Custom Design & Manufacturing Services

An extensive offering of custom products, processes, and services from ON Semiconductor.
**Benefits to Customers**

- ON Semiconductor coordinates specification, design, manufacturing, packaging, testing, and delivery of production ASICs
- Enhance product differentiation with features unavailable in standard solutions
- Save energy with efficiencies gained through integration and design optimization
- Save board space by miniaturizing product size through integration and advanced packaging options
- Protect IP investment through hardware embedding
- Reduce cost in overall application
- Improve reliability by reducing the number of components and interconnections
- Reduce noise by eliminating inter-package connections

**Trusted Supply Chain**

- DMEA accredited Trusted Foundry, Trusted Design, Trusted Test, and Trusted Broker
- Directly owned and operated fabs
- In-house test facilities
- Flexible packaging options from unsorted wafer sales to assembled, final-tested units
- Long-term supply chain security reduces exposure to obsolescence
- World-class customer service
- Supply chain services (buffer stocking, VMI, die banks, distribution)

**Quality & Reliability**

- Fab technologies built to strenuous quality & reliability standards for automotive, implantable medical, and military customer requirements
- Internally owned, managed, and controlled fabs
- Best-practice Q&R methods, tools, systems, and engineers used for quality improvement
- In-house failure analysis and EMC/EMI labs
Customized Solutions from ON Semiconductor

**Custom Product Capabilities**

- Application Specific Integrated Circuits (ASIC)
  - Mixed-Signal ASICs for Automotive, Industrial, Medical and other markets
  - Digital ASICs for Aerospace/Defense, Automotive, Industrial, Communications and other markets
  - FPGA-to-ASIC and ASIC-to-ASIC conversions
- Integrated Passive Devices for portable, wireless and RF applications
- Electro-optical products
  - CCD and CMOS image sensors for machine vision, medical, 2D barcode, military, and space applications, with broad IP portfolio
  - Light sensors for consumer and industrial applications
  - Scanner modules for banking, gaming, and data processing applications
- Virtually any device in our expansive portfolio of power management and discrete components can be customized
- Customized packaging

**Tools and Processes**

- Fully certified and robust custom development process
- Wide range of CMOS and BCDMOS process technologies, from mature to leading edge geometries
- AEC-Q100 qualified smart power technologies up to 100 V
- High reliability and extreme temperature ranges
- Certified, directly owned, 6” and 8” wafer fabs
- Process longevity supports extended product life-cycles
- ESD protection up to 8 kV in-system
- EMC/EMI lab
- Reliability and Failure Analysis lab

**Expertise**

- More than 50 years of custom silicon experience
- Over 5,500 successful designs
- World-class rankings
  - #1 FPGA-to-ASIC Conversion Supplier
  - #1 in Industrial & Other Analog ASIC
  - #1 in Ultra-High-Speed CMOS Image Sensors
  - #1 in Radiation Tolerant, Space Qualified CMOS Image Sensors
  - #1 in Low-Light Interline Transfer EMCCD Image Sensors
  - #2 Industrial Vision Image Sensor Supplier
  - #2 in Overall Analog ASIC
  - #3 Automotive Mixed-Signal ASIC Supplier
  - #3 Aerospace/Defense Digital ASIC Supplier
- Thousands of custom products in production
- Extensive system knowledge in focus application fields
- Hundreds of proven, IP block ‘starting points’ are available

**People**

- System architects review your product concept and architecture and provide feedback
- Team of highly skilled, experienced silicon, packaging and test engineers craft your product
- Dedicated program managers track and report development progress

**Certifications**

- ISO/TS-16949
- AS 9100 Rev. C
- MIL-PRF-38535
- Trusted Foundry, Design, Test, and Broker Accreditation
- ISO 9001
- ISO 14001
- QML, CTPAT, STACK
- ISO 26262
Mixed-Signal Custom Solutions

