FREQUENCY DEVICES™

FIXED FREQUENCY LOWPASS ACTIVE FILTERS

FREQUENCY DEVICES INC

T-64-05

FEATURES

- Ready-To-Use Component
- Socket Or Solder-In Installation
- Corner Frequencies From 0.001Hz To 20kHz
- Corner Frequency Stability ±0.05%/°C
- Adjustable Output DC Offset

APPLICATIONS

- A-D Pre-Filtering
- Transducer Output Filtering
- Medical Instrumentation
- Noise Reduction

DESCRIPTION

The fixed frequency filter is the most effective and economical way to meet fixed frequency applications in the production of analog and digital processors, communications and control equipment. The fixed frequency filter provides guaranteed performance with a single plug-in or solder-in installation step. Costly design, assembly, tuning and testing steps are avoided.

Frequency Devices' full line of high performance fixed frequency lowpass active filters offer to the electronics data processing, communications and control systems industry many proven standard designs to satisfy the requirements of a wide range of fixed frequency, lowpass applications. Standard frequency response characteristics include 2-, 4-, 6-, and 8-pole Butterworth, Bessel and Tchebyscheff functions. The distinguishing features of each of these response characteristics are discussed in detail on page 4.

The large number of available standard models provide corner frequencies from 0.001Hz to 20kHz. Each model is factory pretuned to any corner frequency within its corner frequency range. The corner frequency is specified in a simple code added to the basic model number to form a complete part number. Modern computer controlled manufacturing techniques give you custom performance with off-the-shelf delivery and low cost.

Signal resolution is an important filter feature for systems consideration. Frequency Devices' low noise characteristics make it possible to resolve signals as low as 50μV. This capability permits systems operating with signal levels from 10mV to 10V to maintain better than ±0.5% signal resolution in the passband. The design implementations provide wideband full power output in the passband. The passband gain at dc is set to 0dB.

It is especially important to note that all models are complete high performance active filters which require no external components. The use of these high performance, fixed frequency lowpass active filters allows the system designer to think at the system level, saving time and money by eliminating component-level problems.

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FREQUENCY DEVICES

FIXED FREQUENCY LOWPASS ACTIVE FILTERS

FREQUENCY DEVICES INC

LINE	3dB CORNER FREQUENCY RANGE (HERTZ)	TOL	DRIFT %/°C	POLES	OUTPUT OFFSET DRIFT ±µV/°C	IMPEDANCES INPUT ΩMIN	IMPEDANCES SOURCE[2] ΩMAX	CURRENTS INPUT BIAS	CURRENTS SUPPLY ±mA
1	0.001-0.01	±3%	±0.05	2	50	1M	20k	10pA	8
2	0.001-0.1	±3%	±0.05	4	60	300k	6k	10pA	12
3	0.01-0.1	±3%	±0.05	2	30	300k	6k	10pA	8
4	0.1-1	±3%	±0.05	2	25	30k	600	3nA	4
5	0.1-1	±3%	±0.05	4	40	30k	600	3nA	8
6	1-10	±2%	±0.05	2	25	30k	600	10nA	4
7	1-10	±2%	±0.05	4	40	30k	600	10nA	8
8	1-10	±2%	±0.05	8	60	30k	600	10nA	16
9	1-100	±2%	±0.05	6	50	30k	600	10nA	12
10	10-20k	±2%	±0.05	2	30	30k	600	10nA	8
11	10-20k	±2%	±0.05	4	30	30k	600	10nA	8
12	10-20k	±2%	±0.05	8	60	30k	600	10nA	16
13	100-7k	±2%	±0.05	6	50	30k	600	10nA	12
14	100-20k	±2%	±0.05	6	50	30k	600	10nA	12

SPECIFICATIONS COMMON TO ALL MODELS

DC VOLTAGE GAIN	Non-Inverting	0±0.02dB
INPUT	Voltage Range	±10V
	Maximum Safe Voltage	$\pm V_S$
OUTPUT	Resistance	1Ω
	Rated Output at 2mA	±10V
	Offset Voltage	±5mV
	Noise[3]	50µVRMS
	Offset Zero Adjustment	All Models
	Ground Short Protected	All Models
POWER SUPPLY ($\pm V_S$)	Rated Voltage	±15Vdc
	Operating Range	±5 to ±18Vdc
TEMPERATURE RANGE (°C)	Operating	0 to +70
	Storage	-25 to +85

NOTES:
1 Typical at 25°C and V_S = ±15Vdc.
2 Maximum allowable series input resistor to maintain f_C accuracy.
3 With input grounded, dc to 50kHz excluding dc offset.

