



WF4466TBM

Integrated Encoder OOK Transmitter IC

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Key Features

● Integration

- Integrated PLL and power amplifier
- Integrated EV1527 standard encoder
- Supports ASK/OOK modulation

● Features

- 4 independent key inputs
- 20/24/28-bit address
- Operating temperature: -40 to +120 °C
- Data frame checksum supported
- Operating voltage: 1.8 V – 5.5 V
- Shutdown current: 0 µA

Max Output Power:

- 14 dBm @ 3 V
- 17 dBm @ 5 V

Operating Current:

- 7 mA @ 3 V (433 MHz @ 14 dBm)
- 10 mA @ 5 V (433 MHz @ 17 dBm)

● Characteristics

- Zero standby power consumption
- Integrated anti-voltage power-saving mode
- CE/FCC certified
- Excellent ESD immunity
- Integrated LBD (Low Battery Detection)

● Applications

- Remote access control
- Electric vehicle remote controllers
- Lighting switches
- Remote control toys / fans

Overview

The WF4466TBM is a true single-chip, next-generation OOK transmitter SoC with an integrated encoder. It is fully compatible with 1527-encoded products and supports the popular 315 MHz and 433.92 MHz frequencies. With four independent key inputs, high output power for extended communication range, and a zero-power standby mode for longer battery life, it is ideal for cost-sensitive wireless control applications.

The chip supports the 20-bit address 1527-compatible format and is designed to pair with the WF480/WF490 series receiver ICs, providing a complete low-cost, low-power, high-performance wireless control solution.

1 Pin Description

1.1 Pin Diagram

The WF4466TBM is packaged in SOP8. The pin assignment is shown below.

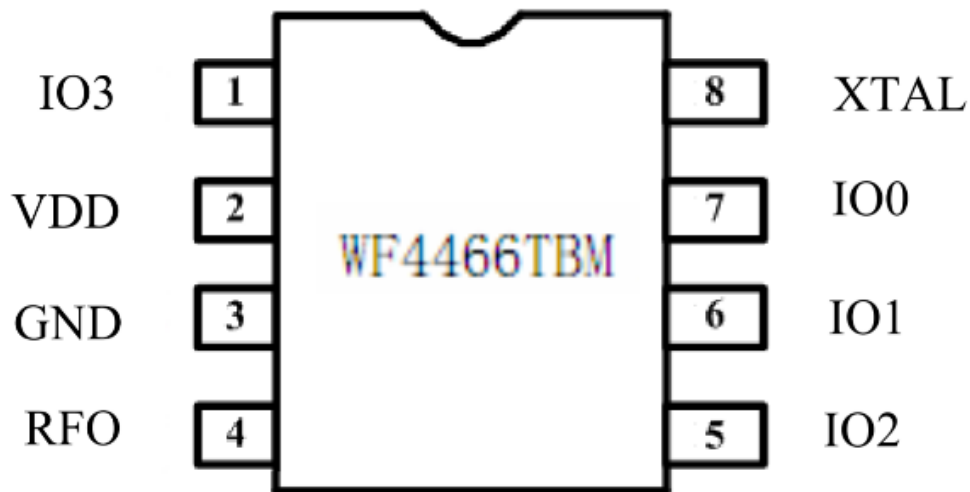


Figure 1 SOP8 Package Pin Diagram

1.2 Pin Description

SOP8 Pin	Pin Name	Pin Type	Pin Description
1	IO3	Digital IO	IO3 key input / LED indicator (key code: 1000)
2	VDD	Power	Power supply input
3	GND	Ground	GND
4	RFO	Analog	RF signal output
5	IO2	Digital IO	IO2 key input (key code: 0100)
6	IO1	Digital IO	IO1 key input (key code: 0010)
7	IO0	Digital IO	IO0 key input (key code: 0001)
8	XTAL	Analog	Crystal oscillator input

