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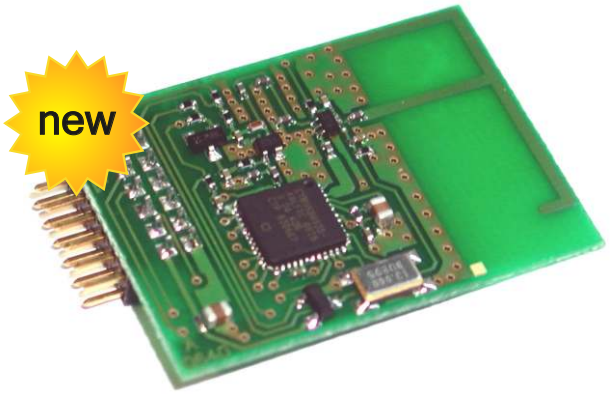
Trasmissione Dati

XTR CYP 2.4GHz

High Speed Multichannel Transceiver



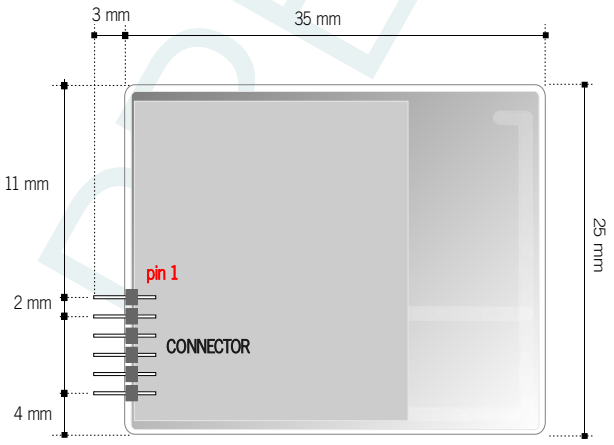
Description

XTR CYP 2.4 long range transceiver, pin to pin compatible with CYWM6935 LR™ 2.4GHz DSSS Radio SoC Cypress Module, represents an extension able to irradiate an RF power (ERP) incremented up to 15 dBm (versus 0 dBm of original module).In this way the supportable range is increased to 150m. It operates in the unlicensed Industrial, Scientific, and Medical (ISM) band (2.4-2.483GHz) and it offers a complete radio module solution for integration into existing or new 2.4GHz products. It uses a DSSS (Direct Sequence Spread Spectrum) technique that allows to operate in disturbed environments and reduces the interference caused by traditional narrowband signals.This technique also permits coexistence with Bluetooth and Wi-Fi as well as all other wireless technologies that utilize the 2.4GHz ISM Band. Radio transceiver embed a power amplifier PA and a PIFA (Planar Inverted F Antenna) antenna.
Module can be connected to a microcontroller and one or more external devices by SPI interface.
This way it's possible to program the transceiver. In particular setting RF channel, transmission data rate and RF radiated power.
Due to the internal amplifier RF power may reach 15dBm ERP (step from -14 to 15dBm).
Utilizable RF channels are 78 in ISM band (2.400-2.4835 GHz).
Transmission data rate is selectable (16, 32 or 64 Kbit/sec) according to the used spreading code.

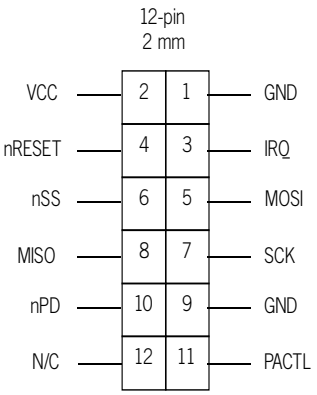
Applications

Industrial automation, Radio modems, Access control.

Mechanical Dimensions (Rear view)



Pin-out



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Reference Documentation

For information on technical details of XTR CYP 2.4GHz such as register settings, timing, application interfaces, clocking and power management, refer to the data sheet of the CYWUSB6935 Radio SoC on Cypress internet site: www.cypress.com.

Pin description

Pin		Description
1,9	GND	Ground connection
2	VCC	Positive voltage supply connection.
3	IRQ	Interrupt signal from the radio module to an external microcontroller
4	nRESET	Reset Signal (active low) from an external microcontoller to the radio module
5	MOSI	Master Out Slave In. SPI signal from an external microcontroller to the radio module.
6	nSS	Slave Select Signal (active low) from an external microcontroller to the radio module.
7	SCK	SPI Clock from an external microcontroller to the radio module.
8	MISO	Master In Slave Out. SPI signal from the radio module to an external microcontroller.
10	nPD	Power Down Signal (active low) from an external microcontroller to the radio module
11	PACTL	State of the external amplifier (read only).

External Power Amplifier

XTR CYP 2.4GHz module includes, within the radio transceiver, a power amplifier that must be correctly set up (the PA must be used only when the module is in transmission mode).
To do that it is necessary to set up properly the register 0x20 of the radio transceiver. The correct setting is the following:

REG. 0x20

Bit	7	6	5	4	3	2	1	0
Setting	0	0	0	0	0	1	1	0

By setting the 0x20 register of the radio trensceiver as in table here above the PA is activated automatically during the transmission. It is instead disabled when module is in receive mode.
To control whether the setting is right, it is necessary to verify the level of PIN 11 of XTR CYP 2.4GHz.
In particular PIN 11 must be:

- 1 when the module is in TRANSMISSION mode
- 0 when the module is in RECEIVE mode

By using external PA it is possible to obtain a radiated power level (ERP) from -14 to 15 dBm by setting the first three bits of 0x23 register of radio transceiver.
RF power levels are shown in the following table:

Table 1

PA Setting	Typical Output Power (ERP)
7	15 dBm
6	13 dBm
5	10 dBm
4	6 dBm
3	-1 dBm
2	-6 dBm
1	-10 dBm
0	-14 dBm

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Technical Specification

Ta = 25 °C

Characteristics	Min	Typ	Max	Unit
Voltage supply	2.7	3.3	3.6	Vdc
Current supply (RX mode)		60		mA
Current supply (TX mode)		100	120	mA
Current supply (Stand-by mode)		0.25		µA
Modulation type		GFSK		
Receiver sensitivity		-95		dBm
RF Power out (ERP)	- 14		15[(1)]	dBm
RF channels frequencies	2402		2481	MHz
Number of channels		78		
RF bandwidth		1		MHz

[(1)] For european use the max power level is 10mW ERP and this condition is satisfied with step 5 on register 0x23 (see Table 1).

Part Number / Model
650200915 / mod. XTR-CYP2.4
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