

For an op-amp in differential to single ended conversion, the input impedance on the inverting input is calculated as below.

$$Z_{in-} = R_G / (1 + \alpha)$$

Where,

$$\alpha = R_F / (R_F + R_G)$$

For $R_G = 200\text{ohms}$ and $R_F = 402$ ohms, this Z_{in-} comes out to be 119.92.

The resistor required to make the combined impedance from the output of I_{out-} then comes out to be:

$$Z_{shunt} = (Z_{in-}) \times 25 / [(Z_{in-}) - 25] = 31.58 \text{ ohms}$$

This number of 31.58 ohms is slightly higher than what is shown in the DAC904 datasheet, and should be corrected to the right value as shown below.

The output impedance on the non-inverting input of the op-amp should stay the same as $(26.1 \parallel (200 + 402)) = 25\text{-ohms}$.

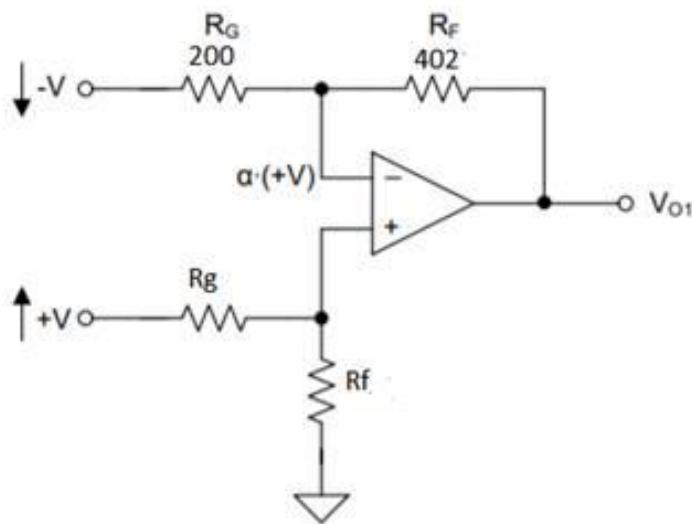


Figure 77. D2S Impedance Analysis

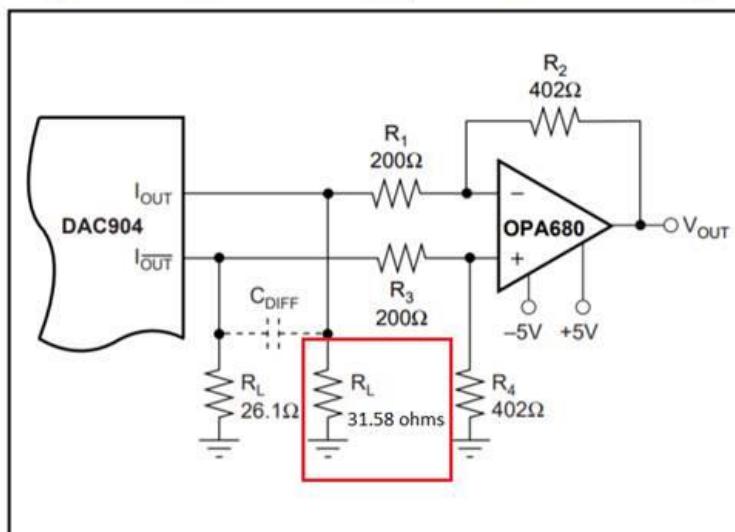


FIGURE 4. Difference Amplifier Provides Differential to Single-Ended Conversion and AC-Coupling.