

Filtro Passa Basso



Nomogrammi
Formule di Progetto

Andamento dell'Attenuazione in funzione della frequenza normalizzata per il filtro prototipo passa basso di Butterworth

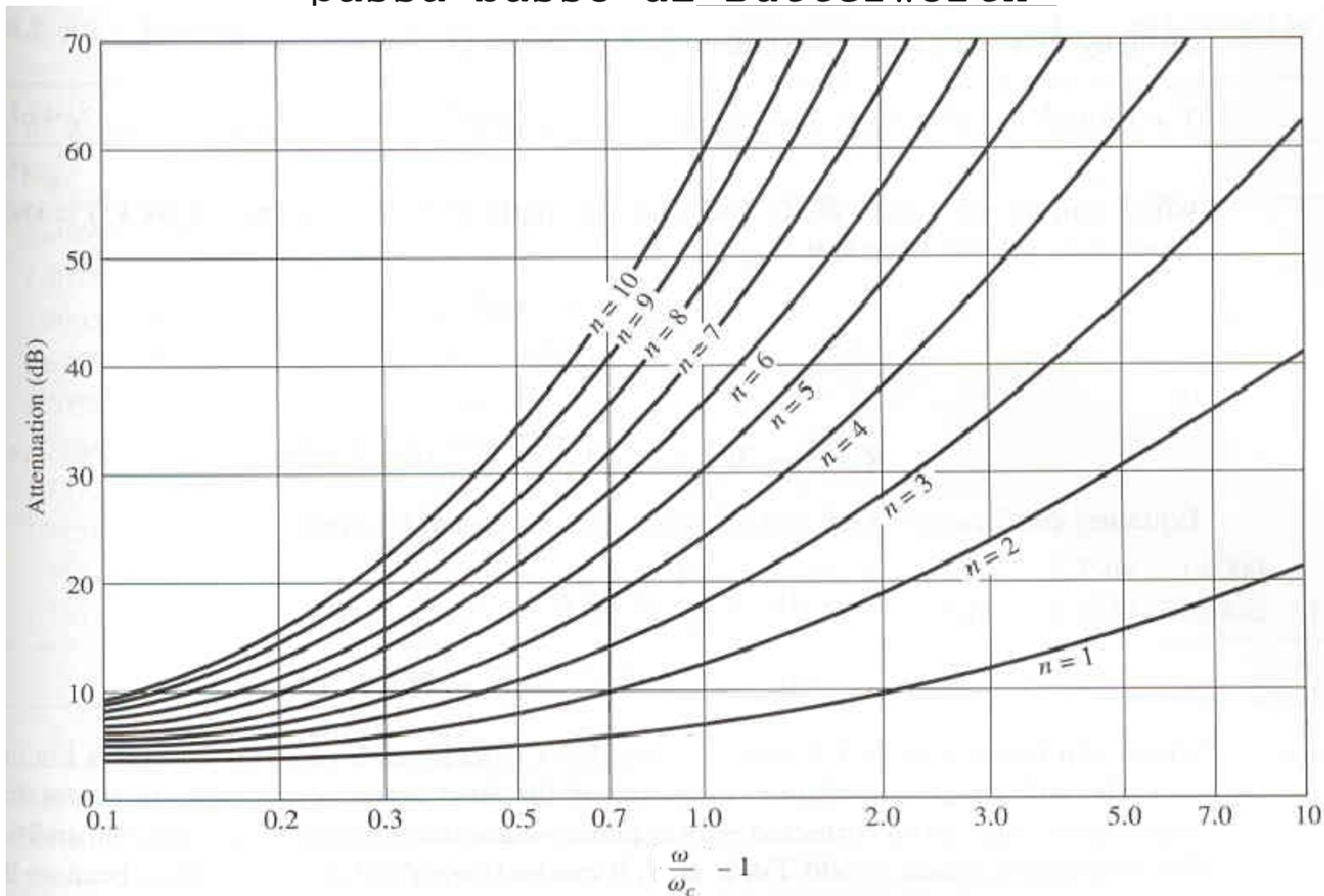
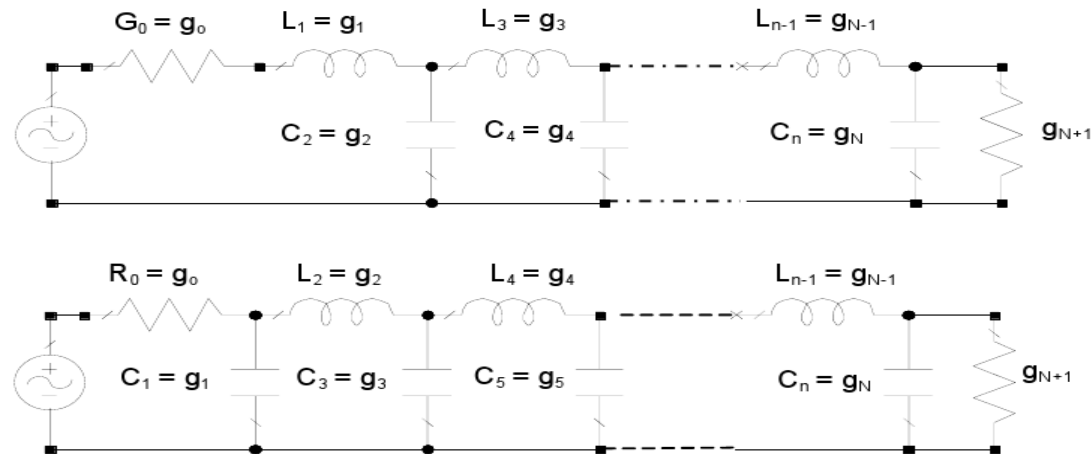
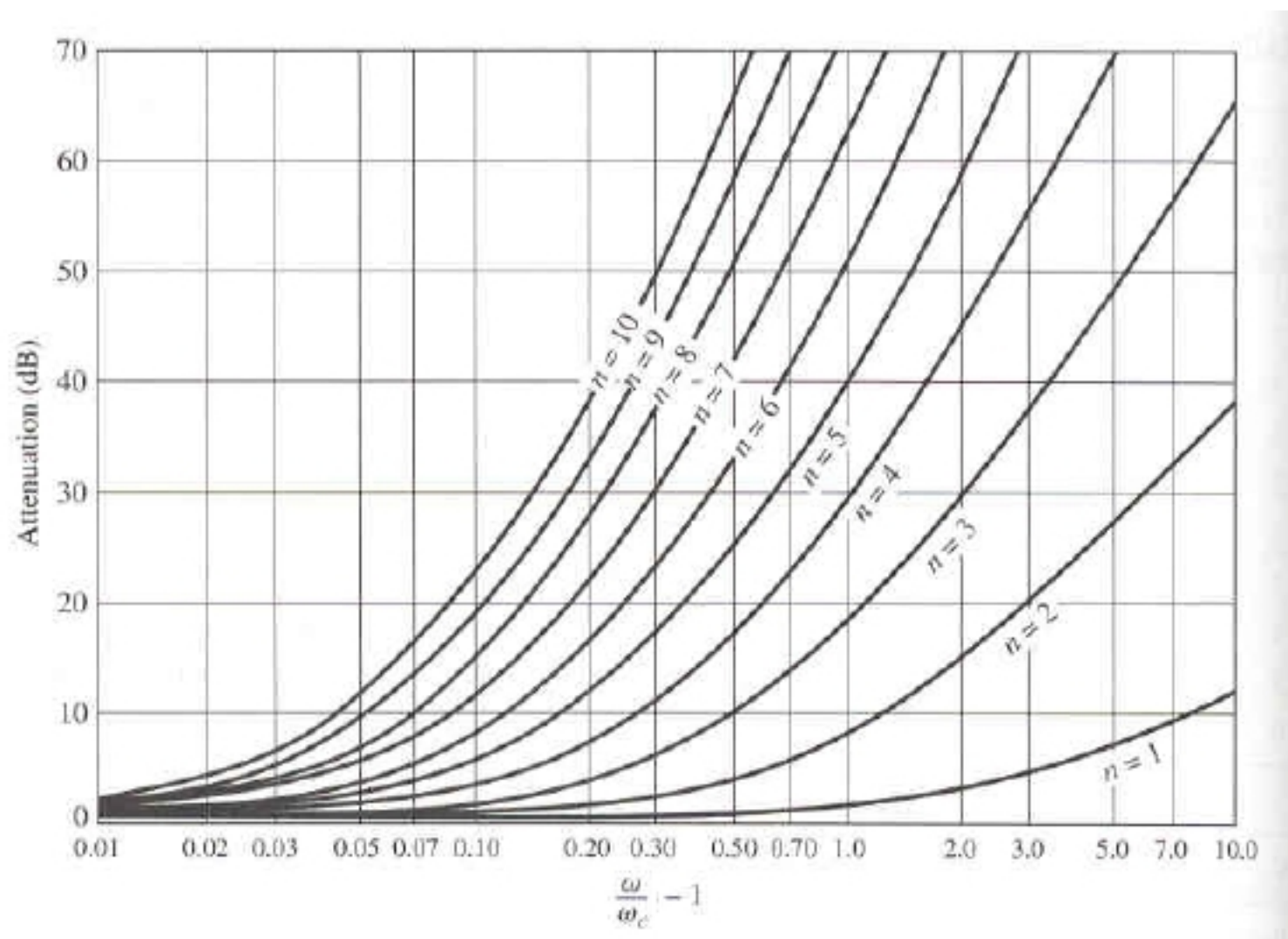


