



TDR result

The point at cursor “a” is $-E/2$ and the point at cursor “b” is V_r , thus:

$$V_i = -269.8\text{mV}$$

$$V_r = -251.2 - (-269.8) = 18.6\text{mV}$$

$$\rho = \frac{V_r}{V_i} = -0.06893995552$$

$$Z_L = Z_0 * \frac{1+\rho}{1-\rho} = 50 * \frac{1+(-0.06893995552)}{1-(-0.06893995552)} = 43.55062411 \text{ Ohms}$$

Part III: Dielectric constant measurement using TDR

The relationship between the velocity factor and the dielectric constant is:

$$V_f = \frac{1}{\sqrt{Dk}} \tag{3}$$

The relationship between the one-way time, trace length and the velocity factor is: