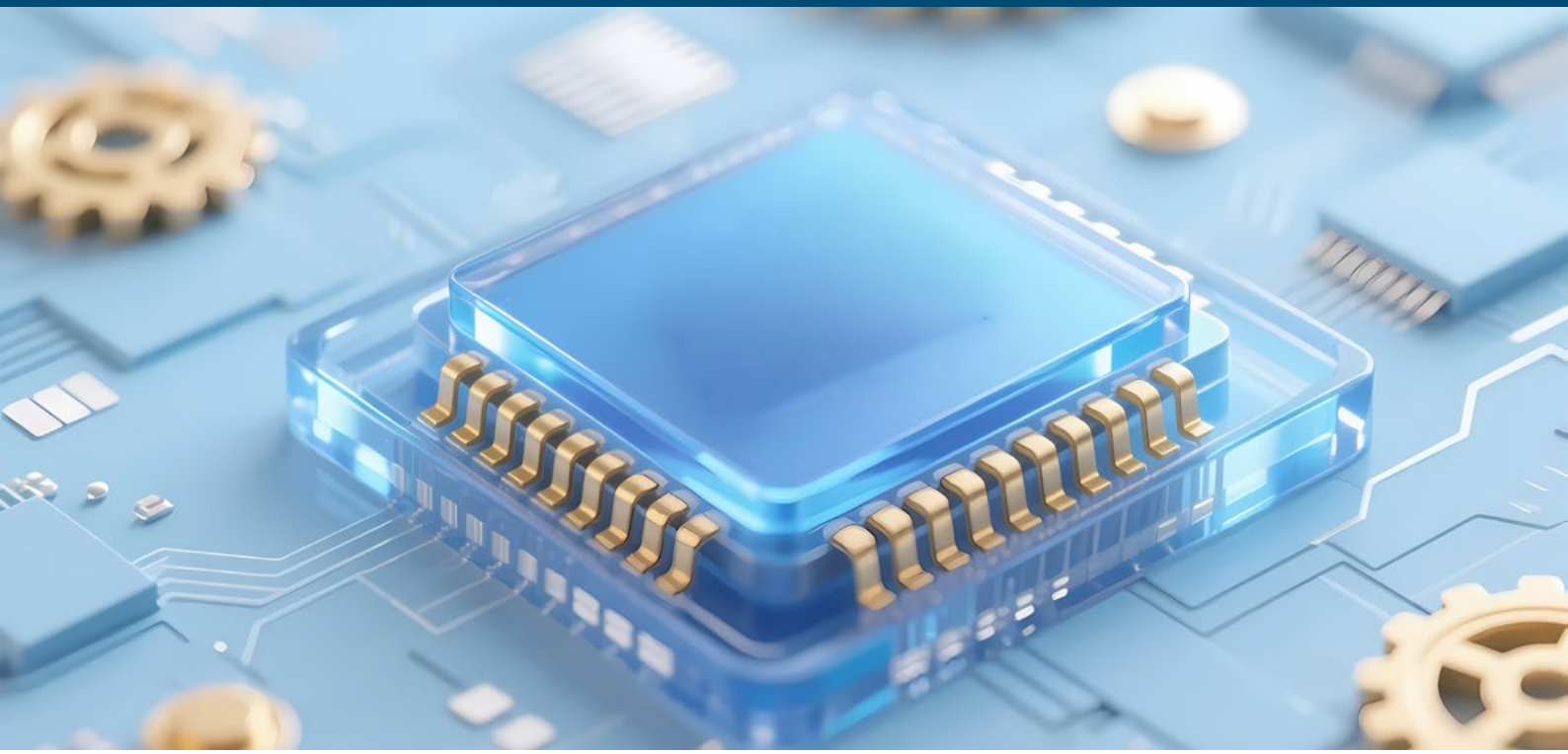
A3ACPNTMS Temperature Sensor (TMS)



About eInfochips

eInfochips is a product engineering and semiconductor design services company offering ASIC/SoC design, Analog & Mixed- Signal IP development, FPGA design, and embedded engineering services across multiple industry segments.

eInfochips provides silicon-proven Analog IPs and custom design solutions for power management, data conversion, connectivity, and mixed-signal applications. The company enables customers to accelerate chip development and deliver high-performance, power-efficient semiconductor products.

eInfochips A3ACPNTMS Temperature Sensor (TMS)

The temperature sensor uses **Delta–Sigma modulation** to generate a digital output proportional to temperature, eliminating the need for complex analog-to-digital conversion circuitry. Designed in **130 nm BCD technology from GlobalFoundries,** it supports a minimum supply voltage of **1.5 V** and operates over a temperature range of **–40°C to +175°C.** The output duty cycle varies by approximately **0.08%/°C,** providing a simple digital representation of temperature for system monitoring and control.

