Tagmicro-Tx3D

Overview

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

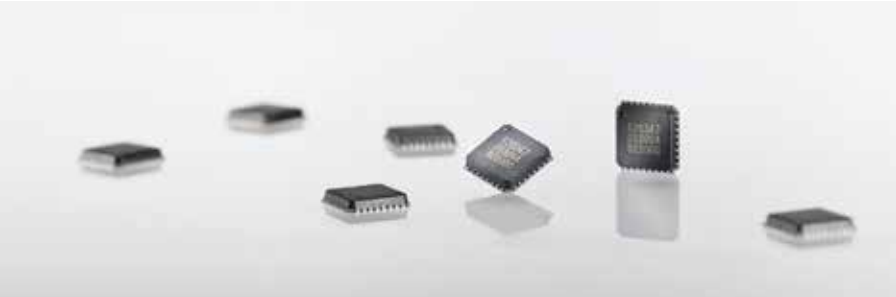
Chip
ASIC 16k

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

Industry Segments
Automotive

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

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



Ultra low power 8-bit microcontroller, fractional-N RF transmitter and 3D LF receiver

Our Tagmicro-Tx3D is designed for immobilizer and battery operated remote keyless entry (RKE) and/or passive keyless entry (PKE) / passive keyless start (PKS) applications. The transponder part is protocol and instruction-set compatible with our existing products and works even without a battery.

The fully differential approach for the 3D LF Receiver supports very high Rx sensitivity and includes smart features such as Transponder antenna sharing and numerous configuration options enabling an optimal application balance between functionality and battery-lifetime. Together with the powerful, ETSI and FCC-compliant, highly configurable fractional-N based UHF-transmitter circuit the single chip solution establishes a bidirectional communication solution for all kinds of passive keyless applications.

Beside the broad flash memory size, the microcontroller offers brownout, power-check and glitch detection functions to ensure reliable operation at under voltage conditions. Each I/O is freely programmable. A trimmed RC oscillator of up to 10 MHz frequency allows stable operation without need for external clock generation. Featuring an 8-bit RISC architecture specially designed for very low power consumption, TAGMICRO-Tx3D executes up to 5 MIPS without compromising battery-lifetime.

Technical features

Chip	ASIC 16k
User Memory	Flasch: 16k bits instruction / EEPROM: 16k bits / RAM: 512 bytes
True Low Current	0.7mA typical. active mode at 10MHz / 200 nA typical power-down mode
TID Memory	Available
Product Code	620324
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
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
- 40 bit sleep counter (>1year), watchdog
- 2 ports of configurable I/Os (up to 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
- Analog and digital watchdog

UHF transmitter

- Fractional N based architecture
- Programmable output power, 32 steps (~ -20dBm to ~ +13 dBm)
- 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 (PKE/PKG)

3D LF receiver and RSSI

- Diffential Input + 3 independent x,y,z-signal chains (analog and digital)
- Adjustable RX data rate (up to 8 kBaud)
- Adjustable Ultra high Rx listen mode sensitivity down to 350µVpp
- Gear level controlled RSSI measurement sensitivity down to 200µVpp
- Very low power consumption 4.8µA typical for 3 axis at listen mode at default sensitivity, Polling System
- On-chip trimming capability for fres and Q (for each 3 axis)
- Shared antenna architecture (x-channel Rx and transponder)
- Supporting adjustable handover (sensitivity and timing)
- Circular receive buffer for Rx input data
- (inverted) Manchester and Miller data decoder support
- Configurable power and interrupt management
- Configurable receiver and wakeup robustness through chain concept and closed loop mechanism
- Debug function for RSSI and receiver

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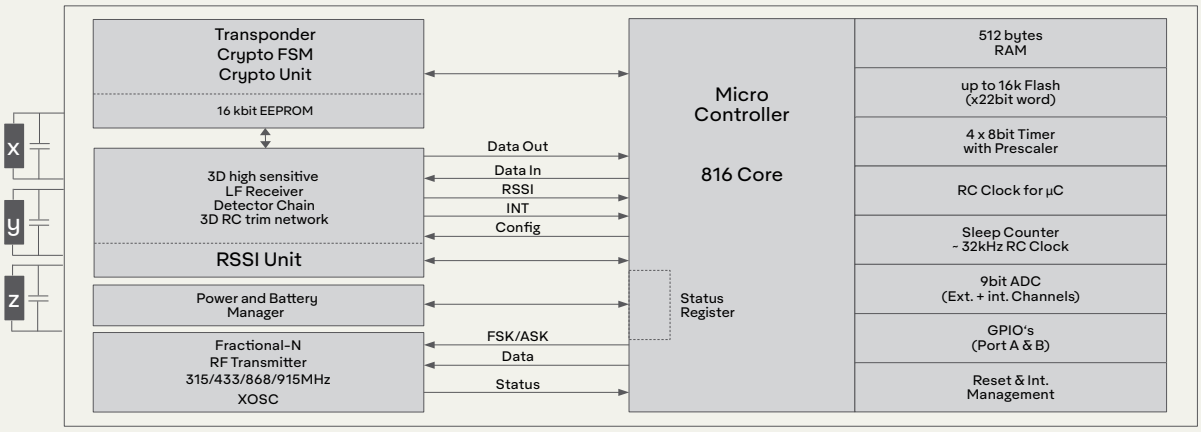
Transponder and EEPROM

125 kHz Crypto Transponder functionality (battery-less)
128bit AES Support
Mileage Counter (increment only)
3 different Secret Keys (96/128 bit each) - Secret-Key 1 and 2 for Challenge / Response Mode, AES Mutual (ISO) Mode and Rolling Code Mode, Increment Counter
32 bit unique device identification number
~14 kbit of free User Memory (UM)
Lock-bits to inhibit programming
Marginal read check for EEPROM write operation
LF transmission rate 4 kBaud
Parallel interface for EEPROM and crypto access via microcontroller



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