

Analog-to-digital and Digital-to-Analog converters 1

Which components do you need in order to realise a DAC circuit analogous to the one considered during the EXPERIMENTAL LAB?

Analog-to-digital and Digital-to-Analog converters 2

Which are the main logic blocks that you need in order to realise an A/D tracking converter analogous to the one considered during the EXPERIMENTAL LAB?

Analog-to-digital and Digital-to-Analog converters 3

When is it possible to observe the phenomenon of "glitches" affecting the performance of a DAC converter similar to the one realised during the EXPERIMENTAL LAB? Explain the origin of the glitch.

Analog-to-digital and Digital-to-Analog converters 4

Considering a DAC circuit analogous to the one implemented in the EXPERIMENTAL LAB, which type of error do you expect to observe on the converted Analog signal if an error affects the MSB branch of the DAC weighted network?

Logic gates and simple sequential logic circuits 1

How can you visualise using the oscilloscope the characteristic of a CMOS inverter? Which information can you extract from this plot about the logic gate performance?

Logic gates and simple sequential logic circuits 3

How could you check using the LTspice software the correct operation of a synchronous counter such as the 4-bit CD4029 used during the virtual LAB?

Transmission lines 1

Which behaviour do you expect to observe if you visualise with the oscilloscope the voltages at the near and far end of a coaxial cable described by a transmission line model (with characteristic impedance $Z_{inf}=50\Omega$) with open termination and connected to a square wave generator characterised by an internal resistance of $R_G=50\Omega$ on the driving side?

Transmission lines 2

How can you realise in the EXPERIMENTAL LAB a Time Domain Reflectometer able to measure the length of a coaxial cable behaving as a transmission line?