FREQUENCY DEVICES®, INC.

8271

Modified FIB2

Description

The 8271 consists of the PC board from the FIB2 modified by removing the diodes used in the power supply. Power will be supplied by the customer to three twelve inch long flying leads that FDI will connect to the plus and minus 15 volts and ground. The 8271 will not be in a box but will be an open PC board with four holes that can be used to mount the board.

Specifications

Power required (with 2 D100L filters)

Voltage:	± 18 to 25 Volts DC
Current Positive and Negative:	170 milliamps
Red Wire:	+18 to 25 Volts DC
White Wire:	-18 to 25 Volts DC
Black Wire:	Power Supply Common

Output Characteristics

Maximum Output Voltage:	10V p-p for R_L = 50 Ω 20V p-p for R_L = 2k Ω
Short Circuit Output Current:	±100 mA continuous
Output Protection:	±200 mA without damage. (Short Circuit to Ground Only)
Output Impedance:	50 Ω
Output Current @ 20V p-p:	±5mA peek

Temperature

Operating:	0 to +70°C
Storage:	-25 to +85°C

Filter Connectors

Filter input:	2 Board mounted BNC connectors
Filter output:	2 Board mounted BNC connectors

PC Board Dimensions 2.75" x 4.5"

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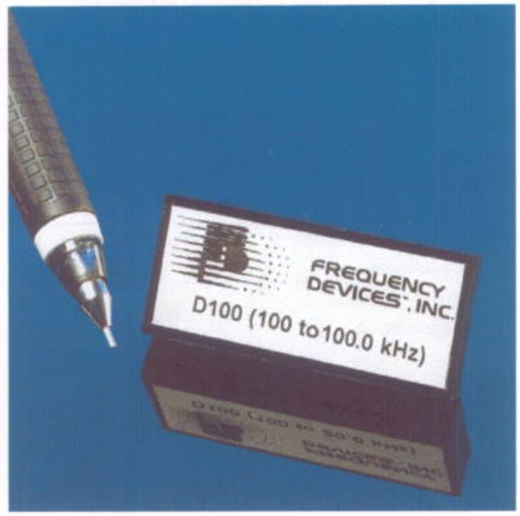
FREQUENCY DEVICES®, INC.

D100L Series

100 Hz to 100 kHz
Low Noise Fixed Frequency

4- and 8- Pole Low-Pass Filters

Description:
D100L Series filters are low noise and distortion 4- and 8-pole, Butterworth or Bessel fixed frequency low-pass filters. These filters feature near theoretical low noise and distortion performance, by providing up to -120 dB noise floors (20-Bit). D100L's take advantage of FDI's design expertise utilizing high performance amplifiers and surface-mount technology to provide design engineers with precision signal conditioning solutions in a compact package. These fully self-contained units require no external components or adjustments. Each D100L comes factory tuned to a user specified corner frequency between 100 Hz to 100 kHz and operate with low harmonic distortion over an input voltage range to ±10 V.



Features/Benefits:

- Small 32-pin DIP (1.8"L x 0.8"W) footprint minimizes board space requirements.
- Plug-in ready-to-use, reducing engineering design and manufacturing cycle time.
- Factory tuned, no external clocks or adjustments needed
- Broad range of corner frequencies to meet a wide range of applications.

Applications

- Transducer output filtering:
- Production test instrumentation
- Medical electronics equipment and research
- Noise and harmonic analysis
- Frequency spectrum analysis

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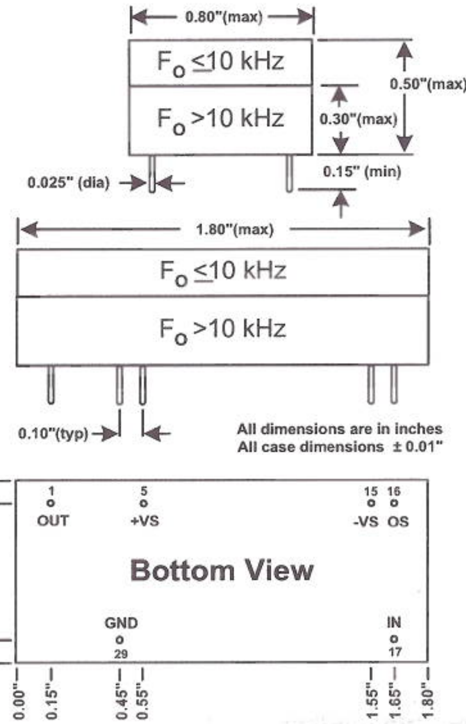
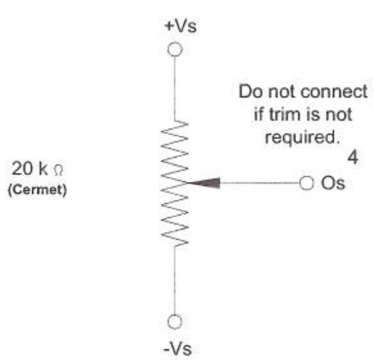
Specifications
(25ºC and Vs ± 15 Vdc)

