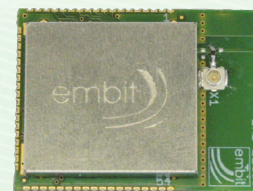# EMB-Z2538PA
# IEEE 802.15.4/ZigBee® - 2.4 GHz
# ARM Cortex™-M3
# OEM Module

**EMB-Z2538PA** is a powerful OEM wireless module targeting low-power RF applications (specifically IEEE 802.15.4) and featuring the computational power of the ARM Cortex™- M3 core. The module delivers very high performance thanks to the 32 bit core and to a large amount of onboard RAM and makes easy to add 802.15.4 and ZigBee wireless connectivity in existing products.

**EMB-Z2538PA** can be configured either as an embedded micro system or as a simple data modem for low power applications in the 2.4 GHz ISM band. It is based on Texas Instruments® CC2538 single chip microcontroller, integrating 128, 256 or 512 KB of FLASH and 32 KB of SRAM; it contains all typical peripherals found in an ARM microcontroller and a 2.4 GHz radio frequency transceiver with hardware acceleration for IEEE 802.15.4 MAC.

The RF section integrates a PA/LNA stage assuring best-inclass performance in terms of covered area. The output power can be configured up to +20 dBm from the software, while input signals are amplified by the LNA section, making it possible to estabilish wireless links of up to 500 meters (LoS); the U.FL receptacle allows the connection of an external antenna.

**EMB-Z2538PA** can communicate with other devices through several interfaces: two UART ports, a SPI, several digital I/O ports (up to 15 digital lines) and an ADC port. **EMB-Z2538PA** can be configured as a network coordinator or router (thanks to the availability of up to 512 KB of FLASH), as well as an end-device thanks to the extremely reduced power consumption in sleep mode. Optionally the module comes with an onboard SRAM expansion and a 32 kHz quartz.

**EMB-Z2538PA** firmware can be easily developed since the module is compatible with Texas Instruments® TIMAC stack and Texas Instruments® ZStack. Texas Instruments® software and development tools are provided together with documentation and tools developed by Embit to quickly get started.

**EMB-Z2538PA** block diagram
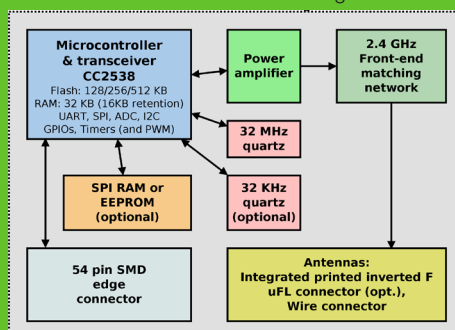


## TECHNICAL SPECIFICATIONS

| | |
|---|---|
| MCU | Texas Instruments® CC2538 (ARM Cortex™-M3 at 32 MHz) |
| Memory | 32 KB RAM / 512 KB Flash |
| Frequency | 2405 ÷ 2480 MHz |
| Tx output power | up to +20 dBm |
| Rx sensitivity | up to -100 dBm |
| Data rate | 250 kbps (802.15.4) |
| Interfaces | UART/SPI/JTAG |
| Digital I/O | up to 15 lines |
| Analog I/O | One 12-bit channel (6 other channels available) |
| Outdoor range | Over 500m (LoS) |
| Indoor range | High wall penetration capability for indoor use |
| Supply voltage | 2.0 – 3.6 V |
| Current consumption | 138 mA (TX @ +20 dBm) 30 mA (RX) 1.7 µA (sleep with RTC running) |
| Antenna | PCB printed inverted F antenna U.FL connector |
| Dimensions | 29.5x22.6x3.5 mm Standard Embit form factor |
| Connector | SMD Edge Connector |
| Temp. Range | -40 to +85 °C |
| Certifications | CE, FCC |