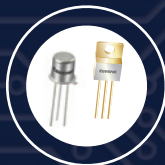




Discretes do Matter™

www.centrasemi.com



diodes • rectifiers • transistors • MOSFETs • JFETs • TVS • thyristors • multi discrete modules



vision

We aspire to be
the preferred manufacturer
of the most innovative
discrete semiconductors
in the industry.



our vision... your complete satisfaction

Central is serious about discrete semiconductors. Our business is the pursuit of perfection in the solutions we provide, the delivery of our products, and your customer experience. Our products are available in surface mount, through-hole, and bare die to suit varying needs. We produce a wide range of standard devices, but we excel in custom, special, and other non-standard products and services. We listen to customers while monitoring industry trends and we have a product design team that is constantly developing new innovative products to meet customers' ever-changing requirements.

Discretes are our only business. We maintain an extensive inventory of raw materials and finished goods so customers don't wait weeks or months for what they need. We welcome smaller quantity and special orders that competitors brush aside, and we are always eager to explore non-standard requirements. Every customer has a skilled Regional Sales Manager and Customer Relationship Manager to coordinate all needs. We are customer-centric, obsessed with quality and on-time delivery, and we are dedicated to your complete satisfaction; that's what makes us different.

The Central team is driven by the core values of **purpose, innovation, enthusiasm, trust, teamwork, and heritage**, and our primary goal is to exceed your expectations. Our leadership team cultivates a dynamic corporate culture through leading by example and providing ongoing development opportunities for our employees, whom we refer to as members. For over forty-five years, our mission has been to be a growing, profitable organization that designs and manufactures the highest quality, innovative discretes with outstanding service.

Susan Ryan | President & CEO

proven history of success

Since 1974, Central Semiconductor has been the go-to company for customers around the world who want innovative and reliable discrete semiconductors. Today, Central supplies leading-edge discretes for the hottest high-tech products, from wearable electronics to tablet computers to wireless products and smart devices. At the same time, Central continues to manufacture older technology devices still needed by many manufacturers of products with long life cycles.



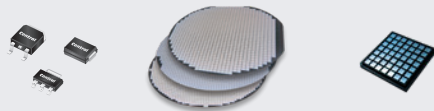
forging a niche

In the late 1970s Central recognized that there was unfulfilled demand for trailing edge semiconductors. Many manufacturers left a gap when they began discontinuing production of germanium devices in favor of silicon. Central stepped in to fill this void and continued making germanium devices until the late 1980s. Since then, Central has remained dedicated to manufacturing many other trailing edge devices in legacy packages. Trailing edge devices allow for the extended life of older, but still useful end products, while avoiding the expense of costly redesigns.



from trailing edge to leading edge

To address the growing demand for miniaturization in the 1980s, Central expanded its product families to include surface mount devices. Then in the 1990s, Central entered the hybrid market to fill another void in the market, and began selling its products in wafer and bare die form. In the 2000s, Central expanded its discrete solutions to include services.



Central today... and into the future

Smaller, more flexible, and more entrepreneurial than broad product line manufacturers, Central Semiconductor has ensured its product portfolio has continued to evolve. With its unique combination of support for trailing edge technology, innovation, and services, Central continues to build its reputation for manufacturing the highest-quality devices, delivered on time, with outstanding service, at reasonable prices. Solving customers' most challenging problems is the key to mutual success. Central's mission and passion...complete customer satisfaction.

core values

Central's leadership team developed its corporate core values to detail what drives the entire organization. Every Central team member is passionate about these principles that are used to guide our day-to-day interactions, as well as our strategic endeavors.

purpose

Customer satisfaction is our passion.

innovation

Overcome challenges through creative solutions.

enthusiasm

The resolve to achieve excellence.

trust

Empower to succeed.

teamwork

Results through dynamic collaboration.

heritage

Exceptional past, exciting future.

