Introduction

The DAC reconstruct board (DACRECON-EV) is designed to provide an analog reconstruction of the digital data from an A/D. It can be used along with a evaluation board for a particular A/D to do linearity, bandwidth, or video testing.

A 12-bit DAC is used to ensure that it contributes minimal distortion when testing A/D's with resolutions of up to 10-bits. The digital input connector is designed to mate directly to a number of A/D evaluation boards available from Intersil.

Board Description

The DAC reconstruct board is a two layer board with a layout optimized for the best performance for the DAC.

TABLE 1. POWER SUPPLIES

POWER SUPPLY	MIN	TYP	MAX	TYP CURRENT
+5V	+4.75V	+5.0V	+5.25V	51mA
-5.2V	-5.46V	-5.2V	-4.94V	174mA

The supplies to the board should be driven by clean linear regulated supplies. They can be hooked up with external 20 gauge wires to the holes marked +5V and -5.2V. Table 1 lists the operating conditions for the power supplies.

The digital input data and the clock to the board are brought in on connector P1. Logic levels should be TTL compatible. The DAC latches data on the falling edge of the clock. Jumpers JP5 - JP9 allow selecting various polarities and delays in the clock to the DAC depending on when the input data is valid.

A current to voltage converter (U2) on the output of the DAC will provide about a $1V_{P-P}$ output swing when terminated in 75Ω. The polarity of the output can be changed using jumpers JP3 and JP4.

Additional circuitry (U3) will allow the analog output of the board to be set at an adjustable offset. The board will be sent from the factory with the analog output centered around ground.

Video Testing

Figure 1 shows how a system can be configured to do video testing of the HI5702 with the DAC reconstruct board and the HI5702 evaluation board HI5702-EV2.The appropriate test waveform is generated by a video source such as the TSG100 or TEK1001 from Tektronix and applied to the converter. The digitized video is converted back to analog by the reconstruct DAC for evaluation by a video analyzer (TEK VM700).

Setting up the boards is a straightforward process. Since the HI5702 is a 10-bit A/D, install jumpers JP1 and JP2 on the DAC reconstruct board to tie the 2 LSBs to the DAC high. Install JP3 so that the video out of the reconstruct board will have negative going sync. Selecting the correct edge to clock the data from the HI5702 evaluation board into the DAC (JP5 - JP9) will depend on the sample rate and is chosen to give the cleanest waveform to the VM700.

Setup HI5702-EV2 for video testing by installing jumpers JP1 and JP3 and applying 1.25V to the testpoint marked VDC. Ensure that the RF transformer T1 is not installed in the board.Input video to the board through the SMA marked VIDEO. Note that all cables carrying video should be 75Ω.

Finally, mate the DAC reconstruct board connector P1 to the P2 connector on HI5702-EV2. Correct alignment between the two boards will have pin 34 on P1 plugged into pin 25 on P2.