Table 1 SOP8 Pin Definition

2 Electrical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
General Characteristics						
Supply Voltage	VDD	433 MHz standard circuit: up to 5.5 V 315 MHz standard circuit: up to 4 V (for 5.5 V at 315 MHz, see Section 6.1 reference circuit)	1.8	3	5.5	V
Operating Current @ 3 V	3V I _{DD}	Freq=433M Pout=14 dBm	—	7	—	mA
Operating Current @ 5 V	5V I _{DD}	Freq=433M Pout=17 dBm	—	10	—	mA
Peak Current @ 3 V	3V I _{pp}	Freq=433M Pout=14 dBm	—	22	—	mA
Peak Current @ 5 V	5V I _{pp}	Freq=433M Pout=17 dBm	—	27	—	mA
Standby Power	I _{STD}	DIN=0; Tdelay > 40 ms	—	0	—	μA
RF Characteristics						
Supported Data Rate	D_RATE	—	1	20	—	kbps
Frequency Range	Freq	—	315	—	433	MHz
Output Power	Pout	Freq=433 MHz 3 V	—	14	—	dBm
		Freq=433 MHz 5 V	—	17	—	dBm
		Freq=315 MHz 3 V	—	14	—	dBm
		Freq=315 MHz 5 V	—	17	—	dBm
RF On/Off Ratio	Pon/off	Power when DIN=1 / DIN=0	—	60	—	dB
Phase Noise @ 433 MHz	—	@ 10 kHz offset	—	−93	—	dBc/Hz
		@ 100 kHz offset	—	−91	—	dBc/Hz
		@ 400 kHz offset	—	−89	—	dBc/Hz
		@ 1 MHz offset	—	−94	—	dBc/Hz
Harmonic Suppression (2nd)	—	Freq=433M Pout=15 dBm	—	−49	—	dBm
Harmonic Suppression (3rd)	—	Freq=433M Pout=15 dBm	—	−51	—	dBm
Harmonic Suppression (2nd)	—	Freq=315M Pout=15 dBm	—	−55	—	dBm
Harmonic Suppression (3rd)	—	Freq=315M Pout=15 dBm	—	−52	—	dBm
Crystal Harmonic Spur (near carrier)	—	Freq=433M	—	−40	—	dBm

		Freq=315M	—	−40	—	dBm
Crystal Characteristics						
Crystal Frequency	F_{XTAL}	Freq=433M	—	13.5 6	—	MHz
		Freq=315M	—	9.84 375	—	MHz
Load Capacitance	C_{LOAD}	—	—	NC	—	pF
Start-up Time	Ton	Freq=433M	—	1.4	—	ms
		Freq=315M	—	2	—	ms

Table 2 Electrical Characteristics

3 Absolute Maximum Ratings

Parameter	Condition	Min	Max	Unit
Supply Voltage	—	−0.3	+5.5	V
Storage Temperature	—	−65	+150	°C
ESD HBM	RFO pin	−6 kV	+6 kV	kV
	IO / Power	−8 kV	+8 kV	kV

Table 3 Absolute Maximum Ratings

4 Recommended Operating Conditions

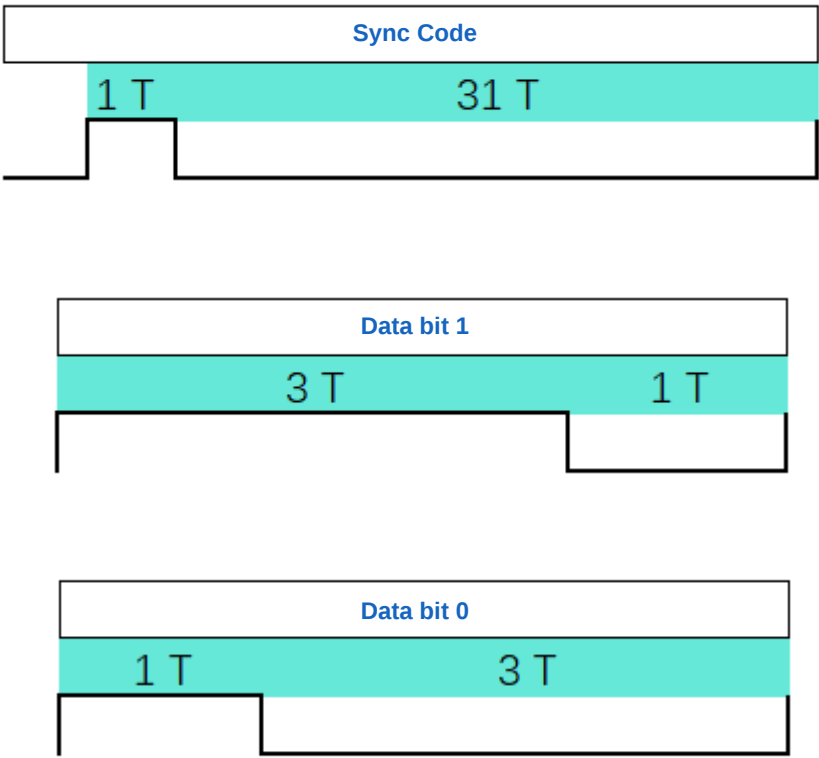
Parameter	Min	Max	Unit
Supply Voltage	1.8	5.5	V
Operating Temperature	−40	+120	°C

Table 4 Recommended Operating Conditions

5 Data Frame

The basic time unit of the WF4466TBM is **T (ms)**, where $T = 0.35\text{ ms}$, giving a data rate of 2.86 kbps. Each data bit consists of $4 \times T$ periods: **bit 1** = 3T high + 1T low; **bit 0** = 1T high + 3T low.

