CMOSTEK CMT2300A

Ultra Low Power 300 – 960 MHz Transceiver

Features

- Optional Configuration Schemes
  - On-Line Configuration by Registers Writing
  - Off-Line Configuration by EEPROM Programming
- Frequency Range: 300 to 960 MHz
- Support OOK, (G)FSK and (G)MSK Modulation
- Data Rate: 0.1 to 100 kbps
- Sensitivity: -120 dBm at 1 kbps, 0.1% BER, F_{RF} = 434 MHz
- Output Power: -10 dBm to +13 dBm
- 4-wire SPI Interface
- Direct, Buffer and Packet Mode Supported
- Configurable Data Handler and 64 Byte FIFO
- Manchester Decoding and Data De-Whitening
- Supply Voltage: 1.8 to 3.6 V
- Ultra Low Receive Power Consumption: 4.2 mA
- Ultra Low Sleep Current
  - 60 nA when Sleep Timer Off
  - 440 nA when Sleep Timer On
- RoHS Compliant
- 16-pin QFN 3x3 Package

Descriptions

The CMT2300A is an ultra low power, high performance, OOK, FSK, MSK, GFSK and GMSK transceiver for various 300 to 960 MHz wireless applications. It is part of the CMOSTEK NextGenRF™ family, which includes a complete line of transmitters, receivers and transceivers. The user can configure the chip features either through off-line EEPROM programming or on-line registers writing. The configuration file to be written into the registers could be produced by the CMOSTEK smart RFPDK. The CMT2300A operates from a supply voltage of 1.8 V to 3.6 V. It consumes only 4.2 mA current while achieving -120 dBm receiving sensitivity and consumes only 60 nA in sleep state, which makes it an ideal solution for battery powered application. The device supports packet handling, 32-byte FIFO, Manchester decoding and data de-whitening for the received data processing. Besides the demodulated data, the device provides 2 configurable interrupts, the sync clock, the power-on reset as well as the system clock for an external device. The CMT2300A can meet worldwide regulatory standards: ARIB, ETSI, and FCC.

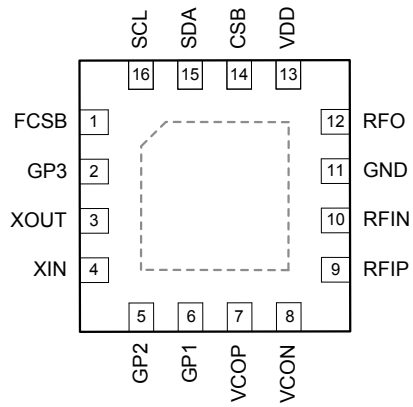
Applications

- Low-power Consumer Electronics Applications
- Home and Building Automation
- Infrared Receiver Replacements
- Industrial Monitoring and Controls
- Remote Automated Meter Reading
- Remote Lighting Control System
- Wireless Alarm and Security Systems
- Remote Keyless Entry (RKE)

Ordering Information

Part Number	Frequency	Package	MOQ
CMT2300A-EQR	868.00 MHz	QFN16	5,000 pcs

QFN16 (3x3)



