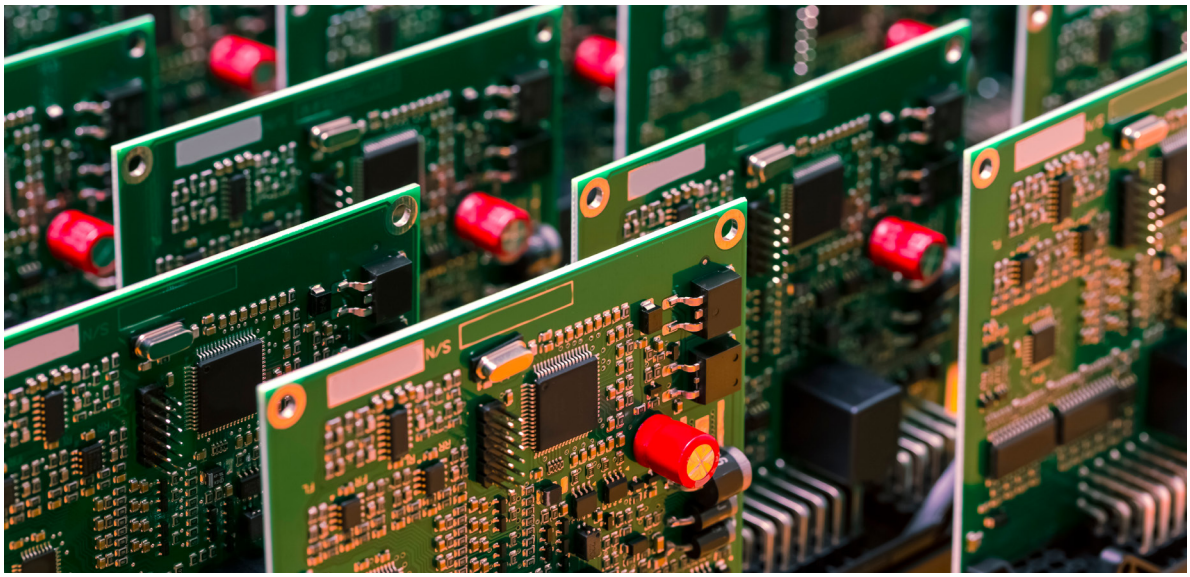


Fig. 2 Components that procurement professionals are interested in purchasing online (Source: TECHDesign)



2.2.1 Embedded Controllers and Processors

Embedded controllers and processors refer to microcontrollers and microprocessors. Both microcontrollers and microprocessors are small computers with RISC architecture. A microcontroller comes with various core sizes, operating speeds, I/O pins, memory sizes, and packages, while a microprocessor also has the above specifications but requires external memory and different voltage rails. From low-end microcontrollers to high-end microprocessors, designers can choose suitable microcontrollers or microprocessors based on their requirements for product performance.

2.2.2 Memory ICs: DRAMs and Flash Memories

Memory ICs store digital data within their memory cells. The main types of memory ICs are volatile and non-volatile memories. Volatile memories retain data after being powered off, while non-volatile memories will lose data when powered off.

DRAMs (Dynamic Random-Access Memory) are the most common type of volatile memories. A DRAM consists of a capacitor and a transistor per data bit, and it stores data in the capacitor. Flash memories are the most common type of non-volatile memories. Flash memories are made from memory cells that comprise floating-gate transistors, and the two main types are NOR Flash and NAND Flash.

2.2.3 Discrete Semiconductors

Discrete semiconductors can only perform a single basic function, and they include diodes, rectifiers, bipolar transistors (BJTs), MOSFETs, and other transistors.

Diodes are two-terminal devices conducting current unidirectionally. Rectifiers are devices converting AC to DC. BJTs are current-controlled current devices with the ability to manage the output current by changing the input current. MOSFETs are voltage-controlled current devices with the ability to manage the output current by changing the input voltage.