Sync Code and BIT Encoding



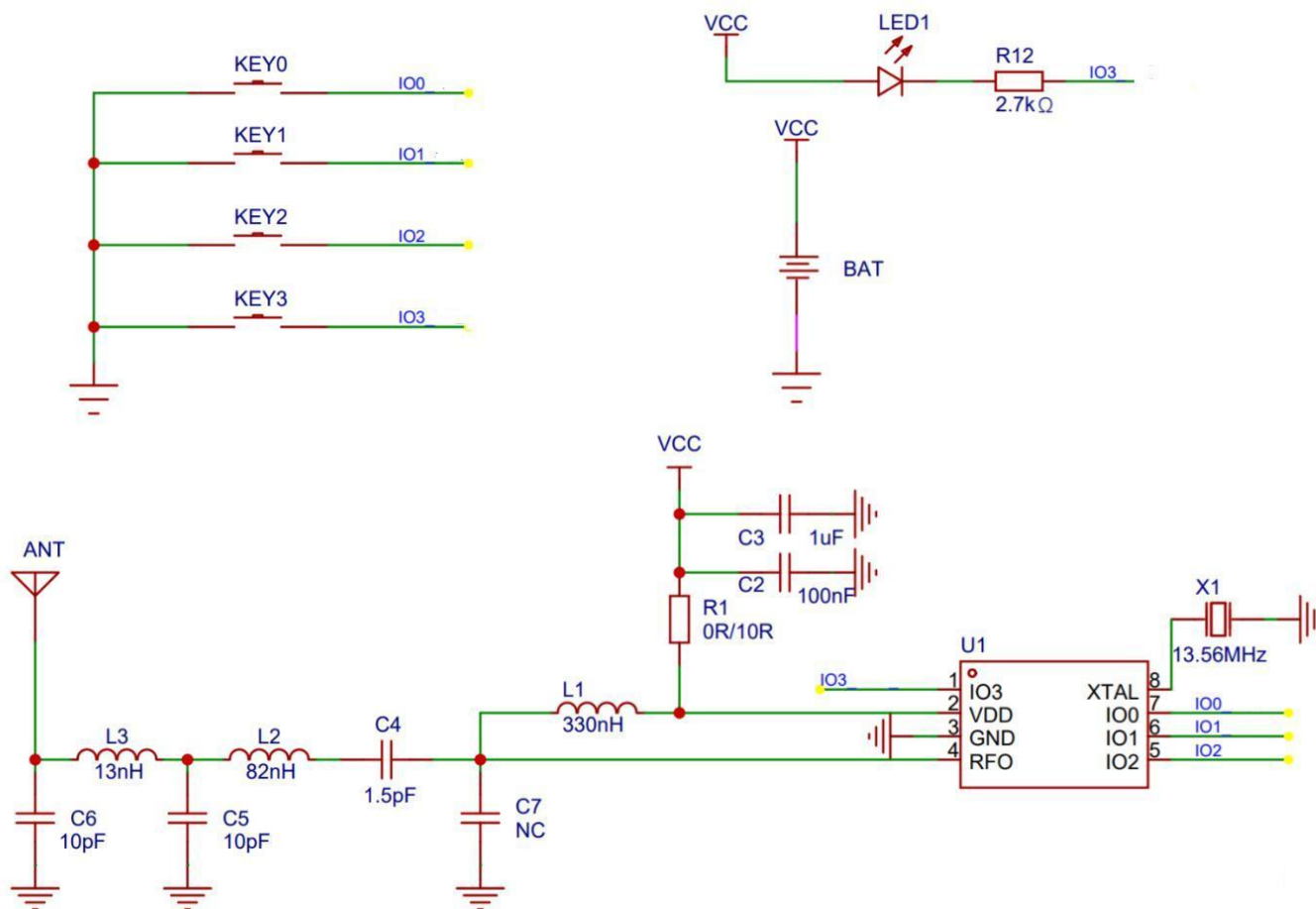
1527 Encoding Frame Structure

32T	20 bits	1 bit	1 bit	1 bit	1 bit
Sync Code	Address C0~C19 (1 million combinations)	D0	D1	D2	D3

6 Circuit Reference Designs

6.1 Standard Circuit

The standard circuit is recommended for applications with harmonic, power, CE/FCC certification, or other stringent requirements, as it provides a well-matched, tunable design.