Value Proposition

- Experienced resources and assets to bring customers’ design objectives successfully to market
- Ability to integrate customers’ IP into single-chip solution, thereby protecting the IP
- Flexible cost models to reduce customers’ total cost

Design Engineering

- Approximately 200 expert mixed-signal designers with extensive SoC and SIP experience
- Robust custom development process
- Dedicated project managers track & report development progress
- Flexible customer development engagement — from full turnkey to subcontractor production services
- Design expertise in:
  » Sensor interface
  » Wireless systems
  » Medical imaging
  » Energy management
  » Building & home control

IP & Fab Processes

- ≥55 nm, analog-focused CMOS/BCDMOS process technologies utilizing internal fabs and external foundry partners
- Low, medium, high voltages — ≤1 V to 90 V
- Low current optimization — active & standby
- Low noise design — “count the electrons”
- High temperature — ≤200°C (profile, for selected technologies)
- Integrated low power wireless
- Non-Volatile Memory (EEPROM, OTP), RAM & ROM
- Embedded digital IP
- Robust ESD protection
- Extensive building block ‘starting points’ consisting of amplifiers, references, DACs, ADCs, linear & switching regulators, power management, etc.

<table>
<thead>
<tr>
<th>Category</th>
<th>Mixed Signal Intellectual Property (IP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Interfaces</td>
<td>USB 3.0/2.0/1.1, HDMI, MIPI, I2C, SPI, CAN, UART</td>
</tr>
<tr>
<td>Microprocessors</td>
<td>ARM, RCore DSP, R8051, AMBA/AHB/APB Peripherals</td>
</tr>
<tr>
<td>Memory</td>
<td>SRAM, DRAM, ROM, EEPROM, OTP, FLASH</td>
</tr>
<tr>
<td>Clocking</td>
<td>Oscillators, PLLs, DLLs</td>
</tr>
<tr>
<td>Communication</td>
<td>Wireless (Proprietary &amp; Standards), Wired (KNX, PLC and others)</td>
</tr>
<tr>
<td>Encryption</td>
<td>ECC, AES, 3-DES, DES, RSA</td>
</tr>
<tr>
<td>Data Converters</td>
<td>DAC, ADC (8 - 20 bits, 1 KSPS – 120 MSPS)</td>
</tr>
<tr>
<td>Wireless IP</td>
<td>PGA, LNA, PLLs, Correlators, DSP</td>
</tr>
<tr>
<td>Power Management</td>
<td>Efficient Switching Regulators, LDos, Charge Pumps, Thermal Protection</td>
</tr>
<tr>
<td>References</td>
<td>Precision Bandgaps, Current References, Temperature Sensors</td>
</tr>
<tr>
<td>Analog and High Voltage</td>
<td>High-Voltage Drivers, Display and LCD Drivers, Class D Amplifiers</td>
</tr>
<tr>
<td>Interfaces</td>
<td></td>
</tr>
<tr>
<td>Signal Conditioning</td>
<td>PGA, Instrumentation Amps, Digital and Analog Filters</td>
</tr>
</tbody>
</table>
**Digital ASIC Solutions**

**Proven Expertise**

The comprehensive digital ASIC offering from ON Semiconductor includes multiple manufacturing locations with state-of-the-art to legacy technologies to support your design requirements. We provide complete solutions from product development, manufacturing, test, and packaging, to quality engineering support and supply. We offer early engagement with our System Architects to assess the best overall technical solution enabling a strong partnership throughout each step of the project lifecycle, from concept to production. ON Semiconductor supports reliable long-term manufacturing to meet the requirements of aerospace/defense, automotive, industrial, communication and other markets. With more than 40 years of IC experience, we guide our customers to the best technical and most economical ASIC solution.