Tabella degli elementi normalizzati per il filtro prototipo passa basso di Butterworth ($g_0=1, \omega_c=1$)



N	g_1	g_2	g_3	g_4	g_5	g_6	g_7	g_8	g_9	g_{10}	g_{11}
1	2.0000	1.0000									
2	1.4142	1.4142	1.0000								
3	1.0000	2.0000	1.0000	1.0000							
4	0.7654	1.8478	1.8478	0.7654	1.0000						
5	0.6180	1.6180	2.0000	1.6180	0.6180	1.0000					
6	0.5176	1.4142	1.9318	1.9318	1.4142	0.5176	1.0000				
7	0.4450	1.2470	1.8019	2.0000	1.8019	1.2470	0.4450	1.000			
8	0.3902	1.1111	1.6629	1.9615	1.9615	1.6629	1.1111	0.3902	1.0000		
9	0.3473	1.0000	1.5321	1.8794	2.0000	1.8794	1.5321	1.0000	0.3473	1.0000	
10	0.3129	0.9080	1.4142	1.7820	1.9754	1.9754	1.7820	1.4142	0.9080	0.3129	1.0000

passa basso di Chebyshev (Ripple 0.5 dB)



Andamento dell'Attenuazione in funzione della frequenza normalizzata per il filtro prototipo passa basso di Chebyshev (Ripple 3.0 dB)

