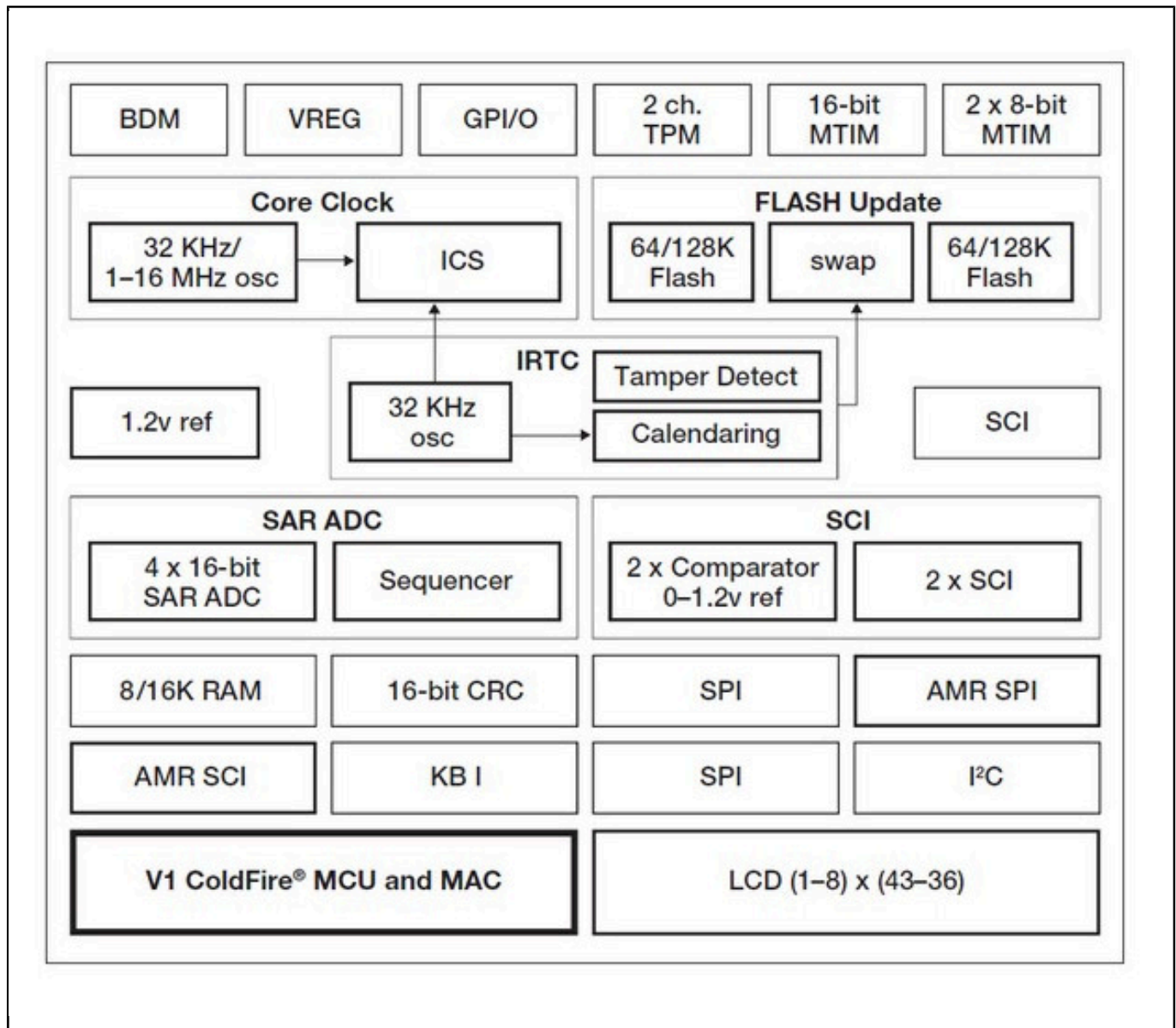# MCF51EM256 32-Bit MCU for Smart Meter Applications

MCF51EM

Last Updated: Jan 8, 2026

MCF51EM256 is NXP®.s smart-meter-on-a-chip 32-bit ColdFire® V1 core microcontroller (MCU) with embedded LCD controller, 16-bit analog-to-digital converter (ADC), and metrology-specific peripherals optimized for smart meter applications. MCF51EM256 comes with a full suite of hardware and software tools that make development quick and easy.

ColdFire MCF51EM Microcontroller Block Diagram Block Diagram

BDM	VREG	GPI/O	2 ch. TPM	16-bit MTIM	2 x 8-bit MTIM

Core Clock

32 KHz/ 1–16 MHz osc	→	ICS

FLASH Update

64/128K Flash	swap	64/128K Flash

IRTC

1.2v ref		32 KHz osc	Tamper Detect		SCI
			Calendaring		

SAR ADC

4 x 16-bit SAR ADC	Sequencer

SCI

2 x Comparator 0–1.2v ref	2 x SCI

8/16K RAM	16-bit CRC	SPI	AMR SPI
AMR SCI	KB I	SPI	I²C

V1 ColdFire® MCU and MAC	LCD (1–8) x (43–36)

View additional information for MCF51EM256 32-Bit MCU for Smart Meter Applications.

Note: The information on this document is subject to change without notice.