**Solutions for Your Requirements**

- Complete value stream offering including product development, test, package engineering, quality engineering, and failure analysis
- Proven state-of-the-art and legacy technologies
- System architects consultation for best overall solution
- Extensive IP offering
- Secure, long term, continuous supply
- Support of small volume applications
- Multiple design interface support (RTL, Netlist, GDS, etc.)
- FPGA-to-ASIC, ASIC-to-ASIC, and multi-chip-to-ASIC conversions
- Big D (Digital) / Small A (Analog) ASIC capability to increase integration and simplify board design
- High reliability, high temperature, special packaging and handling
- Full ITAR handling available
- DO/254-ED80 compliance solutions
- QML Flow, Trusted Supplier
**Digital Standard Cell Product Families**

<table>
<thead>
<tr>
<th>Family</th>
<th>Core Voltage</th>
<th>I/O Voltage</th>
<th>I/O Types</th>
<th>System Performance</th>
<th>Special Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC5 0.5 μm</td>
<td>5 V</td>
<td>5 V, 3.3 V</td>
<td>PCI, TTL, LVTTL, LVC MOS</td>
<td>75 MHz</td>
<td>Long-Term 5 V Support, High Temp</td>
</tr>
<tr>
<td>SC3 0.35 μm</td>
<td>3.3 V, 2.5 V</td>
<td>5 V, 3.3 V</td>
<td>PCI, GTL, HSTL, SSTL, LVTTL, LVC MOS, LVPECL</td>
<td>100 MHz</td>
<td>EEPROM, High Temp</td>
</tr>
<tr>
<td>ONC18 180 nm</td>
<td>3.3 V, 1.8 V, 1.5 V</td>
<td>3.3 V, 2.5 V, 1.8 V</td>
<td>PCI, DCI, HSTL, SSTL, LVTTL, LVC MOS, LVPECL, LVDS, LVDS</td>
<td>266 MHz</td>
<td>NVM, OTP, High Vt, High Temp</td>
</tr>
<tr>
<td>SP110 110 nm</td>
<td>1.2 V</td>
<td>3.3 V, 2.5 V, 1.8 V, 1.5 V, 1.2 V</td>
<td>PCI, DCI, HSTL, SSTL, LVTTL, LVC MOS, LVPECL, LVDS, CML</td>
<td>450 MHz</td>
<td>OTP, Dual Source Capability, Mil Temp</td>
</tr>
<tr>
<td>SP65/55 65 nm, 55 nm</td>
<td>1.2 V, 1.0 V</td>
<td>3.3 V, 2.5 V, 1.8 V</td>
<td>PCI, DCI, HSTL, SSTL, LVTTL, LVC MOS, LVPECL, LVDS, CML</td>
<td>600 MHz</td>
<td>Extensive IP Portfolio</td>
</tr>
<tr>
<td>SP45/40 45 nm, 40 nm</td>
<td>1.1 V, 0.9 V</td>
<td>3.3 V, 2.5 V, 1.8 V</td>
<td>PCI, DCI, HSTL, SSTL, LVTTL, LVC MOS, LVPECL, LVDS, CML</td>
<td>850 MHz</td>
<td>Extensive IP Portfolio</td>
</tr>
<tr>
<td>SP32/28 32 nm, 28 nm</td>
<td>0.85 V ~ 1.05 V</td>
<td>3.3 V, 2.5 V, 1.8 V</td>
<td>PCI, DCI, HSTL, SSTL, LVTTL, LVC MOS, LVPECL, LVDS, CML</td>
<td>1000 MHz</td>
<td>Extensive IP Portfolio</td>
</tr>
</tbody>
</table>

**Comprehensive Intellectual Property Offering**

ON Semiconductor offers a suite of system IP suitable for a variety of applications, including those requiring high-speed serial I/O (SerDes), external high performance memory interfaces, processors and a variety of other hard and soft IP. Combined with support for a rich family of I/O standards, our digital ASIC technologies and IP provide optimal solutions for aerospace/defense, automotive, communications, industrial, consumer, computing, and medical applications. ON Semiconductor is an ARM® microprocessor licensee, and has access to multiple ARM cores for integration into silicon products.
ASIC Conversions
FPGA-to-ASIC, ASIC-to-ASIC

ASIC Conversions and EOL Solutions
ON Semiconductor provides long-term solutions to customers facing device or process obsolescence with their current ASIC or FPGA vendor. We provide reliable second sourcing options as well as cost reduction solutions to help you maintain your competitive edge. Conversion of an older technology to an optimized ASIC solution can provide a mid-life enhancement and extended life cycle.