Specifications subject to change without notice.

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AVAILABLE MODELS AND SPECIFICATIONS

FREQUENCY DEVICES INC

LINE	PACKAGE DATA				MODEL NUMBER		
	CASE	TERMINAL DIAGRAM	PAGE	SOCKET	BUTTER-WORTH	BESSEL	TSCHEBY-SCHEFF
1	C-3	C-05	11	S1002	750L2B-f	750L2L-f	750L2Yr-f
2	C-3	C-05	11	S1002	752L4B-f	752L4L-f	—
3	R-3	R-01	12	S1002	700L2B-f	700L2L-f	700L2Yr-f
4	R-3	R-01	12	S1002	702L2B-f	702L2L-f	702L2Yr-f
5	R-3	R-01	12	S1002	703L4B-f	703L4L-f	703L4Yr-f
6	L-2	L-01	12	S1001	704L2B-f	704L2L-f	704L2Yr-f
7	R-3	R-01	12	S1002	705L4B-f	705L4L-f	705L4Yr-f
8	C-3	C-05	11	S1002	756L8B-f	756L8L-f	—
9	R-3	R-01	12	S1002	721L6B-f	721L6L-f	721L6Yr-f
10	L-2	L-01	12	S1001	706L2B-f	706L2L-f	706L2Yr-f
11	L-2	L-01	12	S1001	707L4B-f	707L4L-f	707L4Yr-f
12	C-2	C-05	11	S1002	757L8B-f	757L8L-f	—
13	L-2	L-01	12	S1001	—	—	722L6Yr-f
14	L-2	L-01	12	S1001	722L6B-f	722L6L-f	—

ORDERING GUIDE All of the basic model numbers are listed in these tables. In each case a corner frequency code must be added to complete the part number. For Tchebyscheff models a passband ripple code is also required.

PASSBAND RIPPLE for Tcheby-scheff models is designated by adding one of these codes directly onto the basic model number:

RIPPLE	CODE(r)	EXAMPLE
0.2dB	A2W	702L2YA2W-f
0.5dB	A5W	707L4YA5W-f
1dB	1W	700L2Y1W-f

CORNER FREQUENCY is designated in Hertz using either a letter A instead of a decimal point or a letter K instead of a thousands comma:

FREQUENCY	CODE(f)	EXAMPLE
0.00123Hz	A00123	752L4B-A00123
12.3Hz	12A3	707L4YA5W-12A3
12.3kHz	12K3	757L8L-12K3

OUTPUT OFFSET VOLTAGE ADJUSTMENT

The output offset voltage of all Frequency Devices' fixed frequency lowpass active filters is 0 ± 5mVdc under rated power supply voltage and temperature conditions. The OPTIONAL adjustment circuits shown in Figures 3.1 and 3.2 below can be used to zero the offset voltage if necessary. Use the circuit shown in Figure 3.1 for all models that have terminals T1 and T2. Use the circuit of Figure 3.2 for all models that have Terminal OSI. In any case use a carbon composition, cermet or metal film potentiometer; a wire-wound component will degrade performance.

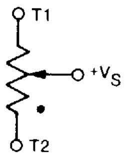

FIGURE 3.1
Output offset trim for models with terminals T1 and T2.

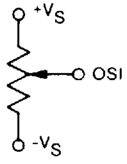

FIGURE 3.2
Output offset trim for models with terminal OSI.

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BUTTERWORTH

The Butterworth transfer function provides a maximally flat amplitude response in the passband. Attenuation is -3dB at f_C and rolls of at -6dB per octave per pole beyond f_C. The step response displays moderate overshoot which increases with the number of poles, N. An excellent choice for general purpose filter applications, the Butterworth is particularly useful where passband gain accuracy is important.

BESSEL

The Bessel transfer function approximates a constant time delay in the passband. The phase delay increases linearly from 0 to $N\pi/4$ radians and amplitude response is -3dB down at the cutoff frequency f_C. The fast settling time and minimal overshoot in the step response make them desirable for A/D & D/A systems.
Bessel filters are used in reconstruction of waveforms and direct frequency measurements. They also appear in averaging filters, voltage to frequency conversion and fixed time delay applications.

