Zolertia RE-Mote Hardware Development Platform

Ultra-Low Power Wireless platform for 2.4 GHz and 863-950 MHz IEEE 802.15.4, 6LoWPAN, and ZigBee Applications

Microcontroller

- Powerful ARM® Cortex® -M3
- 32-MHz Clock Speed
- 512KB In-SystemProgrammable Flash
- 32KB of RAM (16KB With Retention)
- USB 2.0 Full-Speed Device (12 Mbps)
- Security Hardware acceleration
  (AES-128/256, SHA2, ECC-128/256,
  RSA Hardware Acceleration Engine
  for Secure Key Exchange)
- 1 x I2C, 1 x SPI, 1 x UART, µDMA,
  12-Bit ADC with configurable resolution
- General Purpose Pin (GPIO) 4/20mA

Features

- Micro-SD support
- Shutdown Mode (190nA)
- Real Time Clock Calendar (RTCC)
- External Watchdog Timer and
  battery monitor (optional)
- Built-in LiPo Battery Charger
- RF switch to programatically
  drive either 2.4 GHz or Sub-1GHz
  RF interface to RP-SMA connector

RF 2.4 GHz

- ISM 2.4 GHz IEEE 802.15.4 &
  Zigbee/Thread compliant
- 2394-2507 MHz frequency range with
  1MHz/5MHz programable steps
- Sensitivity -97 dBm, ACR 44 dB, up
  to 7 dBm transmission power
- Data Rate 250 Kbps with DSSS
  Modulation

RF Sub-1 GHz

- ISM 863-868, 915-, 920-, 950 MHz
  ISM/SRD Band,
  IEEE 802.15.4g compliant
- Sensitivity -109 dBm (50Kbps), down
  to -123 dBm (1.2 Kbps), ACR up to 60
  dB, up to +16 dBm transmission power
- Channels from 12.5 KHz - 1.66 MHz
- Supported modulations 2-FSK,
  2-GFSK, 4-FSK, 4-GFSK, MSK, OOK
- Supports Data Rate Up to 1.25 Mbps
  in Transmit and Receive Modes

Compliances

- **Europe:** ETSI EN 300 220,
  ETSI EN 54-25, EN 300 328,
  EN 300 440.
- **US:** FCC CFR47 Part 15,
  FCC CFR47 Part 90, 24, 101.
- **Japan:** ARIB RCR STD-T30,
  ARIB STD-T66, ARIB STD-T67,
  ARIB STD-T108

Parameter	Min	Average	Max	Unit
Operation supply voltage	3.4	4.7	16	V
General Purpose Pin Voltage output	0	3.3	-	V
General Purpose Pin Current output	0	4	20	mA
Shutdown Mode	150	-	-	nA
PM3 Power Mode	-	0.4	-	uA
PM1 Power Mode	-	0.6	-	mA
Active Mode (2.4 GHz RX, CPU idle)	-	20	-	mA
Active Mode (2.4 GHz TX, 0dBm, CPU idle)	-	24	-	mA
Operation Temperature	-40	25	100	°C

Development tools

- Contiki OS contiki-os.org
- RIOT OS   www.riot-os.org
- Thingsquare Platform
- OpenWSN (upcoming!)
- Eclipse IDE for C/C++
- Code Composer Studio™
- IAR Embedded Workbench ® for ARM
- SmartRF™ Studio
- SmartRF Flash Programmer
- Built-in programming support over USB

Zolertia Resources

- Zolertia site www.zolertia.io
- Zolertia Online Store zolertia.io/store
- Resource Page www.zolertia.io/resources
- Zolertia Github repository github.com/Zolertia
- Hackster Page www.hackster.io/zolertia

open source™

RE-Mote pin-out distribution and components

JP5

USD.MISO	SPI1.MISO	PC6	18
USD.MOSI	SPI1.MOSI	PC5	17
USD.SCLK	SPI1.SCLK	PC4	16
UTTON.USER	RTC_INT1	PA3	15
UTTON.RESET	JTAG.RESET	RESET	14
		DGND	13
		D+3.3	12
ADC1	AIN5	PA5	11
ADC2	AIN4	PA4	10
		DGND	09
		D+5.1	08
ADC3	AIN2	PA2	07
		JTAG.TMS	06
		JTAG.TCK	05
JTAG.TDO	PB7		04
JTAG.TDI	PB6		03
	PS+EXT		02
	DGND		01

JP6

01	PD5	EXT_WDT	LED1
02	PD4	UART1.CTS	LED2
03	PD3	UART1.RTS	LED3
04	PA0	UART0.RX	
05	PA1	UART0.TX	
06	PD1	SHUTDOWN_ENABLE	
07	PC2	I2C.SDA	RTC.SDA
08	PC3	I2C.SCL	RTC.SCL
09	DGND		
10	D+3.3		
11	PA7	AIN7	USD.CS
12	PD0	SHUTDOWN_DONE	
13	PC1	UART1.RX	
14	PC0	UART1.TX	
15	DGND		
16	D+3.3		
17	DGND		
18	+VBAT		

RP-SMA EXTERNAL ANTENNA

MICRO-SD

RP-SMA EXTERNAL ANTENNA

RGB LED

JP6

LED1	EXT_WDT	PD5	01
LED2	UART1.CTS	PD4	02
LED3	UART1.RTS	PD3	03
	UART0.RX	PA0	04
	UART0.TX	PA1	05
	SHUTDOWN_ENABLE	PD1	06
RTC.SDA	I2C.SDA	PC2	07
RTC.SCL	I2C.SCL	PC3	08
		DGND	09
		D+3.3	10
USD.CS	AIN7	PA7	11
	SHUTDOWN_DONE	PD0	12
	UART1.RX	PC1	13
	UART1.TX	PC0	14
		DGND	15
		D+3.3	16
		DGND	17
		+VBAT	18

JP5

18	PC6	SPI1.MISO	USD.MISO
17	PC5	SPI1.MOSI	USD.MOSI
16	PC4	SPI1.SCLK	USD.SCLK
15	PA3	RTC_INT1	BUTTON.USER
14	RESET	JTAG.RESET	BUTTON.RESET
13	DGND		
12	D+3.3		
11	PA5	AIN5	ADC1
10	PA4	AIN4	ADC2
09	DGND		
08	D+5.1		
07	PA2	AIN2	ADC3
06	JTAG.TMS		
05	JTAG.TCK		
04	PB7	JTAG.TDO	
03	PB6	JTAG.TDI	
02	PS+EXT		
01	DGND		

JTAG CC2538

JTAG PIC

USER BUTTON

RESET BUTTON

PROGRAM & DEBUG USB

USB 2.0 CONNECTOR