FPGA Conversions
ON Semiconductor is the industry leader specializing in converting FPGAs to ASICs. We provide significant cost savings, performance enhancement, and product assurance. Our customers have been able to reduce system costs considerably by successfully substituting their high cost FPGAs with drop-in ASIC replacements in over 4,000 applications. In most cases, higher performance, lower power and better thermal performance can be achieved in the ASIC. ON Semiconductor offers a parallel development path for FPGA development. This leverages the FPGA development benefits while accelerating the path to production with an ASIC.

FPGA to ASIC Conversion
The Best of Both Worlds

<table>
<thead>
<tr>
<th>METRIC</th>
<th>FPGA</th>
<th>ASIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Cost</td>
<td>▲</td>
<td>Single-chip solution</td>
</tr>
<tr>
<td>HW/SW Co-Design</td>
<td>▲</td>
<td>3-4x typical power reduction with ASIC solution</td>
</tr>
<tr>
<td>ECO Turn-Around</td>
<td>▲</td>
<td>ASIC price 25 to 75% of the FPGA piece price</td>
</tr>
<tr>
<td>Time to Market</td>
<td>▲</td>
<td>No configuration boot-up vulnerabilities</td>
</tr>
<tr>
<td>System Performance</td>
<td>▲</td>
<td>Cold-start, Hot-swap enabling</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>▲</td>
<td>ASIC production stability</td>
</tr>
<tr>
<td>Unit Cost</td>
<td>▲</td>
<td>Radiation effects, flight-criticality, on-shore</td>
</tr>
<tr>
<td>Security</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Non-volatility (LAPU)</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Life Cycle Support</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Harsh Environments</td>
<td>▲</td>
<td></td>
</tr>
</tbody>
</table>

Conversion Features and Benefits
- Automatic design migration to a Standard Cell ASIC
- Low NRE, low cost drop-in replacements
- Multiple-to-one conversions for higher level of integration
- Original circuit functionality and performance maintained
- Optional performance enhancements for a competitive edge
- ASIC IP optimized for FPGA migrations
- Single-chip, non-volatile solution results in Live-at-Power-Up (LAPU); enhanced security; immunity to configuration logic errors resulting from SEE
- Significant reduction in power usage
- Improved cost through die size reduction
- Directly owned and operated fabs, plus access to industry standard third-party foundries
- Long fabrication process life
- On-shore production paths for most technologies
Integrated Passive Devices (IPD)
Efficient RF System-in-Package Solutions

Integrating passive devices into our HighQ™ copper platform gives a cost-effective, space-saving solution for all RF needs.

IPD Technology Characteristics
- Target frequency: 500 MHz to 40 GHz
- Low profile, minimal footprint
- Tight tolerance

Typical Applications
- Antenna Switch
- WiFi/Bluetooth
- Power Amplifier
- Zigbee

Typical IPD Designs
- Baluns
- Couplers
- Diplexers
- Balanced Filters
- Splitters
- Matching networks

IPD Technology (R, L, C)

Performance
- Guaranteed ±5.0% capacitor tolerance
- Typical < 1% variance between capacitors on common IPD
- Dual Cu stack up of 12 µm for high Q inductors
**IPD Technology**

**Advantages**
- Smaller than discrete solutions
- Thinner & higher precision than LTCC
- Lower cost than GaAs
- Best performance among silicon-based IPDs

**State of the Art Fab**
- Standard Mechanical InterFace system (SMIF) results in high and consistent yields
- Located in Gresham, Oregon
- Fab Certifications:
  - ISO14001
  - ISO/TS16949
  - AS9100B
  - OHSAS18001
  - QML (DoD)
  - ITAR (DoD)
  - Trusted Foundry Status

**Design and Foundry Services**
- Complimentary feasibility study
- Design services available
- Self-service design with full featured PDK for Cadence and Agilent
- Four 8-inch dedicated prototype wafers
- Shuttles with multiple designs/variants
Custom Foundry Services Overview

ON Semiconductor has a broad portfolio of custom and standard foundry offerings, including mixed-signal processes.

