CMOSTEK CMT2250AW

300 – 480 MHz OOK Receiver with Decoder

Features

- Embedded EEPROM
  - Very Easy Development with RFPDK
  - All Features Programmable
- 3-wire SPI Interface for EEPROM Programming
- Frequency Range: 300 to 480 MHz
- Symbol Rate: 0.1 to 40 ksps
- Sensitivity: -114 dBm at 1 ksps, 0.1% BER
- Stand-Alone, No External MCU Control Required
- Embedded 1920, 1527 and 2262 Data Decoder
- 4 Data Outputs
- Configurable Duty-Cycle Receive Mode
- Low Power Consumption: 3.8 mA
- Low Sleep Current
  - 60 nA When Sleep Timer Off
  - 440 nA When Sleep Timer On
- ID Study, Factory Code Supported
- RoHS Compliant
- Available in QFN16(3x3), DIP16 and SOP16 Packages

Applications

- Low-Cost Consumer Electronics Applications
- Remote Control
- Smart LED Control (On/Off Dimming)
- Home Security and Alarm
- Garage and Gate Openers
- Home and Building Automation
- Industrial Monitoring and Controls
- Sensor Networks
- Health Monitors
- Remote Keyless Entry (RKE)

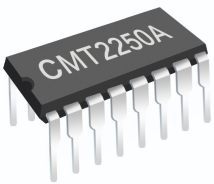
Ordering Information

Part Number	Frequency	Package	MOQ
CMT2250AW-EQR	433.92 MHz	QFN16	5,000 pcs
CMT2250AW-EDB	433.92 MHz	DIP16	1,000 pcs
CMT2250AW-ESR	433.92 MHz	SOP16	2,500 pcs

Descriptions

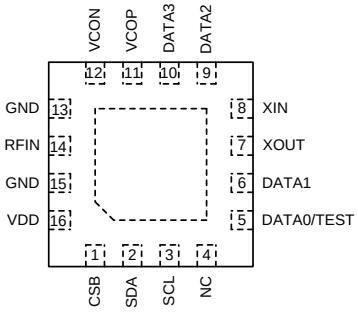
The CMT2250AW is a true single-chip, ultra low power and high performance device that consists of an OOK RF receiver, a data decoder and 4 data output pins for various 300 to 480 MHz wireless applications. The device integrates a data decoder that is not only compatible with the most common used encoding format of 1527 and 2262, but also a more efficient, flexible and powerful format of 1920 designed by CMOSTEK. The device delivers sensitivity up to -114 dBm while consuming only 3.8 mA current when it is always on. An embedded EEPROM allows the frequency, symbol rate and other features to be programmed into the device using the CMOSTEK USB Programmer and RFPDK. Alternatively, in stock product of 433.92 MHz is available for immediate demands with no need of EEPROM programming. When pairing the device to CMOSTEK transmitters, the synchronization ID can be programmed into both of the transmitter and receiver during the manufacturing phase, or studied by the receiver from the transmitter remotely by end customers. The CMT2250AW is part of the CMOSTEK NextGenRF™ family, together with CMT215x series transmitters, they enable ultra low cost, low power consumption RF links.

QFN16 (3x3)

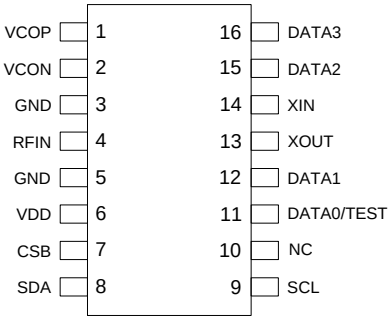


DIP16

SOP16



QFN16(3x3) Top View



SOP16/DIP16 Top View

Table 2. CMT2250AW Pin Descriptions in QFN16 (3x3) Package

Pin Number	Name	I/O	Descriptions
1	CSB	I	3-wire SPI chip select input for EEPROM programming
2	SDA	IO	3-wire SPI data input and output for EEPROM programming
3	SCL	I	3-wire SPI clock input for EEPROM programming
4	NC	-	Not connected, leave floating
5	DATA0/TEST	O	Data output, connect to an LED or other device Receiving data output for production test purpose
6	DATA1	O	Data output, connect to an LED or other device
7	XOUT	O	Crystal oscillator output
8	XIN	I	Crystal oscillator input or external reference clock input
9, 10	DATA2, DATA3	O	Data outputs, connect to LEDs or other devices
11	VCOP	IO	VCO tank, connected to an external inductor
12	VCON		
13, 15	GND	I	Ground
14	RFIN	I	RF signal input to the LNA
16	VDD	I	Power supply input

