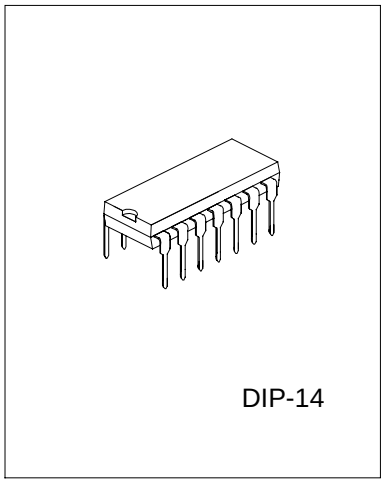
# $2^{24}$ OTP ENCODER




## DESCRIPTION

The SC9314 is CMOS LSI encoder designed for remote control system applications. It encodes 24 bits of information and then serially transmits it via the DOUT pin upon receipt of transmission enable (DATA pins: D0~D3) signals. The combination of address and bits of the SC9314 is designed by a one-time programmable process. The chip, in addition, offers various packaging for flexible combination of programmable address/data so as to meet various applications. Its programmable address/data is transmitted together with the anti-code bits via RF or infrared transmission medium upon receipt of a trigger signal.

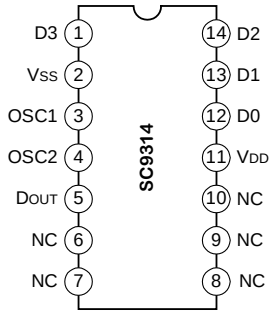
## FEATURES

* Operating voltage: 2V~12V
* Low power consumption
* Built-in oscillator needs only 5% resistor
* 0/2/4/8 data selectable
* $2^{24}$ maximum address and data codes
* Easy interface with RF or IR medium
* One-time programmable
* Data active: D0~D3
* Minimal external components

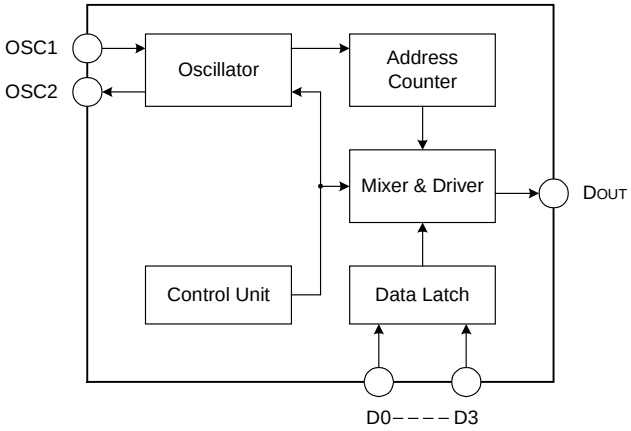
## APPLICATIONS

* Burglar alarm system
* Smoke and fire alarm system
* Garage door controllers
* Car door controllers
* Security system
* Cordless telephones
* Other remote control systems

## PIN CONFIGURATION



## BLOCK DIAGRAM




Note: Address/Data number are available in various combinations, refer to functional description.

## ABSOLUTE MAXIMUM RATING

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{DD}$ | 0.3~12 | V |
| Input Voltage | $V_{IN}$ | 0.3~ $V_{DD}$ +0.3 | V |
| Storage temperature | $T_{STG}$ | -50 ~ 125 | °C |
| Operating Temperature | $T_{OPR}$ | -20 ~ 70 | °C |

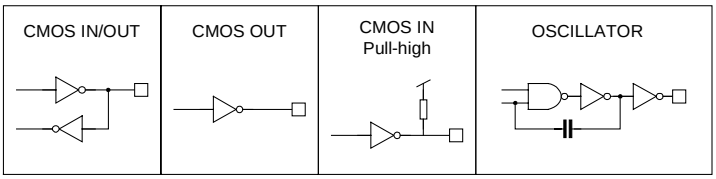
## ELECTRICAL CHARACTERISTICS ($V_{DD}$ =5.0V, $T_A$=25°C)

| Parameter | | Symbol | Test conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | $V_{DD}$ | Condition | | | | |
| Operating Voltage | | $V_{DD}$ | | | 2 | | 12 | V |
| Standby Current | | $I_{STB}$ | 12V | Oscillator stops | | 1 | 2 | A |
| Operating Current | | $I_{DD}$ | 12V | No load $F_{OSC}$=3KHz | | 200 | 400 | A |
| H Input Voltage | | $V_{IH}$ | | | 0.8 $V_{DD}$ | | $V_{DD}$ | V |
| L Input Voltage | | $V_{IL}$ | | | 0 | | 0.2$V_{DD}$ | V |
| D0~D7 Pull-High Resistance | | $R_{PH}$ | 12V | | | 150 | 300 | k |
| Output Current | Source | $I_{DOUT}$ | 5V | 0.9$V_{DD}$ | 2 | 5 | | mA |
| | | | 12V | 0.9$V_{DD}$ | 6.5 | 15 | | mA |
| | Sink | | 5V | 0.1$V_{DD}$ | 2 | 5 | | mA |
| | | | 12V | 0.1$V_{DD}$ | 6 | 15 | | mA |
| Oscillator Frequency | | $F_{OSC}$ | 12V | $R_{OSC}$=1.4M | | 3 | | kHz |