CMT2300A Top View

1. Pin Descriptions

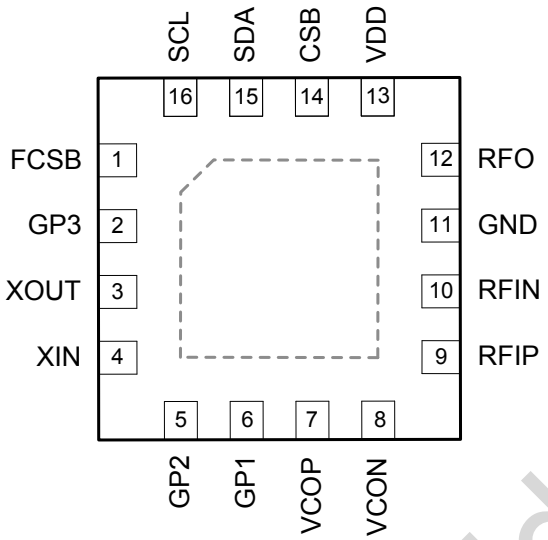


Figure 1. CMT2300A Pin Assignments - Single-ended RF Input Application

Table 1. CMT2300A Pin Descriptions

Pin Number	Name	I/O	Descriptions
1	FCSB	I	4-wire SPI FIFO select input, active low, internally pulled high. Leave floating when programming the embedded EEPROM
2	GP3	O	General purpose output. Options are: CLKO (Default), INT1, INT2 and DCLK
3	XOUT	O	Crystal oscillator output
4	XIN	I	Crystal oscillator input or external reference clock input
5	GP2	IO	General purpose input or output. Options are: INT1 (Default), INT2, DCLK and DOUT/DIN
6	GP1	IO	General purpose input or output. Options are: DOUT(Default)/DIN, INT, INT2 and DCLK
7	VCOP	IO	VCO tank, connected to an external inductor
8	VCON		
9	RFIP	I	Differential RF signal input to the LNA. Connect RFIP to ground if single-ended RF input is needed
10	RFIN		
11	GND	I	Ground
12	RFO	O	Power amplifier output
13	VDD	I	Power supply input
14	CSB	I	4-wire SPI chip select input, active low, internally pulled high
15	SDA	IO	4-wire SPI data input and output
16	SCL	I	4-wire SPI clock input, internally pulled low