engineering



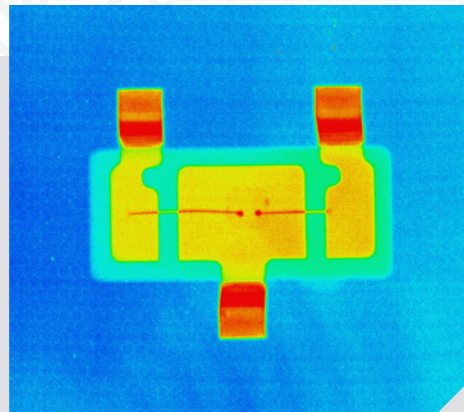
new device development

Facing a design problem? Central's research and development team can meet the strictest custom design requirements and get the job done quickly.



experienced applications engineering

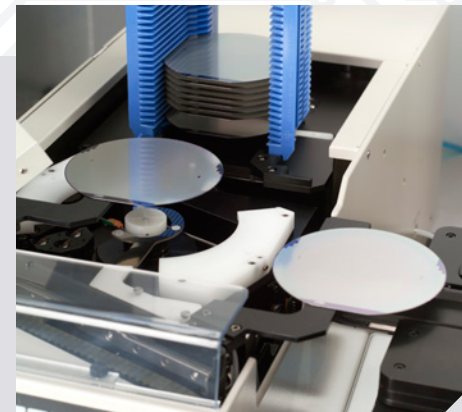
Central's parametric search tool and the involvement of its applications engineering group make selecting the right discretes a simple task. These engineers are ready to assist product designers in making the right choices. Central's applications engineers also share their expertise by publishing articles and white papers on discrete devices and device applications.



advanced product analysis

A critical part of Central's constant effort to achieve perfect product quality is its ability to thoroughly analyze devices. Central's product analysis lab is equipped with state-of-the-art tools such as JEOL scanning electron microscope (S.E.M.) with EDX. Devices can be inspected for metallurgical impurities and wire bonding connections can be verified.

manufacturing



wafer processing & device assembly

Central's extremely efficient manufacturing process uses carefully selected foundries and assembly plants. This model features high speed automated wafer probe, production testing, and marking & taping equipment. Packaged device wafers are 100% tested in a Class 1000 cleanroom before assembly. After assembly, devices are returned to Central and are tested again to ensure the strictest quality standards are met.



production testing

Automated and manual production testing is performed to ensure devices meet electrical specifications and lot-to-lot consistency. Wafers and assembled devices are 100% tested using the latest high-speed test equipment.



inventory & shipping

All devices are shipped to customers around the globe from Central's Hauppauge, Long Island, New York headquarters, located approximately 50 miles/80 kilometers east of Manhattan.

quality

over 45 years of outstanding quality

In a world where imperfection is all too often accepted, Central constantly monitors its manufacturing processes and business practices to achieve perfect quality products and outstanding service. Continuous improvement opportunities are regularly identified and implemented from within the organization.

Central defines Quality as Complete Customer Satisfaction.

We are dedicated to manufacturing Competitively Priced, Quality Products delivered on time and professionally serviced.

We define excellence as surpassing our customers' expectations.

Our perpetual challenge is the pursuit of Achieving Excellence in everything we do, and we strive to accomplish this by utilizing Ongoing Training and focusing on Continuous Improvement.

We recognize that Customer Satisfaction results in repeat business.



product qualification

Central Semiconductor conducts an extensive analysis of its products including a variety of industry standard accelerated stress tests. This qualification process is performed in order to confirm the product meets the long-term reliability and quality requirements of each and every Central product.



in process quality control

Central's in-process quality controls assure that every device meets its strict standards of excellence. Statistical Process Control (SPC) is used to detect any variations during the manufacturing process.



product quality analysis

The Central team is driven to ensure that customers receive the highest quality products. In the rare occasion when a failure does occur, Central has created an online product quality analysis (PQA) tool that allows customers to submit an issue for failure analysis with just a few key strokes. Customers can track and review progress of the analysis in real time from anywhere in the world.