TCHEBYSCHEFF

The Tchebyscheff transfer function achieves a sharp frequency cutoff at the expense of allowing ripple in the passband. Tchebyscheff filters are specified by the amount of passband amplitude ripple and the cutoff frequency. FDI's Tchebyscheffs are normalized to unity gain at DC and -3dB attenuation at f_C. Tchebyscheffs are used where rolloff rate is important and gain variations are of secondary consideration, such as audio applications.

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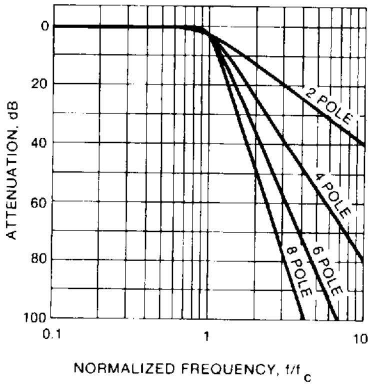
FREQUENCY DEVICES™

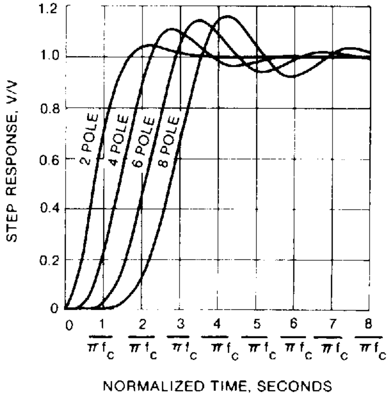
THEORETICAL RESPONSE BUTTERWORTH

FREQUENCY DEVICES INC

FREQUENCY RESPONSE



STEP RESPONSE



NORMALIZED FREQUENCY RESPONSE TABLE

f/f_c	2 POLE		4 POLE		6 POLE		8 POLE	
	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)
0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
0.10	0.00	-8.1	0.00	-15.0	0.00	-22.0	0.00	-29.4
0.20	0.01	-16.4	0.00	-30.1	0.00	-44.5	0.00	-59.0
0.30	0.04	-25.0	0.00	-45.5	0.00	-67.2	0.00	-89.1
0.40	0.11	-34.0	0.00	-61.4	0.00	-90.4	0.00	-119.8
0.50	0.26	-43.3	0.02	-78.0	0.00	-114.5	0.00	-151.7
0.60	0.53	-53.0	0.07	-95.7	0.01	-140.0	0.00	-185.0
0.65	0.71	-57.9	0.14	-105.1	0.02	-153.4	0.00	-202.6
0.70	0.93	-62.7	0.24	-114.9	0.06	-167.5	0.01	-220.9
0.75	1.19	-67.6	0.41	-125.2	0.14	-182.4	0.04	-240.2
0.80	1.49	-72.3	0.67	-135.9	0.29	-198.2	0.12	-260.8
0.85	1.82	-77.0	1.05	-146.9	0.58	-215.2	0.31	-283.2
0.90	2.19	-81.5	1.55	-158.1	1.08	-233.1	0.74	-307.4
0.95	2.59	-85.8	2.21	-169.2	1.88	-251.6	1.59	-333.5
1.00	3.01	-90.0	3.01	-180.0	3.01	-270.0	3.01	-360.0
1.10	3.92	-97.7	4.97	-199.9	6.17	-303.6	7.48	-407.9
1.20	4.88	-104.5	7.24	-216.8	9.96	-330.6	12.90	-444.5
1.30	5.86	-110.6	9.62	-230.8	13.86	-351.7	18.30	-472.1
1.40	6.85	-115.9	11.98	242.2	17.61	-368.4	23.40	-493.7
1.50	7.83	-120.5	14.25	-251.7	21.16	-382.0	28.18	-511.4
2.00	12.30	-136.7	24.10	-282.0	36.12	-425.5	48.16	-568.3
2.50	16.03	-146.0	31.84	-298.6	47.75	-449.6	63.67	-600.2
3.00	19.14	-152.1	38.17	-309.3	57.25	-465.2	76.34	-620.8
3.50	21.79	-156.3	43.53	-316.7	65.29	-476.1	87.05	-635.3
4.00	24.10	-159.3	48.16	-322.2	72.25	-484.2	96.33	-646.0
5.00	27.97	-163.6	55.92	-329.9	83.88	-495.5	111.84	-661.0
6.00	31.13	-166.4	62.25	-334.9	93.38	-503.0	124.50	-670.9
7.00	33.81	-168.3	67.61	-338.6	101.41	-508.3	135.22	-677.9
8.00	36.12	-169.8	72.25	-341.2	108.37	-512.3	144.49	-683.2
9.00	38.17	-171.0	76.34	-343.3	114.51	-515.4	152.68	-687.3
10.00	40.00	-171.9	80.00	-345.0	120.00	-517.8	160.00	-690.6

