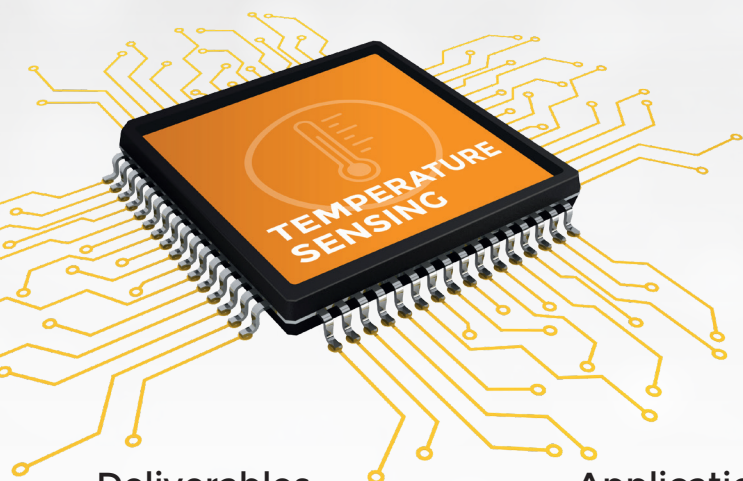


Moortec Embedded Temperature Sensor IP

Moortec Semiconductor provides embedded temperature sensor IP for your advanced node System on Chip (SoC) at 28nm and FinFET. Highest accuracy for best device performance optimisation.



Features:

- Accurately measures Silicon junction temperature
- Accuracy $\pm 1^{\circ}\text{C}$ over -40°C to 125°C
- Simple, fast, single point calibration (if required)
- Digital interface for simplified chip integration
- Uses standard digital process layers
- Instantiate multiple temperature sensors on a single chip
- High testability for reliable operation
- Small Size

Deliverables:

- GDSII
- LEF (Abstract) view
- Liberty timing files
- LVS netlist
- Verilog model

Applications:

- Highest accuracy thermal sensing for best Performance Optimisation
- Dynamic Voltage & Frequency Scaling (DVFS) schemes
- Identify and manage potential silicon hot spots
- Support for Silicon temperature profiling
- Real-life operating temperature data with fast sampling speed
- Failure management of multi-processor-node architectures
- Hacking detection and protection

Silicon characterisation and qualification:

- Stress based JEDEC HTOL testing
- Accurately measures device operating temperature
- Package analysis, measuring thermal dissipation capabilities
- Reduces the need for external thermal imaging and measurement

Thermal Management:

- Avoids high transistor leakage current caused by on-chip heating
- Prevents thermal runaway and monitors temperature for safety-critical circuits
- Decreases mean time to failure through thermal analysis and the investigation of electromigration margins
- Allows enabling or disabling of blocks for Power Management
- Can control cooling fans for Thermal Management

Digital interface provides:

- Simplified integration with no shielded analogue signals to route
- Easily addressable sensor instances

Interfacing options:

- AMBA APB, IEEE P1500, SPI and I2C interfaces available

Available on:

- TSMC
- Global Foundries
- SMIC
- UMC