Table 1. CMT2250AW Pin Assignments in SOP16/DIP16 Package

Pin Number	Name	I/O	Descriptions
1	VCOP	IO	VCO tank, connected to an external inductor
2	VCON		
3, 5	GND	I	Ground
4	RFIN	I	RF signal input to the LNA
6	VDD	I	Power supply input
7	CSB	I	3-wire SPI chip select input for EEPROM programming
8	SDA	IO	3-wire SPI data input and output for EEPROM programming
9	SCL	I	3-wire SPI clock input for EEPROM programming
10	NC	-	Not connected, leave floating
11	DATA0/TEST	O	Data output, connect to an LED or other device Receiving data output for production test purpose
12	DATA1	O	Data output, connect to an LED or other device
13	XOUT	O	Crystal oscillator output
14	XIN	I	Crystal oscillator input or external reference clock input
15,16	DATA2, DATA3	O	Data outputs, connect to LEDs or other devices

Typical Application

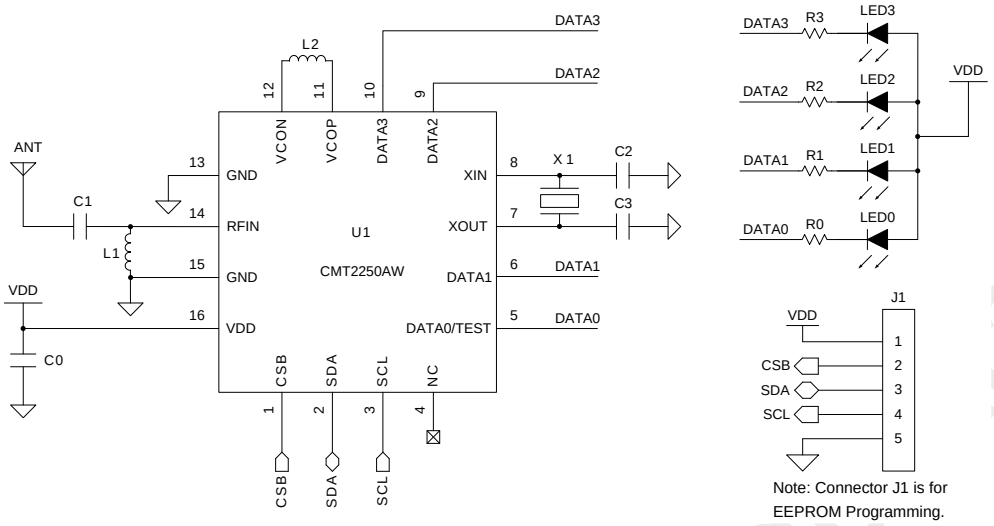


Figure 1. CMT2250AW Typical Application Schematic

Table 1. BOM of Typical Application

Designator	Descriptions	Value (Match to 50Ω ANT)		Value (Common Used ANT)		Unit	Manufacturer
		315 MHz	433.92 MHz	315 MHz	433.92 MHz		
U1	CMT2250AW, 300 – 480 MHz OOK receiver with decoder	-		-		-	CMOSTEK
X1	±20 ppm, SMD32*25 mm, crystal	26		26		MHz	EPSON
L1	±5%, 0603 multi-layer chip inductor	33	27	68	33	nH	Murata LQG18
L2	±5%, 0603 multi-layer chip inductor	33	22	33	22	nH	Murata LQG18
C1	±0.25 pF, 0402 NP0, 50 V	5.6	3.3	4.3	2.7	pF	Murata GRM15
C0	±20%, 0402 X7R, 25 V	0.1		0.1		uF	Murata GRM15
C2, C3	±5%, 0402 NP0, 50 V	27		27		pF	Murata GRM15
R0/1/2/3	5%, 0402 chip resistor	330		330		Ω	
LED0/1/2/3	SMD3528, orange LED	40		40		mW	

Package Outline

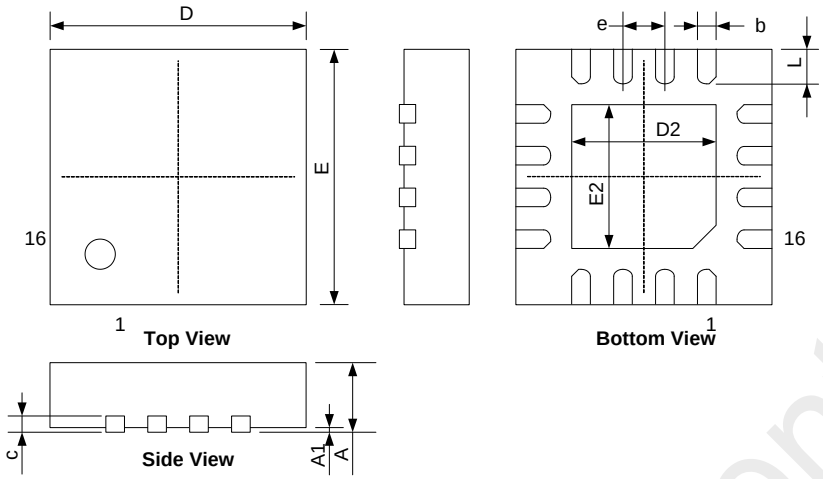


Figure 2. 16-Pin QFN 3x3 Package

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