2. Typical Application Schematic

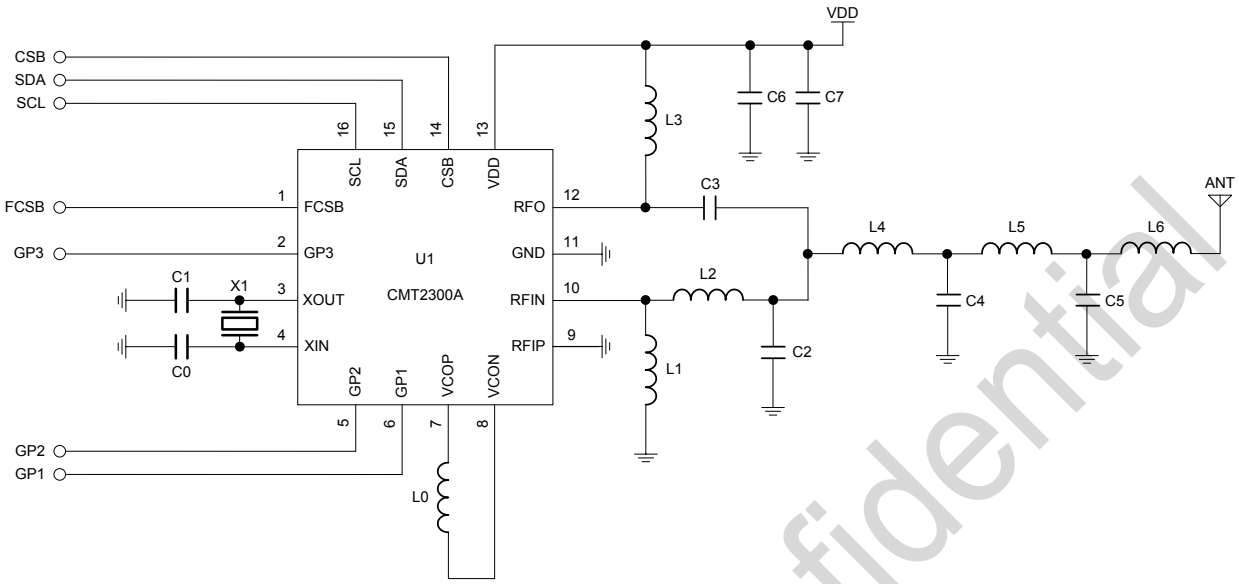


Figure 2. Typical Application Schematic - Single-ended RF Input Application

Table 2. BOM of Typical Application

Designator	Descriptions	Value		Unit	Manufacturer
		434 MHz	868 MHz		
U1	CMT2300A, ultra low power 300 – 960 MHz transceiver	-		-	CMOSTEK
L0	±5%, 0603 multi-layer chip inductor	22	3.9	nH	Murata LQG18
L1	±5%, 0603 multi-layer chip inductor	56	6.8	nH	Murata LQG18
L2	±5%, 0603 multi-layer chip inductor	56	22	nH	Murata LQG18
L3	±5%, 0603 multi-layer chip inductor	180	120	nH	Murata LQG18
L4	±5%, 0603 multi-layer chip inductor	56	12	nH	Murata LQG18
L5	±5%, 0603 multi-layer chip inductor	82	22	nH	Murata LQG18
L6	±5%, 0603 multi-layer chip inductor	51	18	nH	Murata LQG18
C0, C1	±0.25 pF, 0402 NP0, 50 V	15	15	pF	Murata GRM15
C2	±0.25 pF, 0402 NP0, 50 V	2.2	1.5	pF	Murata GRM15
C3	±0.25 pF, 0402 NP0, 50 V	8.2	15	pF	Murata GRM15
C4	±0.25 pF, 0402 NP0, 50 V	3.9	3.9	pF	Murata GRM15
C5	±0.25 pF, 0402 NP0, 50 V	3.3	2.2	pF	Murata GRM15
C6	±0.25 pF, 0402 NP0, 50 V	470		pF	Murata GRM15
C7	±20%, 0402 X7R, 25 V	0.1		uF	Murata GRM15
X1	±20 ppm, SMD32*25 mm, crystal	26		MHz	EPSON

3. Package Outline

The 16-pin QFN 3x3 illustrates the package details for the CMT2300A. The table below lists the values for the dimensions shown in the illustration.

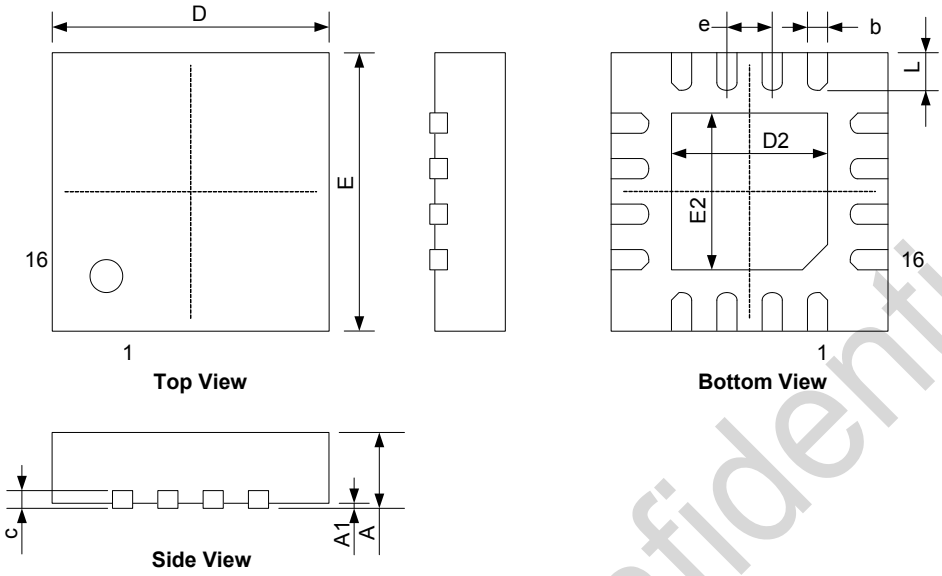


Figure 3. 16-Pin QFN 3x3 Package

Table 3. 16-Pin QFN 3x3 Package Dimensions

Symbol	Size (millimeters)	
	Min	Max
A	0.7	0.8
A1	—	0.05
b	0.18	0.30
c	0.18	0.25
D	2.90	3.10
D2	1.55	1.75
e	0.50 BSC	
E	2.90	3.10
E2	1.55	1.75
L	0.35	0.45

4. Contact Information

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