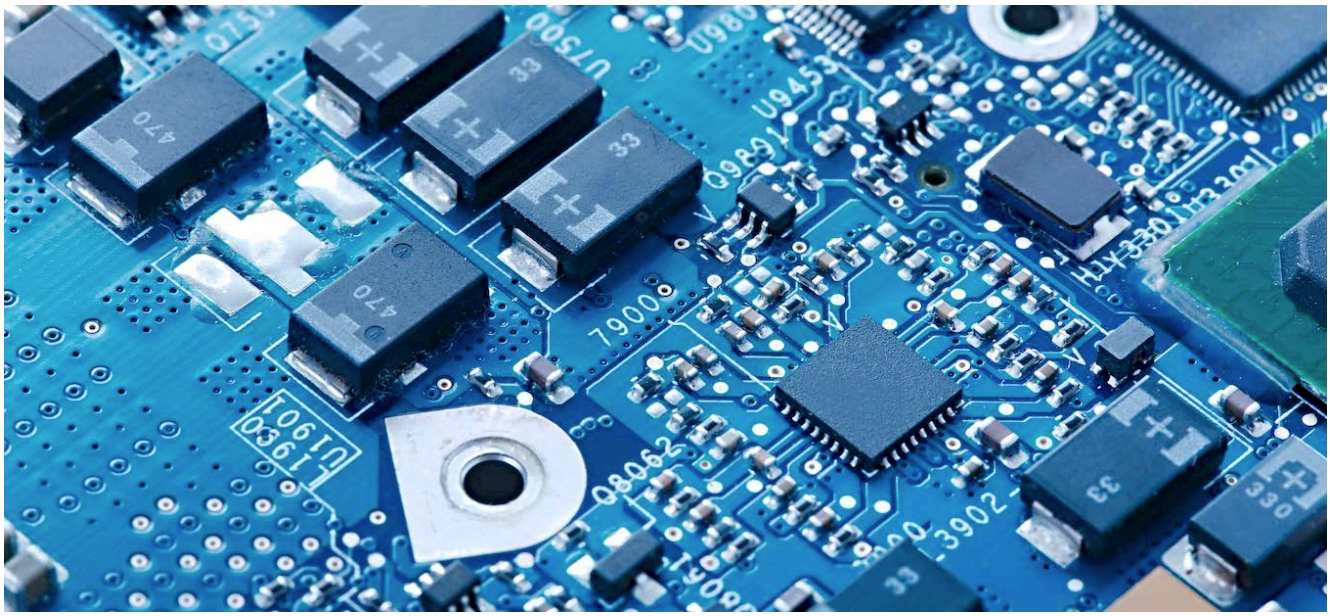
The common applications for diodes and rectifiers are voltage protection, alternating current converters (AC to DC), and amplitude modulated (AM) radio signal detection, while the common applications for BJTs and MOSFETs are switches and signal amplifiers.

2.2.4 Development Kits and Tools

Designers use development kits and tools to emulate their systems in the initial stage. They choose a component based on the testing result of the related development kit. Development kits and tools not only provide various interfaces, sensors, and electronic components on PCBs (Printed Circuit Boards) but also share software and firmware with designers.

2.2.5 Embedded Solutions

Embedded solutions are solutions for embedded systems. An embedded system is a computer system which at least combines a processor, a memory, and other I/O peripheral devices. Embedded solutions include display modules, sensor modules, wireless, and RF modules.



2.2.6 LED Lighting

Compared to traditional light bulbs, LED (Light Emitting Diode) lighting components are 90% more efficient. With electrical current flowing through these components, light sources inside them can emit light. LED lighting components are used in numerous applications.

2.2.7 Passive Components

Passive components restrict, reallocate, or store energy, and they include but are not limited to resistors, capacitors, inductors, and transducers.

Resistors reduce current flow, while capacitors and inductors store energy. The common applications for resistors are current flow reduction, voltage dividers, and transmission line termination. Common applications for capacitors are timing circuits, waveform shaping and creation, signal filtering, and EMI reduction. Applications for inductors are transformers, energy storage, sensors, and motors.

2.2.8 Connectors

Consisting of plugs and jacks, connectors are used to bridge electrical conductors and create an interface for electrical circuits. They can connect wires, cables, printed circuit boards, and many other electronic components.