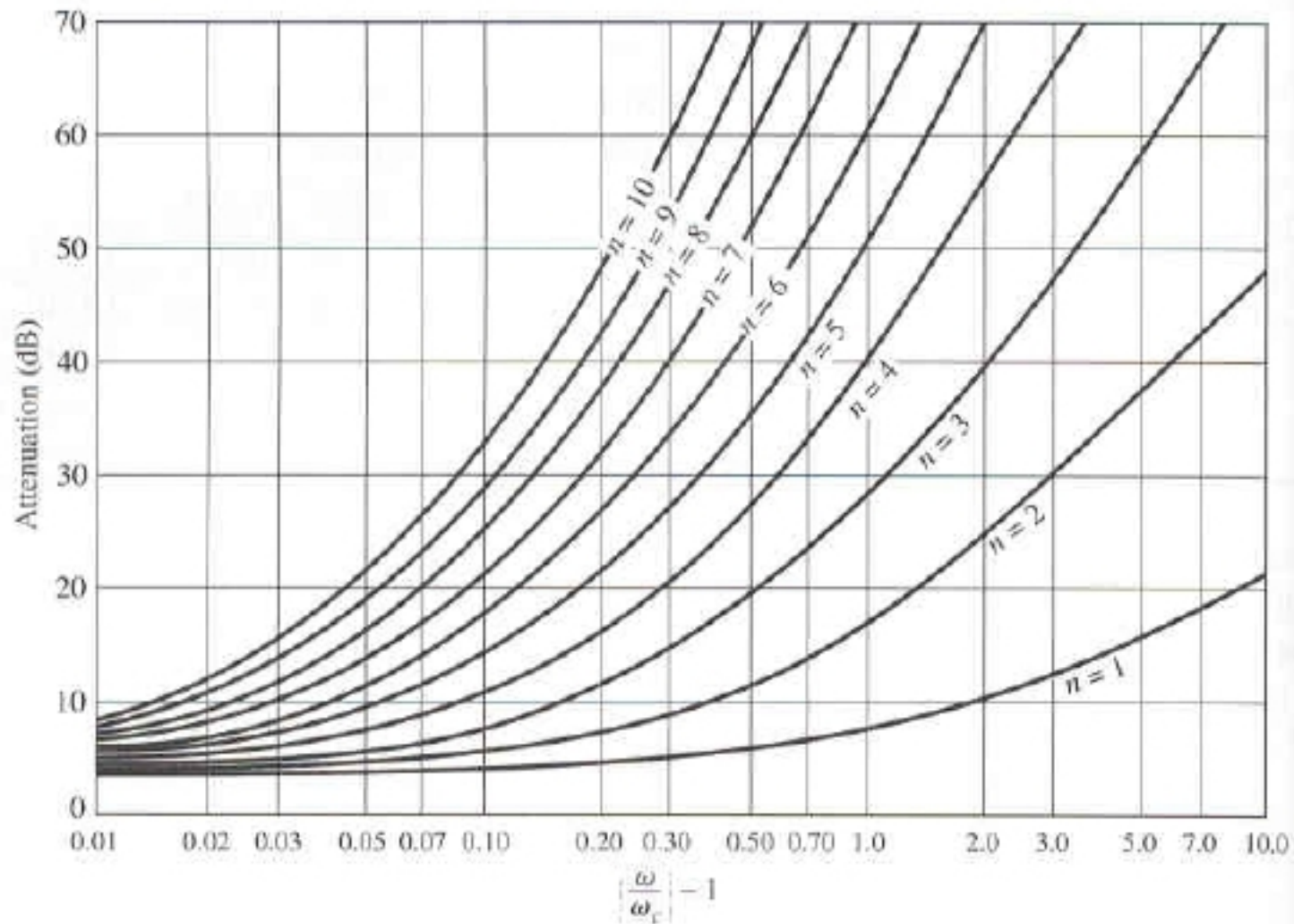
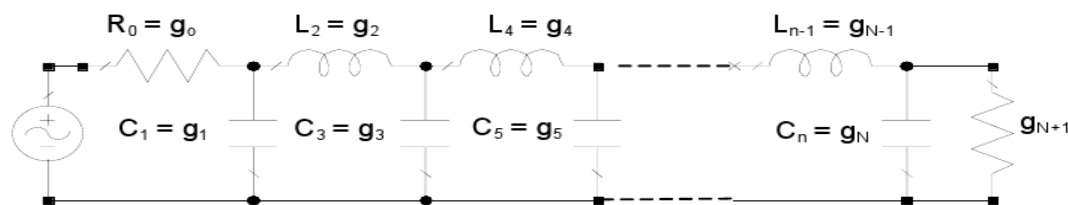
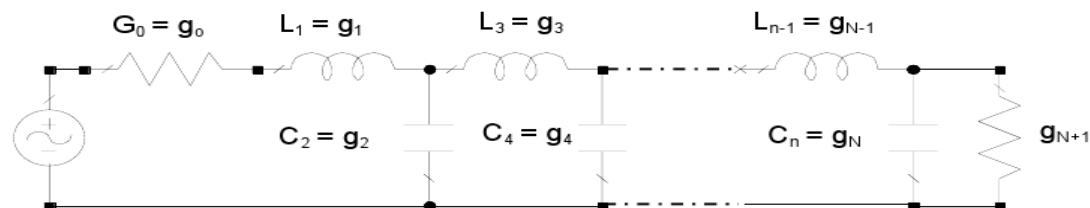
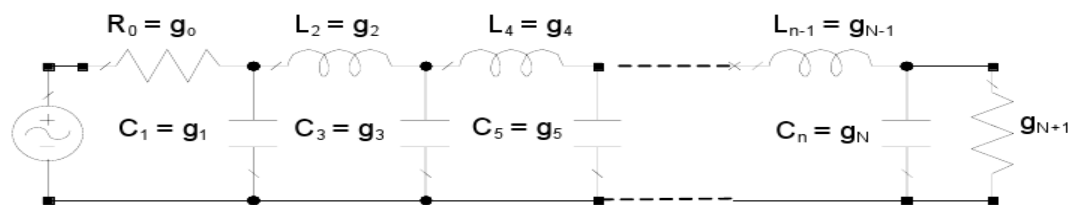
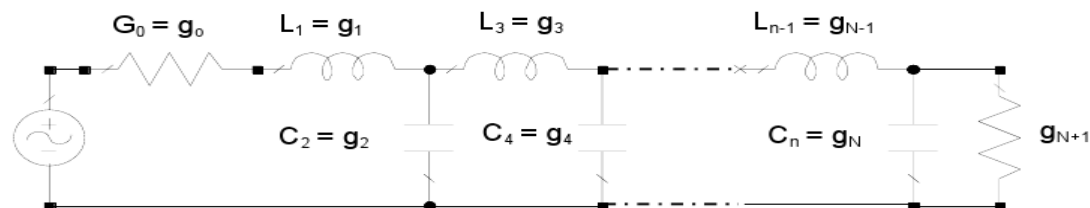