## PIN DESCRIPTION

| Pin No. | Symbol | I/O | Internal Connection | Description |
|---|---|---|---|---|
| 14<br>1~3 | D0~D3 | I | CMOS IN Pull-High | Data input and transmission enable (active low). They can be externally set to VSS or left open. |
| 4 | $V_{SS}$ | I | | Negative power supply (GND) |
| 9 | OSC2 | O | OSCILLATOR | Oscillator output pin |
| 10 | OSC1 | I | OSCILLATOR | Oscillator output pin |
| 11 | $D_{OUT}$ | O | CMOS OUT | Data serial transmission output |
| 12 | $V_{DD}$ | I | | Positive power supply |

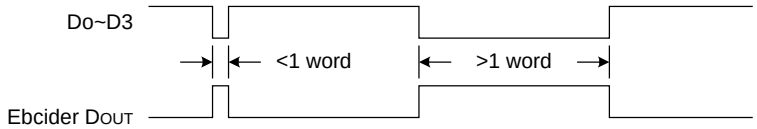
## APPROXIMATE INTERNAL CONNECTION CIRCUIT




## FUNCTIONAL DESCRIPTION

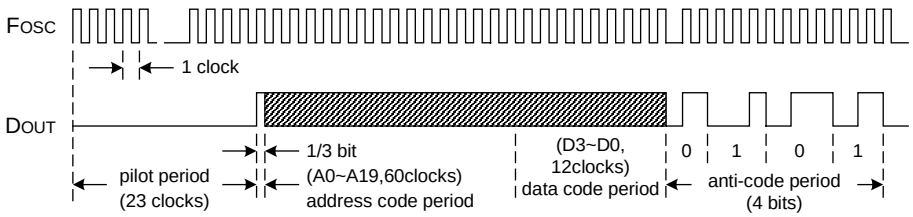
**Normal operation**

The SC9314 encodes and transmits address/data to a decoder upon receipt of a trigger signal. The address codes of SC9314 are always being transmitted as long as power ($V_{DD}$) is supplied. The transmission function of the SC9314 is enabled by the D0~D3 pins (active low). The following is the transmission of the SC9314.



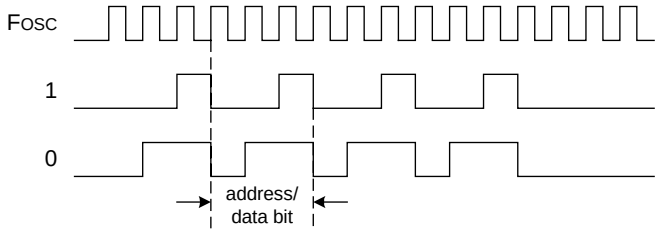

*Transmission timing*

A complete code word of the SC9314 consists of 3 periods as shown below.

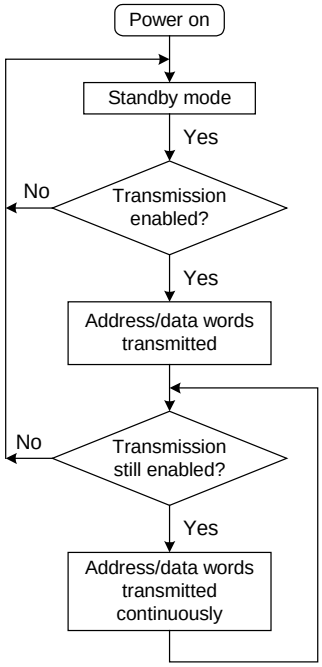



*A complete code word for the SC9314*

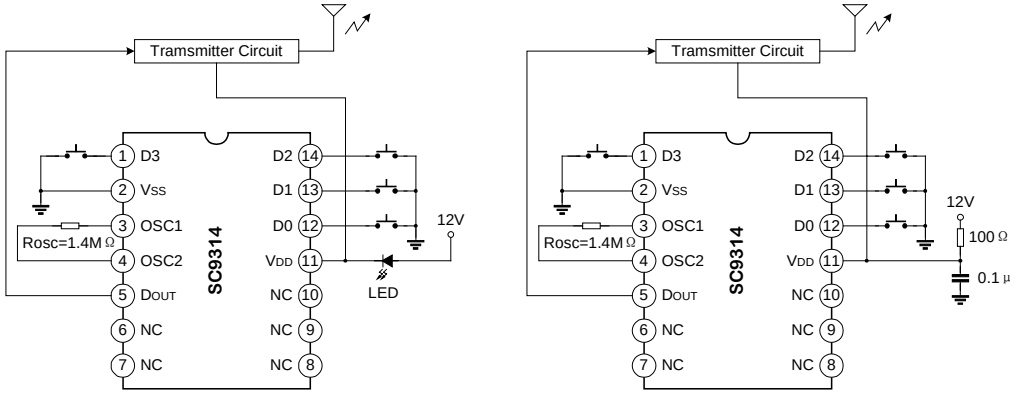
The SC9314 detects the logic state of the internal programmed address and the external data pins, and then transmits the detected information during the code period. Each address/data bit can be set to one of the following two logic states:




**Flowchart**



## TYPICAL APPLICATION CIRCUITS




Note: In order to prevent the IC from being damaged owing to the latch up, the 100Ω resistor or the LED which also can be a transmission indicator is indispensable when $V_{DD}$=9V~12V.

## PACKAGE OUTLINE

DIP-14-300-2.54 UNIT: mm