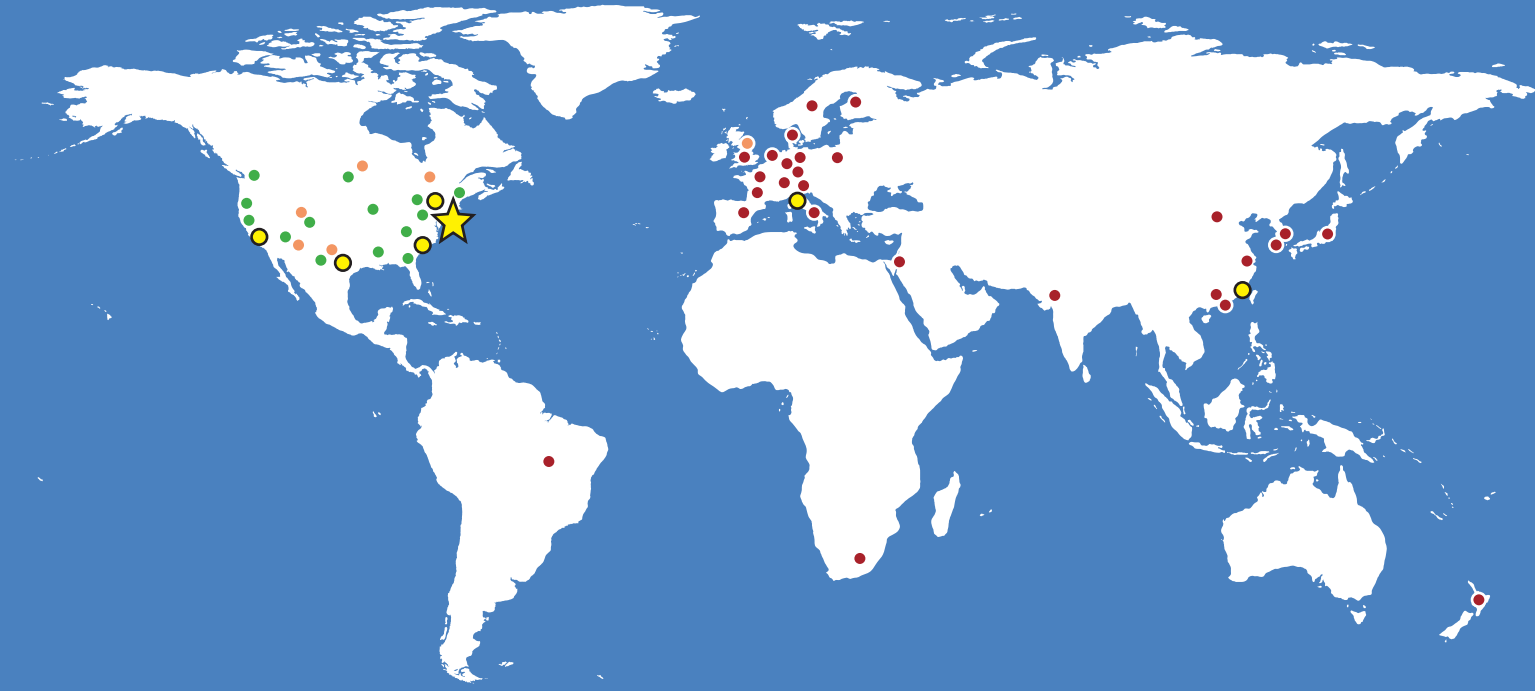


global sales network



Outstanding service is one of the keys to longstanding success. Central's Sales team is staffed with knowledgeable professionals focused on completely satisfying customers and helping to overcome challenges.

Central has a multi-lingual extended sales channel, including Regional Sales Managers, Customer Relationship Managers, a network of franchised distributors, and local representatives.



Hauppauge, NY
Corporate Headquarters

Regional Sales Office

Manufacturer's Representative

Regional Franchised Distributor

Broadline Franchised Distributor

products & solutions

Central continually manufactures standard and innovative products for customers. Some customers seek these products out at the die level, and others require legacy devices that other manufacturers end of life (EOL) and discontinue altogether.