2.3 Considerations of Customers When They Purchase Electronic Components Online

To better serve our customers, TECHDesign wants to further discover the customers' considerations when they purchase electronic components online. Are they discouraged by high retail prices? Are they unsatisfied with the lack of available supply? Or do they need cheaper and faster shipments? It is essential to depict the customers' profiles and considerations to provide a fulfilling online purchasing experience for them.

Therefore, TECHDesign has completed an online retail market research report that investigated the main factors affecting customers to place orders.

We have listed 8 factors that affect the customers' decision-making during online component procurement and then ask the customers to prioritize these factors from considering the most to the least. These factors are:

- ✓ Price
- ✓ Stock availability
- ✓ Delivery time
- ✓ Production lead time
- ✓ Shipping fee
- ✓ Ease of search
- ✓ Customer service
- ✓ Payment options and check out process

We also separated customers into three types, which are design house customers, manufacturers, and distributors/traders.

- ✓ Design house customers: companies which design and plan their product creation. Some of the design houses would outsource the manufacturing process to manufacturers, while others have their own factories and manufacture the products on their own.

- ✓ Manufacturers: companies which produce or create goods by using labor, machines, equipment, and other tools. They are not in charge of the design of a product but handle the whole process from raw materials to the product.

- ✓ Distributors/traders: companies which buy the electronic components and then sell them to their customers. They can solve the logistic problems that customers encounter, and some distributors can even provide technical support.

As a result, this report shows no matter under which conditions (normal or shortage), price, stock availability, and delivery time are factors that all kinds of customers care for the most. The below chart briefly illustrates the purchase considerations and shows how respondents think these three factors are far more important than others.

The Importance of Purchase Considerations

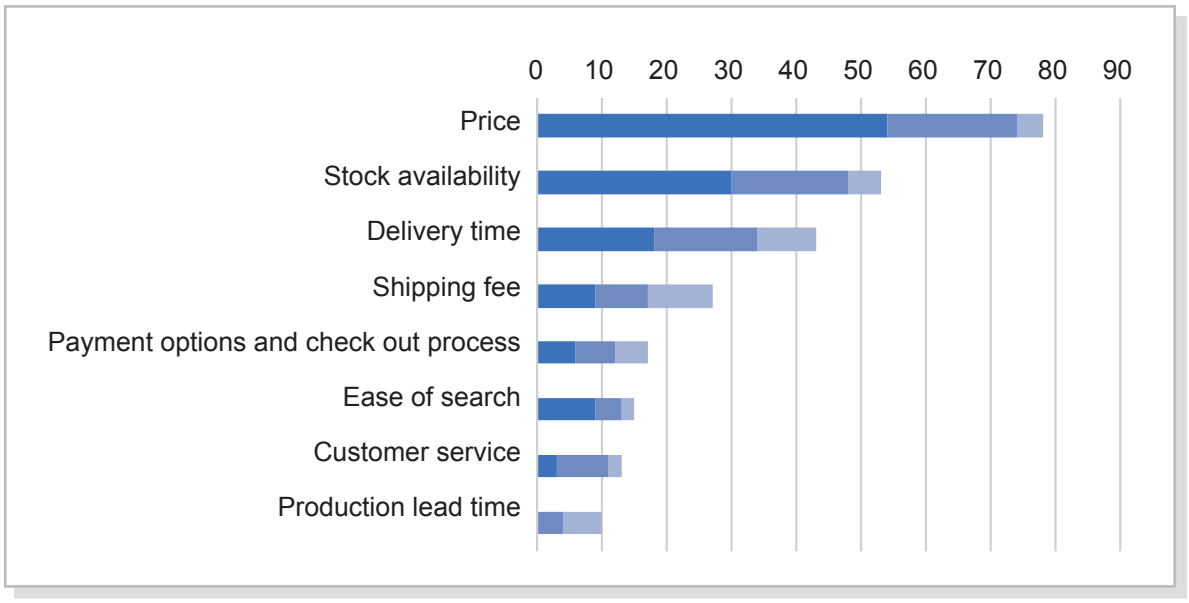


Fig. 3 The importance of purchase considerations from respondents
Remark: all the scores are hidden for data protection (Source: TECHDesign)

In other words, online purchasers are afraid of facing higher prices, uncertain delivery times, and lack of stock availability - imagine how difficult it is to deal with if you can buy 50K certain diodes this month but cannot find any of them available next month.

