50 kHz Low-Pass Filter



EF124

Description

The EF124 Low-Pass Filter employs a 5th order elliptic filter design. The design reduces group delay variation while preserving a practical 5th order rejection skirt. The EF124 is notably designed to terminate into any modern voltage signal transfer system that has a high impedance input, including DAQ systems, laboratory test equipment, and oscilloscopes. This architecture provides the highest signal-to-noise ratio capabilities for $V_{transfer}$ systems.

Specifications

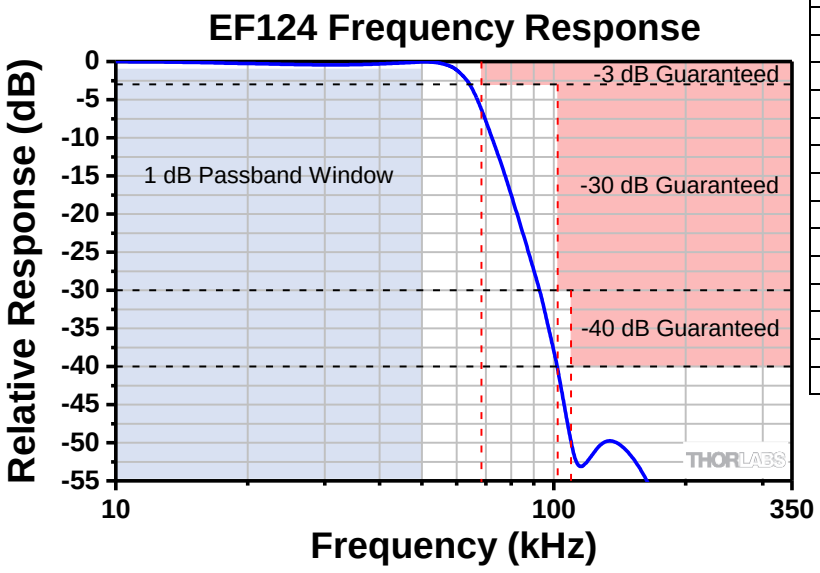
EF124	
	Value[a]
Passband (1 dB Window)[b]	0 to 50 kHz
3 dB Rejection	>68.4 kHz
30 dB Rejection	>102.1 kHz
40 dB Rejection	>109.5 kHz
Source Impedance (BNC Female)	50 Ω (Typical)
Load Impedance[c] **(BNC Female)**	≥100 kΩ (Typical)
Input Voltage	±10 V (Max)
Storage Temperature	-20 to +70 °C

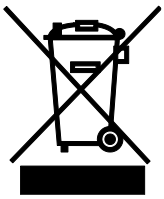
a. Values measured at 25 °C.
b. Performance measured to 500 MHz.
c. This filter can be operated with termination resistances below 1 kΩ, however, the passband will narrow at smaller termination resistances and the performance is not guaranteed.