Our mixed-signal processes with high voltage and low power options are ideally suited for products in sensor applications and in the communication, mil/aero, automotive, medical and industrial markets.

Other offerings include custom process installation & modification, custom short-loop wafer processing, and back-end services, such as backside metallization, wafer thinning, probe, packaging, test, and logistics.

Service Oriented

ON Semiconductor understands customer needs and is dedicated to meeting them, from unsorted wafers to tested and packaged units. Customers are paired with a single contact for all business and technical issues for consistent support from initial engagement to production.

With high quality manufacturing facilities in the U.S., Europe and Asia, ON Semiconductor delivers prompt, cost-effective solutions to electronic manufacturers worldwide.

Our technology is design ready with excellent, easy to download design kits through MyON link on the www.onsemi.com Web site.

Trusted Source

ON Semiconductor is a registered ITAR supplier and has also been granted Category 1A Trusted Design, Trusted Test, and Trusted Foundry accreditation for its on-shore fabrication facilities in Idaho and Oregon.

Company Certifications


Process Longevity

ON Semiconductor’s philosophy for process longevity means we keep needed processes around to accommodate your long-term needs. We are committed to supporting long-life products and are dedicated to building long-term relationships. Supporting this is the company’s financial strength and commitment to effective use of resources. As a result, our customers have the confidence to make long-term product decisions without the concern of process obsolescence.

<table>
<thead>
<tr>
<th>Node (µm)</th>
<th>Process</th>
<th>Max Operating Voltage (VGS)</th>
<th>Max Drain Voltage (VDS)</th>
<th>No Metal Layers</th>
<th>Wafer Size (in)</th>
<th>Memories</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.18</td>
<td>ONC18  18V/18V</td>
<td>5 V / 18 V</td>
<td>18 V</td>
<td>4-6</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>ONC18  5V/30V</td>
<td>1.8 V / 5 V</td>
<td>30 V</td>
<td>4-6</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>ONC18G M/S I4T45</td>
<td>1.8 V - 3.3 V</td>
<td>15 V</td>
<td>4-6</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>I4T70</td>
<td>1.8 V / 3.3 V</td>
<td>45 V</td>
<td>4-6</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td>0.25</td>
<td>ONC25</td>
<td>5 V</td>
<td>5 V</td>
<td>2-5</td>
<td>8</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>ONBCD25</td>
<td>5 V / 12 V</td>
<td>2.5 V / 5 V / 40 V</td>
<td>2-5</td>
<td>8</td>
<td>N</td>
</tr>
<tr>
<td>0.35</td>
<td>C3</td>
<td>3.3 V / 12 V</td>
<td>10 V</td>
<td>3-5</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>I3T25</td>
<td>18 V</td>
<td>18 V</td>
<td>3-5</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>I3T50</td>
<td>3.3 V</td>
<td>36 V</td>
<td>3-5</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>I3T80</td>
<td>3.3 V</td>
<td>65 V</td>
<td>3-5</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>I3T200SOI</td>
<td>3.3 V</td>
<td>70 V / 200 V</td>
<td>3-5</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td>0.6</td>
<td>C5</td>
<td>5 V / 12 V</td>
<td>18 V</td>
<td>2-3</td>
<td>8</td>
<td>Y</td>
</tr>
<tr>
<td>0.7</td>
<td>I2T100</td>
<td>5 V</td>
<td>90 V</td>
<td>2-3</td>
<td>6/8</td>
<td>N</td>
</tr>
</tbody>
</table>
**Flexible Manufacturing**
- Wide variety of standard CMOS, BCD and high voltage process offerings
- Flexible manufacturing available (process modifications, lot splits, etc.)
- Multiple fab strategy to enable dual sourcing
- Specialty services such as advanced die stitching
- Shuttle services for prototyping
- DMEA Accredited Trusted Foundry and Broker
- Low volume strategic engagements
- Partial fab processing, assembly & test services

Our commitment to long-term technology support and a wide range of process offerings enable our customers to provide the highest quality end products at the most cost effective rate.