See the Application Note 9412 "Using the HI5702 Evaluation board" and the HI5702 data sheet for additional applications information when using the converter.
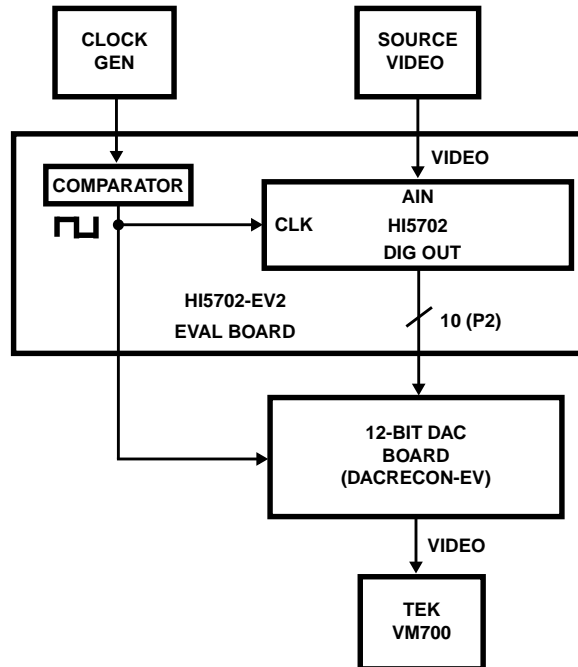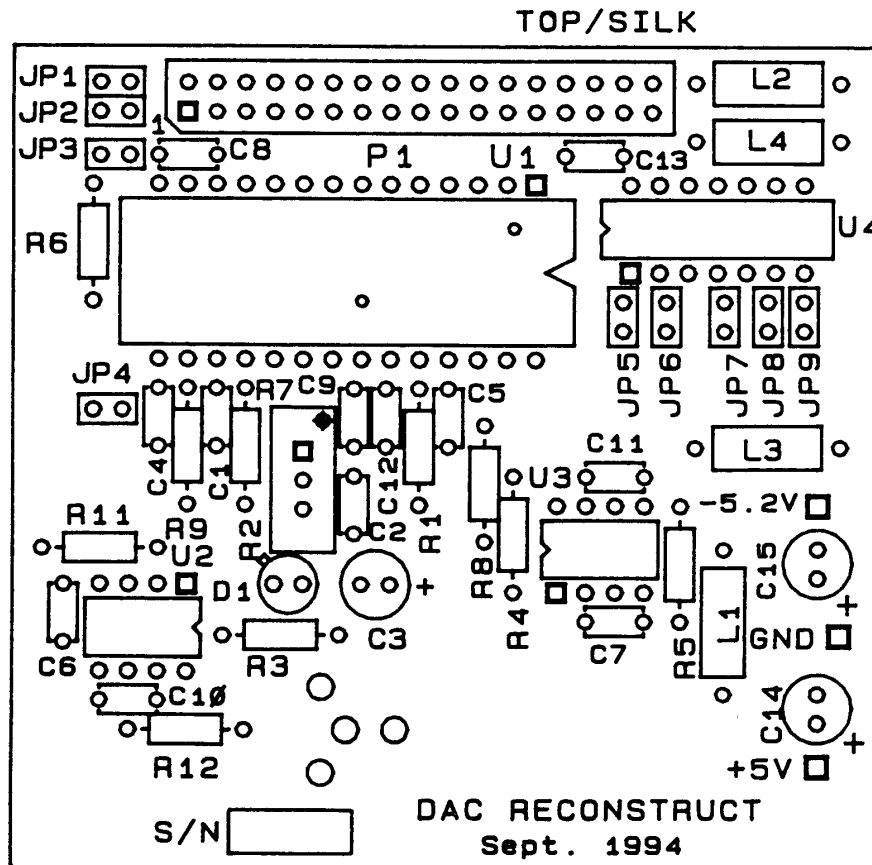
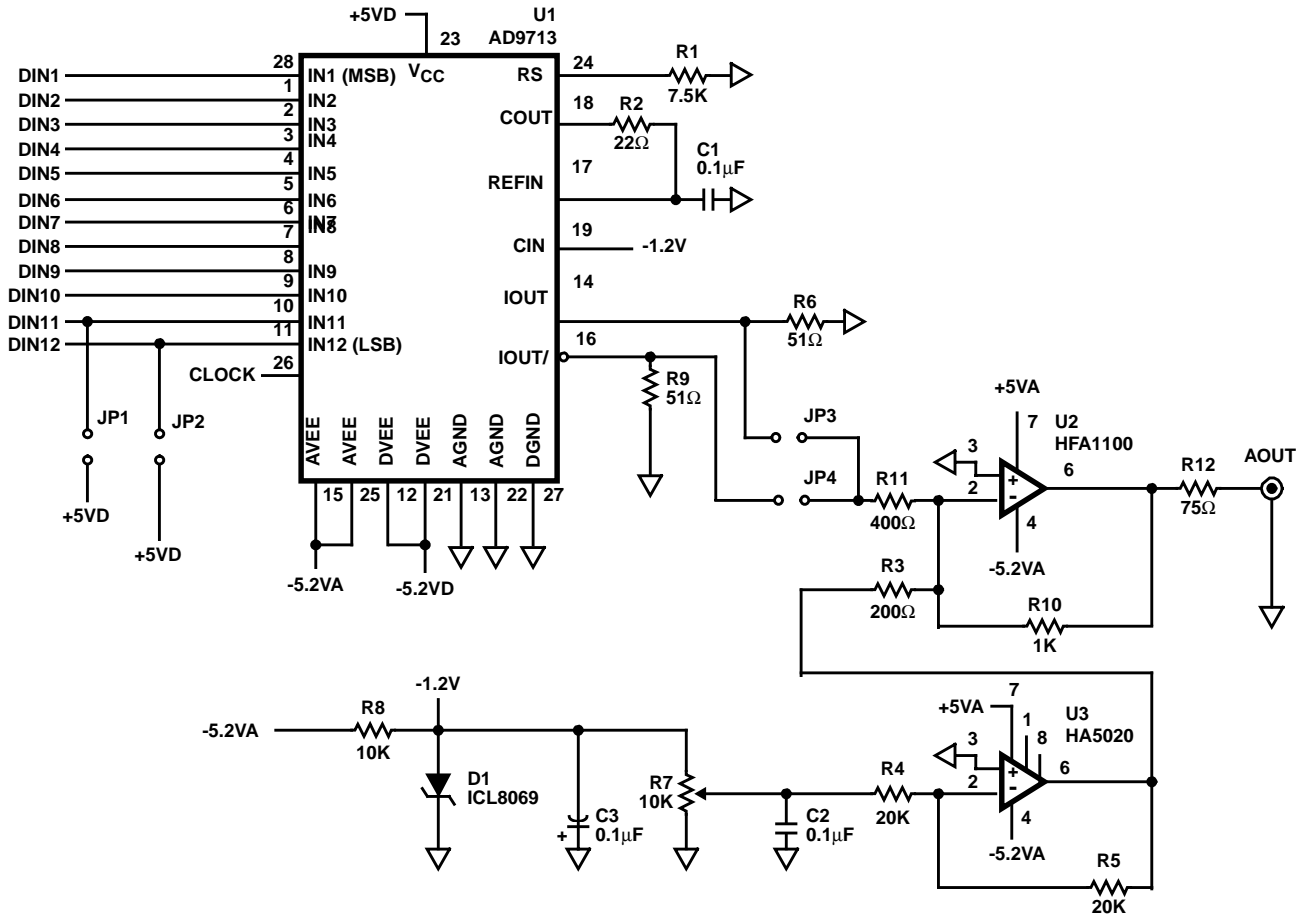**FIGURE 1. VIDEO TEST SETUP**