Tabella degli elementi normalizzati per il filtro prototipo passa basso di Chebyshev ($g_0=1, \omega_c=1$, Ripple=0.5 dB)



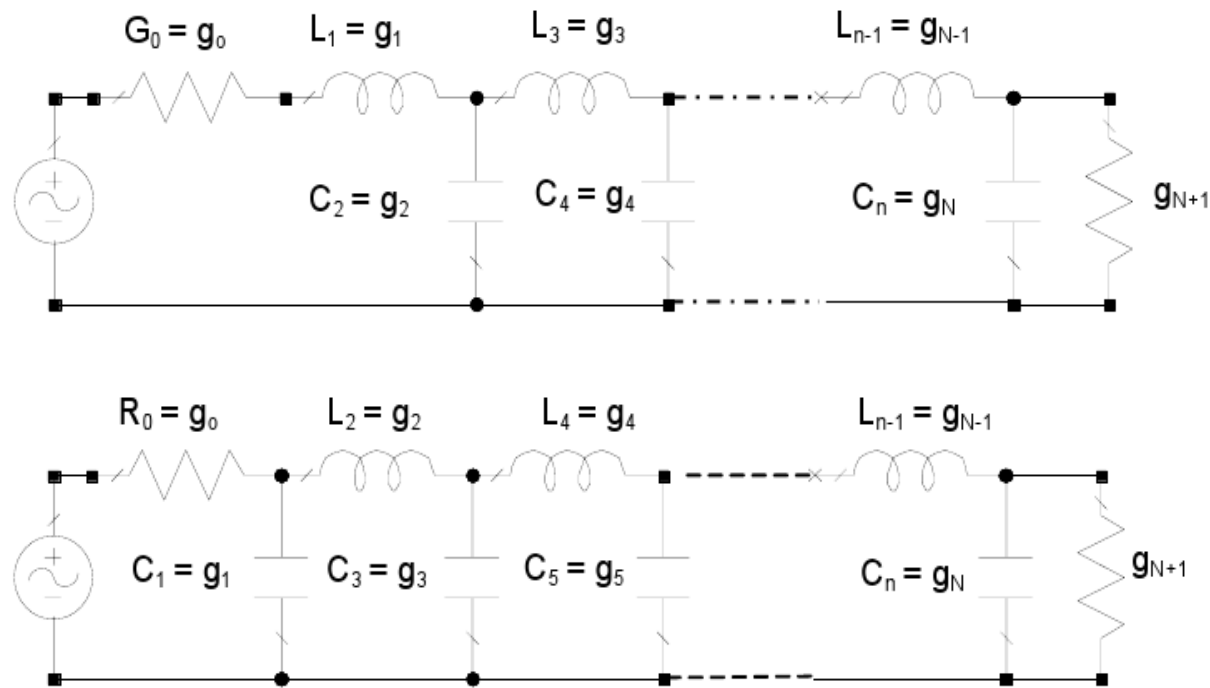
N	0.5 dB Ripple										
	g_1	g_2	g_3	g_4	g_5	g_6	g_7	g_8	g_9	g_{10}	g_{11}
1	0.6986	1.0000									
2	1.4029	1.7071	1.9841								
3	1.5963	1.0967	1.5963	1.0000							
4	1.6703	1.1926	2.3661	0.8419	1.9841						
5	1.7058	1.2296	2.5408	1.2296	1.7058	1.0000					
6	1.7254	1.2479	2.6064	1.3137	2.4758	0.5696	1.9841				
7	1.7372	1.2583	2.6381	1.3444	2.6381	1.2583	1.7372	1.0000			
8	1.7451	1.2647	2.6564	1.3590	2.6964	1.3389	2.5093	0.8796	1.9841		
9	1.7504	1.2690	2.6678	1.3673	2.7329	1.3673	2.6678	1.2690	1.7504	1.0000	
10	1.7543	1.2721	2.6754	1.3725	2.7392	1.3806	2.7231	1.3485	2.5329	0.8842	1.9841