Then, the next question will be, how does one get satisfying pricing, adequate stocks, and on time delivery when one searches for electronic components online? How to obtain a better online purchase experience through different platforms?

In the next chapter, we will introduce how we solve the problems of high prices, lack of stock, and uncertain delivery time by providing wholesale pricing, continuity of supply, and dedicated customer service.

3. How TECHDesign's Corporate Account Program Is Creating a Better Online Experience

3.1 Introduction to the Corporate Account Program

Purchasing components online today is simple and transactional. Customers purchase what they need without leaving any information behind. They are anonymous, and suppliers do not know who is buying their products and for what applications.

TECHDesign's Corporate Account Program aims to change the transactional nature of this relationship.

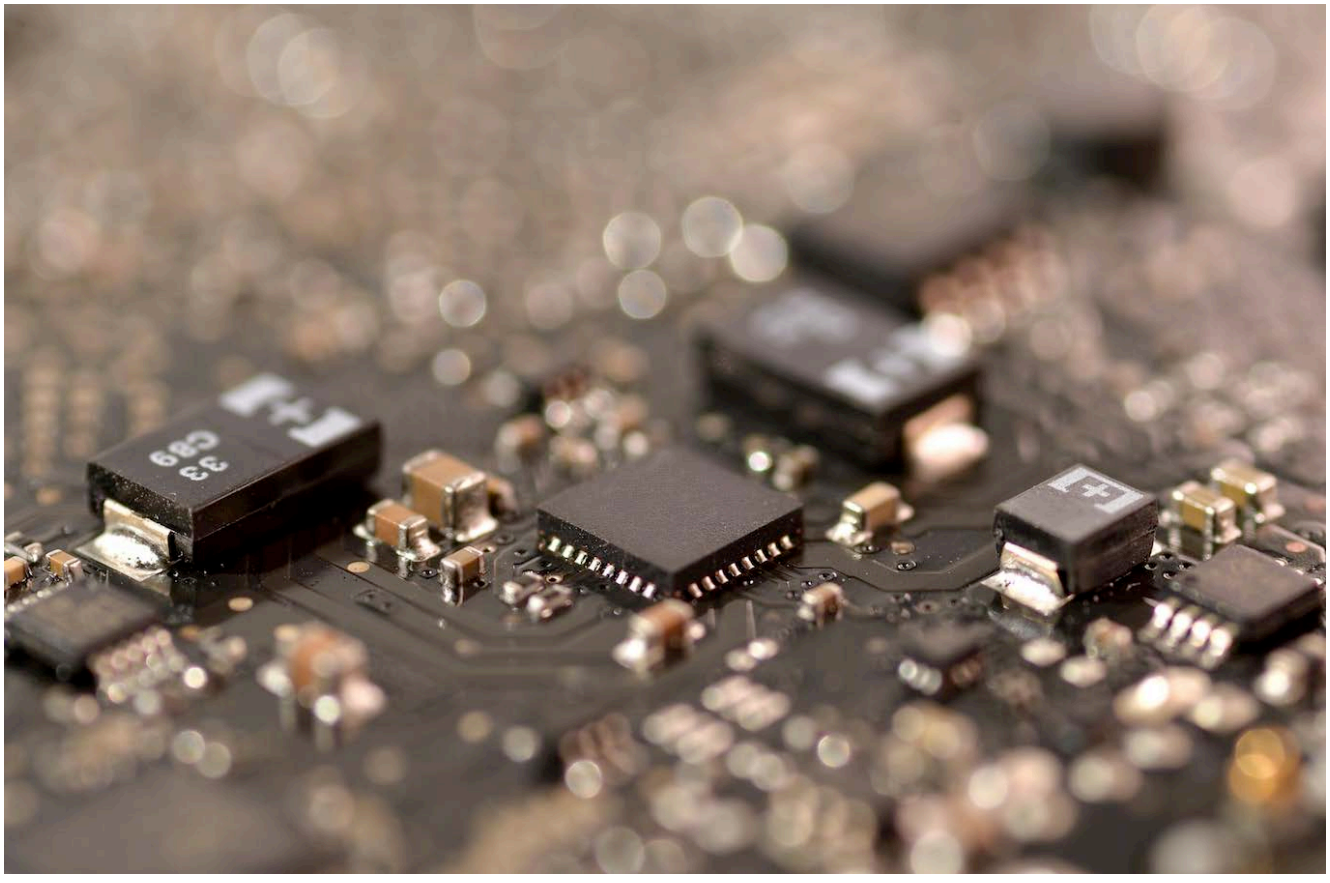
Our suppliers would instead like to build long-term, trustworthy relationships with their online customers - you, so they can offer better pricing and continuity of supply. By providing suppliers with your project information and volumes, they can invest in your company's growth and grow in partnership with you.

