

Product Description

Inside the transmitter, a voltage regulator, XC62FP-3.9 converts voltage of a 6V-battery into a regulated 3.9V voltage, which is the supply voltage for the whole circuit. When any one button connecting to microcontroller, PIC16C505-04 is pressed, a sequence of digital signal is sent to transmitter IC, HiMARK TX4930, in which the digital signal modulates onto a carrier frequency of 916.5MHz. The modulated frequency goes to a PCB-printed inverted-L antenna via a L-C lumped filter(L6, C28, C29, C30 and C31). The carrier frequency is from a VCO generated by multiplying a local oscillator at frequency 14.32MHz by 64.

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Description

The TX4930 is a low-power 433/868/915 MHz FM/FSK transmitter IC suitable for use in the North American 915 MHz and European 433 and 868 MHz ISM bands. The TX4930 is intended as a phase-locked frequency source in local oscillator or transmitter applications.

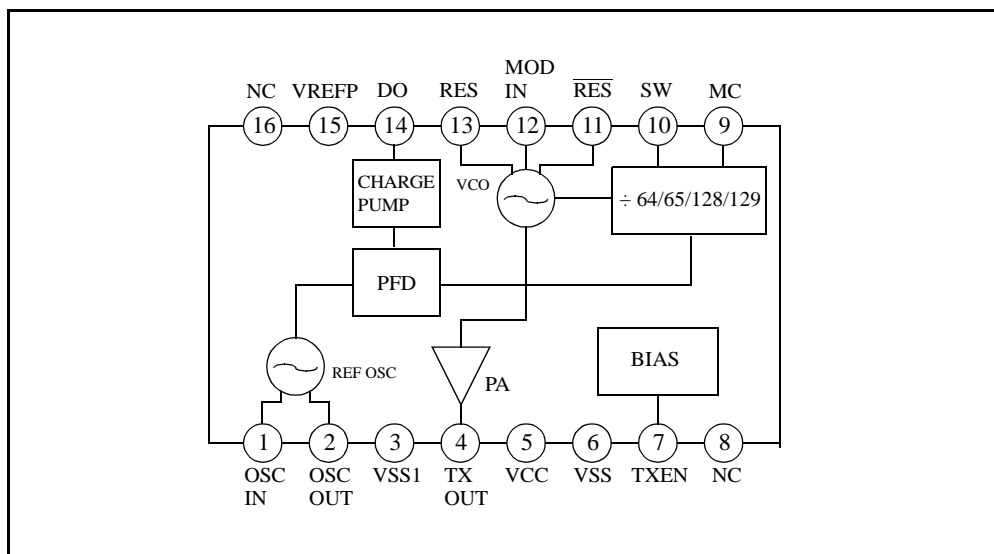
Features

- ◆ Integrated VCO with multi-modulus $\div 64/65/128/129$ prescaler, phase/frequency detector, and reference oscillator forming complete phase-locked loop
- ◆ Transmitter enable pin for power saving
- ◆ 2.7V to 5V supply voltage
- ◆ On-chip varactor diode for narrowband modulation
- ◆ SSOP-16 package (0.64mm pitch)