Tabella degli elementi normalizzati per il filtro prototipo passa basso di Chebyshev ($g_0=1, \omega_c=1$, Ripple=3.0 dB)



N	3.0 dB Ripple										
	g_1	g_2	g_3	g_4	g_5	g_6	g_7	g_8	g_9	g_{10}	g_{11}
1	1.9953	1.0000									
2	3.1013	0.5339	5.8095								
3	3.3487	0.7117	3.3487	1.0000							
4	3.4389	0.7483	4.3471	0.5920	5.8095						
5	3.4817	0.7618	4.5381	0.7618	3.4817	1.0000					
6	3.5045	0.7685	4.6061	0.7929	4.4641	0.6033	5.8095				
7	3.5182	0.7723	4.6386	0.8039	4.6386	0.7723	3.5182	1.0000			
8	3.5277	0.7745	4.6575	0.8089	4.6990	0.8018	4.4990	0.6073	5.8095		
9	3.5340	0.7760	4.6692	0.8118	4.7272	0.8118	4.6692	0.7760	3.5340	1.0000	
10	3.5384	0.7771	4.6768	0.8136	4.7425	0.8164	4.7260	0.8051	4.5142	0.6091	5.8095

Filtro Prototipo Passa Basso: Schemi Circuitali e Formule di Riscalamento.

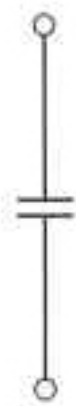
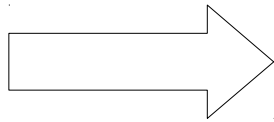


$$L_K = \frac{R_0 g_K}{2\pi f_C} \qquad C_K = \frac{g_K}{R_0 2\pi f_C}$$

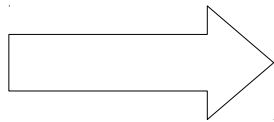
Filtro Passa Alto, Passa
Banda, Arresta Banda

Regole di Trasformazione
Formule di Riscaldamento

Regole di Trasformazione degli Elementi circuitali Passa Basso – Passa Alto



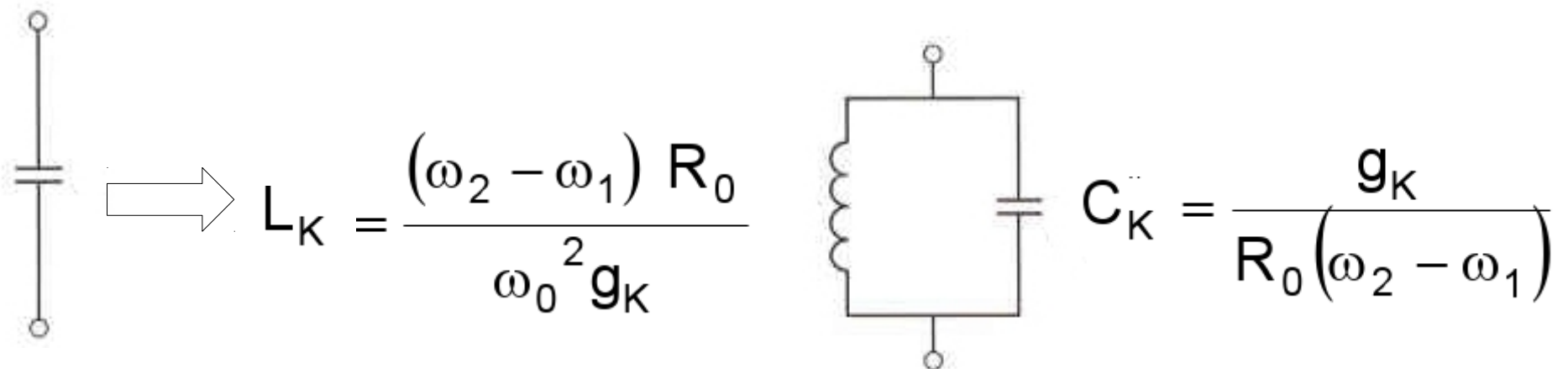
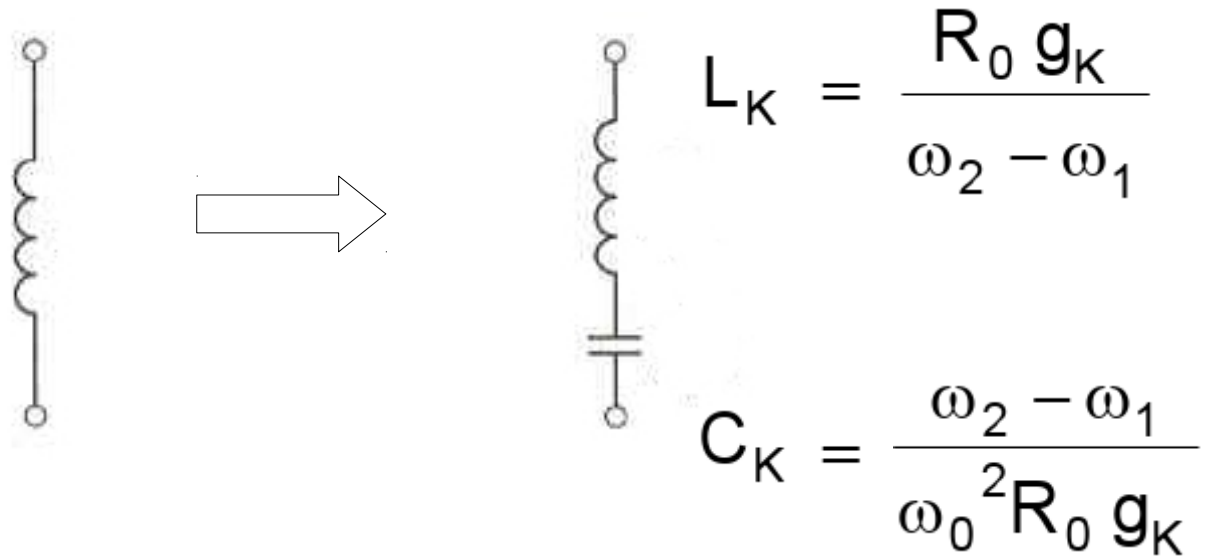
$$C_K = \frac{1}{R_0 g_K 2\pi f_C}$$



