

Device Engineering Incorporated

DEVICE ENGINEERING INCORPORATED

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Integrated Circuit Design and Production Capabilities

DEI is a fab-less Semiconductor Company specializing in the design and manufacture of Analog, RF, Mixed-Signal, & Digital ASIC's & IC's.

Quality Certifications & Processing:

- AS9100:2004 & ISO9001:2000
- MIL STD 883 Processing
- ITAR Certified

Design Processes:

DEI's Integrated Circuit designs use a variety of processes including:

- Bipolar (20V, 37V, 60V) (Multiple processes)
- High Speed Bipolar ($f_T = 18\text{GHz} - 28\text{GHz}$)
- BiCMOS/CMOS (0.18 μm 0.35 μm , 0.6 μm , 0.8 μm , 1.5 μm)
- SiGe BiCMOS (0.35 μm) ($f_T = 35\text{GHz} - 62\text{GHz}$)
- DIMOS (320V, 650V)

Selection of a process depends upon operating voltage, output drive specifications, power, and other parameters. DEI specializes in using semiconductor processes that provide ten-year product availability.

Design Expertise:

Device engineering has completed over 75 full custom, semi-custom and standard products over the last 8 years.

All new, 2nd source, and replacement IC's make use of:

- System level needs analysis
- Design to either Concept or Specification
- Detailed product definition
- Definition of special needs or enhancements
- Use of Reverse Engineering for form/fit/function replacement devices
- Rigorous process requirements definition (utilizing the same or similar process for legacy type devices)
- Engineering staff with 100+ years of Electronics Design Experience
- On staff PHD EEs

Design Examples:

- Reverse Engineered Obsolete Microlinear Bipolar Array
- Retarget obsolete PMOS ASICs to HV CMOS
- 12 Bit Multiplying Quad DAC
- Pierce Oscillator
- PLL/Clock
- Thermal Controller
- High Voltage Drive ICs
- ARINC 429 Databus Products
- Backplane Transceiver Buffer/ Logic
- High Frequency (RF)
- Frequency Synthesizer (4 GHz, Low Noise)
- Commercial Lighting Controller
- LED Dimmer/Driver
- Discrete Interface Circuits
- Voltage Monitor
- Relay Driver



AS9100B / ISO9001:2000 Certificate

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Unique Design Technologies:

Device Engineering has developed unique capabilities that can be applied to a variety of applications. These capabilities include:

- Lightning Protected Inputs (Transients up to 600V) DO160 Level 3
- RMS Conversion
- Very Low Phase Noise Frequency Synthesizer Design -160dBc/Hz > 5KHz
- Low Power (nA, sub 1V)
- High Voltages (300 to 1650V)
- Relay Driver/ Control
- Transient Voltage Protection
 - 100V/ 100uS Transient Suppression
 - Turns Output Bus On and Off, Limits Output Voltage
- Intelligent Switch

Design & Layout Tools:

Device Engineering uses industry standard design tools based on Personal Computer platforms. Our expertise and tools include, but are not limited to:

- **Design Tools**
 - Cadence RF Design Suite
 - Viewdraw/ModelSim
 - Leonardo-Spectrum
 - P-Spice
 - SIMetrix (SPICE /Schematic)
 - Verilog/VHDL Simulation & Synthesis

Layout Tools

- IC Editors ICED (Layout Editor)
- Tanner L-Edit Pro
- Layout Versus Schematic (LVS)
- Design Rules Check (DRC)
- Auto Place and Route (APR)

In-House Capabilities:

Device Engineering has in-house all of the necessary capabilities for wafer screening and production testing. These capabilities include, but are not limited to:

- Wafer Testing
 - Wafer Probe Stations
 - Hot Chuck Capability.
- Production Screening
 - 2 – ASL3000 Analog/RF Testers
 - 1 – ASL1000 Analog Tester
 - Hot / Cold Electrical Testing
 - Burn-In Ovens
 - MIL-STD-883 Groups A and C
- Device Marking Capability
- Dry Pack Capability
- IC Handlers for Volume Production
 - SOIC & TSSOP
 - PLCC
 - DIP
 - MLPQ
 - PQFP & MQFP

