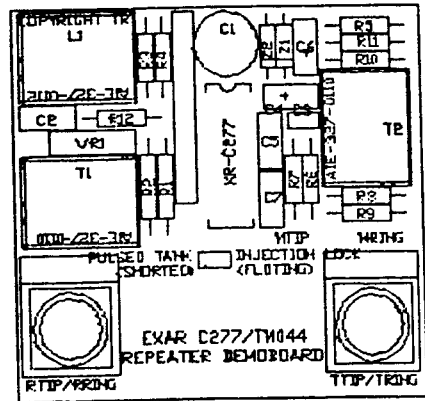


XR-C277/TM044 Evaluation System

GENERAL DESCRIPTION

The XR-C277/TM044 combination can be used as a T1/CEPT Receiver or Repeater capable of extracting, regenerating and retiming of AMI encoded data. With an additional comparator it is possible to extract the clock, which is generally required for receiver applications. Included in the XR-C277 monolithic repeater is a high performance preamplifier followed by a peak detector, a set of clock and data threshold detectors to extract the timing information, an ALBO (Automatic Line Build Out) circuit to insure that the preamplifier receives the correct amplitude and shape, a clock amplifier to generate a squarewave out of the sinusoidal tank waveform, and a set of latch circuits which sample and hold the received data. The outputs of the two data latches drive the two output driver stages which are designed to work with a nominal load of 100 ohm and be able to handle peak load currents of 30 mA.

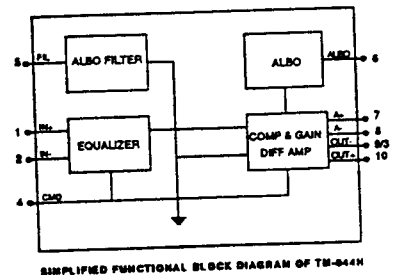
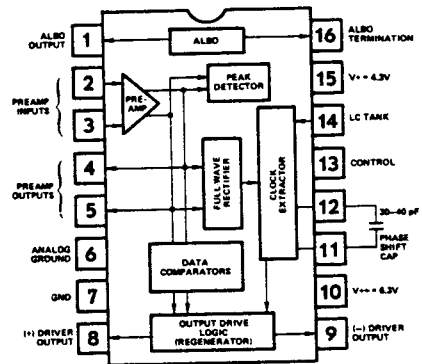


FEATURES

- 1.544/2.048MBPS Repeater or Receiver
- Space Saving Hybrid Equalizer
- Complete ALBO and Smoothing Filter
- Low Power Operation (13mA)
- Improved Crosstalk and Noise Performance
- Enhanced Performance (36DB Line Loss)
- Operating Temperature Range (-40° to 85° C)
- Available Packages (C277): Plastic, Ceramic and S.O.P.

ASSEMBLY PROCEDURE

- 1) Attach four equal spacers to the corners of the Demoboard to ease the assembly procedure.
- 2) Insert and solder all capacitors as marked on the PC Board. Make sure you choose the correct component values, tolerances and polarity where applicable.
- 3) Insert and solder all resistors and diods in place and clip their leads.
- 4) Now insert the 16 pin integrated circuit socket. Notice the polarity to avoid damage to the IC when inserted.



SIMPLIFIED FUNCTIONAL BLOCK DIAGRAM OF TM-044H

5) The magnetics used for the demoboard are manufactured by three qualified vendors which are:

- a) AIE MAGNETICS (813) 347-2181
- b) SCHOTT (612) 475-1173
- c) PULSE ENGINEERING (619) 268-2400

For further information and specs on these components please contact the selected magnetic manufacturers. Insert and solder these parts. Notice the polarity of the transformers and tank coil.

6) Carefully insert the XR-C277 IC into the socket without bending the leads and choose the desired input and output connectors. The board is intended to use BNC connectors but can vary depending on the type of test equipment used.

7) Lastly, insert the hybrid network into the corresponding socket.

