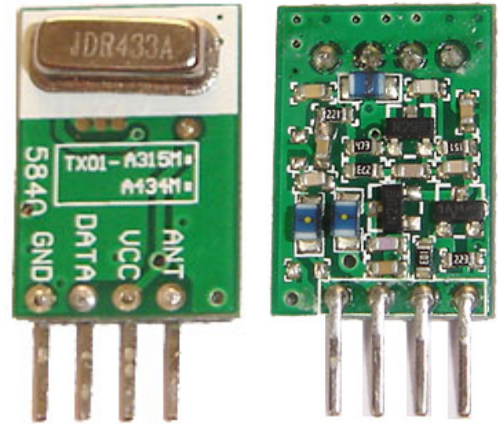


## 433 MHz RF Transmitter STT-433

### 1. Overview

The STT-433 is ideal for remote control applications where low cost and longer range is required. The transmitter operates from a 1.5-12V supply, making it ideal for battery-powered applications. The transmitter employs a SAW-stabilized oscillator, ensuring accurate frequency control for best range performance. Output power and harmonic emissions are easy to control, making FCC and ETSI compliance easy. The manufacturing-friendly SIP style package and low-cost make the STT-433 suitable for high volume applications.



### 2. Features

- 433.92 MHz Frequency
- Low Cost
- 1.5-12V operation
- 11mA current consumption at 3V
- Small size
- 4 dBm output power at 3V

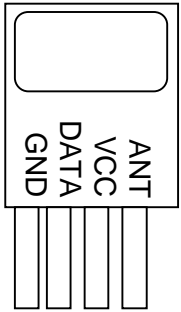
### 3. Applications

- Remote Keyless Entry (RKE)
- Remote Lighting Controls
- On-Site Paging
- Asset Tracking
- Wireless Alarm and Security Systems
- Long Range RFID
- Automated Resource Management

### 4. Specification

Parameter	Symbol	Min	Typ.	Max	Unit
Operating Voltage	Vcc	1.5	3.0	12	Volts DC
Operating Current Data = VCC	Icc	-	11mA @3V 59mA @5V	-	mA
Operating Current Data = GND	Icc	-	100	-	uA
Frequency Accuracy	TOL fc	-75	0	+75	Khz
Center Frequency	Fc	-	433	-	Mhz
RF Output Power		-	4 dBm@3V (2 mW) 16 dBm@5V (39 mW)		dBm / mW
Data Rate		200	1K	3K	BPS
Temperature		-20		+60	Deg. C
Power up delay			20		ms

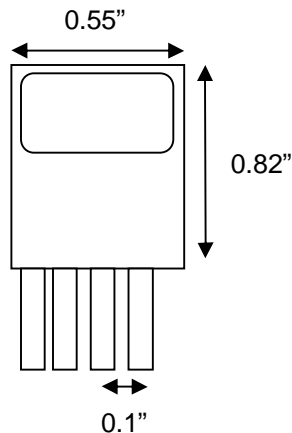
## 5. Pin Description



Pin Name	Description
ANT	50 ohm antenna output. The antenna port impedance affects output power and harmonic emissions. An L-C low-pass filter may be needed to sufficiently filter harmonic emissions. Antenna can be single core wire of approximately 17cm length or PCB trace antenna.
VCC	Operating voltage for the transmitter. VCC should be bypassed with a .01uF ceramic capacitor and filtered with a 4.7uF tantalum capacitor. Noise on the power supply will degrade transmitter noise performance.
DATA	Digital data input. This input is CMOS compatible and should be driven with CMOS level inputs.
GND	Transmitter ground. Connect to ground plane.

## 6. Mechanical Drawing

Dimensions in Inches



## 7. Operation

### 7.1. Theory

OOK(On Off Keying) modulation is a binary form of amplitude modulation. When a logical 0 (data line low) is being sent, the transmitter is off, fully suppressing the carrier. In this state, the transmitter current is very low, less than 1mA. When a logical 1 is being sent, the carrier is fully on. In this state, the module current consumption is at its highest, about 11mA with a 3V power supply.

OOK is the modulation method of choice for remote control applications where power consumption and cost are the primary factors. Because OOK transmitters draw no power when they transmit a 0, they exhibit significantly better power consumption than FSK transmitters.

OOK data rate is limited by the start-up time of the oscillator. High-Q oscillators which have very stable center frequencies take longer to start-up than low-Q oscillators. The start-up time of the oscillator determines the maximum data rate that the transmitter can send.

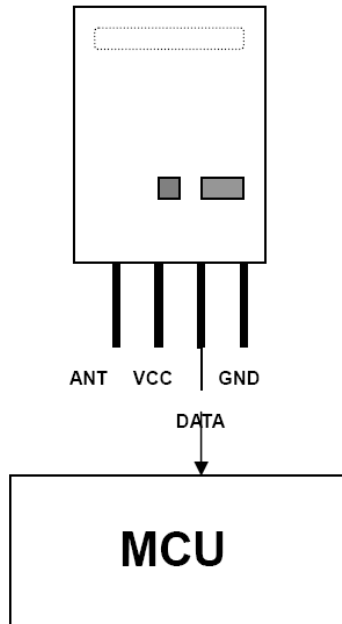
## 7.2. Data Rate

The oscillator start-up time is on the order of 40uSec, which limits the maximum data rate to 4.8 kbit/sec.

## 7.3. SAW stabilized oscillator

The transmitter is basically a negative resistance LC oscillator whose center frequency is tightly controlled by a SAW resonator. SAW (Surface Acoustic Wave) resonators are fundamental frequency devices that resonate at frequencies much higher than crystals.

# 8. Typical Application



# 9. Ordering Information

Part Number	Description
STT-433	433 MHz RF Transmitter