When standard devices do not meet a customer's design requirements, Central excels at developing custom solutions. These may be new to Central or new to the world.



innovation

- Leading edge devices
- Custom packaging
- Application-specific designs



bare die

- Standard and unique packaging options
- Custom metalization
- Broad range of devices
- Up-screening options



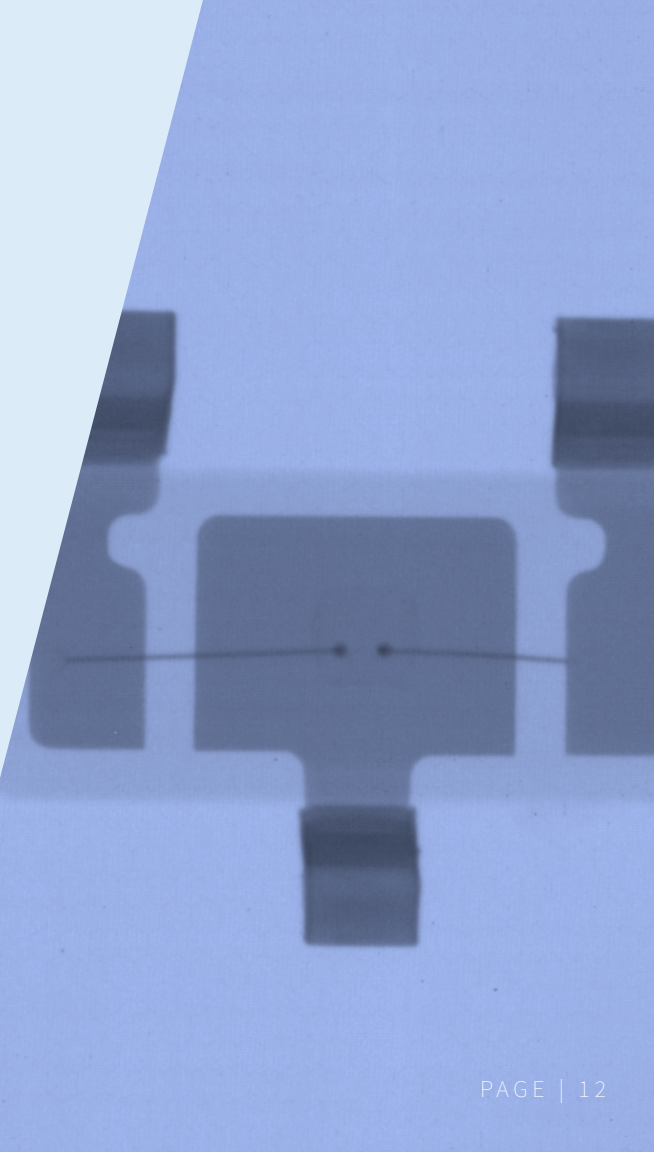
legacy

- Central continues to manufacture older technology devices to support extended product life cycles
- Over 3,000 legacy devices available
- Custom legacy device development possible



services

- Product services and vendor managed inventory
- Parametric electrical screening
- Plating options for through-hole devices
- Custom device development
- Up-screening
- Super Industrial™ and Spacellite™



product portfolio



transistors - small signal

- **General Purpose:** 10V thru 250V - 30mA thru 800mA
- **High Current:** 20V thru 120V - 500mA thru 1.0A
- **High Voltage:** 60V thru 700V - 10mA thru 1.0A
- **Darlington:** 25V thru 60V - 300mA thru 800mA
- **Low Noise Amplifier:** 18V thru 110V - 10mA thru 500mA, NF = 2.0 & 3.0 (dB)
- **RF Oscillator:** 12V thru 50V - 25mA thru 500mA - f_T = 600 thru 900 (MHz)
- **Saturated Switch:** 12V thru 30V - 50mA thru 600mA
- **Chopper:** 35V - 150mA - PNP only



transistors - bipolar power

- **General Purpose:** 25V thru 175V - 1.0A thru 30A
- **Low $V_{CE(SAT)}$** 15V thru 140V - 1.0A thru 6.0A - $V_{CE(SAT)}$ as low as 0.25V @ I_C = 3.0A
- **High Voltage:** 60V thru 700V (BV_{CEV}) - 1.0A thru 20A - NPN only
- **Darlington:** 30V thru 400V - 1.0A thru 30A



MOSFETs / JFETs

- MOSFETs**
- **N-Channel** V_{DS} = 20V thru 850V - I_D = 100mA thru 12A - $r_{DS(ON)}$ = as low as 20m Ω
 - **P-Channel** V_{DS} = 20V thru 50V - I_D = 100mA thru 11A - $r_{DS(ON)}$ = as low as 20m Ω
 - **Complementary N-Channel/P-Channel**