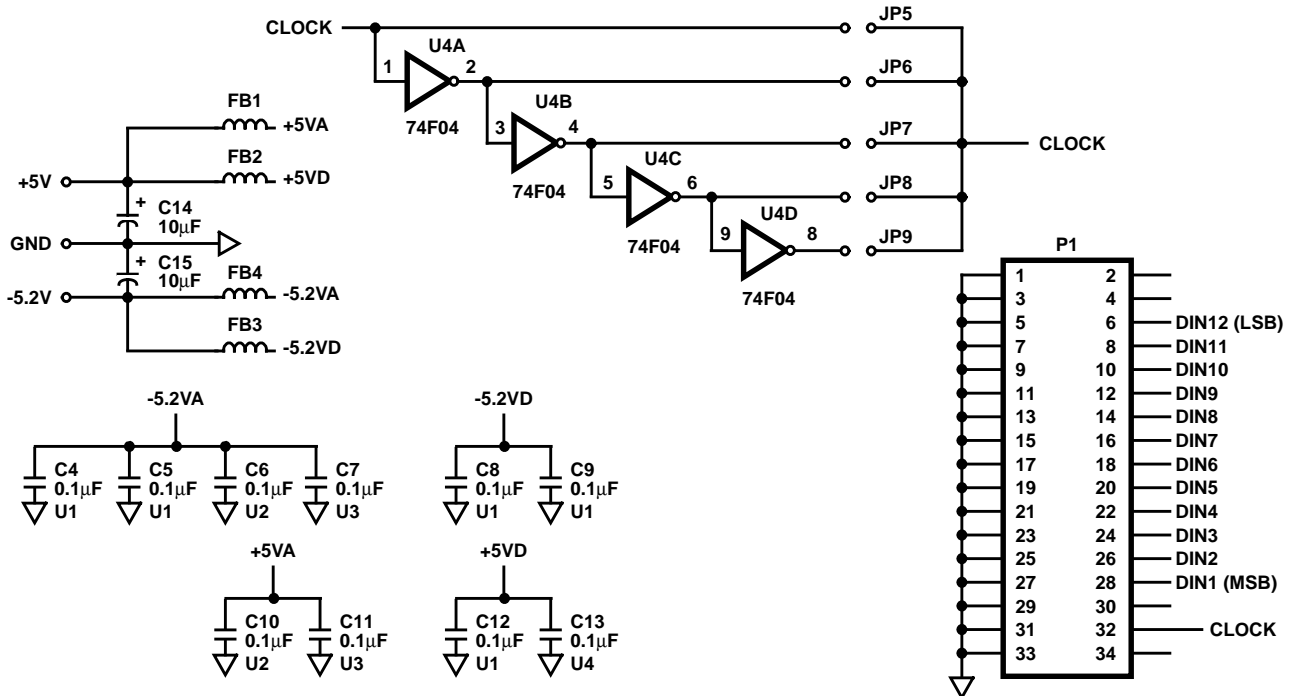**FIGURE 2. PARTS LAYOUT**

FIGURE 3. DAC RECONSTRUCTION BOARD

FIGURE 4. DAC RECONSTRUCTION BOARD

Parts List

REFERENCE DESIGNATOR	DESCRIPTION
R1	7.5kΩ
R2	22Ω
R3	200Ω
R4, R5	20kΩ
R6, R9	51Ω
R7	10kΩ Pot
R8	10kΩ
R10	1kΩ 1206 Chip
R11	400Ω
R12	75Ω
P1	2 x 17 Connector
AOUT	Female BNC
U4	74F04
C1, C2, C4-C13	0.1μF Cap
C3, C14, C15	10μF Tant Cap
JP1-9	1 x 2 Header
U2	HFA1100
U3	HA5020
D1	ICL8069DSQ
U1	AD9713BAN
FB1-4	Ferrite Bead on Lead

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Sales Office Headquarters

NORTH AMERICA
Intersil Corporation
P. O. Box 883, Mail Stop 53-204
Melbourne, FL 32902
TEL: (321) 724-7000
FAX: (321) 724-7240

EUROPE
Intersil SA
Mercure Center
100, Rue de la Fusee
1130 Brussels, Belgium
TEL: (32) 2.724.2111
FAX: (32) 2.724.22.05

ASIA
Intersil (Taiwan) Ltd.
7F-6, No. 101 Fu Hsing North Road
Taipei, Taiwan
Republic of China
TEL: (886) 2 2716 9310
FAX: (886) 2 2715 3029