TECHDesign's Corporate Account Program is available to all companies and is completely FREE! The details will be addressed below.

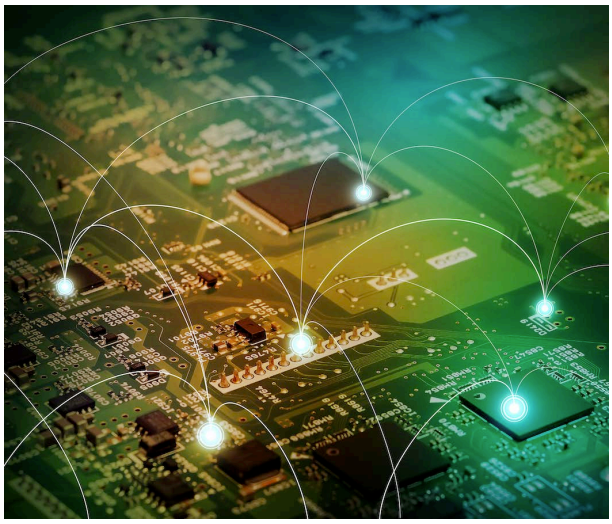
3.1.1 Benefit 1: Tailored Wholesale Pricing

Purchasing electronic components online today is essentially a retail market. No matter who you are and what you plan to do, the price is the same for everyone. It doesn't matter that you plan on buying a large quantity every month. It doesn't matter if your volumes may increase significantly if your product is successful. And it doesn't matter if you are a longstanding loyal customer. The online price is what it is - take it or leave it.

This is where our Corporate Account Program is different. Our suppliers want to learn the specific details regarding your company, your project and your long-term volumes. Our suppliers want to invest in your growth and grow in partnership with you. And as a Corporate Account member, **you can let the suppliers know the target price you are seeking.** Based on all this information, **our suppliers will then prepare a discounted price tailored to your specific case.** No more retail prices, but tailored wholesale prices to grow your business.



3.1.2 Benefit 2: Continuity of Supply and Pre-ordering Service



The other most commonly cited frustration with online purchasing is lack of availability of stock and at lead times that meet your schedule. This is again what it means to be retail. If it's in stock, you can buy it. If not, you will have to wait until it comes into stock. But relying on this type of supply situation is simply too risky. No serious business would ever rely on purchasing their parts from retail. Any hiccup in stock availability would have detrimental impacts on its business.

Procurement professionals understand that even more important than low prices, having continuity of supply is paramount. Without supply of parts, you will have no products to sell leading to unhappy customers and lost revenue (all while still paying operating costs). Thus, in order for online to become a trustworthy channel for electronic components, businesses need to get guaranteed continuity of supply from their online channels.