$$L_K = \frac{R_0}{g_K 2\pi f_C}$$

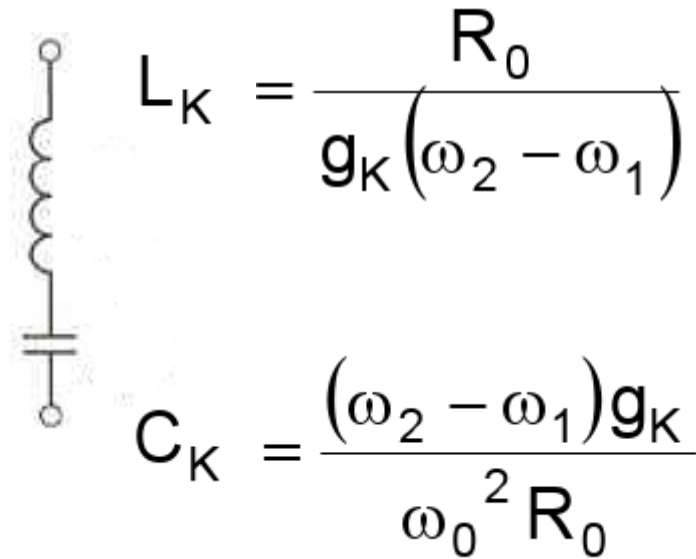
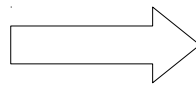
Regole di Trasformazione degli Elementi Circuituali

Passa Basso – Passa Banda

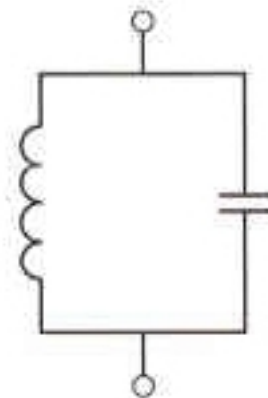


Regole di Trasformazione degli Elementi Circuituali

Passa Basso – Arresta Banda



$$L_K = \frac{R_0}{g_K(\omega_2 - \omega_1)}$$



$$C_K = \frac{(\omega_2 - \omega_1)g_K}{\omega_0^2 R_0}$$

Sommario delle Trasformazioni Circuitali

Low-pass	High-pass	Bandpass	Bandstop
			