

INFRARED ENCODER AND DECODER

DESCRIPTION

The ST84C01/02 is a single channel Infrared encoder and decoder, designed for wireless peripheral communications. It meets the standard IrDa specification for wireless applications. The ST84C01 is offered with standard and programmable custom frequencies. The ST84C01 can interface directly to ST16C450 and ST16C550 products.

ST84C01/02 is designed in a 1.2 μ process to achieve 115.2k baud transmission rate.

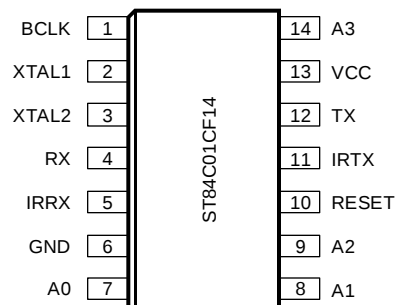
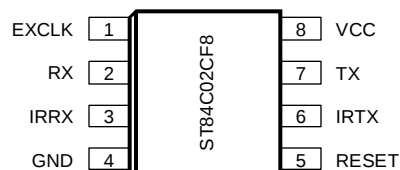
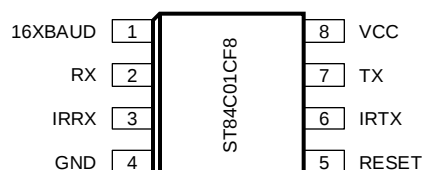
FEATURES

- Selectable transmit/receive bit rate
- Low power single 5V CMOS technology
- 8, 14 pin DIP or SOIC package.
- Crystal oscillator circuit on board

ORDERING INFORMATION

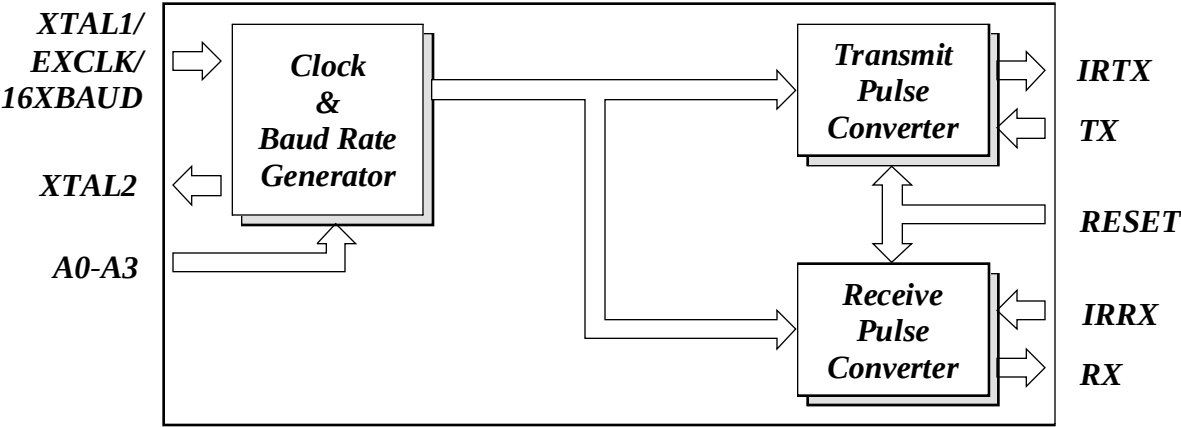
Part number	Package	Operating temperature
ST84C01CP8	Plastic-DIP	0 ° C to +70° C
ST84C01CF8	SOIC	0° C to +70° C
ST84C01CP14	Plastic-Dip	0° C to +70° C
ST84C01CF14	SOIC	0° C to +70° C
ST84C02CP8	Plastic-DIP	0 ° C to +70° C
ST84C02CF8	SOIC	0° C to +70° C

Plastic-DIP Package



ST84C01

BLOCK DIAGRAM



SYMBOL DESCRIPTION

Symbol	Pin 8 14		Signal Type	Pin Description
BCLK	-	1	O	Buffered clock output. To drive external UART clock.
XTAL1	1	2	I	Crystal or External Clock input. A crystal can be connected to this pin and XTAL2 pin to generate internal reference clock. For external clock application, XTAL2 is left open or used as buffered clock output.
XTAL2	-	3	O	Crystal clock output.
RX	2	4	O	Receive data output. Standard UART data output for 8 bits wide word with 1 start and stop bits recovered from IRRX receive data.
IRRX	3	5	I	Infrared receive data input.
GND	4	6	O	Supply ground.
A0	-	7®	I	Address select 0. To select the internal preprogrammed data rates.
A1	-	8®	I	Address select 1. To select the internal preprogrammed data rates.
A2	-	9®	I	Address select 2. To select the internal preprogrammed data rates.
RESET	5	10	I	Reset input (active high). To reset internal counters, receiver and transmitter.
IRTX	6	11	O	Infrared transmit data output. Converted standard UART 8 bits wide word with 1 start and stop bit to IrDa specified pattern.
TX	7	12	I	Transmit data input. Standard UART data input for 8 bits wide word with 1 start and stop bits.
VCC	8	13	I	Positive supply input.
A3	-	14®	I	Address select 3. To select the internal preprogrammed data rates.