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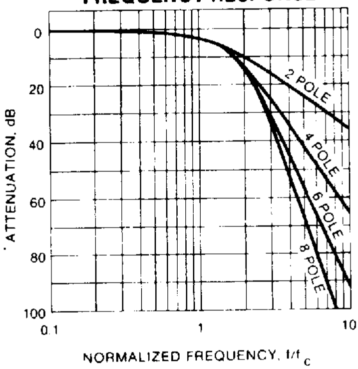
 FREQUENCY DEVICES

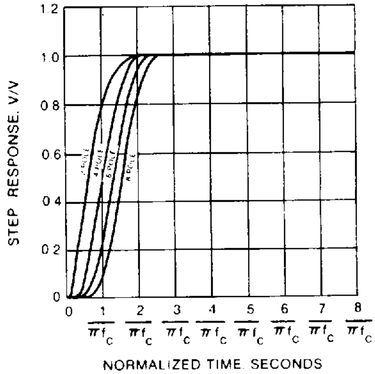
THEORETICAL RESPONSE BESSEL

FREQUENCY DEVICES INC

FREQUENCY RESPONSE



STEP RESPONSE



NORMALIZED FREQUENCY RESPONSE TABLE

f/f_c	2 POLE		4 POLE		6 POLE		8 POLE	
	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)
0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
0.10	0.03	-7.8	0.03	-12.1	0.03	-15.5	0.03	-18.2
0.20	0.11	-15.6	0.11	-24.2	0.12	-31.0	0.12	-36.4
0.30	0.25	-23.4	0.25	-36.3	0.26	-46.5	0.26	-54.7
0.40	0.45	-31.2	0.45	-48.4	0.46	-62.0	0.47	-72.9
0.50	0.71	-38.3	0.71	-60.6	0.73	-77.4	0.74	-91.1
0.60	1.04	-46.4	1.02	-72.7	1.05	-92.9	1.06	-109.3
0.65	1.24	-50.1	1.21	-78.7	1.24	-100.7	1.25	-118.4
0.70	1.44	-53.8	1.41	-84.8	1.44	-108.4	1.45	-127.5
0.75	1.67	-57.4	1.63	-90.8	1.66	-116.2	1.67	-136.6
0.80	1.91	-61.0	1.86	-96.8	1.89	-123.9	1.91	-145.7
0.85	2.16	-64.4	2.12	-102.9	2.15	-131.7	2.16	-154.9
0.90	2.43	-67.8	2.40	-108.9	2.42	-139.4	2.42	-164.0
0.95	2.72	-71.1	2.69	-114.9	2.70	-147.1	2.71	-173.1
1.00	3.01	-74.3	3.01	-120.8	3.01	-154.9	3.01	-182.2
1.10	3.63	-80.4	3.71	-132.6	3.68	-170.4	3.67	-200.4
1.20	4.28	-86.1	4.51	-144.2	4.44	-185.8	4.40	-218.6
1.30	4.96	-91.4	5.39	-155.5	5.29	-201.2	5.20	-236.8
1.40	5.66	-96.3	6.37	-166.4	6.23	-216.5	6.10	-255.0
1.50	6.36	-100.8	7.42	-176.7	7.29	-231.5	7.08	-273.2
2.00	9.82	-118.4	13.41	-219.4	14.17	-300.2	13.68	-361.9
2.50	12.96	-130.1	19.43	-247.8	22.54	-350.7	23.08	-436.4
3.00	15.74	-138.2	25.09	-267.3	30.70	-384.7	33.38	-489.2
3.50	18.19	-144.0	30.04	-281.0	38.08	-408.4	42.85	-525.4
4.00	20.36	-148.5	34.43	-291.2	44.68	-425.8	51.81	-551.8
5.00	24.07	-154.8	41.92	-305.2	55.93	-449.5	66.80	-587.3
6.00	27.15	-159.0	48.12	-314.5	65.25	-465.0	79.22	-610.2
7.00	29.77	-162.0	53.40	-321.1	73.17	-475.9	89.80	-626.3
8.00	32.06	-164.2	57.99	-326.0	80.07	-484.0	98.99	-638.2
9.00	34.08	-166.0	62.05	-329.8	86.16	-490.3	107.12	-647.4
10.00	35.89	-167.4	65.68	-332.8	91.62	-495.3	114.40	-654.8