**Full Service Custom Foundry**

**Capability**
- Design Kits for 0.8 µm to 110 nm CMOS, BCD & High-Voltage Technologies
- Internal & external IP offerings
- FoundryPlus™ Added-Value Services – wafer sort, thinning, backside metalization, packaging, testing
- Custom Process Expertise – development, transfers, & modifications

**Experience**
- Servicing Foundry customers in aerospace, defense, industrial, automotive, & consumer markets for over 45 years
- Long-term strategic relationships
- Flexible manufacturing options
- Process longevity
- Full service optimized supply chain

**Quality**
- Quality culture – Road To Zero Defects
- QML (DoD) Certifications
- ISO-9001, AS9100
- TS-16949, ISO-26262, AEC-Q100
- Trusted Supplier, ITAR Certification
- OHSAS 18001
Custom Electro-Optical Solutions

ON Semiconductor supplies fully assembled CIS modules for scanning applications, such as currency verification, gaming, and balloting machines. Our devices leverage the performance benefits of CMOS active pixel technology to provide superior noise performance. Due to design expertise and flexibility, the company can provide quick turn around times from concept to production.

Our industry leading custom light sensor solutions combine our expertise in silicon photo-diode technology, analog and digital circuit design and custom optical filters to provide individual customers with unique and innovative solutions for ambient light sensors and optical proximity sensors. Custom light sensors perform in applications such as smart phone gesture detection and display power management; TV screen intensity management; and general LED lighting intensity control.

CIS Module Features and Options
- CMOS based linear image sensors
- Internally owned and operated fabrication facility
- Flatbed, sheet-fed style
- Resolutions from 50 to 1,200 dpi
- A3 to A8 and custom scan widths
- IR to UV LED illumination (white, red, green, etc.)
- RGB, single, or multiple LED colors in either light pipe or bar
- 1 MHz to 20 MHz (4 x 5 MHz) scan speed
- Analog, binary, inverted and multi-channel outputs
- Trilinear color sensors
- Fixed or programmable resolution, high scan speed, extended temperature range
- Reflective and transmission illumination methods

Light Sensor Features and Options
- Ambient light sensors
- Proximity sensors
- Integration of optical sensors, LED drivers and high speed digital interfaces
- Custom optical filters can mimic human eye light response or other desired behaviors
- Accurate low light level operation, especially in the presence of filtering and smoked glass
- Analog or digital outputs
- Linear or logarithmic outputs
- Very low power consumption

Photodiode Array Features and Options
- Self-scanning solid-state linear imaging arrays
- Optimally designed for spectroscopy applications with high dynamic range
- Large signal-to-noise ratio
- 65 pC saturation capacity
- Wide spectral response (180 – 1000 nm) for UV and IR response
- UV damage resistance
- Low dark current
- Integration time up to 9 seconds at room temperature
- Integration time extended to hours by cooling
- High linearity
- Low power dissipation (less than 1 mW)
- Geometrical structure for enhanced stability and registration
- Standard DIP-22 package
Custom Image Sensor Solutions

ON Semiconductor develops custom and application-specific CCD and CMOS image sensors that help customers create unique products with state-of-the-art performance. Designs can leverage existing technology blocks or include the development of new technologies to provide new levels of performance and functionality.

Custom image sensor designs provide great flexibility in product specifications, providing opportunities for key end-product differentiation in the target application. Devices can be developed with commercial, industrial, or military grade qualification, and an advanced supply chain supports long-term supply.

