

**XR-T3590**

**Evaluation System**  
**User Manual**

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August 1996-4

### OVERVIEW

This unit is a 4.5 by 5.0 inch circuit board that simplifies the evaluation of the XR-T3590 Single Chip V.35 Transceiver in a CCITT V.35 application. Its features include dip switch selection of all chip options, and provisions for applying the ground potential offset voltage specified by the V.35 test procedure to the receiver inputs. *Figure 1.*, *Figure 2.* and *Table 2.* show the demo board component layout, circuit diagram, and list of components respectively.

### POWER REQUIREMENTS

Supply voltages of +5.0 Volts  $\pm 5\%V$  for  $V_{DD}$  and -5.0 Volts  $\pm 5\%$  for  $V_{SS}$  are applied to the board through banana jacks. Both power sources should be well-regulated, and each be capable of supplying 250 mA minimum. During normal operation jumper E-1 must be installed, and nothing is connected to the banana jack labeled OFFSET.

### DIGITAL INPUT DIGITAL OUTPUT CONNECTIONS

The TTL compatible transmitter inputs are the BNC connectors mounted on the left side of the board that are labeled TX1IN, TX2IN and TX3IN. Provisions are included for installing input termination resistors R1, R2, and R3 if required. These resistors (50 or 75 $\Omega$ ) are needed only if a pulse generator with a low impedance output and a fast rise time is used as a test signal source. They are not required for TTL signals applied to the board through short cables.

Likewise, the TTL compatible receiver outputs are the BNC connectors labeled RX1OUT, RX2OUT, and RX3OUT.

### TRANSMITTER LINE OUTPUT AND RECEIVER LINE INPUT CONNECTIONS

The line connections are made to the six RJ-11 connectors or to the corresponding test point pairs that are located on the right side of the board. The RJ-11s are for connecting twisted pair cables, and the test points provide a convenient means for viewing the output and input signals differentially on an oscilloscope. From top to bottom, the three transmitter outputs are labeled TX1OUT, TX2OUT, and TX3OUT, and the three receiver inputs are labeled RX1IN, RX2IN, and RX3IN. Note that connectors are wired so that the "A" and "B" XR-T3588 output pins and the "A" and "B" XR-T3589 input pins go to the same pin numbers on the RJ-11 connectors. Therefore, a test cable must be wired in the same manner to prevent a data inversion between the transmitter digital input and the receiver digital output. (Telephone cables typically contain a "twist" between modular connectors, and will therefore give a data inversion.)

### TRANSMITTER AND RECEIVER FUNCTION SELECTION

The DIP switch located in the center of the board selects the logic state applied to the XR-T3590 function control pins SL2, SL1, and SL0. *Table 1.* shows the function for each switch setting. Note that when a DIP switch section is "OFF," a logic 1 is applied to the corresponding IC pin.

DIP Switch Setting			Drivers On	Receivers On	Description
SEL2	SEL1	SEL0			
ON	ON	ON	-	-	All Off
ON	ON	OFF	-	1,2,3	All Receivers Off
ON	OFF	ON	1,2,3	1,2	DCE Mode
ON	OFF	OFF	1,2,3	1,2	DCE Mode With Mirrored Loopback
OFF	ON	ON	1,2	1,2,3	DTE Mode
OFF	ON	OFF	1,2	1,2,3	DTE Mode With Mirrored Loopback
OFF	OFF	ON	1,2,3	1,2,3	All On
OFF	OFF	OFF	1,2,3	-	All Drivers On