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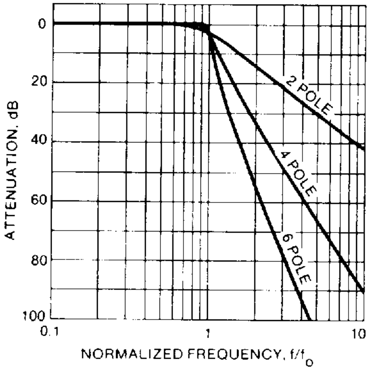
FREQUENCY DEVICES™

THEORETICAL RESPONSE 0.2DB TCHEBYSCHEFF

FREQUENCY DEVICES INC

FREQUENCY RESPONSE



NORMALIZED FREQUENCY RESPONSE TABLE

f/f_C	2 POLE		4 POLE		6 POLE	
	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)
0.00	0.00	0.0	0.00	0.0	0.00	·0.0
0.10	-0.02	-8.0	-0.04	-17.3	-0.07	-27.8
0.20	-0.08	-16.4	-0.13	-35.2	-0.18	-56.8
0.30	-0.15	-25.2	-0.20	-54.0	-0.17	-86.8
0.40	-0.20	-34.8	-0.17	-73.4	-0.04	-116.9
0.50	-0.16	-45.2	-0.07	-93.2	-0.01	-147.3
0.60	0.04	-56.4	-0.00	-113.5	-0.15	-180.1
0.65	0.21	-62.2	-0.02	-124.0	-0.20	-198.0
0.70	0.45	-68.0	-0.07	-135.3	-0.17	-216.9
0.75	0.75	-73.7	-0.16	-147.7	-0.08	-236.5
0.80	1.10	-79.3	-0.20	-161.8	-0.00	-256.9
0.85	1.51	-84.8	-0.06	-177.9	-0.06	-279.1
0.90	1.97	-90.0	0.44	-195.7	-0.20	-306.2
0.95	2.48	-94.9	1.47	-213.9	0.36	-341.5
1.00	3.01	-99.5	3.01	-230.7	3.01	-379.4
1.10	4.14	-107.8	6.89	-256.8	11.52	-426.4
1.20	5.32	-114.9	10.85	-273.9	19.07	-448.5
1.30	6.50	-120.9	14.48	-285.5	25.33	-461.6
1.40	7.65	-126.0	17.74	-294.0	30.67	-470.7
1.50	8.77	-130.4	20.68	-300.4	35.37	-477.6
2.00	13.67	-144.7	32.20	-318.9	53.25	-497.1
2.50	17.58	-152.6	40.60	-328.2	66.07	-506.8
3.00	20.78	-157.5	47.28	-333.9	76.18	-512.8
3.50	23.49	-160.9	52.83	-337.8	84.57	-516.9
4.00	25.83	-163.4	57.60	-340.7	91.75	-519.9
5.00	29.73	-166.9	65.50	-344.7	103.65	-524.1
6.00	32.92	-169.1	71.92	-347.3	113.29	-526.8
7.00	35.60	-170.7	77.32	-349.1	121.41	-528.7
8.00	37.93	-171.9	81.99	-350.5	128.42	-530.1
9.00	39.98	-172.8	86.10	-351.6	134.60	-531.2
10.00	41.81	-173.5	89.78	-352.4	140.12	-532.1

49

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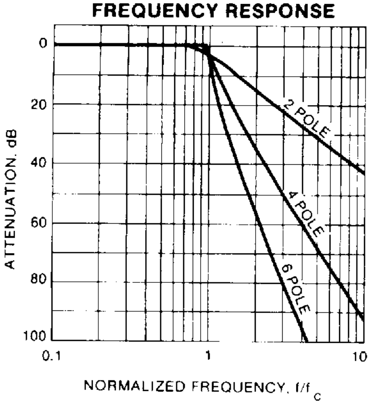
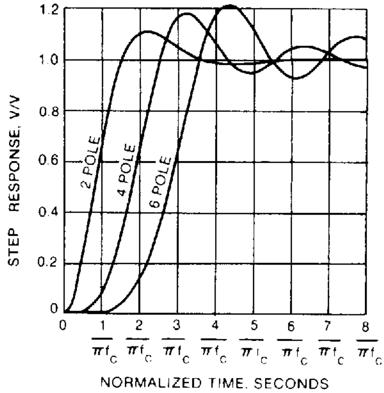
FREQUENCY DEVICES™

