PRODUCT BRIEF

XENSIV™ TCI

Infineon's integrated thermal conductivity hydrogen gas sensor

As the hydrogen economy expands, ensuring safety through rapid and accurate gas detection is essential. Infineon's XENSIV™ TCI hydrogen (H2) sensor based on thermal conductivity (TC) principles, can detect hydrogen leaks with astonishing speed, within just 100 ms. This immediate response is critical for early warning systems in hydrogen storage, pipelines, and fuel cell facilities. The TCI sensor exploits hydrogen's significantly higher thermal conductivity in comparison to air and most industrial gases, enabling high selectivity and sensitivity. Unlike many conventional sensors, TC sensors exhibit very low drift and are inherently robust, maintaining accuracy over time and in harsh environments. Additionally, they are not prone to chemical poisoning, ensuring long operational lifespans and minimal maintenance – a crucial advantage for mission-critical hydrogen applications.

Potential applications

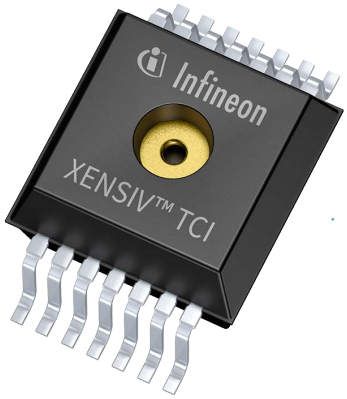
- **Automotive battery monitoring systems** (thermal runaway detection)
- **Automotive fuel cell hydrogen leakage measurement**
- **Industrial hydrogen leakage measurement**
  (e.g. electrolyzers, energy storage systems, stationary FC)

Key features

- Insensitivity to poisoning
- Low lifetime offset drift
- Ultra-low power consumption
- Fast response time < 100 ms
- AEC-Q100 qualified
- JEDEC and JESD47L qualified
- 15 years lifetime

Key benefits

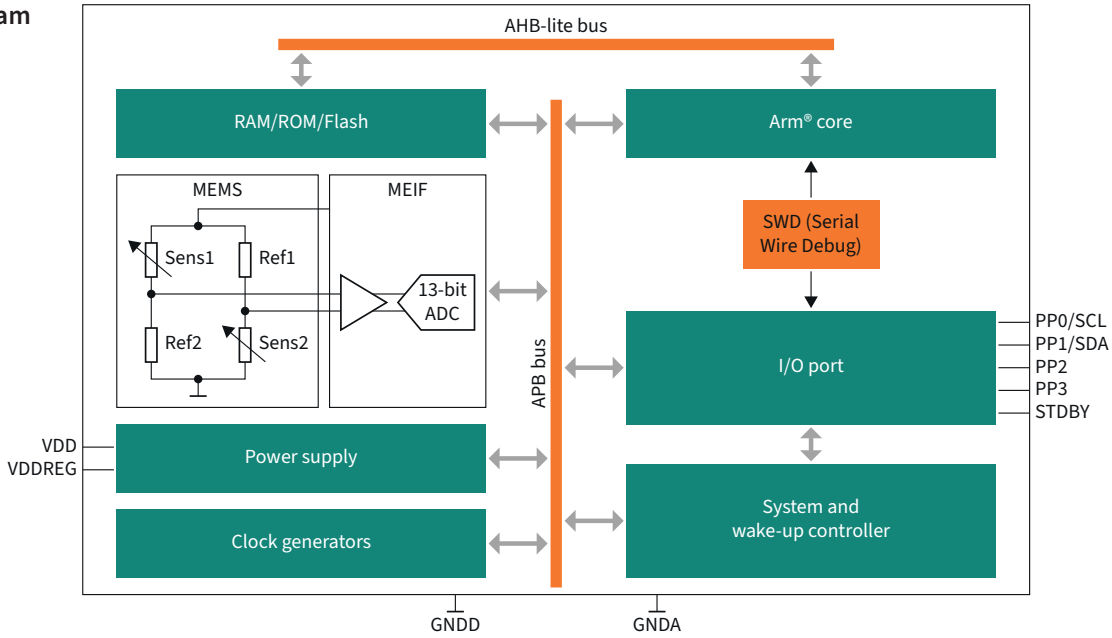
- Automotive grade sensor reliability
- No maintenance or replacement costs
- Flexible configuration possible also in the field
- Superior robustness and stability compared to catalytic- or metal-oxide-sensors



RoHS

www.infineon.com/gas-sensors

Block diagram



Product overview

Parameter	Min.	Typ.	Max.	Unit	Note or test condition
Hydrogen measurement range	0		16	%H2	Without external ignition protection
Accuracy	-0.34		0.34	%H2	Humidity compensated with external humidity sensor. Absolute humidity < 150 g/m³. Temperature ≤ 90°C. Pressure between 60 and 130 kPa.
Temperature operating range	-40		105	°C	
Humidity operating range	0		100	%	Non-condensing
Avg. current consumption		112		µA	

Orderable Part Number (OPN)	Ordering code (SP number)
TCIXTMA1	SP006004240

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