Custom CMOS Image Sensor Capabilities
- Frame rates up to 18 K frames per second at megapixel resolution
- Windowing to 1 M frames per second
- Die sizes from less than 1 mm by 1 mm up to wafer scale
- Radiation tolerant designs
- 8, 10, 12, 14 and 16-bit ADC options
- High speed parallel and serial digital outputs
- Optimized pixel architectures
- In-pixel noise reduction

Custom CCD Image Sensor Capabilities
- Interline, Full-Frame, Linear, TDI, and EMCCD platforms
- Wavelength independent, aperture limited MTF
- Superior global electronic shuttering
- Read noise <1 e⁻
- Die sizes up to wafer scale
- Multiple output designs
- Data rates up to 60 MHz / output
- ITO gates for high quantum efficiency
- Superior dark current and uniformity performance
- Custom packages
- US Manufactured
Automotive Die/Wafer Sales

The automotive die sales program from ON Semiconductor is designed to meet the requirements of today’s automotive market. The increasing complexity of electronic systems is accompanied by demands for increased component density, improved subsystem reliability, and reduced functional costs. ON Semiconductor offers thousands of discrete and integrated circuit devices in chip form to address today’s market needs. Built around our manufacturing Center of Excellence, we offer thorough electrical testing and visual inspection of every die we produce under our bare die program.

The ON Semiconductor Advantage
- Dedicated die center of excellence
- 100% electrical testing per device specification
- 100% visual inspection
- Whole wafers or Surftape®
- Certified to ISO/TS-16949
- Certified to ISO 9001
- AEC qualified die/wafers available

Available Product Families*
- Analog
- BJTs, Digital Transistors (BRTs), CCRs, JFETs
- EEPROMs
- ESD Protection Diodes
- IGBT
- Logic
- MOSFETs
- Op Amps
- Schottky
- SmartFET
- Smart Card ICs
- Ultrafast
- Video & Audio Amps
- Voltage Regulators
- Zeners

* Operating Temperatures to 175°C. Maximum operating temperature contingent upon mounting configuration and higher temperature operation may not be supported by all products.
The commercial die sales program from ON Semiconductor is designed to meet the challenges of today’s consumer market. Rapid device miniaturization, increased thermal and electrical performance and improved reliability requires module designs utilizing bare die. ON Semiconductor offers thousands of products in various packaging options to meet these evolving market requirements. Our manufacturing Center of Excellence performs the electrical and visual inspection testing to ensure our bare die exceed customer requirements.

**The ON Semiconductor Advantage**
- Dedicated die center of excellence
- Sample electrical testing per device specification
- Whole wafers or Surftape
- Certified to ISO 9001

**Available Product Families**
- Analog
- BJTs, Digital Transistors (BRTs), CCRs, JFETs
- EEPROMs
- ESD Protection Diodes
- IGBT
- Logic
- MOSFETs
- Op Amps
- Schottky
- SmartFET
- Smart Card ICs
- Ultrafast
- Video & Audio Amps
- Voltage Regulators
- Zeners

**Wafer Sales**
- Probe
- Inspection
- Pack & Ship

**Surftape**
- Probe
- Inspection
- Wafer Mount
- Wafer Saw
- Sample Saw Inspection
- Pick/Place Surftape
- Final Inspection
- Pack & Ship

**Third-Party Partners**
- Micross
- Semi Dice
### ON Semiconductor Technical Support

**ON Semiconductor International Sales Offices**

<table>
<thead>
<tr>
<th>Country</th>
<th>City</th>
<th>Phone Numbers</th>
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**ON Semiconductor Distribution Partners**