50

THEORETICAL RESPONSE
0.5 DB TCHEBYSCHEFF





NORMALIZED FREQUENCY RESPONSE TABLE

f/f_c	2 POLE		4 POLE		6 POLE	
	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)
0.00	0.00	0.0	0.00	0.0	0.00	0.0
0.10	-0.04	-7.9	-0.09	-17.3	-0.17	-27.9
0.20	-0.15	-16.1	-0.30	-35.7	-0.45	-58.1
0.30	-0.30	-25.0	-0.48	-55.7	-0.44	-90.4
0.40	-0.44	-35.0	-0.46	-76.9	-0.13	-121.9
0.50	-0.50	-46.1	-0.25	-98.2	-0.01	-152.4
0.60	-0.36	-58.4	-0.03	-119.0	-0.32	-185.7
0.65	-0.20	-64.8	-0.00	-129.6	-0.47	-204.7
0.70	0.05	-71.3	-0.07	-140.7	-0.47	-225.3
0.75	0.38	-77.7	-0.24	-153.1	-0.28	-246.5
0.80	0.79	-84.0	-0.43	-167.6	-0.05	-267.7
0.85	1.27	-90.0	-0.48	-185.0	-0.04	-289.9
0.90	1.81	-95.6	-0.06	-205.3	-0.39	-317.1
0.95	2.39	-100.9	1.12	-226.4	-0.17	-356.2
1.00	3.01	-105.7	3.01	-245.3	3.01	-400.0
1.10	4.31	-114.2	7.61	-271.9	12.90	-446.1
1.20	5.62	-121.2	12.02	-287.7	20.93	-465.2
1.30	6.92	-127.1	15.89	-297.9	27.39	-476.2
1.40	8.17	-131.9	19.31	-305.2	32.86	-485.7
1.50	9.36	-136.0	22.35	-310.6	37.64	-489.3
2.00	14.46	-149.0	34.09	-326.1	55.71	-505.3
2.50	18.45	-156.0	42.58	-333.8	68.59	-513.2
3.00	21.69	-160.4	49.29	-338.6	78.73	-518.0
3.50	24.42	-163.4	54.87	-341.8	87.14	-521.4
4.00	26.77	-165.5	59.65	-344.2	94.34	-523.8
5.00	30.69	-168.5	67.57	-347.4	106.25	-527.1
6.00	33.88	-170.5	73.99	-349.6	115.90	-529.3
7.00	36.58	-171.9	79.40	-351.1	124.02	-530.9
8.00	38.91	-172.9	84.07	-352.2	131.04	-532.0
9.00	40.96	-173.7	88.19	-353.1	137.21	-532.9
10.00	42.79	-174.3	91.87	-353.8	142.73	-533.6

50

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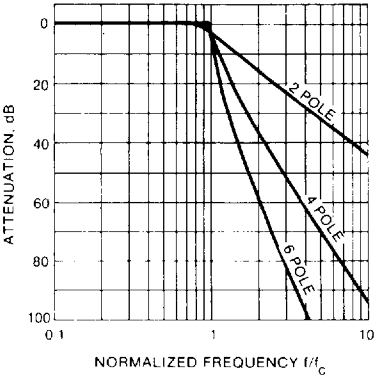
FREQUENCY DEVICES™