TEST AND ADJUSTMENT PROCEDURE:

The XR-C277/TMO44 Demoboard is designed to operate as a repeater, but with the small addition of a comparator it is possible to extract the clock output as shown in the applications schematic. It is left to the customers choice to perform the testing and evaluation of this circuitry depending on the type of test instrument and application they may have. The testing of this board was done with the Sierra (415-11) which tests the board in a repeater configuration.

INITIAL ADJUSTMENT

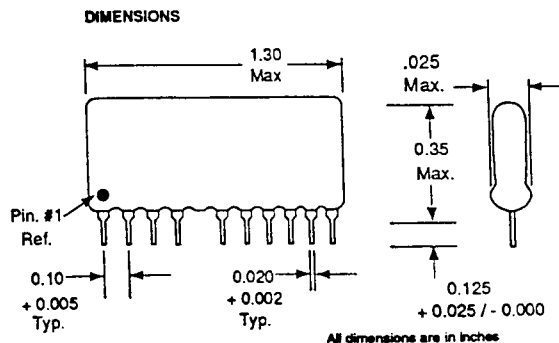
1) Connect the AMI encoded input signal from the Sierra Test Set to the RTIP/RRING input connector of the demoboard. Similarly connect the TTIP/TRING or output signal back to the return line of the test set.

2) Apply power to the test set and check for a: the correct feed through current (supplied by the test set, approx. 50mA and adjustable) and b: the voltage drop (approx. 5V) on the loop which in this case is generated by the exterior zeners.

3) To be able to see the input and output waveforms with an oscilloscope, it is necessary to isolate the scope ground from the board ground with a small electrolytic capacitor. Connect this capacitor to the board ground and switch over to an all one's pattern on the test set. Check for a sign of life and look at the extracted data output (pin 8 or 9). Notice that it may look jittery since the board has not been adjusted so far.

4) Place another scope probe on pin 14 (LC Input Pin) and adjust the variable inductor until the sinusoidal output waveform reaches it's maximum amplitude.

5) Switch the test instrument to generate a QRSS pattern sequence, and place a scope probe on one of the preamplifier output pins (4 or 5) and the other on the extracted data output (pin 8 or 9). Now adjust the phase shift capacitor (C1) until the falling or negative transition of the clock output waveform coincides directly, or slightly less (30nses), with the top of the preamplifier output pulse (top of the eye.) At this point we should observe the least amount of errors under normal or noisy conditions. The board should be now operating satisfactorily from up to 36dB and approximately 11dB of noise.



XR-C277/TM044ES

7-FEB-1989 Bill of Material Print

COMP NO.	LABEL	PACKAGE	COMMENTS
1	BNC1	BNC	
2	BNC2	BNC	
3	C1	VARCAP	2-20PF
4	C2	RAD0.2	100Pf
5	C3	RAD0.1	6.8NF
6	C4	RAD0.2	10UF TANT
7	C5	RAD0.2	0.1UF
8	C6	RAD0.2	10UF TANT
9	C7	RAD0.2	0.1UF
10	HYBRID1	HYB	XR-TM044
11	IND	TRANS	327-0112
12	J1	J2	JUMPER
13	R1	AXIAL0.6	6.2 OHM, 1/2W
14	R10	AXIAL0.5	1K, 1/4W
15	R11	AXIAL0.5	75, 1/4W
16	R12	AXIAL0.5	24K, 1/4W
17	R2	AXIAL0.6	6.2 OHM, 1/2W
18	R3	AXIAL0.5	475, 1/4W
19	R4	AXIAL0.5	2K, 1/4W
20	R5	AXIAL0.5	3.65K, 1/4W
21	R6	AXIAL0.5	30.1, 1/4W
22	R7	AXIAL0.5	30.1, 1/4W
23	R8	AXIAL0.5	6.2, 1/2W
24	R9	AXIAL0.5	6.2, 1/2W
25	T1	TRANS	327-0110
26	T2	TRANS	327-0110
27	VAR1	RAD0.4	90V
28	XR-C277	DIP16	U1
29	Z1	DIODE0.4	ZENER 6.2V, 1/4W
30	Z2	DIODE0.4	ZENER 4.4V, 1/4W

