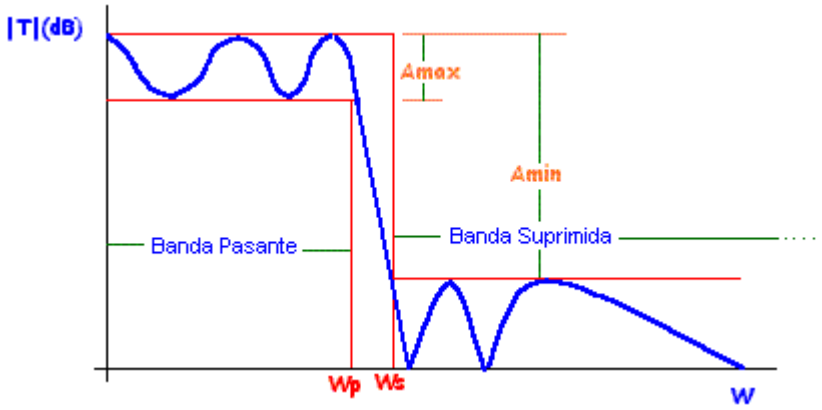
B&C-LPF

BUTTERWORTH & CHEVYSHEV LOW PASS FILTERS

SPECIFICATIONS OF THE FILTER



The process of filter design begins with the characteristic curves of transition of the filter like it is shown in the figure.
As a physical circuit can not give constant transmission in all the passing band, the specifications take into account the deviation of the transmission of passing band from the ideal 0 dB, but it puts a superior bench mark, Amax(dB), which oscillates between 0.05 and 3 dB. That is, ***Amax*** is the maximum value that can attenuate the sign in the passing band.

As a circuit can not produce transmission zero in the whole suppressed band, it is specified that the circuit should attenuate at least ***Amin***(dB) with regard to the signs of passing band. According to the application of the filter, Amin can vary between 20 and 100 dB.

As the transmission of the filter can not change abruptly, a transition band is specified between ***wp*** and ***ws*** (rad/s) where wp <ws (see figure). Commonly, these values are given in Hz, that is to say, ***fp***=wp/2pi and ***fs***=ws/2pi.

Finally, a low pass filter has a gain in DC or ***Adc.***

PROGRAM DESCRIPTION:

SIZE: ***2068 bytes***
CHECKSUM: ***#5650h***

This program generates transfer functions with polynomials of Butterworth and Chevyshev for the design of Low Pass Filters.

INSTRUCTIONS:

When executing the program the following fields are observed:

FIELD	DESCRIPTION
Fp	Max passing frecuency in Hz.
Fs	Cut frecuency in Hz. fs>fp.
Amax	Maximum attenuation in passing band.
Amin	Minimum attenuation in cut band.
Adc	DC Gain
STO	¿Save variables?
Rnd	Decimals in the solution (0 = all)
Tipo	Filter type

After the execution:

	DESCRIPTION
Wp	Angular frecuency=2πfp
Ws	Angular frecuency =2πfs
ε	Parameter
N	Order of the filter.

Pressing any key, you will have the two inferior levels of the stack occupied.

In the level 2 a vector that contains the N poles of the function of the filter (because Chevyshev and Butterworth are ALL POLE functions), and in the level 1 the Transfer function of the filter, in function of the variable s and wo (or wp) depending of the filter type.
Pressing EVAL, the wo value (or wp) is replaced in the equation to obtain a function of s.

PD:

- English is not my native language, I have tried to carry out the translation without making errors with the help of my PC.
- Please send me a mail, with suggestions, opinions, etc.

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