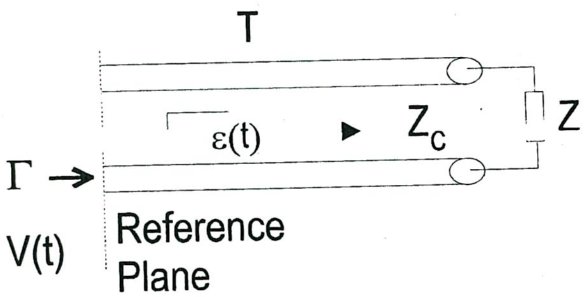
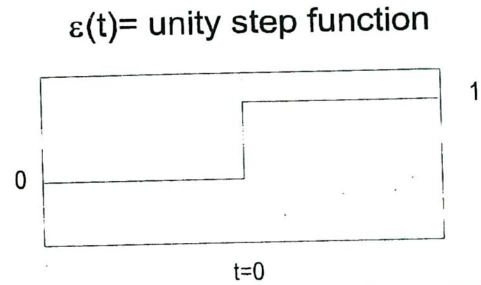
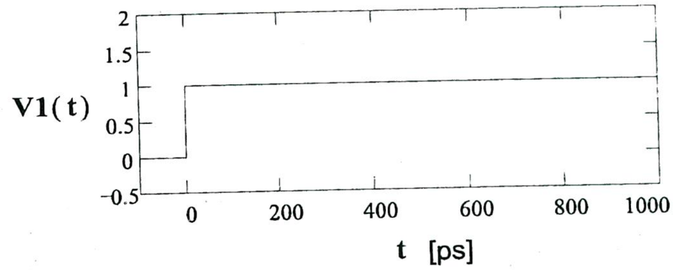
What we see on a sampling scope





