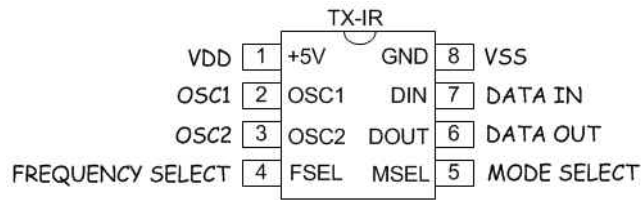


TX-IR - 8-Pin Programmable Infrared Transmitter IC



TX-IR Serial Infrared Interface IC

The TX-IR is an 8-pin infrared transmitter IC designed for infrared serial data links, and remote control applications. Data present on the DIN pin is recreated on the DOUT pin modulated at the selected carrier frequency of 38KHz or 40KHz providing a simple, single-chip solution, for infrared data communications and remote control applications.

Programmable Features:

The programmable features of the TX-IR allow specific configuration options to be set before power is applied to the circuit. Programmable options are:

1. **FSEL** - 38-40KHz Data Carrier "Frequency Select"
2. **MSEL** - True or Inverted Data Input Logic "Mode Select".

FSEL Options:

The FSEL pin selects the modulation frequency of the data carrier for outgoing infrared data. Selectable frequencies are 38KHz or 40KHz. This feature allows the TX-IR to be used with inexpensive 38KHz or 40KHz infrared photo detector modules for infrared wireless communications, and remote control applications.

Pin programmable options are set at design time by connecting the FSEL & MSEL pins to the appropriate logic levels as shown below. When power is applied, the user-selected operating modes will be in effect.

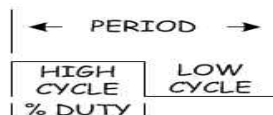
FSEL = 0

- Frequency \cong 40KHz | Duty-Cycle \cong 52%

FSEL = 1

- Frequency \cong 38KHz | Duty-Cycle \cong 50%

Note: Duty cycle % refers to the "High Cycle" time of the carrier frequency period.



TX-IR - 8-Pin Programmable Infrared Transmitter IC

MSEL Options:

The MSEL pin selects an input logic state of "1" or "0" that will turn ON or OFF the data carrier/infrared LED drive output on the DOUT pin. This feature allows the TX-IR to be used for infrared serial communications using TRUE or INVERTED serial modes, and simple push-button switches for remote control applications.

MSEL = 0

- Data Input Mode = TRUE
- Logic 0 on DIN Activates Modulated Data Carrier on DOUT

MSEL = 1

- Data Input Mode = Inverted
- Logic 1 on DIN Activates Modulated Data Carrier on DOUT

DIN & DOUT Pins

The DIN pin samples the logic state and bit timing of the incoming serial or logic pulse, and passes this timing information to the DOUT pin. The DOUT pin then outputs a carrier frequency matching the width of the sampled data bit by turning the carrier ON / OFF as shown below in Figure 1.

