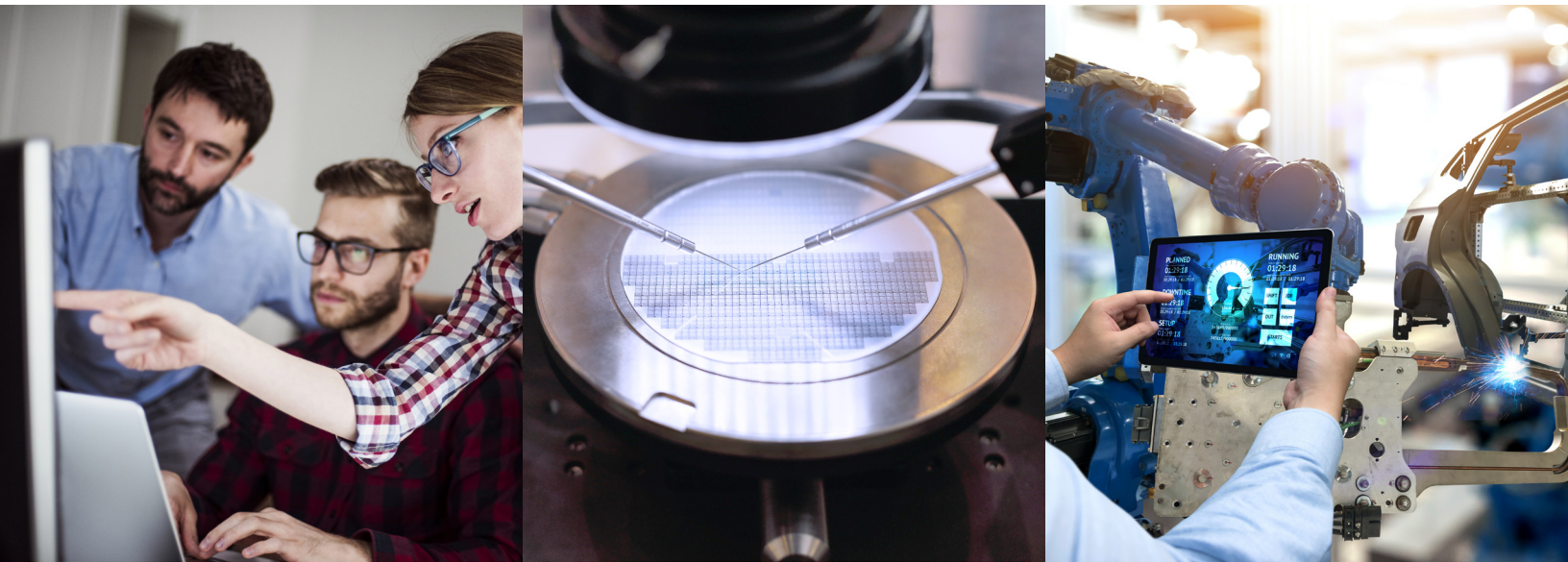


## Leading-Edge Analog Mixed-Signal ASICs



# Leading-Edge Analog Mixed-Signal ASICs

Microsemi offers custom integrated circuit designs of analog mixed-signal solutions for leading aerospace, avionics, defense, industrial, and automotive companies, and is a leading application-specific integrated circuit (ASIC) manufacturer of analog embedded systems. Our custom solutions include IC chips requiring high voltages, radiation tolerance, a focus on safety standards, and tolerance to harsh environments. Our fabless model ensures maximum flexibility in process selections, allowing for optimized designs and cost-effective solutions. Our experienced teams are dedicated to our customers' success by working in collaboration with them throughout all stages of design and production.

## Reliable, Proven Application-Specific Integrated Circuit Development and Manufacturing

- Fully custom ASIC design flow
- Full supply services, from specification to production
- Custom specific standard product (CSSP)
- System integration and packaging optimization

## Benefits to Customers

- IP investment protection
- Board space optimization
- Power optimization
- Overall application cost reduction
- Reliability improvement
- Obsolescence management
- Product differentiation from standard products

## Experienced Team

- System architects
- Analog, digital, firmware, layout, packaging, test and product engineers
- Program managers

## Safety, Quality, and Reliability

- Safety-critical applications: Automotive ISO 26262, Avionics DO-254
- Radiation tolerance: TID, SEL/SEU, ELDRS, prompt dose, neutron
- High-reliability, stringent-temperature: -55 °C to 225 °C
- Standards/certifications/classifications: AS9100, ISO 9001, MIL-PRF-38535, QML-V, QML-Q, ITAR, EAR

## Packaging Solutions

- Flip Chip Multi-Layer Stack Up
- Bump Die and WLCSP
- Plastic Encapsulated
- Multi Chip Module (MCM)
- Hermetic High Reliability