Note: R1 defaults to 0 Ω. When using the 315 MHz band with supply voltage above 4.0 V

Frequency	X1	R1	C2	C3	C4	C5	C6	C7	L1	L2	L3
433 MHz	13.56 MHz	0 Ω	100 nF	1 μF	1.5 pF	10 pF	10 pF	NC	330 nH	68 nH	13 nH
315 MHz	9.84374 MHz	0 Ω/10 Ω*	100 nF	1 μF	1.6 pF	15 pF	15 pF	NC	330 nH	120 nH	24 nH

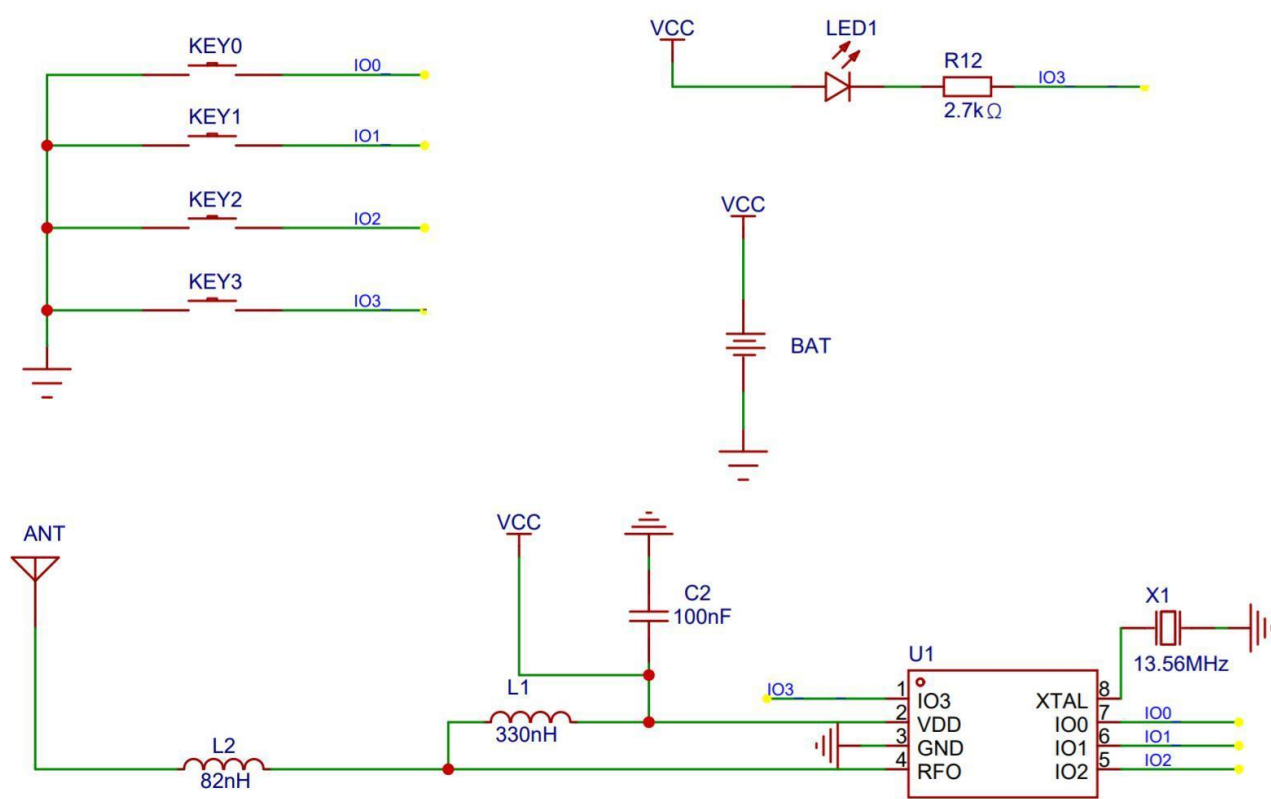
Table — Standard Circuit Matching Values

* Resistor R1: When the 315MHz power supply voltage is less than 4.0V, R1 is 0. When the 315MHz power supply voltage is greater than 4.0V, R1 should be soldered as a 10 resistor.

* The matching parameter example is for a 50 antenna. Actual matching requires adjustments based on the specific antenna to achieve better power and radiation performance.

6.2 Simplified Circuit

The simplified circuit is a low-cost solution for non-certification applications. Good output power can still be achieved by tuning the inductance values appropriately.



* L2 needs to be adjusted according to the actual product.