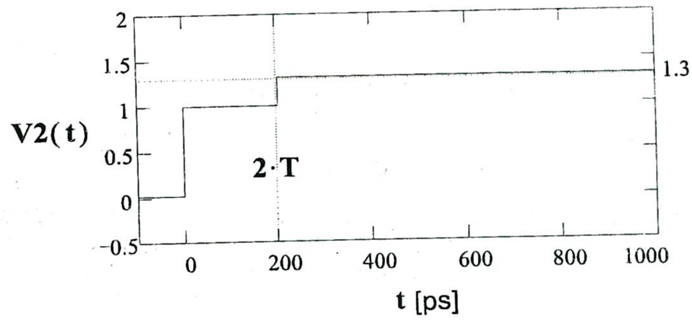
$$Z = Z_c \qquad \Gamma(t) = 0$$

$$V1(t) = \varepsilon(t)$$

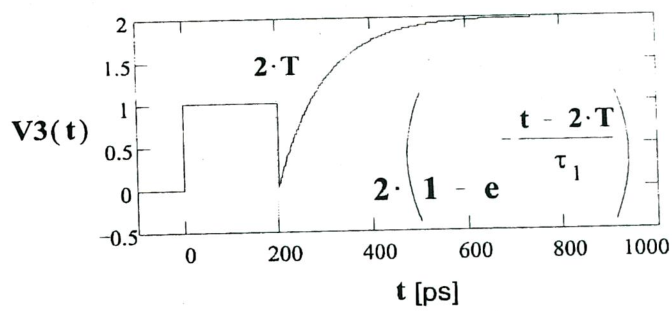


$$Z = 2 \cdot Z_c \qquad \Gamma = \frac{Z - Z_c}{Z + Z_c} = \frac{1}{3}$$

$$V2(t) = \varepsilon(t) + \Gamma \cdot \varepsilon(t - 2 \cdot T)$$



$$Z = \frac{1}{j \cdot \omega \cdot C} \qquad \tau_1 = Z_c \cdot C$$



$$Z = j \cdot \omega \cdot L \qquad \tau_2 = \frac{L}{Z_c}$$

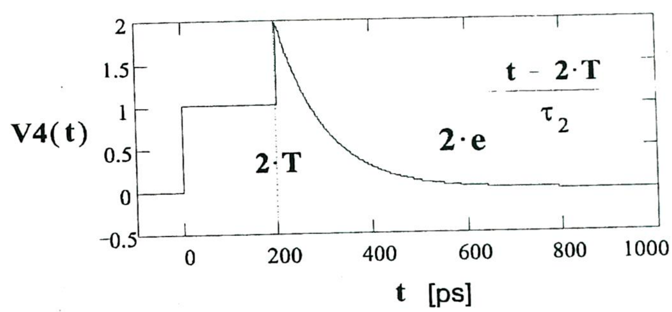
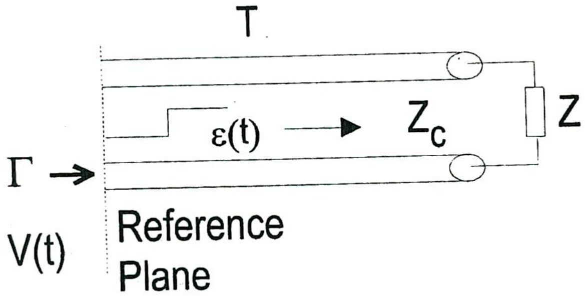
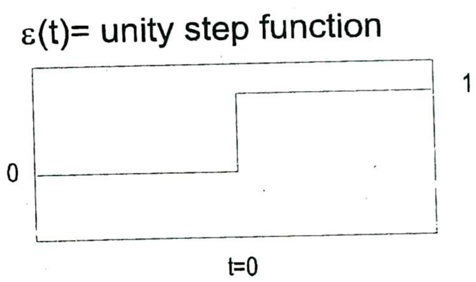


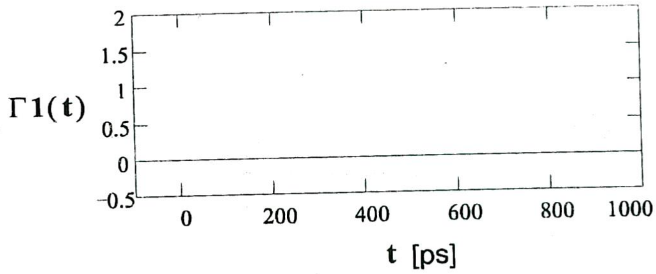
Fig 2 Step-function response for different terminations on a sampling scope (through sampler)

What we see on a network analyzer

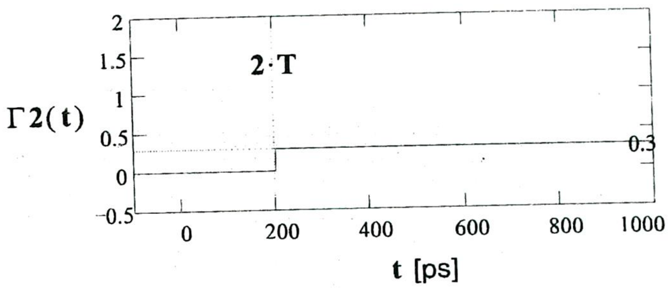




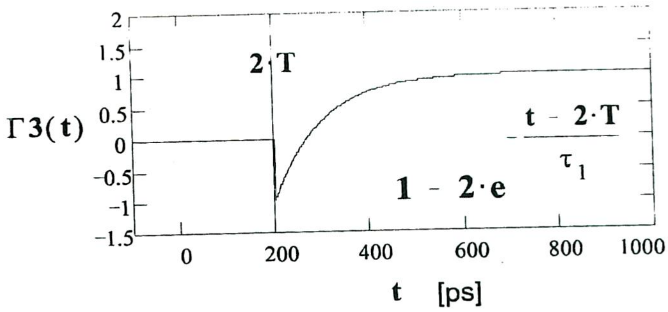
$Z = Z_c \qquad \Gamma(t) = 0$



$Z = 2 \cdot Z_c \qquad \Gamma = \dfrac{Z - Z_c}{Z + Z_c} = \dfrac{1}{3}$



$Z = \dfrac{1}{j \cdot \omega \cdot C} \qquad \tau_1 = Z_c \cdot C$



$Z = j \cdot \omega \cdot L \qquad \tau_2 = \dfrac{L}{Z_c}$

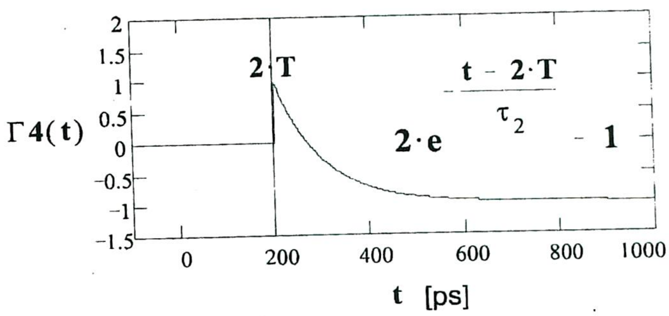


Fig 1 Step-function response for different terminations on a VNA.