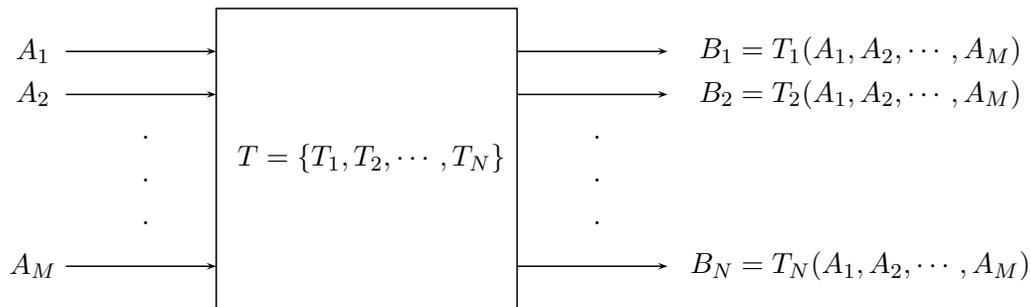


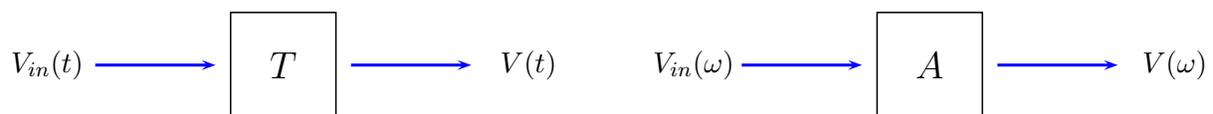
Transformation of Signals

Circuit Functionality

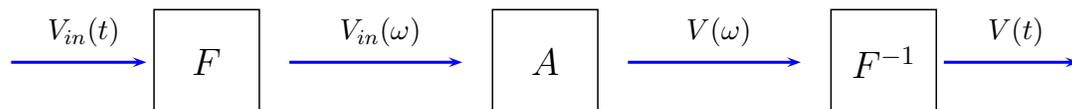
As a general statement, an electronic circuit transforms a set of input signals to a set of output signals as diagrammed below.



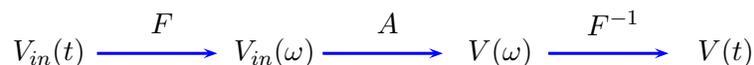
Considering just one input signal, the transformation in either the time or frequency domain is easier to comprehend.



Here T is an operator of some sort describing the functionality of the circuit, perhaps a simple multiplication or something more complicated such as an integration, convolution or differentiation. In the frequency-domain, the operator $A(\omega)$ is different from T but simpler, usually being only a multiplication. One could imagine building circuits that consecutively perform on a time-dependent input signal the operations of Fourier transform F , response as a function of frequency $A(\omega)$ and inverse Fourier transform F^{-1} .



In reality though, a circuit simply responds to the different frequency components of the input signal in a describable way. Mentally, we have to perform the Fourier and inverse Fourier transforms so that we can predict or understand the resulting output signal.



Fourier Series

Fourier Transforms

Spectrum Analysis