Frequency	X1	C2	L1	L2
433 MHz	13.56 MHz	100 nF	330 nH	82 nH
315 MHz	9.84374 MHz	100 nF	330 nH	120 nH

Table — Simplified Circuit Matching Values

* Matching values are for a 50 Ω antenna example. Tune according to the actual antenna for optimal power and radiation performance.

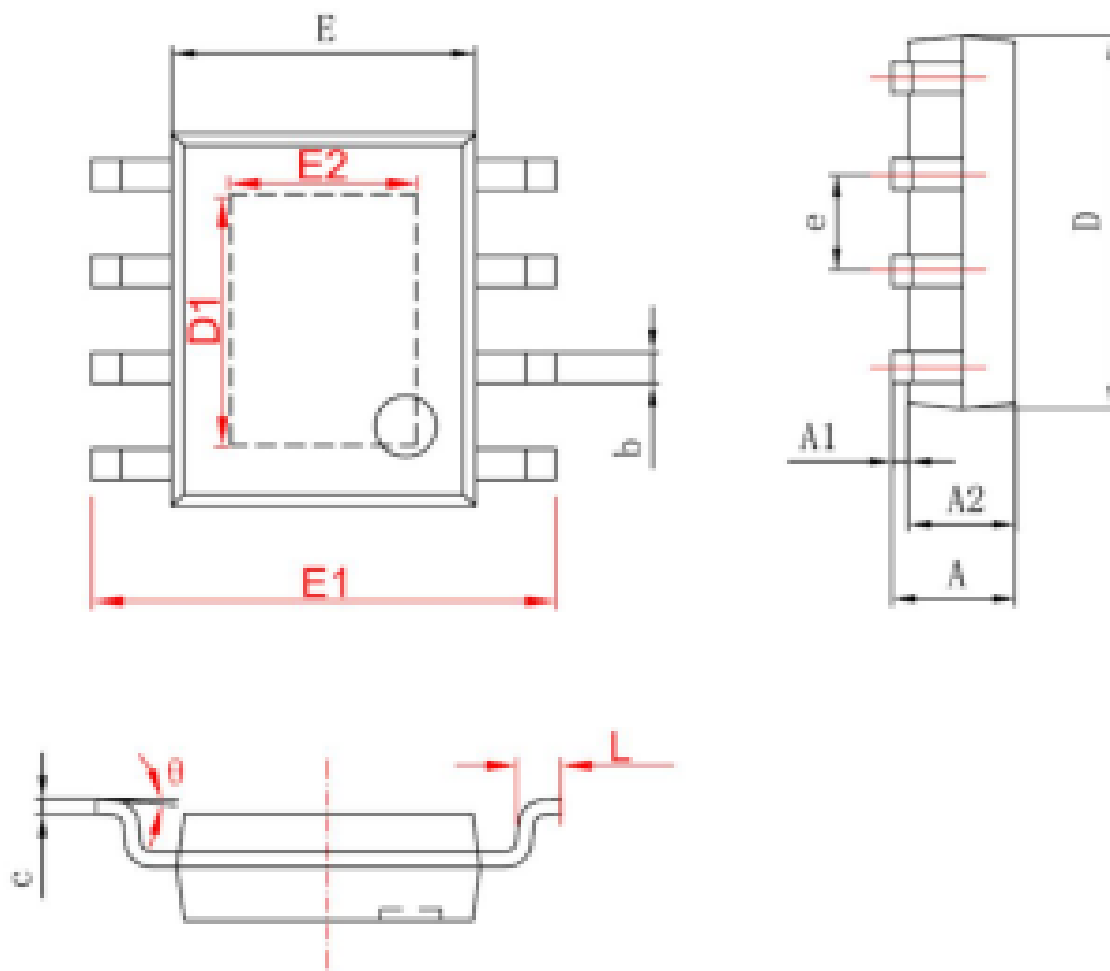
*This circuit is not recommended for use with an external antenna.

6.3 Ordering Information

Part Number	Frequency	Encoding	Data Rate	Package
WF4466TBM 315	315 MHz	1527 (20+4 bits)	2.86 kbps	SOP8
WF4466TBM 433	433.92 MHz	1527 (20+4 bits)	2.86 kbps	SOP8

Table 5 Ordering Information

7 Package Information (SOP8)



Symbol	Min (mm)	Max (mm)
A	1.500	1.700
A1	0.050	0.150
A2	1.350	1.550
b	0.300	0.500
c	0.190	0.250
D	4.800	5.000
D1	3.200	3.400
E	3.840	4.040
E1	5.900	6.100
E2	2.100	2.300
e	1.27 (BSC)	
L	0.520	0.720
θ	0°	8°

Figure 3 SOP8 Package Dimensions