Sample Response Data

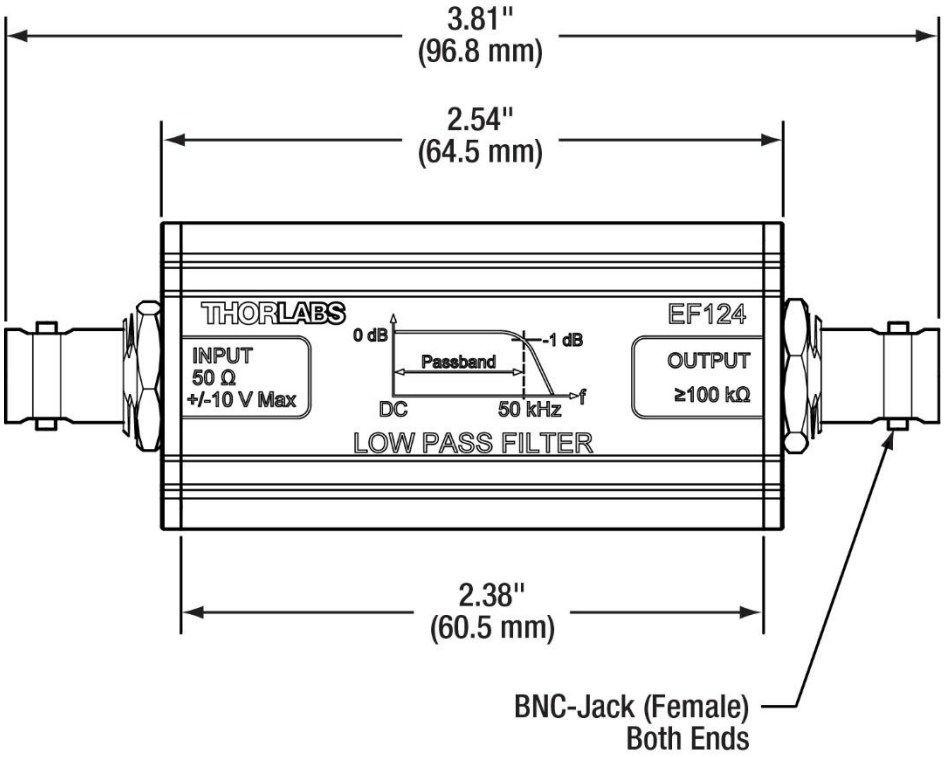
Freq. (kHz)	Rel. Resp. (dB)	Group Delay Variation (µs)
10.00	0.00	0.00
10.18	-0.01	0.00
11.20	-0.03	-0.05
12.32	-0.05	0.25
13.56	-0.09	0.04
14.92	-0.12	0.02
16.42	-0.16	-0.01
18.07	-0.20	0.08
19.89	-0.25	-0.14
21.89	-0.30	-0.06
24.30	-0.36	-0.02
26.74	-0.40	0.07
29.42	-0.43	0.06
32.66	-0.43	0.50
35.94	-0.41	0.89
39.55	-0.34	1.63
43.53	-0.22	3.38
47.90	-0.09	4.23
49.60	-0.05	4.98
50.03	-0.04	5.16
50.47	-0.04	5.37
50.91	-0.03	5.95
54.11	-0.08	7.95
58.01	-0.54	10.59
60.06	-1.06	11.56
62.74	-2.10	11.53
64.96	-3.30	10.41
68.44	-6.27	7.23
72.74	-10.39	3.76
78.67	-15.96	0.26

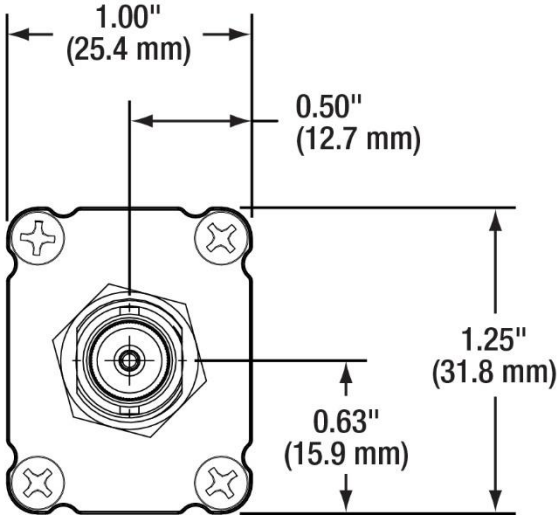
Freq. (kHz)	Rel. Resp. (dB)
92.81	-29.92
93.62	-30.78
101.25	-39.21
102.14	-40.27
109.50	-50.20
114.37	-54.80
128.07	-49.19
143.41	-49.92
163.41	-54.50
182.99	-61.53
206.70	-70.37
229.45	-61.69
261.45	-57.75
290.23	-56.43
322.18	-55.81





Drawings


3.81"
(96.8 mm)
2.54"
(64.5 mm)
THORLABS
EF124
INPUT
50 Ω
+/-10 V Max
0 dB
-1 dB
Passband
DC
50 kHz
f
OUTPUT
≥100 kΩ
LOW PASS FILTER
2.38"
(60.5 mm)
BNC-Jack (Female)
Both Ends


1.00"
(25.4 mm)
0.50"
(12.7 mm)
1.25"
(31.8 mm)
0.63"
(15.9 mm)