ST84C01

SYMBOL DESCRIPTION

Symbol	Pin		Signal Type	Pin Description
	8	14		
16XBAUD	1	-	I	16 X BAUD rate clock input (ST84C01). User selectable transmit and receive data rates. This pin can be connected to ST16C450/550 baud-out pin.

® Has internal pull-up resistors.

DATA RATE SELECTION TABLE

A3	A2	A1	A0	BAUD RATE	DIVISOR
0	1	0	1	600	192
0	1	1	0	1200	96
0	1	1	1	2400	48
1	0	0	0	3600	32
1	0	0	1	4800	24
1	0	1	0	7200	16
1	0	1	1	9600	12
1	1	0	0	19.2k	6
1	1	0	1	38.4k	3
1	1	1	0	57.6k	2
1	1	1	1	115.2k	1

ABSOLUTE MAXIMUM RATINGS

Supply range	7 Volts
Voltage at any pin	GND-0.3 V to VCC+0.3 V
Operating temperature	0° C to +70° C
Storage temperature	-40° C to +150° C
Package dissipation	500 mW

DC ELECTRICAL CHARACTERISTICS

$T_A = 0 - 70^\circ \text{C}$, $V_{CC} = 5.0 \text{ V} \pm 10\%$ unless otherwise specified.

Symbol	Parameter	Limits			Units	Conditions
		Min	Typ	Max		
V_{IL}	Input low level			0.8	V	$I_{OL} = 6.0 \text{ mA}$ $I_{OH} = 6.0 \text{ mA}$ Pin 3 only $V_{IN} = V_{CC}$ Pin 3 No load.
V_{IH}	Input high level	2.0			V	
V_{OL}	Output low level			0.5	V	
V_{OH}	Output high level	2.8			V	
I_{IL}	Input low current			-100	μA	
I_{IH}	Input high current			1	μA	
I_{CC}	Operating current		1	1.2	mA	
R_{IN}	Input pull-up resistance	35	50	65	k Ω	

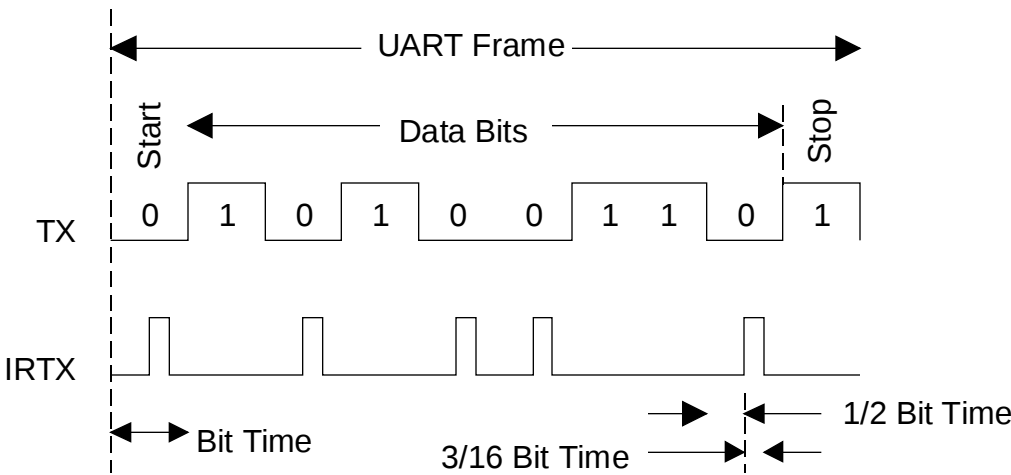
AC ELECTRICAL CHARACTERISTICS

$T_A = 0 - 70^\circ \text{C}$, $V_{CC} = 5.0 \text{ V} \pm 10\%$ unless otherwise specified.

Symbol	Parameter	Limits			Units	Conditions
		Min	Typ	Max		
T_1	CLOCK rise time		1.5	2	ns	0.5V - 2.8V
T_2	CLOCK fall time		1.5	2	ns	2.8V - 0.5V

ST84C01

INFRARED TRANSMIT TIMING



INFRARED RECEIVE TIMING

