## Determination of the Crystal Drive Level (Crystal Power)

To ensure that the crystal is not overdriven in its circuit environment, it may be necessary to measure the power that is applied to the crystal.

The most reliable way to do this is to measure the crystal power (often called drive level) by a miniature current probe. A typical configuration of a crystal circuit and the correct position to insert the current probe is shown in Fig. 1.

Fig. 1
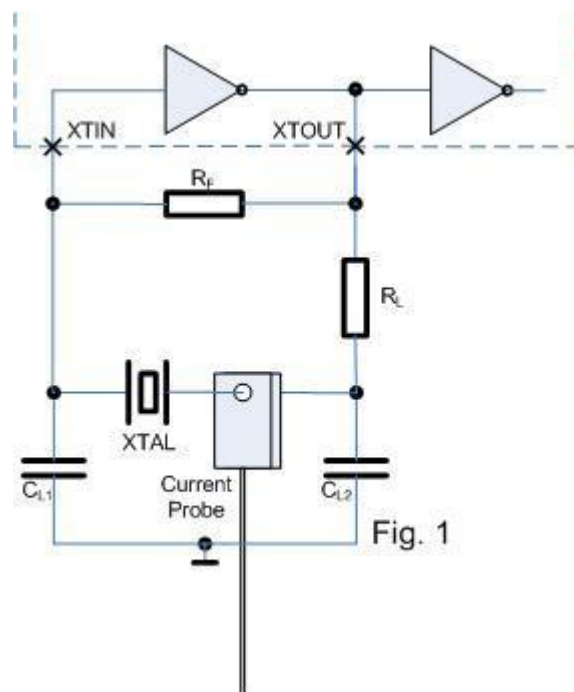
The crystal power level can be determined as follows:

- calculate the resonance load at the original circuit conditions, using the parameters of the individual crystal* in the circuit using formula (1):

$$R_L = R_S * \left(1 + \frac{C_0}{C_L}\right)^2 \qquad (1)$$

- the crystal current I_{CSpp} is measured with the current probe. Note that the RMS current I_{CSRMS} must be calculated from the peak to peak current I_{CSpp} to calculate the crystal power correctly.

$$P_{Crystal} = R_L * \left(I_{CSRMS}\right)^2 = R_L * \left(\frac{I_{CSpp}}{2 * \sqrt{2}}\right)^2 = R_L * \frac{\left(I_{CSpp}\right)^2}{8} \qquad (2)$$