Tagmicro-TxFN

Overview

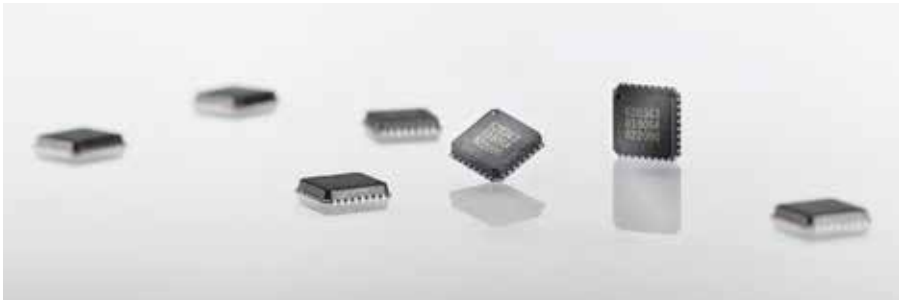
Frequency Band
LF 125 kHz
UHF 315-434-868-915 MHz

Chip
ASIC 4k
ASIC 8k

Hard Tag Dimensions
5 x 5 mm / 0.20 x 0.20 in

Industry Segments
Automotive

Applications
Remote Control



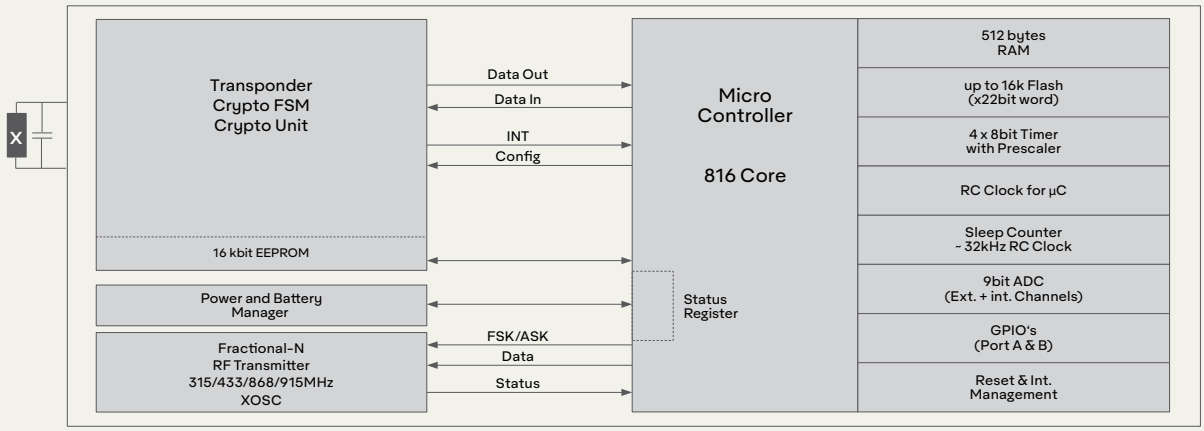
Ultra low power 8-bit microcontroller and tractional-N RF transmitter

Our Tagmicro-TxFN is designed for immobilizer and battery operated remote keyless entry (RKE) applications. The transponder part is protocol and instruction-set compatible with our existing products and works even without a battery. Additional commands for microcontroller communication are also implemented. A powerful fractional-N based UHF-transmitter circuit is built in enabling a single chip application.

The microcontroller offers brownout, power-check and glitch detection functions to ensure reliable operation at under voltage conditions. Each of the 16 I/Os are freely programmable. A trimmed RC oscillator of up to 10MHz frequency allows stable operation without need for external resonator. Featuring an 8-bit RISC architecture specially designed for very low power consumption, Tagmicro-TxFN executes up to 5 MIPS without compromising battery-lifetime. The battery management feature allows batteries to be recharged by a 125 kHz magnetic field.

Technical features

Chip	ASIC 8k	ASIC 4k
User Memory	Flash: 8k-bit instruction EEPROM: 16k-bit RAM: 256 bytes	Flash: 4k-bit instruction EEPROM: 16k-bit RAM: 256 bytes
True Low Current	500 µA typical active mode 200 nA typical power-down mode	
TID Memory	Available for all	
Product Code	620334	620354
Hard Tag Dimension	5 x 5 mm / 0.20 x 0.20 in	
Housing Material	G 700	
Color	Black	
Operating Temperature	-40 °C to 85 °C -40 °F to 185 °F	
Storage Temperature	-40 °C to 90 °C -40 °F to 194 °F (max. 1000h)	
Quantity / Package	2500 pcs / tape on reel	



Microcontroller

- Wide supply voltage range 1.8 V – 3.6 V
- Up to 5 MIPS at 10MHz
- "Run by field" capability
- 8-level supply voltage level detection
- Adjustable battery charging circuit
- 16 fully configurable I/Os (8x IRQ, pull-up / down, open drain)
- Timer Capture / Output Compare / PWM
- 4 high currents outputs (e.g. for LED driving)
- Dual mode RC oscillator (1 MHz or 10 MHz)
- 8-bit CoolRISC architecture
  16 registers
  200 ns instruction cycle time
  2 clocks per instruction
- POR, BO-Reset, OSC Fail detection
- 8/16-bit timer, frequency generator
- 9-bit, 1+5 channel A/D converter
- 40 Bit Sleep Counter (>1 year)
- Analog and digital watchdog

UHF Transmitter

- Fractional N based architecture
- Programmable output power, 32 steps (~ -60dBm to +13dBm)
- Programmable output load capacitance
- Quartz XTAL fine-tuning feature
  - temperature compensation
  - improved oscillator stability
- Single device concept for all frequencies (ASK and FSK modulation)
- Up to 100 kBps data rate (ASK Manchester)
- Manchester / Biphase / NRZ / Miller data encoder

Tools and service

- Easy to use DoC functions, full peripheral integration, C-Compiler
- Windows-based software programs with engineering support

Applications

- Car immobilizers
- Remote keyless entry (RKE)
- Passive keyless entry (PKE)
- Keyless Start/Go (PKG)

3D LF Receiver and RSSI

- 125 kHz Crypto Transponder functionality (battery-less)
- Multiple on-chip crypto-algorithms (AES, TagCoder family)
- Challenge-response mode and rolling code mode
- 3 different secret keys (96/128 bit each)
  – Secret-key 1 and 2 for challenge / response mode, AES mutual mode and rolling code mode
  – Secret-key 3 for memory protection
- 32 bit unique device identification number
- ~15 kbit of free User Memory (UM)
- Lock-bits to inhibit programming
- Power check for EEPROM write operation
- Transmission rate 4 kBaud
- Parallel interface for EEPROM and crypto access via microcontroller
- Mileage counter (increment only)

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