IoT Devices

Energy-Harvesting Systems

Low-Power Applications

Space-Constrained Systems

eInfochips Advantages

- **30** Years of experience in system design
- **17** Design centres worldwide
- **75+** Successful Tapeouts and Silicon Bring up
- **100M+** Product deployments across globe
- **180nm to 18A** expertise

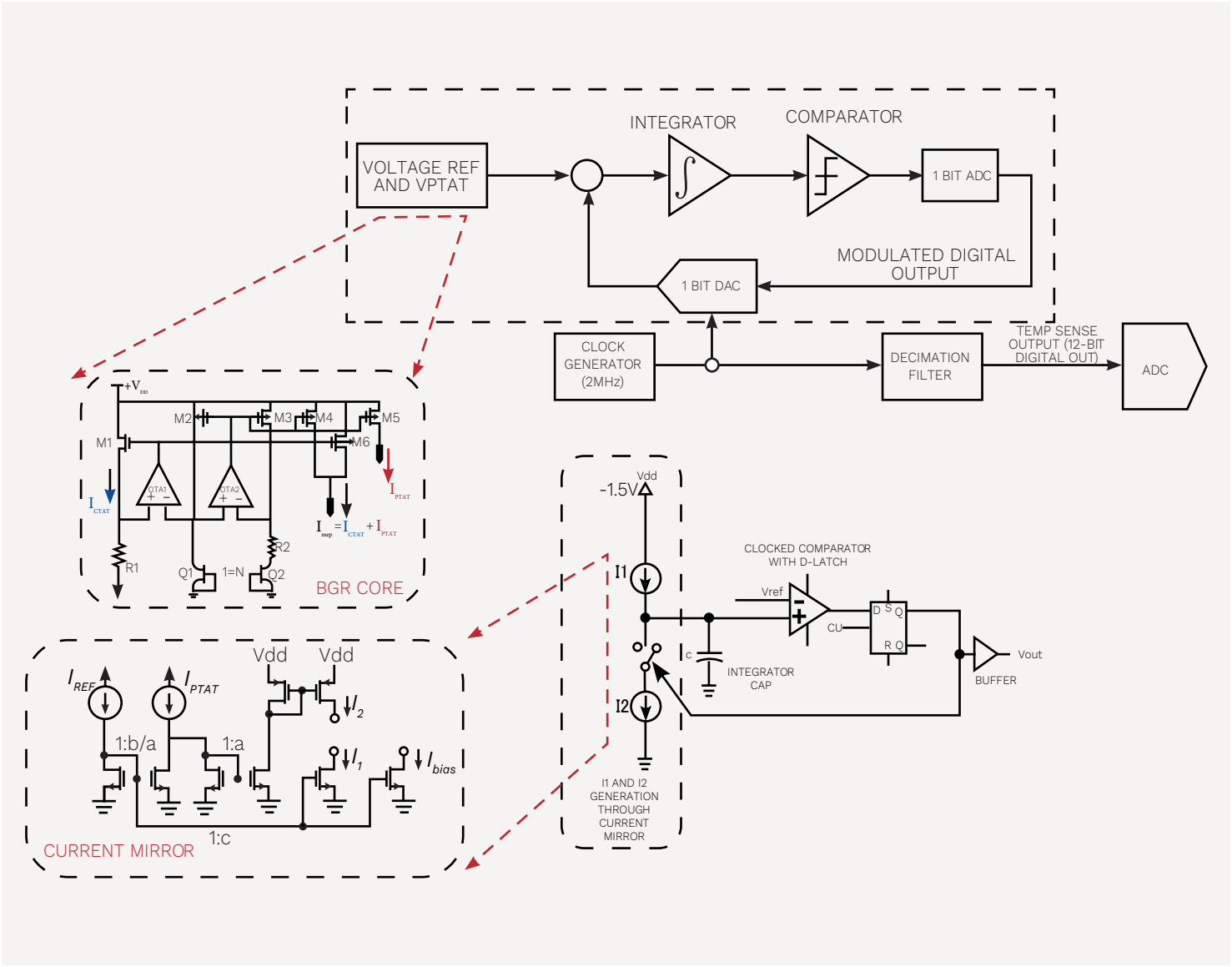


Fig. Block diagram

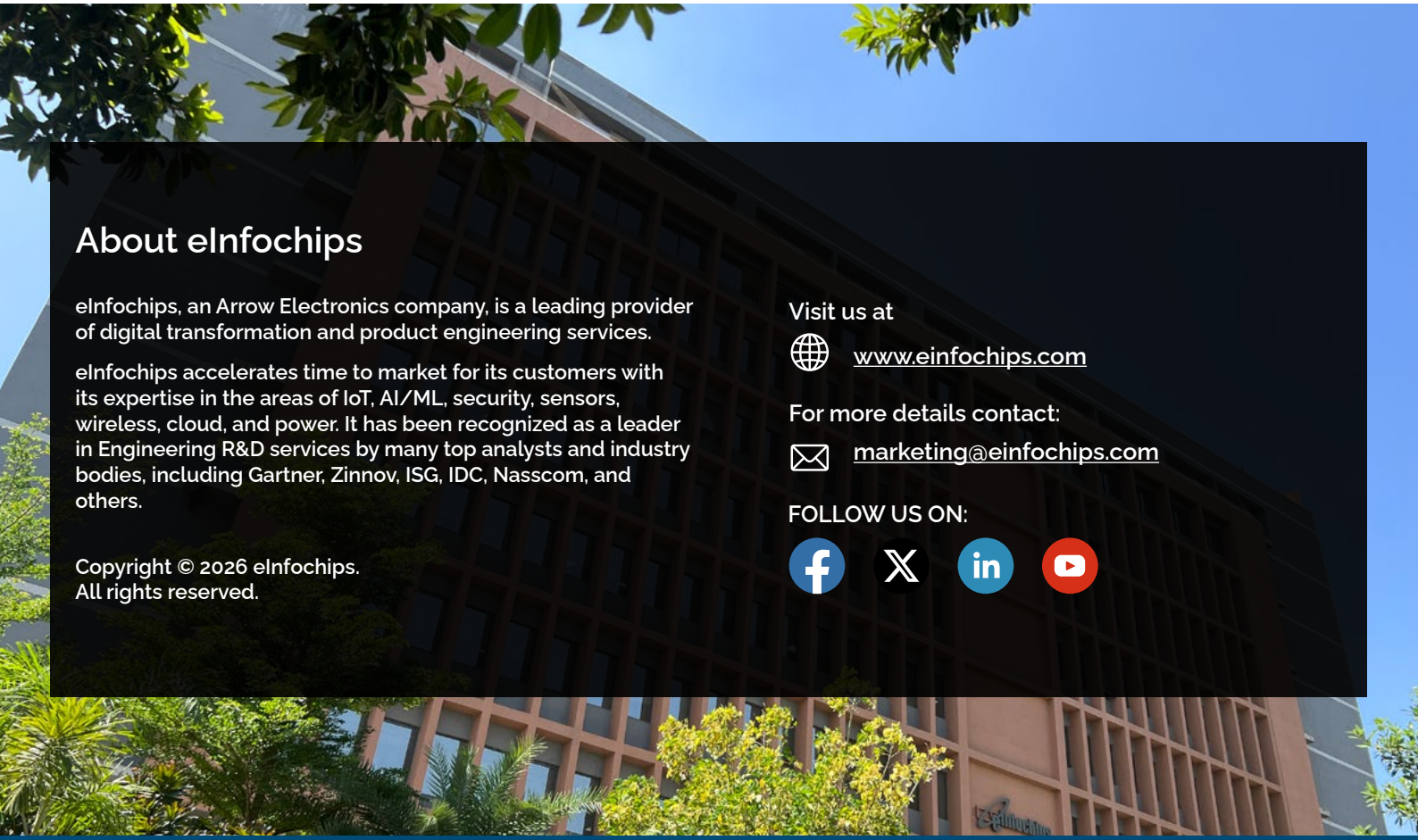
Features

- Temperature sensor produces a digital output using Delta-Sigma modulation, for operation at low supply voltage down to 1.5Vs
- Capable of accurately measuring temperatures from –40°C to +175°C
- Fabricated using 130nm BCD technology from Global Foundry
- Duty cycle of the output signal changes by 0.08% per degree Celsius, showing strong temperature sensitivity

Stability Analysis:

For Loop 1						
	min	maxm	in	maxm	in	max
Gain	29.3	30.66	29.12	30.43	29.12	30.43
Gain Margin	20.09	23.46	20.87	27.15	20.47	23.38
Phase Margin	76.05	81.33	76.15	80.82	75.99	80.53

For Loop 2	Prelay		Post lay with R		Post lay with RCC	
	min	maxm	in	maxm	in	max
Gain	31.08	34.38	26.14	34.32	26.14	34.32
Gain Margin	23.66	46.15	17.73	38.11	14.8	34.77
Phase Margin	63.3	88.85	62.57	88.87	54.57	88.2



About eInfochips

eInfochips, an Arrow Electronics company, is a leading provider of digital transformation and product engineering services.

eInfochips accelerates time to market for its customers with its expertise in the areas of IoT, AI/ML, security, sensors, wireless, cloud, and power. It has been recognized as a leader in Engineering R&D services by many top analysts and industry bodies, including Gartner, Zinnov, ISG, IDC, Nasscom, and others.

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