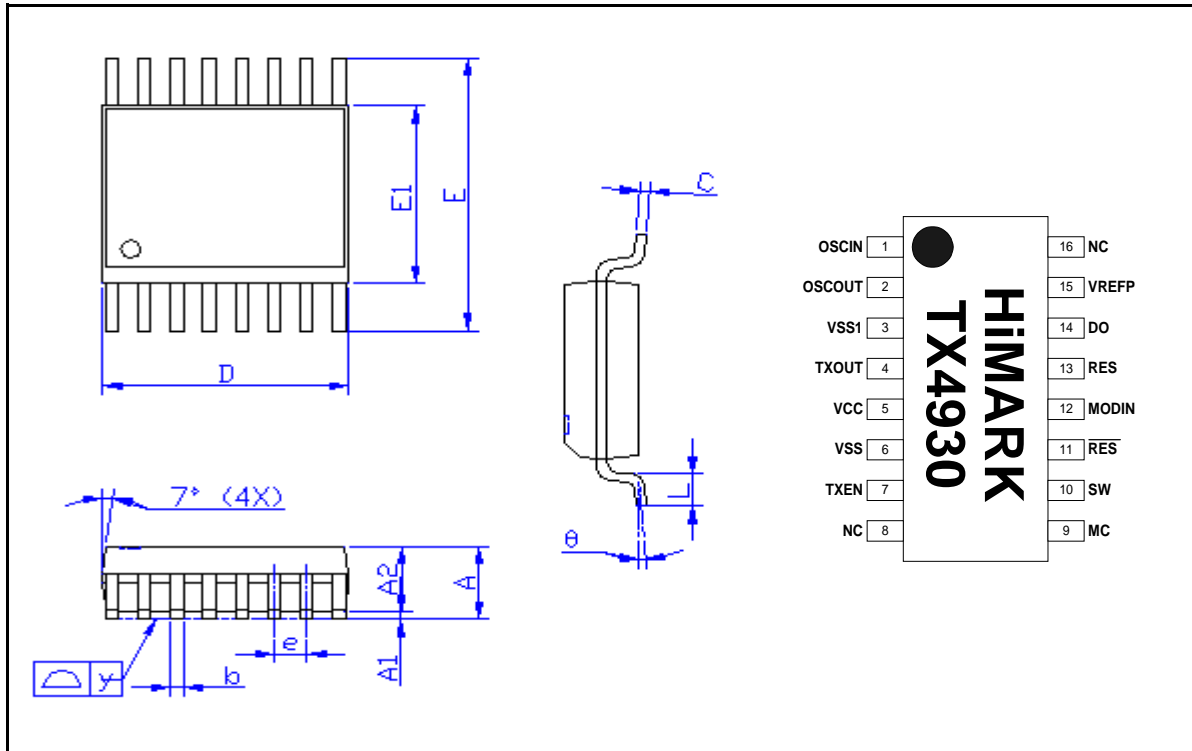
Applications

- ◆ Wireless mouse
- ◆ Wireless amplifier/ speaker/ headphone/ microphone
- ◆ Wireless car alarm system

Block Diagram



Package and Pin Assignment: SSOP-16



Symbols	Dimensions in mm			Dimensions in inch		
	min.	nom.	max.	min.	nom.	max.
A	1.35	1.60	1.75	0.053	0.064	0.069
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.20	0.25	0.30	0.008	0.010	0.012
C	0.19	—	0.25	0.007	—	0.010
D	4.80	—	5.00	0.189	—	0.197
E	5.80	—	6.20	0.228	—	0.244
E1	3.80	—	4.00	0.150	—	0.157
e	—	0.64	—	—	0.025	—
L	0.40	—	1.27	0.016	—	0.050
y	—	—	0.10	—	—	0.004
θ	0°	—	8°	0°	—	8°

Pin Descriptions

Number	Name	I/O	Description
1	OSCIN	I	Connected directly to the reference oscillator transistor base.
2	OSCOUT	O	Connected directly to the emitter of the reference oscillator transistor.
3	VSS1	GND	Ground for TXOUT.
4	TXOUT	O	Buffered output of the VCO.
5	VCC	POWER	DC power supply.
6	VSS	GND	Ground.
7	TXEN	I	Power-down control for all circuitry. When this pin is a logic "low", all circuits are turned off.
8	NC	NC	Not internally connected.
9	MC	I	Selects the prescaler modulus. A logic "high" selects 64 or 128 for the prescaler divisor. A logic "low" selects 65 or 129 for the divisor.
10	SW	I	Select the desired prescaler divisor. A logic "high" selects the 64/65 divisor. A logic "low" selects the 128/129 divisor.
11	$\overline{\text{RES}}$	I/O	Supply DC voltage to the VCO, as well as to tune the center frequency of the VCO.
12	MODIN	I	FM analog or digital modulation can be imparted to the VCO through this pin.
13	RES	I/O	See Pin 11.
14	DO	O	Output of the charge pump. An RC network from this pin to ground is used to establish the PLL bandwidth.
15	VREFP	O	Bias voltage reference pin for bypassing the prescaler and phase detector.
16	NC	NC	Not internally connected.

Absolute Maximum Ratings

$$V_{SS} = V_{SS1} = 0 \text{ V}$$

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	2.2 to 6	V
Operating Temperature Range	T_{OPR}	-40 to 85	°C
Storage Temperature Range	T_{STG}	-40 to 150	°C
Soldering Temperature Range	T_{SLD}	255	°C
Soldering Time Range	t_{SLD}	10	s

Recommended Operating Conditions

$$V_{SS} = V_{SS1} = 0 \text{ V}$$

Parameter	Symbol	Value			Unit
		min.	typ.	max.	
Supply Voltage Range	V_{CC}	2.7	3.6	5.0	V
Operating Temperature	T_A	-10	25	60	°C

Electrical Characteristics

($V_{CC} = 2.7$ to $5V$, $V_{SS} = V_{SS1} = 0V$, TXEN = high, $T_A = -10$ to $60^\circ C$, $f_{RF} = 915MHz$ unless otherwise noted)

Parameter	Symbol	Condition	Value			Unit
			min.	typ.	max.	
VCC Supply Voltage	V_{CC}		2.2	3	5	V
Total Consumption Current	I_{CC}	$V_{CC} = 3.3V$		12.5	14	mA
Power-down I_{CC}					1	μA
Output Power	P_{out}	$V_{CC} = 3.3V$		-3		dBm
Phase Noise		Offset 10KHz, 5KHz loop BW		-80		dBc/Hz
Harmonics		with output matching		-27		dBm
Crystal Frequency Spurs		5KHz loop BW		-50		dBc
Charge Pump Current			-40		40	μA

Application Circuit (915 MHz)

(Audio Transmitter)