Our Corporate Program does exactly that. Instead of hoping supply is available when you make your next order, **with our pre-ordering service, you can place multiple orders for future delivery, and line up your supply many months, quarters or even years in advance.** You won't need to pay until it's closer to the shipment date, but you can lock in the supply in advance. And the best part is that **the supplier will take all your future volumes into account when providing you with your tailored pricing.** Our suppliers benefit by being able to plan their production in advance, and **you'll benefit by receiving guaranteed, continuous supply at discounted wholesale prices.**

3.1.3 Benefit 3: Dedicated Customer Service

Our dedicated customer service will help you solve any problems during the component purchasing process. No matter which purchasing stage you are in, whether you are waiting for your RFQ (Request for Quotation) response, placing your order, or checking the delivery status of the product you purchased, you can always ask our customer service team to quickly resolve any issues that may arise. TECHDesign is always available and ready to assist you!

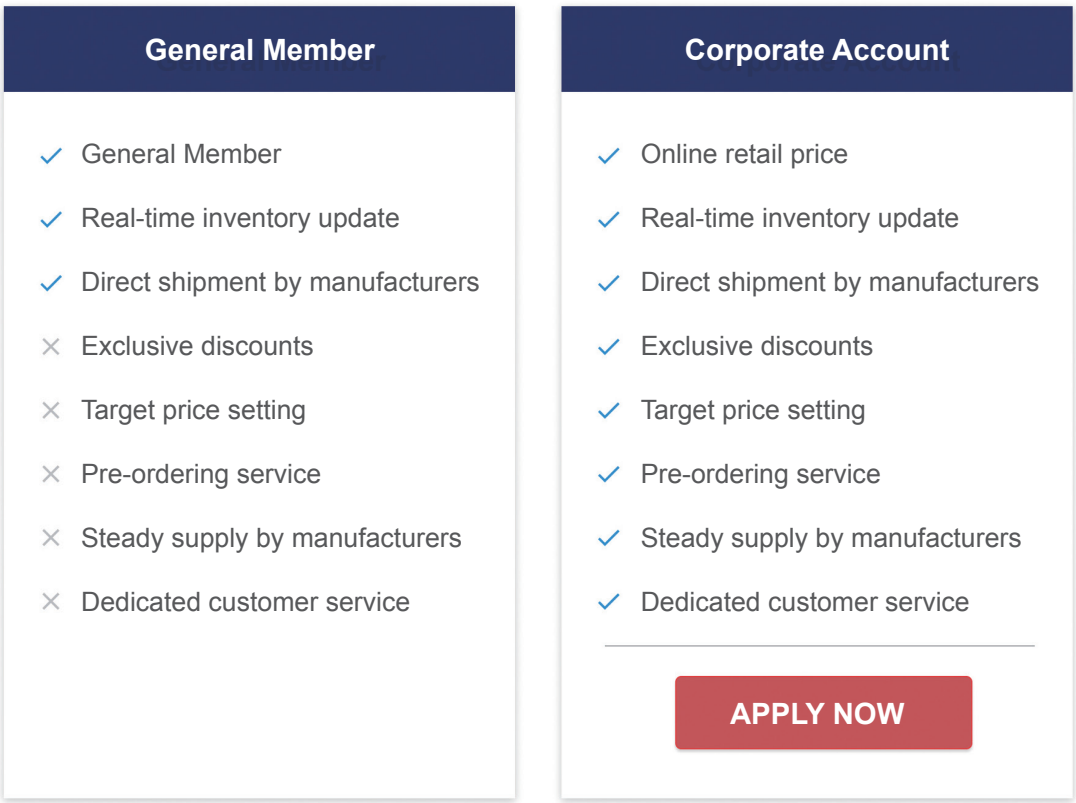


Fig. 4 Differences between general members and corporate accounts on services at TECHDesign

(Source: TECHDesign)

3.2 How to Become a Corporate Account Member

Applying for a corporate account is easy. You only need to follow the below 4 steps:

3.2.1 Apply

Click "APPLY NOW"(https://www.techdesign.com/market/corporate-account) to complete the application form. There are several documents required for TECHDesign to confirm the legitimacy of your company:

- ✓ VAT number, tax ID number, or Unified Social Credit Code
- ✓ Business license or other official documents that prove the establishment of your company, please attach in one of these formats: .pdf, .png, or .jpeg
- ✓ Bank account information

Please be assured that all the confidential information collected by us will only be used as the supporting basis for review.

