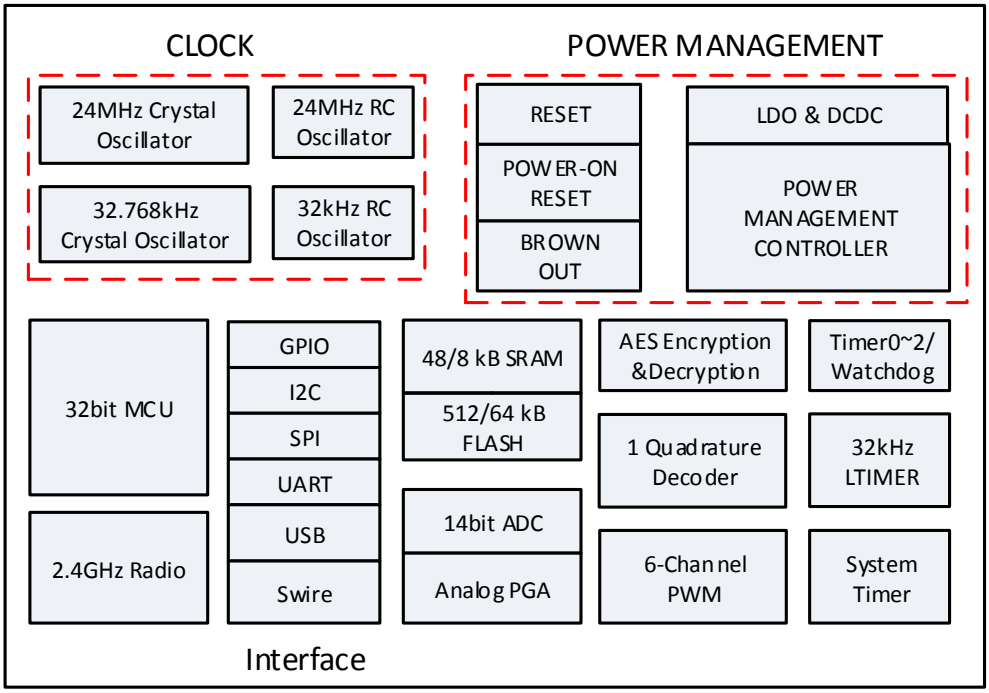
TLSR8359

Telink ULP 2.4GHz RF SoC

Product Brief

The TLSR8359 with internal Flash support is dedicated to 2.4GHz RF System-On-Chip solution, such as Retail/Logistics, Private network, Beacon applications, and etc. It supports 2.4GHz proprietary standard.

The TLSR8359 integrates a power-balanced 32-bit MCU, 2.4GHz Radio, 48kB/8kB SRAM, 512kB/64kB Flash, 14bit ADC with PGA, PWM, one quadrature decoder (QDEC), flexible IO interfaces, and other peripheral blocks required for 2.4GHz RF System-On-Chip application development. The TLSR8359 also includes multi-stage power management design allowing ultra-low power operation and making it the ideal candidate for power-constraint applications.



Applications

- Retail/Logistics
- Private network
- Beacon

Key Features

- 4-byte chip unique ID (UID)
- 32bit proprietary microcontroller
  - Better power-balanced performance than ARM M0
  - Instruction cache controller
  - Maximum running speed up to 48MHz
- Memory architecture
  - Program memory: 512kB (TLSR8359F512)/64kB (TLSR8359F64) Flash
  - 48kB (TLSR8359F512) / 8kB (TLSR8359F64) on-chip SRAM with up to 32kB / 8kB retention

  - Firmware protection for anti-cloning
- RF transceiver
  - 2.4GHz RF transceiver in worldwide 2.4GHz ISM band
  - 2.4GHz proprietary 1Mbps/2Mbps/250kbps/500kbps mode with Adaptive Frequency Hopping feature
  - Rx Sensitivity: -96dBm @ 1Mbps, -93dBm @ 2Mbps
  - Tx output power: up to +10dBm
  - 50 Ω matched single-pin antenna input
  - RSSI monitoring with +/-1dB resolution
  - Auto acknowledgement, retransmission and flow control
- Power management
  - Power supply of 1.8V~3.6V
  - Battery monitor for low battery voltage detection
  - Brownout detection/shutoff and Power-On-Reset
  - Multiple-power-state to optimize power consumption
- Low power consumption
  - Whole Chip RX mode: 5.3mA
  - Whole Chip TX mode: 4.8mA @ 0dBm with DCDC
  - Deep sleep with external wakeup (without SRAM retention): 0.4uA
  - Deep sleep with SRAM retention: 1uA (with 8kB SRAM retention), 1.2uA (with 16kB SRAM retention), 1.4uA (with 32kB SRAM retention)
- RTC and other timers
  - Clock source of 24MHz&32.768kHz Crystal and 32kHz/24MHz embedded RC oscillator
  - Three general 32-bit timers with four selectable modes in active mode
  - Watchdog timer
  - A low-frequency 32kHz timer available in low power mode
- Digital and analog interfaces
  - Up to 32/17/2 GPIOs depending on package option
  - SPI, I2C, USB, Swire, UART with hardware flow control support
  - Up to 6 channels of differential PWM
  - IR transmitter with DMA
  - One quadrature decoder, two-phase input
  - 10-channel (only GPIO input), 14-bit SAR ADC
  - Low power comparator
- Embedded temperature sensor
- Embedded hardware AES and AES-CCM
- Embedded hardware acceleration for Elliptical curve cryptography (ECC)
- Hardware OTA upgrade and multiple boot switch, allowing convenient product feature roll outs and upgrades
- Operating temperature: -40℃~+85℃
- Completely RoHS-compliant package
  - TLSR8359F512ET48, 48-pin QFN 7×7x0.75mm
  - TLSR8359F512ET32, 32-pin QFN 5×5x0.75mm
  - TLSR8359F64ES16, 16-pin TSSOP16_4.96x6.4x1.2mm
- Supports 2.4GHz proprietary technology

Development tools

A full set of development tools for the SoC are provided, which include EVB, reference design and SDK for customers to perform evaluation, quick application prototyping and firmware development.

Company Profile

Telink Semiconductor provides highly integrated radio-frequency and mixed-signal System-On-Chip (SoC) solutions for a variety of communication and control application markets including consumer electronics, medical instruments, industrial control, home automation, smart energy, and etc.

For further information on the technology, product and business term, please contact Telink Semiconductor.

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