Table 1. XR-T3590 Function Selection

## XR-T3590 Ground Potential Offset Testing

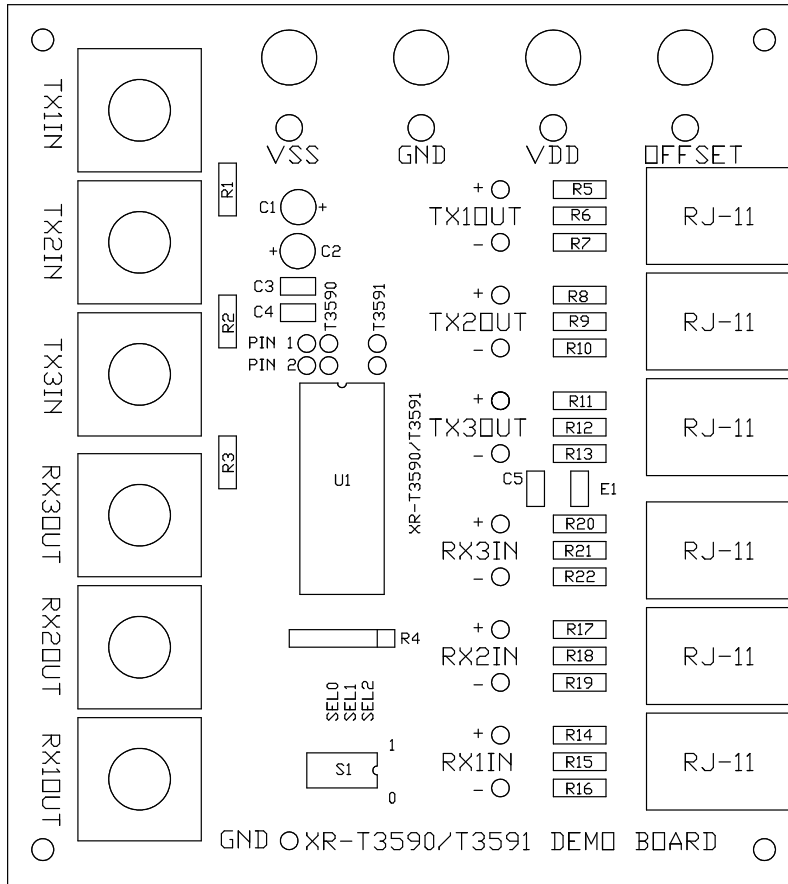
The receiver ground potential offset test specified by CCITT V.35 may be performed on the demo board. For

this test, jumper E-1 is first removed and then a DC voltage in the range of  $\pm 4$  Volts is applied between the GND and OFFSET banana jacks.

## ADDENDUM

Qty.	Value	Ref. Designators	Notes
15	51.1 $\Omega$ , 1/4W, 1% Metal Film Resistor	R1,2,3,5,7,8,10,11, 13,14,16,17,19,20,22	
1	10K, 2%, 5 Resistor, Thick-Film Network, Panasonic	R4	
6	121 $\Omega$ , 1/4W, 1% Metal Film Resistor	R6,9,12,15,18,21	
2	22 $\mu$ F, 16V, Electrolytic, Axial Lead, 5mm Dia., 2mm Spacing, Panasonic Type NHE	C1,2	
3	0.1 $\mu$ F, 63V, Z5U Dielectric, Axial Lead, 0.1" Spacing, Panasonic	C3,4,5	
1	4-Position DIP Switch, CTS	S1	
2	2 Pin Single-row Header, Gold	E1	
1	Shorting Jumper for Above Header		
6	Female BNC Connector, PC Mount		Connector For Digital I/O
6	6-pin RJ-11 Connector		Connector For Line
3	Banana Jack (1 Black, 1 Red, 1 Blue, 1 Green)		GND, V <sub>DD</sub> , V <sub>SS</sub> , OFFSET Connectors
13	Pins for Digital I/O and Ground Pads		Digi-Key ED-5052ND, \$0.0714 ea. (Qty 100)
1	24 pin DIP Socket		
4	Spacers to Elevate Board		
4	4-40 x 5/16" Screws		To Attach Spacers

