Leading-Edge Analog Mixed-Signal ASICs
ASIC Solutions

Summary
Microchip 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 your success by working in collaboration with you 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
<table>
<thead>
<tr>
<th>Process</th>
<th>1 μm DI 0.6 μm BiCMOS Rad-tolerant</th>
<th>1 μm SOI Extreme Temp.</th>
<th>0.35 μm HVCMOS AEC-Q100, Grade 0</th>
<th>180 nm HVCMOS AEC-Q100, Grade 0</th>
<th>130 nm BCD AEC-Q100, Grade 0</th>
<th>55/65 nm (on roadmap)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Voltage</td>
<td>200V</td>
<td>90V</td>
<td>45V</td>
<td>40V</td>
<td>85V</td>
<td>12V</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>−55°C to 125°C</td>
<td>−55°C to 225°C</td>
<td>−40°C to 175°C</td>
<td>−40°C to 175°C</td>
<td>−40°C to 150°C</td>
<td>−40°C to 125°C</td>
</tr>
<tr>
<td>Gate Density Gates/mm²</td>
<td>2.5K</td>
<td>2.5K</td>
<td>28K</td>
<td>125K</td>
<td>220K</td>
<td>1M</td>
</tr>
<tr>
<td>Metal Layers</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Memory Type</td>
<td>ROM, RAM, DPRAM, OTP</td>
<td>ROM, RAM, DPRAM, OTP</td>
<td>ROM, RAM, DPRAM, OTP, EEPROM</td>
<td>ROM, RAM, DPRAM, OTP, NVRAM</td>
<td>ROM, RAM, SRAM, OTP, MTP, FLASH</td>
<td>ROM, RAM, SRAM, OTP, FLASH</td>
</tr>
</tbody>
</table>

**Existing/Available IP**

**Signal Conditioning and Converters**
- PGA, AFE, demodulators, peak detectors
- ADCs SAR, Sigma-Delta
- HV analog muxes, analog filters

**Digital Integration and Signal Processing**
- Digital filters
- Compiled memories
- Processors: 32-bit RISC and peripherals
- DSP functions

**Interfaces and Protections**
- SPI, I²C, JTAG, SENT, PWM, PSII5
- ESD protection cells up to 4kV
- Reverse battery protections

**Drivers and Actuation**
- High-voltage drivers
- Line protectors and current limiters
- Motor drivers and pre-drivers

**Power Management**
- Switching regulators, linear regulators
- E-Fuse protection devices
- Charge pumps, thermal protection

**Clock Management**
- RC, VCO oscillators, PLLs
- LC tank exciter, sleep-mode timer

**Packaging**

For more information, please visit www.microsemi.com