3.2.2 Review

Wait for 7 to 10 business days to receive your application result. In the interim, you can check the application status (https://www.techdesign.com/market/corporate-account) at any time. Click "Check Your Progress" button at the top right-hand corner and enter your application number.

3.2.3 Confirm

You will receive a confirmation e-mail from TECHDesign once your application is approved. Congratulations on becoming a corporate account member!

3.2.4 Shopping

Log in to your corporate account to enjoy all the exclusive benefits mentioned above.

Fig. 5 How to apply for a corporate account? (Source: TECHDesign)

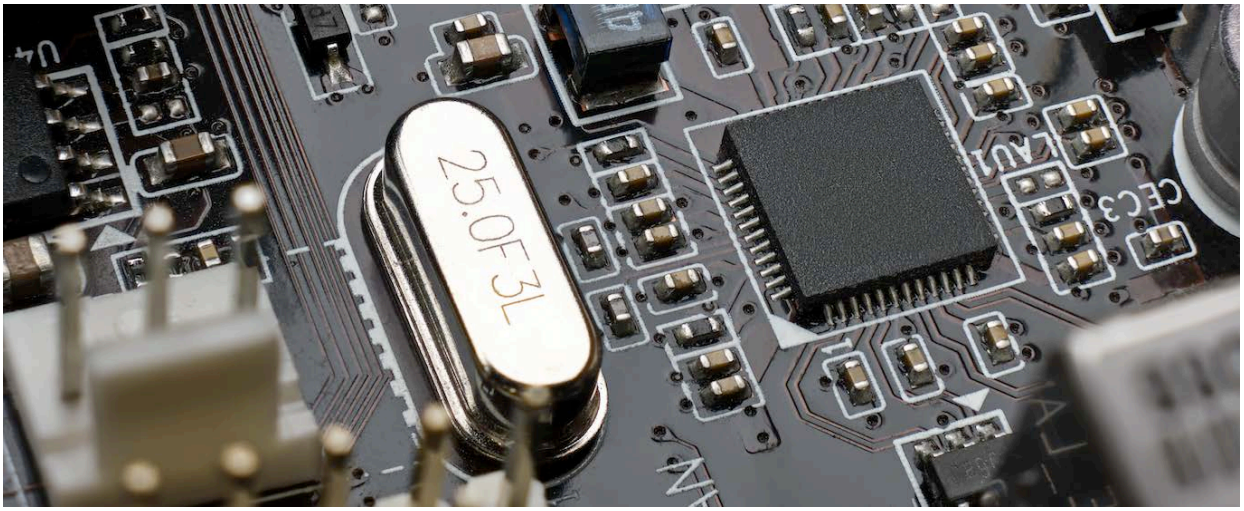
If the application is not approved and you want to know the reason, please e-mail us at e_market@techdesign.com to discover more and reapply. You can still shop at TECHDesign anytime you want.

4. Conclusion

Purchasing electronic components online has become ordinary for procurement professionals and engineers. Different from other consumer products, electronic components have more complicated specifications and high technical content. The report discussed key segments of electronic components—active, passive, and electromechanical components, as well as the segments that are commonly searched for online by procurement professionals, which include microcontrollers, memory ICs, discrete semiconductors, LED lighting, passive components, connectors, and other components. The report also addressed the value chain of the electronic component industry.

Due to the rise in consumers buying electronic components online, TECHDesign crafted a market research report that investigates the factors that affect customers placing online orders. Prices, stock availability, and delivery times regardless of industry are always the most critical factors to customers.

The Corporate Account Program solves the problems of high pricing, unstable stock, and slow response times in online purchasing. At TECHDesign, corporate account members can enjoy tailored wholesale pricing, target price setting, continuity of supply, pre-ordering services, and the support of dedicated customer service without spending a penny. You are just a click away! Make sure to give the Corporate Account Program a try!



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