Table 2. List of Components



**Figure 1. Component Layout**

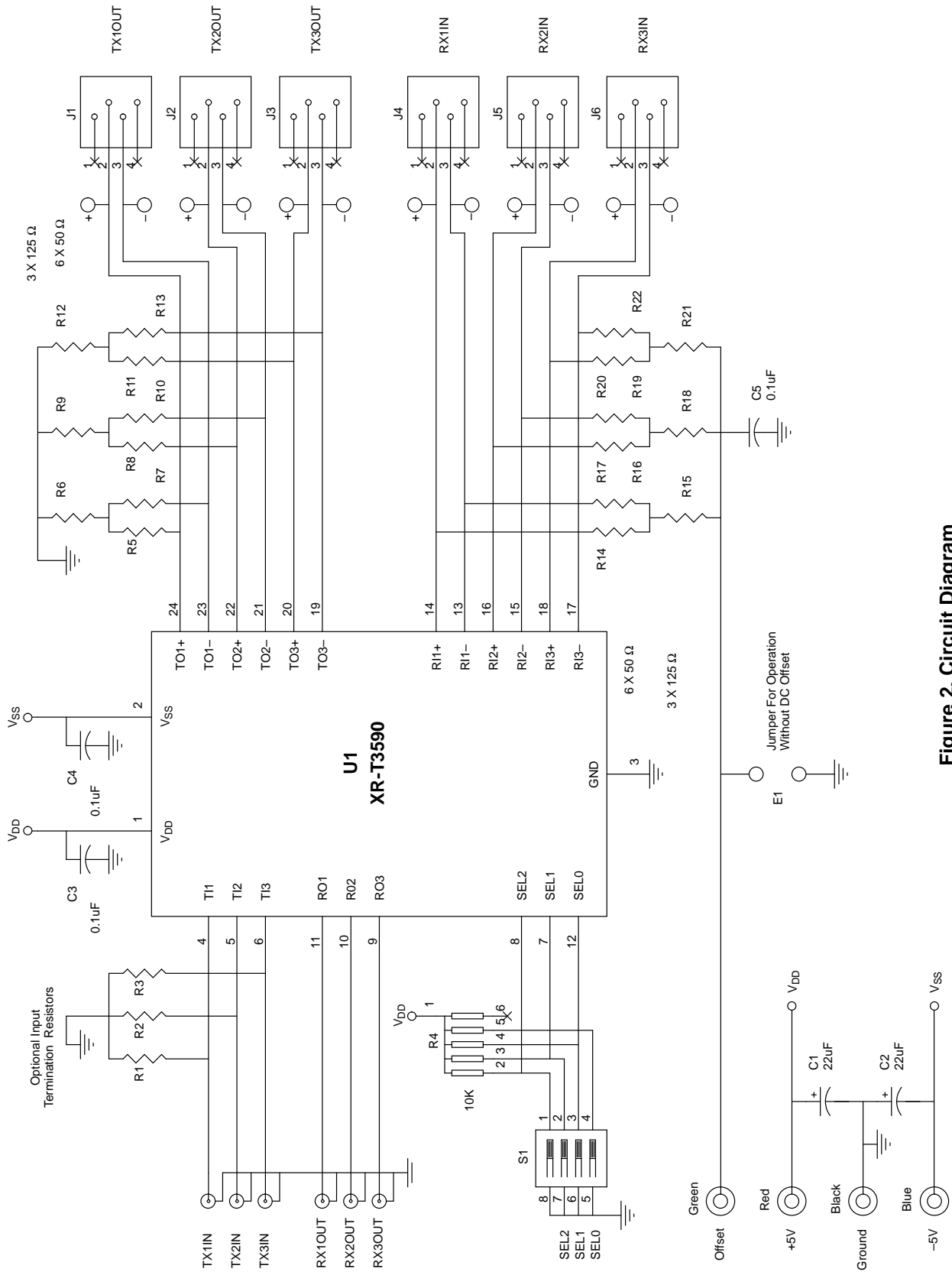


Figure 2. Circuit Diagram



**Notes**



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