Aerospace



Defense



Industrial



Automotive



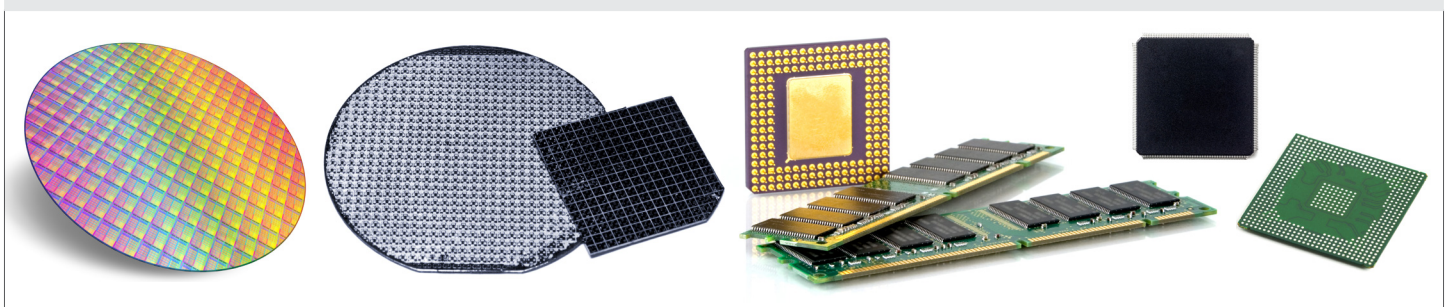
# Leading-Edge Analog Mixed-Signal ASICs

| Process                               | 1 $\mu\text{m}$ DI<br>0.6 $\mu\text{m}$ BiCMOS<br>Rad-tolerant | 1 $\mu\text{m}$ SOI<br>Extreme Temp. | 0.35 $\mu\text{m}$ HVMOS<br>AEC-Q100,<br>Grade 0 | 180nm HVMOS<br>AECQ100,<br>Grade 0 | 130nm BCD<br>AECQ100,<br>Grade 0      | 55/65nm<br>(on roadmap)          |
|---------------------------------------|--|--------------------------------------|--|------------------------------------|---------------------------------------|----------------------------------|
| Max. Voltage                          | 200 V  | 90 V                                 | 45 V   | 40 V                               | 85 V                                  | 12 V                             |
| Temperature Range                     | -55 °C to 125 °C   | -55 °C to 225 °C                     | -40 °C to 175 °C                                 | -40 °C to 175 °C                   | -40 °C to 150 °C                      | -40 °C to 125 °C                 |
| Gate Density<br>Gates/mm <sup>2</sup> | 2.5K   | 2.5K                                 | 28K  | 125K                               | 220K                                  | 1M                               |
| Metal Layers                          | 3  | 3                                    | 4  | 6                                  | 8                                     | 8                                |
| Memory Type                           | ROM, RAM,<br>DPRAM, OTP  | ROM, RAM,<br>DPRAM, OTP              | ROM, RAM,<br>DPRAM, OTP,<br>EEPROM               | ROM, RAM,<br>DPRAM, OTP,<br>NVRAM  | ROM, RAM,<br>SRAM, OTP, MTP,<br>FLASH | ROM, RAM,<br>SRAM, OTP,<br>FLASH |

## Existing/Available IP

|   |  |
|---|--|
| Signal Conditioning and Converters        | PGA, AFE, demodulators, peak detectors<br>ADCs SAR, Sigma-Delta<br>HV analog muxes, analog filters       |
| Digital Integration and Signal Processing | Digital filters<br>Compiled memories<br>Processors: 32-bit RISC and peripherals<br>DSP functions         |
| Interfaces and Protections                | SPI, I2C, JTAG, SENT, PWM, PSI5<br>ESD protection cells up to 4kV<br>Reverse battery protections         |
| Drivers and Actuation                     | High-voltage drivers<br>Line protectors and current limiters<br>Motor drivers and pre-drivers            |
| Power Management                          | Switching regulators, linear regulators<br>E-Fuse protection devices<br>Charge pumps, thermal protection |
| Clock Management                          | RC, VCO oscillators, PLLs<br>LC tank exciter, sleep-mode timer   |

## Packaging



To stay up to date about Microsemi's ASIC solution products,  
email [sales.support@microsemi.com](mailto:sales.support@microsemi.com) or visit our Design Services Website:  
[https://www.microsemi.com/product-directory/services/  
1043-mixed-signal-asic-design-services](https://www.microsemi.com/product-directory/services/1043-mixed-signal-asic-design-services)

Microsemi is continually adding new products to its  
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For the most recent updates to our product line and for detailed  
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MSCC-0236-BR-01000-1.0-0318