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<tr>
<th>Distribution Partner</th>
<th>Contact Information</th>
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<tbody>
<tr>
<td>Allied Electronics</td>
<td><a href="http://www.alliedelec.com">www.alliedelec.com</a></td>
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<tr>
<td>ALTIMA Company, Mancinica, Inc.</td>
<td><a href="http://www.altimac.com/about/english.html">www.altimac.com/about/english.html</a></td>
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<tr>
<td>Arrow Electronics</td>
<td><a href="http://www.arrow.com">www.arrow.com</a></td>
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<tr>
<td>Avnet</td>
<td><a href="http://www.avnet.com">www.avnet.com</a></td>
</tr>
<tr>
<td>Chip One Stop, Inc.</td>
<td><a href="http://www.chipstop.com/web/JPN/en/make/on">www.chipstop.com/web/JPN/en/make/on</a></td>
</tr>
<tr>
<td>CLAIIS Company, Mancinica, Inc.</td>
<td><a href="http://www.mancinica.co.jp/en">www.mancinica.co.jp/en</a></td>
</tr>
<tr>
<td>Danke Distribution Ltd.</td>
<td><a href="http://www.danakhr.com">www.danakhr.com</a></td>
</tr>
<tr>
<td>Digit-Key</td>
<td><a href="http://www.digkey.com">www.digkey.com</a></td>
</tr>
<tr>
<td>eFuture &amp; FPA Electronics</td>
<td><a href="http://www.futureelectronics.com/contact">www.futureelectronics.com/contact</a></td>
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<tr>
<td>Fujitsu Electronics Co., Ltd.</td>
<td><a href="http://www.fujitec.co.jp/english">www.fujitec.co.jp/english</a></td>
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<tr>
<td>KTL Corporation</td>
<td><a href="http://www.kl-tcorpor.co.jp/en">www.kl-tcorpor.co.jp/en</a></td>
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<tr>
<td>Mouser Electronics</td>
<td><a href="http://www.mouser.com">www.mouser.com</a></td>
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<tr>
<td>Newark/Farnell</td>
<td><a href="http://www.farnell.onsemi.com">www.farnell.onsemi.com</a></td>
</tr>
<tr>
<td>NEXTY Electronics Corporation</td>
<td><a href="http://www.nexty-ele.com/english">www.nexty-ele.com/english</a></td>
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<tr>
<td>OS Electronics Co., Ltd.</td>
<td><a href="http://www.oseltec.com">www.oseltec.com</a></td>
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<tr>
<td>Promate Electronic Co.</td>
<td><a href="http://www.promate.co.tw">www.promate.co.tw</a></td>
</tr>
<tr>
<td>Ryon Corporation</td>
<td><a href="http://www.ryon.com/en">www.ryon.com/en</a></td>
</tr>
<tr>
<td>Russian Company, Limited</td>
<td><a href="http://www.russianco.ru/eng">www.russianco.ru/eng</a></td>
</tr>
<tr>
<td>RS Components</td>
<td><a href="http://www.rs-components.com">www.rs-components.com</a></td>
</tr>
<tr>
<td>Segyung Bristonen Co.</td>
<td><a href="http://www.bristone.com">www.bristone.com</a></td>
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<tr>
<td>Seral Microelectronics, HK</td>
<td><a href="http://www.seral.com.hk">www.seral.com.hk</a></td>
</tr>
<tr>
<td>World Peace Industries Co.</td>
<td><a href="http://www.wpi-group.com">www.wpi-group.com</a></td>
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<tr>
<td>WIT Microelectronics Co.</td>
<td><a href="http://www.witmc.com">www.witmc.com</a></td>
</tr>
<tr>
<td>Yosun Electronics</td>
<td><a href="http://www.yosun.com.tw">www.yosun.com.tw</a></td>
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</tbody>
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**ON Semiconductor Website**

[www.onsemi.com](http://www.onsemi.com)

**Order Literature**


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  - Eletap
  - (408) 496-0706
- **Canada**
  - Eastern Canada
  - Astec
  - (905) 607-1444
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  - Paragon Electronic Systems
  - (603) 645-7630
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  - e-Components
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  - Atlanta
  - e-Components
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  - Ammon & Ricos
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  - Bear VAI
  - (440) 526-1991
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  - (952) 400-1070
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  - Matrix – Design Technology
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  - Matrix – Design Technology
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