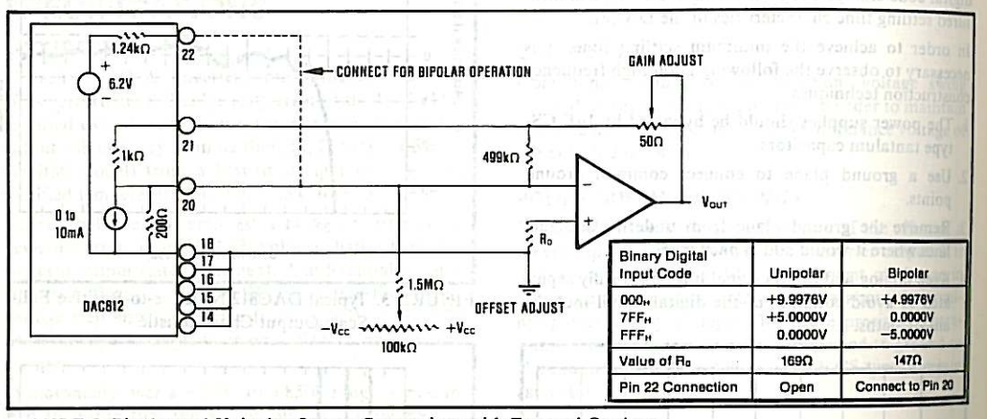
5. Bring the source of the digital driving signal as close to the inputs of the DAC812 as possible. If the digital inputs are not clean it will be necessary to reshape them using registers or line drivers. It is recommended that the logic power line be bypassed near the digital logic circuitry as a further measure to achieve clean signals.
6. If possible, the DAC812 should be soldered directly into the printed circuit board since connector lead length will cause ringing in the output.

OUTPUT CONFIGURATIONS AND APPLICATIONS INFORMATION

The DAC812 contains a 1.24kΩ resistor for generating the bipolar offset current and a 1kΩ resistor which is used as the feedback resistor when used with an external op amp. This thin-film network is constructed on sapphire to provide excellent temperature tracking capability inherent in thin-film networks. These internal resistors along with other internal resistors cause the DAC812 output, in any mode, to be a ratiometric product of the reference. The feedback resistor has very low power sensitivity so that linearity is maintained independent of digital-code changes. Because this resistor is constructed on a sapphire network, it is possible to have both superior tracking and low capacitance.

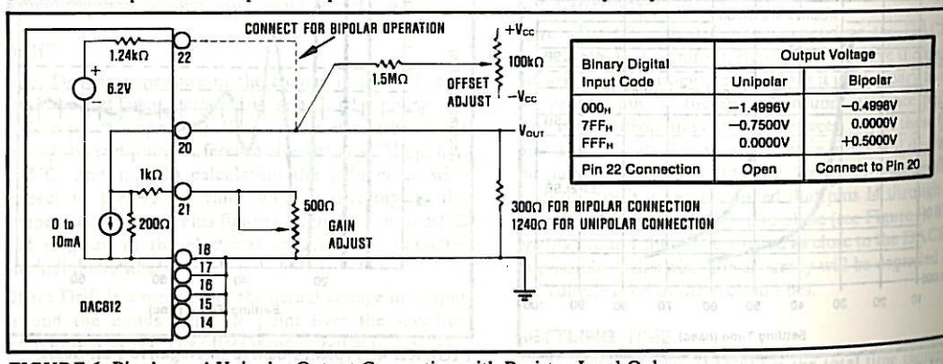
Figure 5 shows the DAC812 connected to an external op amp in unipolar and bipolar modes. When the op amp is a Burr-Brown model OPA600 it is possible to achieve settling times to 0.1% accuracy in 150nsec. Output accuracy and linearity specifications are given when connected to an external op amp.

For highest speed operation, the DAC812 should be used without an external op amp. Figure 6 shows how to connect the DAC812 for bipolar and unipolar operation. Figure 7 illustrates how to connect the DAC812 to construct a fast A/D converter.



Binary Digital Input Code	Unipolar	Bipolar
000_H	+9.9976V	+4.9976V
$7FF_H$	+5.0000V	0.0000V
FFF_H	0.0000V	−5.0000V
Value of R_O	169Ω	147Ω
Pin 22 Connection	Open	Connect to Pin 20

FIGURE 5. Bipolar and Unipolar Output Connections with External Op Amp.



Binary Digital Input Code	Output Voltage	
	Unipolar	Bipolar
000_H	−1.4996V	−0.4996V
$7FF_H$	−0.7500V	0.0000V
FFF_H	0.0000V	+0.5000V
Pin 22 Connection	Open	Connect to Pin 20

FIGURE 6. Bipolar and Unipolar Output Connection with Resistor Load Only.

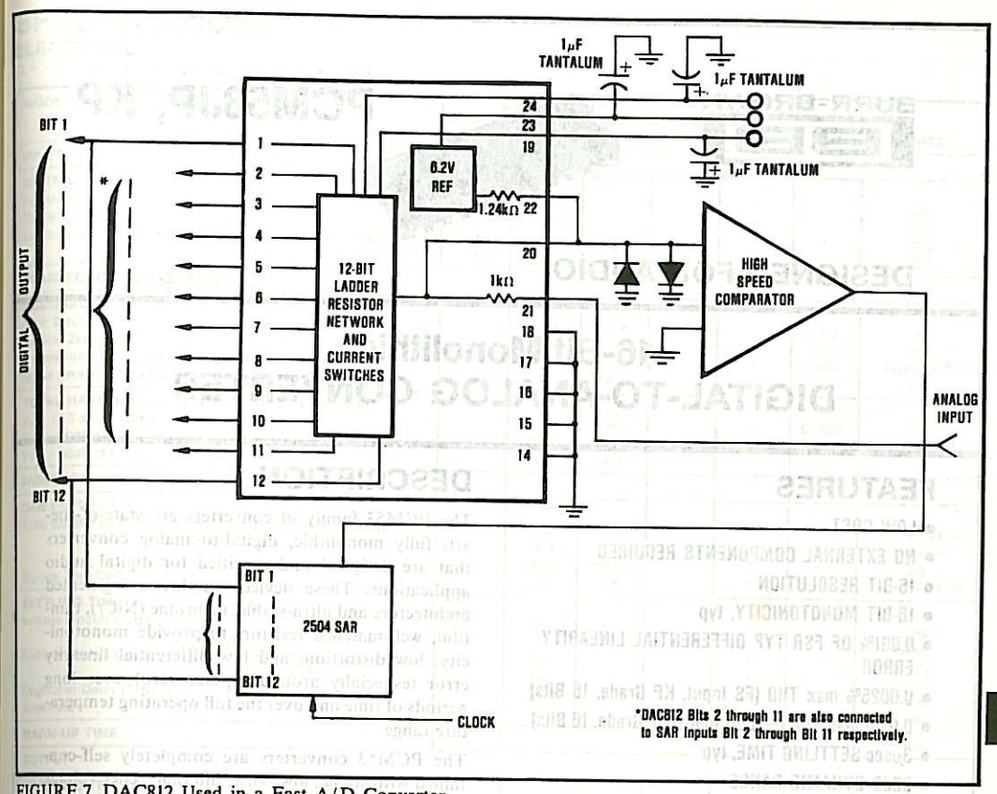


FIGURE 7. DAC812 Used in a Fast A/D Converter.