THEORETICAL RESPONSE 1 DB TCHEBYSCHEFF

FREQUENCY DEVICES INC

FREQUENCY RESPONSE



NORMALIZED FREQUENCY RESPONSE TABLE

f/f_C	2 POLE		4 POLE		6 POLE	
	A(dB)	ψ(°)	A(dB)	ψ(°)	A(dB)	ψ(°)
0.00	0.00	0.0	0.00	0.0	0.00	0.0
0.10	-0.06	-7.5	-0.16	-16.9	-0.31	-27.2
0.20	-0.23	-15.5	-0.55	-35.5	-0.89	-58.8
0.30	-0.49	-24.4	-0.93	-56.9	-0.89	-94.0
0.40	-0.78	-34.7	-0.95	-80.4	-0.28	-127.0
0.50	-0.98	-46.8	-0.56	-103.6	-0.01	-156.8
0.60	-0.94	-60.5	-0.10	-124.9	-0.55	-189.7
0.65	-0.78	-67.9	-0.00	-135.2	-0.91	-209.9
0.70	-0.51	-75.3	-0.06	-145.9	-0.98	-232.6
0.75	-0.13	-82.6	-0.30	-157.9	-0.65	-255.9
0.80	0.36	-89.6	-0.68	-172.5	-0.17	-277.9
0.85	0.93	-96.2	-0.99	-191.1	-0.02	-299.7
0.90	1.58	-102.4	-0.72	-214.3	-0.56	-326.2
0.95	2.28	-107.9	0.67	-238.9	-0.83	-369.0
1.00	3.01	-113.0	3.01	-259.6	3.01	-419.0
1.10	4.51	-121.5	8.36	-285.7	14.15	-462.7
1.20	5.98	-128.3	13.12	-299.8	22.51	-478.7
1.30	7.40	-133.8	17.18	-308.6	29.11	-487.9
1.40	8.74	-138.2	20.70	-314.7	34.66	-494.1
1.50	10.00	-141.9	23.82	-319.3	39.50	-498.7
2.00	15.30	-153.4	35.71	-332.2	57.67	-511.8
2.50	19.36	-159.5	44.24	-338.5	70.59	-518.2
3.00	22.63	-163.2	50.98	-342.4	80.76	-522.2
3.50	25.38	-165.8	56.58	-345.1	89.18	-524.9
4.00	27.74	-167.7	61.37	-347.0	96.38	-526.9
5.00	31.67	-170.2	69.29	-349.7	108.30	-529.6
6.00	34.87	-171.9	75.72	-351.4	117.95	-531.3
7.00	37.57	-173.1	81.13	-352.7	126.08	-532.6
8.00	39.90	-174.0	85.81	-353.6	133.09	-533.5
9.00	41.95	-174.6	89.93	-354.3	139.27	-534.3
10.00	43.79	-175.2	93.61	-354.9	144.79	-534.8

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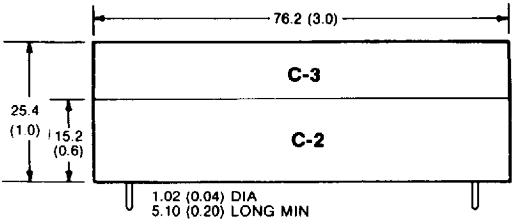
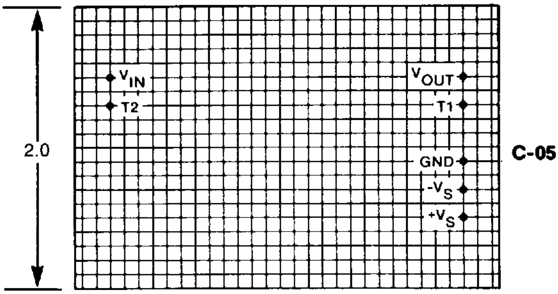
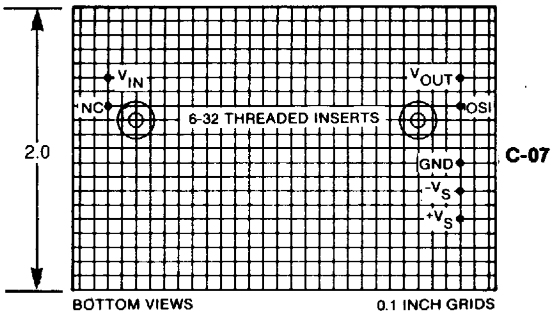
52 FREQUENCY DEVICES™

PACKAGE DATA
C-CASE







TERMINAL KEY

V_{IN}	Signal Input
V_{OUT}	Signal Output
T1, T2, OSI	Offset Trim, see page 3
NC	No Connection
$+V_S$	Supply Voltage, Positive
GND	Ground, Supply Common
$-V_S$	Supply Voltage, Negative

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FREQUENCY DEVICES

PACKAGE DATA
L-CASE, R-CASE

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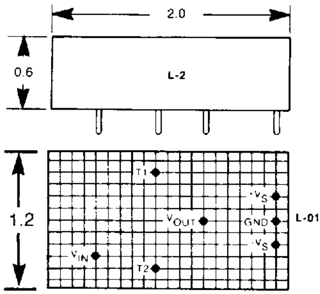