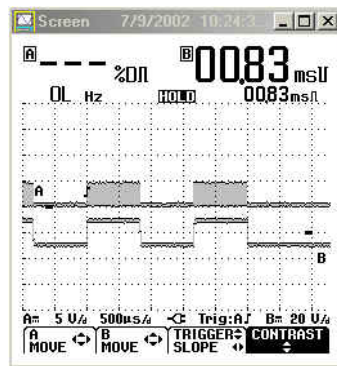
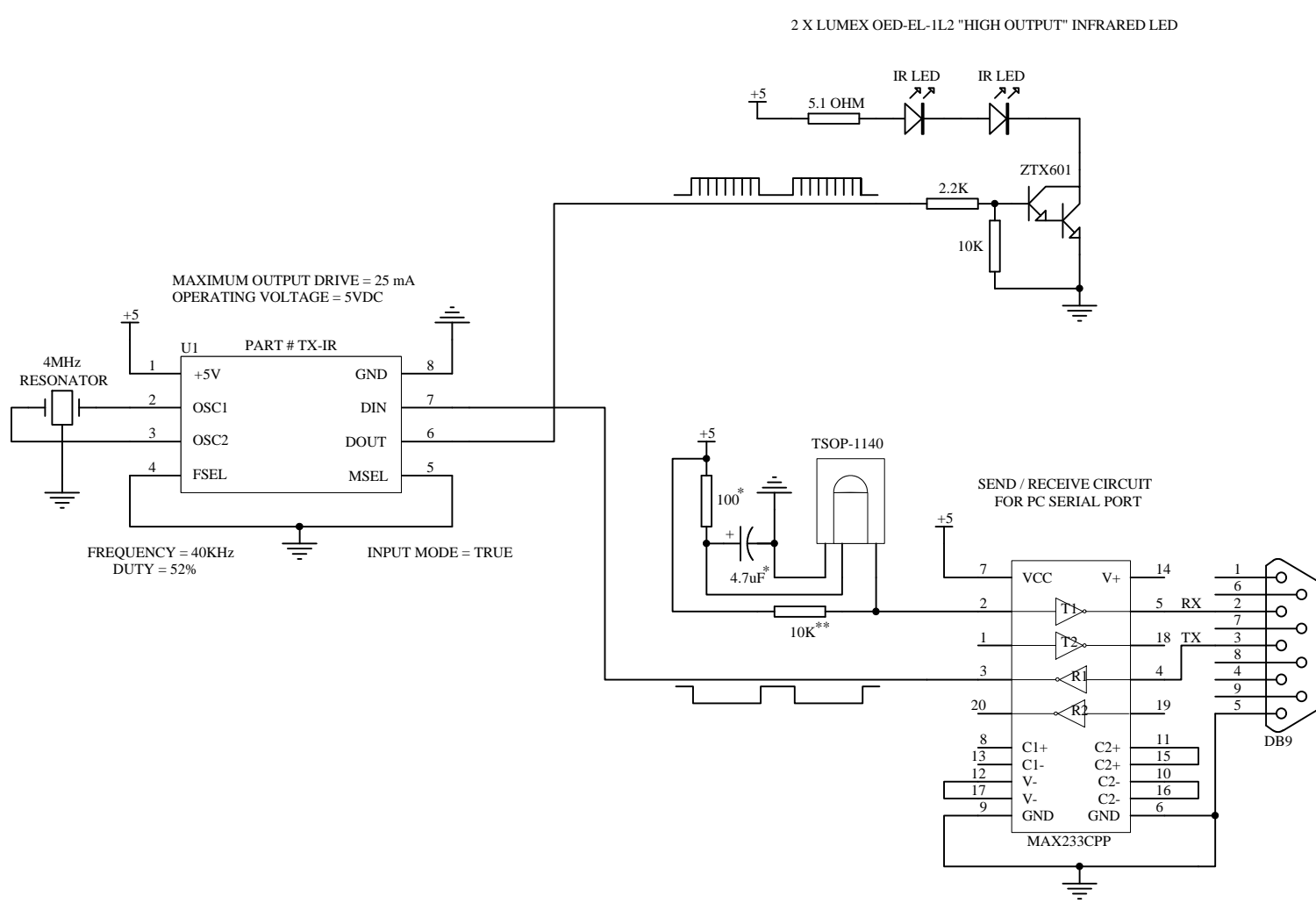


Figure 1

Trace B of the oscilloscope screen-capture shown in Figure 1 shows an incoming 1200-baud serial data stream present on DIN. Trace A shows the 40KHz modulated data signal being output on DOUT. The "input mode" selected by MSEL = 1 is inverted.

With the flexibility of programmable input logic modes, the TX-IR can be interfaced to the PC serial port, microcontrollers like the PIC, BASIC Stamp, 8051, and even simple push-button switches for wireless infrared serial communications, and remote control applications.