- JFETs**
- **N-Channel** BV_{GSS} = 25V thru 40V - I_{DSS} = 1mA thru 150mA
 - **P-Channel** BV_{GSS} = 30V & 40V - I_{DSS} = 0.9mA thru 60mA



for a complete listing of all devices,
visit Central's Parametric Search at:
www.centraalsemi.com

diodes

- **Schottky** 20V thru 100V - 15mA thru 500mA
- **Fast Switching** 35V thru 600V - 50mA thru 400mA
- **Current Limiting (CLD)** 35 μ A thru 22.5mA
- **Stabistor** 0.9V thru 4.1V
- **Zener** 100mW thru 250W - 1.8V thru 330V
- **Temperature Compensated Zener** 325mW & 350mW - 6.2V & 9.0V
- **Low and Ultra Low Leakage** As low as 5pA



rectifiers

- **General Purpose:** 50V thru 1600V - 1.0A thru 40A
- **Fast Recovery** (<500ns) 50V thru 1000V - 1.0A thru 6.0A
- **Ultra Fast Recovery** (<100ns) 50V thru 1300V - 1.0A thru 15A
- **Super Fast Recovery** (<35ns) 100V thru 600V - 1.0A thru 10A
- **HyperFast Recovery** (<25ns) 200V thru 600V - 1.0A thru 10A
- **Schottky** 20V thru 200V - 1A thru 75A
- **Schottky Bridge** 40V thru 200V - 1.0A thru 2.0A
- **Bridge** 60V thru 1000V - 140mA thru 35A



thyristors

- **SCR** 25V thru 1200V - 250mA thru 63A
- **TRIAC** 200V thru 800V - 1.0A thru 40A



protection devices

- **Transient Voltage Suppressor (TVS)** 200W thru 5000W - 5.0V thru 440V
- **ESD Transient Voltage Suppressor** HBM 2KV thru 30KV - 1.5V thru 24V - (Capacitance as low as 0.2pFTYP)



markets & applications

alternative energy



- Bypass diode for solar panel
- DC-AC inverter
- DC-DC Boost converter
- Buck converter
- Micro inverter

networking



- Power over Ethernet (PoE)
- Data/User interface
- I/O interface
- Micro controller protection
- Audio amp

consumer

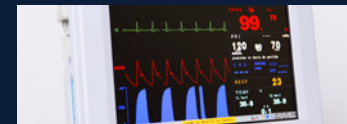


- Data/User interface
- Battery charging & control
- DC-DC converter
- High voltage power supply
- Audio processing
- Power management

industrial • scientific • medical (ISM)

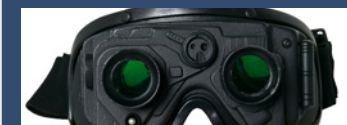


- Power Factor Correction (PFC)
- Motor control
- Rectification
- Filter/Protection
- I/O interface
- DC-DC converter



- DC-AC inverter
- Battery and charging circuit
- Power management
- Data/User interface
- Sense and measure
- DSP/Micro controller protection

