0.18-micron Process Platform Overview

The 0.18-micron Process Platform from TSI Semiconductors provides a highly efficient and flexible platform for producing the most reliable silicon chips. For customers looking for a supply chain partner for Logic CMOS, Analog/Mixed-signal/RF and High Voltage chip production, TSI Semiconductors provides an unparalleled level of efficiency, expertise and collaboration.

Features

- 4 μm thick power metal
- Shallow trench isolation
- MIM Caps and Varactors
- HV VVPN and VVPN bipolar
- Schottky Barrier Diodes
- Modular process – fewer masked layers
- HV devices
- Precision analog components

Benefits

- Flexibility – modular
- Reliability of device
- ESD functionality
- Efficiency, reducing overall costs

### TSI Semiconductors Process Device Menu

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<td>1.8V &amp; 5V</td>
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<td>Yes</td>
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<td>N+, P+ diffusion &amp; poly</td>
<td>N+, P+ diffusion &amp; poly</td>
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<td>RR poly high R - 1.6kΩ/sq (1ML)</td>
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<td>RR poly high R - 1.6kΩ/sq (1ML)</td>
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<td>RP poly precision R - 165Ω/sq (1ML)</td>
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<td>Single MIM - 2.1 fF/μm² * (1ML)</td>
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<td>Dual MIM - 4.1 fF/μm² * (1ML)</td>
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<td>Dual MIM - 4.1 fF/μm² * (1ML)</td>
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<td>7LM: M1-MT Analog Metal (AM) - 4μm</td>
<td>Analogy Metal (AM) - 4μm</td>
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*Optional Devices/Layers
Logic CMOS
The TSI Semiconductors 0.18-micron Logic CMOS process provides a broadly defined platform ideal for disruptive device technology requiring the ultimate in manufacturing flexibility. TSI Semiconductors has built a family of options that includes low power, high voltage and analog/mixed-signal/RF.
Note: 0.16-micron is a direct shrink of 0.18-micron

Analog/Mixed-signal/RF Processes
The TSI Semiconductors Analog/Mixed-signal/RF processes provide a choice of 1.8 volt/5 volt and 5 volt only options. Both feature a 4-micron thick analog metal that supports high power and RF inductor performance.

- Resistors & optional resistors
  - Standard processing
  - High-resistivity (RR 1.6KΩ/sq) polysilicon
  - Precision (RP 165Ω/sq) polysilicon
  - HV NWell and PWell resistors
  - TaN thin film resistor
- Capacitors
  - Single layer and dual layer MIM capacitors

High Voltage
The TSI Semiconductors High Voltage process is the cost-effective alternative for high voltage designs. Requiring fewer masks than alternative technologies, this high voltage process offers a broad range of application options covering not only low voltage 1.8 volt to 5 volt, but also high voltage 12 volt, 20 volt, 25 volt, 50 volt and 120 volt options.

Features
- Triple gate oxides for up to 20 volt
- 4-micron thick power metal
- Non-Epi bulk process
- Precision analog components

Benefits
- Cost-effective
- Simple process
- Fewer masks
- Ultimate in flexibility

Summary
TSI Semiconductors is your trusted supply chain partner for standard product solutions, providing a 0.18-micron process platform from automotive-grade, high-voltage, as well as novel, disruptive technologies. Our expertise, collaborative environment, intense focus on IP security provide the perfect environment for your foundry needs.

TSI Semiconductors is your only choice when reliability is an absolute and high yield expectations are a “must-have” for low and mid-volume IC designs that target mainstream logic, analog/mixed-signal/RF and high voltage process technologies. TSI Semiconductors is fully certified to meet the most demanding industry specifications and quickly moves your innovation to market in a secure environment.

TSI Semiconductors is a world-class, specialty foundry offering flexible technology development and the highest industry quality manufacturing solutions. Our flexible technology development and manufacturing services allow our customers to benefit from accelerated cycles of learning, which enables them to get products to market faster, and gain greater control and protection of their specific technology. With our headquarters and 8-inch fabrication plant in Roseville, California, we manufacture in a large array of versatile processes that include analog/mixed-signal/RF, deep-submicron, standard product solutions, automotive-grade, high-voltage, and technology capabilities utilizing novel materials, structures and devices. For more information, visit www.tsisemi.com.