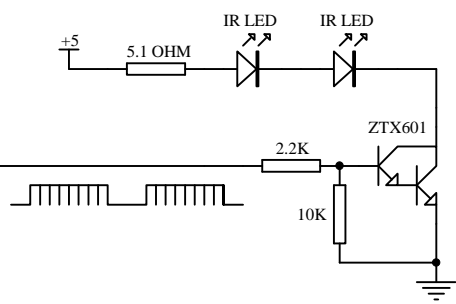
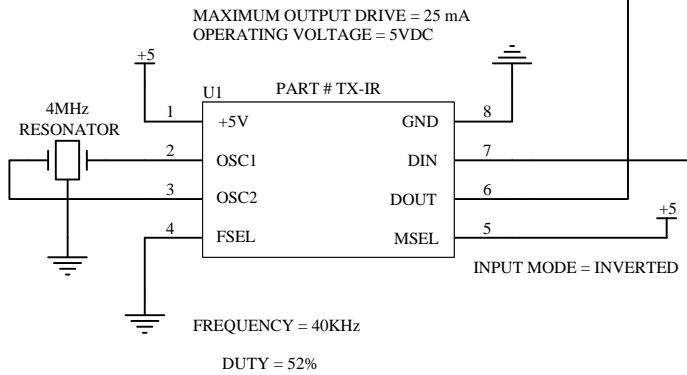


Title		
TX-IR BUFFERED RS-232 INFRARED SERIAL INTERFACE TRANSMIT & RECEIVE APPLICATION [MAX DATA-RATE 2400 BAUD]		
Size	Number	Revision
Orcad A		A.1
Date:	10-Jul-2002	Sheet 1 of 1
File:	C:\CAD\SCHEMATICS.Ddb	Drawn By: B. REYNOLDS

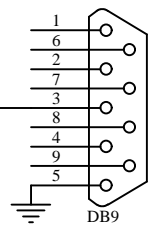
D

D

2 X LUMEX OED-EL-1L2 "HIGH OUTPUT" INFRARED LED



SERIAL DATA FROM PC SERIAL PORT TO TX-IR



DIRECT SERIAL FROM PC

C

C

B

B

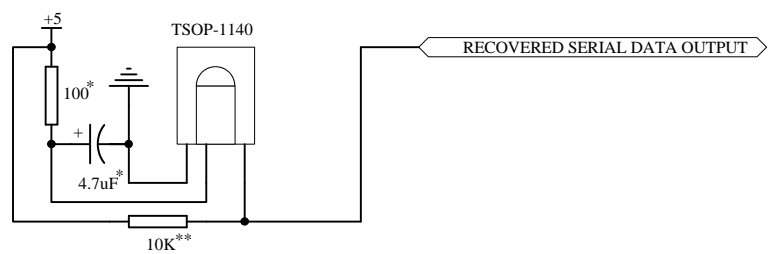
Recovered serial data output on the TSOP-1140 IR detector will be in TRUE mode;

Sample BASIC Stamp II receiver program:

```

VALUE VAR BYTE
DIRL = %11111111 ' Pins 0 to 7 = OUTPUTS
INPUT 8         ' Receive serial data on pin 8
T1200 CON 813   ' T1200 Baud [TRUE MODE]
T2400 CON 396   ' T2400 Baud [TRUE MODE]

BEGIN:
SERIN 8, T2400, [VALUE] ' Receive serial data & place in byte variable VALUE
OUTL = VALUE           ' Place serial data on pins 0 to 7
GOTO BEGIN             ' Return for more serial data
    
```



A

A

Title			TX-IR DIRECT RS-232 INFRARED SERIAL INTERFACE FOR MICROCONTROLLER APPLICATIONS		
Size	Number	Revision		A.1	
Orcad A					
Date:	14-Dec-2002	Sheet 1 of 1			
File:	C:\CAD\SCHEMATICS.Ddb	Drawn By:		B. REYNOLDS	