mil/aero

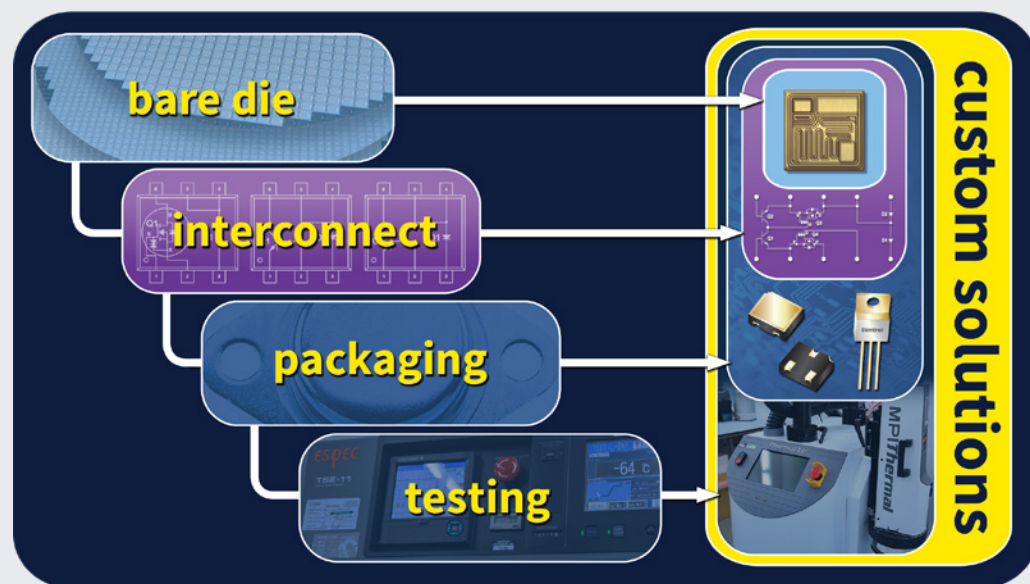


- High reliability up-screened devices
- MIL-PRF-38534 bare die equivalents
- MIL-PRF-19500 bare die and packaged equivalents

customer-specific solutions

When designers can't find standard discretes to solve their problems, they turn to Central for the custom solutions they need. Central's robust services and capabilities offering is continuously expanding.

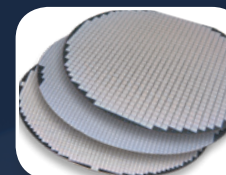
Central can develop your ideal solutions at all levels of the design process:



bare die

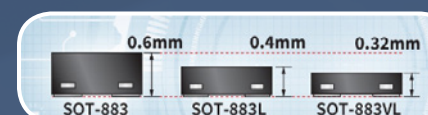
Custom solutions can begin at the bare die level.

- special wafer diffusion
- monolithic die
- backside metalization for wafers



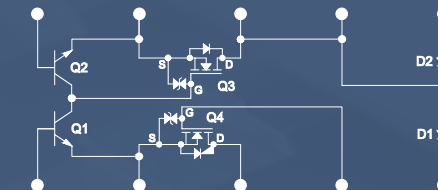
packaging

Custom packages can be developed to meet specific requirements. Central excels at solving problems when board space or profile are essential design factors.



interconnect

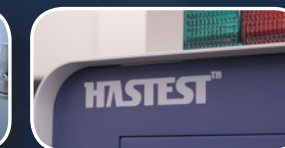
Central can combine multiple devices with different technologies into a single package. Monolithic solutions may also be available.



testing

Up-screening services are available for designers requiring ruggedized or high-reliability devices.

- MIL-equivalent bare die up-screening
- MIL-equivalent packaged device up-screening
- customer-specific testing





solutions for extreme environments

When standard commercial or standard industrial devices do not meet product performance requirements, Central Semiconductor's **Super Industrial™** and **Spacellite™** products are the ideal solution.

SUPER INDUSTRIAL™

Super Industrial™ devices are upgraded versions of standard commercial and industrial products, providing an alternative to standard industrial or military devices. Super Industrial™ improves end product tolerance to extreme environmental conditions and improves reliability.

enhancements may include:

- Upgraded device specifications
- Wider temperature ranges
- Ruggedized construction
- Integrated technologies / MDMs
- Up-screening to insure high reliability



spacellite™

Spacellite™ discrete semiconductors are devices designed to meet the specifications for reliability and functionality for today's modern satellite applications. Spacellite™ meets Space 2.0 methodology and directives and offers reduced cost without compromising quality or reliability. Equivalent to MIL-PRF-19500 and MIL-PRF-38534 devices, Spacellite™ products are ideal for low Earth orbit (LEO) applications.

testing possibilities:

- thermal testing
- temperature cycling
- Scanning Electron Microscopy (S.E.M.)
- fine leak testing
- highly-accelerated stress testing
- wire pull testing

Rethink the Possibilities™

Contact Us:

Satisfying engineers' most demanding design requirements for the latest applications with exceptional service is a passion for the Central team.

Your vision is our mission, **just ask.**

**Just
Ask**

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