HAT-12D8S   Serial o/p, 8 bits data

This chip emulates the Holtek decoding protocol. After receiving two transmissions with the proper format, the incoming data is decoded and output in serial format via SER_OUT (8). The format is 9600bps, one start bit, one stop bit, no parity. Flow control may be implemented by using the Data Ready (11) pin and the Send Data (10) pin. When valid data has been received and is in the buffer, DR (11) goes high to indicate to the PC (or other device) that there is data waiting. As soon as SD (10) is pulled low, the data is output via pin 8. The decoder will buffer up to 3B of data if they are received before SD (10) is brought high. Once there are 3B already stored, any new transmissions received will be ignored until there is more space in the buffer.

An internal timer is used to time 500ms, and is reset every time data is output. If a transmission with the *same* data as the previous transmission is received, it will not be output until the timer has timed 500ms. *Different* data will be output no matter what the condition of the timer.

The first eight bits received are decoded as data, the last four bits received are the address. The address of the decoder can be set by bringing the Learn (6) pin high for approximately 3.5 seconds. After 3.5 seconds Learn IND (7) goes low ; which can be used to sink up to 15mA to drive an LED, and the first valid transmission received sets the address. This address is stored in EEPROM memory and will be retrieved on power up. If being used with a Holtek HT-12E encoder, its oscillator should be configured with a 680k resistor.

Features

- Operating voltage: 4.5V-5.5V
- Internal protection against accidental double transmission (discards duplicate data within 500ms)
- Optional flow control lines
- 4 Bit address
- 8 Bit data which is output at 9600-8-N-1 via a serial port
- Active high valid transmission pin
- Very few external components (10MHz crystal and two 22pF capacitors)

Typical Applications

- Security systems
- Remote monitoring
- Remote control
- Smoke/Fire alarm systems
- Interfacing a remote control to a PC
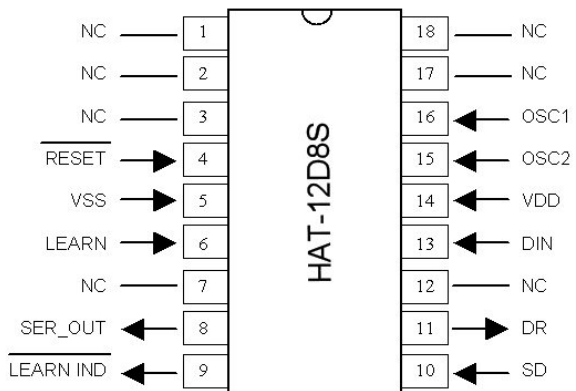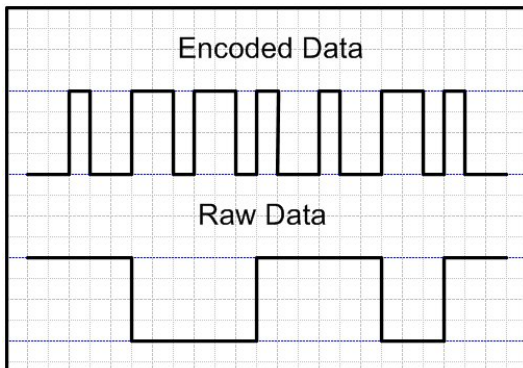
Pinouts

PIN	Function	Signal Direction
1	NC	N/A
2	NC	N/A
3	NC	N/A
4	RESET	Input
5	VSS	Input
6	LEARN	Input
7	NC	N/A
8	SER_OUT	Output
9	LEARN_IND	Output
10	SD	Input
11	DR	Output
12	NC	N/A
13	DIN	Input
14	VDD	Input
15	OSC2	Input
16	OSC1	Input
17	NC	N/A
18	NC	N/A

Pin Descriptions

RESET: Active low. Tie high for normal operation.

VSS: Ground reference.

LEARN: When pulled high for 3.5 seconds, the next valid transmission received sets the address of the decoder.

SER_OUT: Serial data output. Data is configured at 9600b/s, 1 start bit, 1 stop bit.

LEARN IND: When the chip goes into learn mode (pin 6 has been high for 3.5s) this pin goes low. Can be used to sink up to 15mA to drive an LED indicator.

SD: When Send Data is brought low, the data in the buffer is moved to the serial output. If permanently tied low, the data is moved directly to the output.
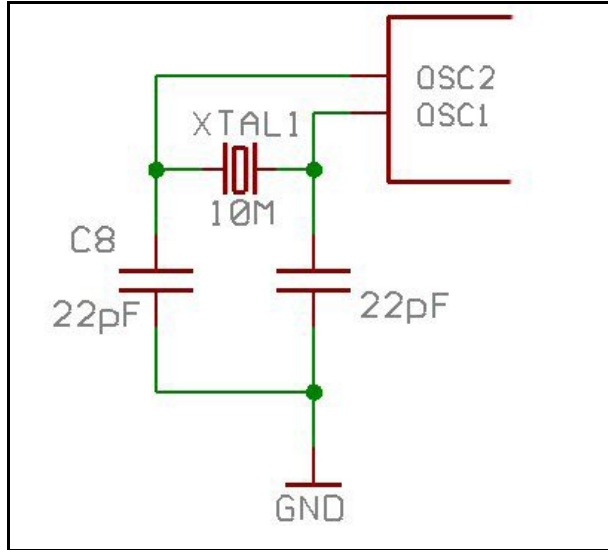
DR: When valid data arrives and is present in the buffer, this line goes high. Goes low once the data has been transmitted via SER_OUT.

DIN: Encoded data input (from the receiver). Encoded data should be encoded according to the Holtek HT-12E protocol as shown on the previous page. **NOTE:** With respect to the

HT-12E, A0 to A7 are decoded as data, and D0 to D3 are used as the address. If used with a Holtek HT-12E encoder, its oscillator should be configured with a 680k resistor.

VDD: Positive voltage reference.

OSC1—OSC2: Oscillator input. Each should have a 22pF capacitor to ground and a 10MHz crystal across the pins. See the figure below.

Oscillator configuration.