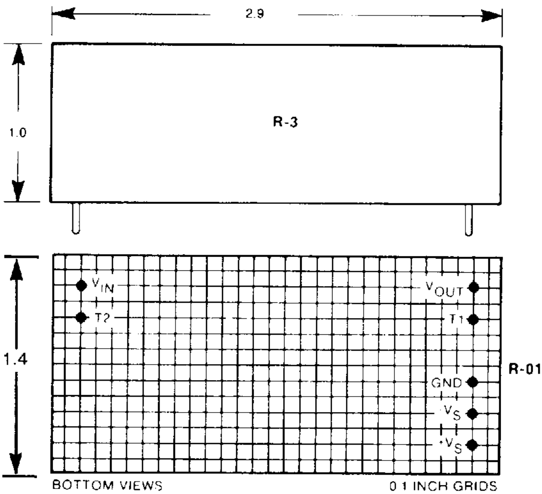

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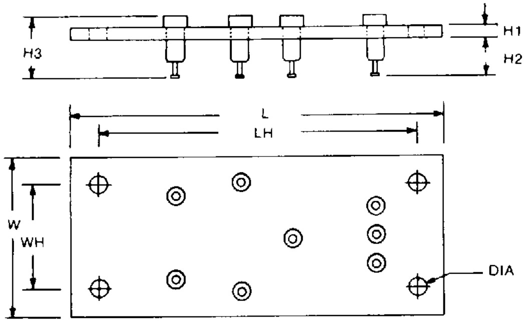
FREQUENCY DEVICES™

PACKAGE DATA
SOCKETS
S1001, S1002

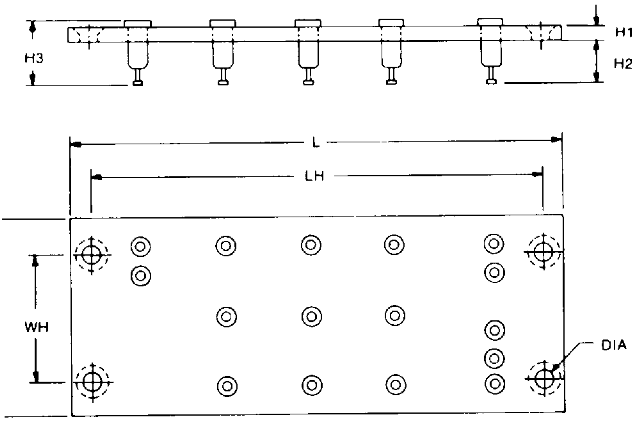
FREQUENCY DEVICES INC

S1001



DIMENSION	MILLIMETERS	INCHES
L	71	2.8
LH	61	2.4
W	30	1.2
WH	20	0.8
H1	2.3	0.09
H2	7.9	0.31
H3	12	0.47
DIA	3.5	0.14

S1002



DIMENSION	MILLIMETERS	INCHES
L	89	3.5
LH	81	3.2
W	36	1.4
WH	23	0.9
H1	2.3	0.09
H2	7.9	0.31
H3	12	0.47
DIA	3.5	0.14

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FREQUENCY DEVICES™

FIXED FREQUENCY LOWPASS ACTIVE FILTERS

FREQUENCY DEVICES INC

FILTER SELECTION

First use the response data on pages 4 through 10 to select the response type and number of poles that will meet the passband, stopband and transient response requirements of your application. Then use the Available Models and Specifications table on pages 2 and 3 to select the standard model that provides the chosen response type and number of poles and whose frequency range includes the required corner frequency.

HOW TO ORDER

All of the basic fixed frequency lowpass active filter model numbers are listed in the Available Models and Specifications table on pages 2 and 3. In each case a simple corner frequency code must be added to complete the part number. For Tchebyscheff models a passband ripple code is also required.

PASSBAND RIPPLE for Tchebyscheff models is designated by adding one of these codes directly onto the basic model number:

RIPPLE	CODE(r)	EXAMPLE
0.2dB	A2W	702L2YA2W-f
0.5dB	A5W	707L4YA5W-f
1dB	1W	700L2Y1W-f

CORNER FREQUENCY is designated in Hertz using either a letter A instead of a decimal point or a letter K instead of a thousands comma:

FREQUENCY	CODE(f)	EXAMPLE
0.00123Hz	A00123	752L4B-A00123
12.3Hz	12A3	707L4YA5W-12A3
12.3kHz	12K3	757L8L-12K3

Installation sockets are ordered simply by listing as a separate line item on your P.O.

CALL FOR ACTION

Frequency Devices' sales engineering staff is ready to answer any questions you may have and to help you match your specific requirements to the most cost effective filter. You'll find our number at the bottom of every page. Call now for the answer that's right for you!

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