Pin-Out and Package Data
Ordering Information

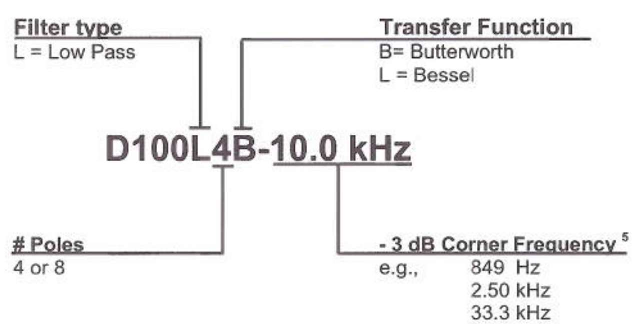
Analog Input Characteristics[1]	
Impedance	1.0 kΩ min.
Voltage Range	$\pm 10\ V_{peak}$
Max. Safe Voltage	± Vs
Analog Output Characteristics	
Load impedance	1k Ω min.
Linear Operating Range for THD	± 5V
Operating Range for low Noise	± 10V
Current[2] @ (Vs @ ±15V)	10 mA max.
Offset Voltage[3]	2 mV typ. 20 mV max.
Offset Temp. Coefficient	50 μV/ºC.
Power Supply ($\pm V_S$)	
Rated Voltage	±15V
Operating Range	±5V min. ±18V max.
Quiescent Current D100L4	40 mA max.
D100L8	80 mA max.
Temperature Range	
Operating	0ºC to +70ºC
Storage	-25ºC to +85ºC



DC Offset Adjustment



ORDERING INFORMATION



Notes:
1. Input and output signal voltage referenced to supply common.
2. Output is short circuit protected to common. DO NOT CONNECT TO ±Vs.
3. Adjustable to zero.
4. Units operate with or without offset pin connected.
5. How to specify Corner Frequency. Corner frequency is specified by attaching a three-digit frequency designator to the basic model number. Corner frequencies can range from 100 Hz to 100 kHz.

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FREQUENCY DEVICES™, INC.

8-Pole

Bessel

Low-Pass

Appendix A

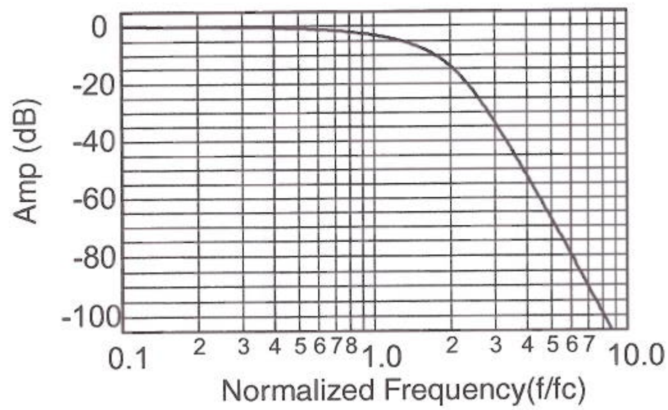
Theoretical Transfer Characteristics

f/fc (Hz)	Amp (dB)	Phase (deg)	Delay[1] (sec)
0.00	0.00	0.00	.506
0.10	-0.029	-18.2	.506
0.20	-0.117	-36.4	.506
0.30	-0.264	-54.7	.506
0.40	-0.470	-72.9	.506
0.50	-0.737	-91.1	.506
0.60	-1.06	-109	.506
0.70	-1.45	-128	.506
0.80	-1.91	-146	.506
0.85	-2.16	-155	.506
0.90	-2.42	-164	.506
0.95	-2.71	-173	.506
1.00	-3.01	-182	.506
1.10	-3.67	-200	.506
1.20	-4.40	-219	.506
1.30	-5.20	-237	.506
1.40	-6.10	-255	.505
1.50	-7.08	-273	.504
1.60	-8.16	-291	.502
1.70	-9.36	-309	.498
1.80	-10.7	-327	.492
1.90	-12.1	-345	.482
2.00	-13.7	-362	.468
2.25	-18.1	-402	.417
2.50	-23.1	-436	.352
2.75	-28.3	-465	.291
3.00	-33.4	-489	.241
3.25	-38.3	-509	.201
3.50	-43.1	-526	.170
4.00	-51.8	-552	.126
5.00	-66.8	-587	.077
6.00	-79.2	-610	.052
7.00	-89.8	-626	.038
8.00	-99.0	-638	.029
9.00	-107	-647	.023
10.0	-114	-655	.018

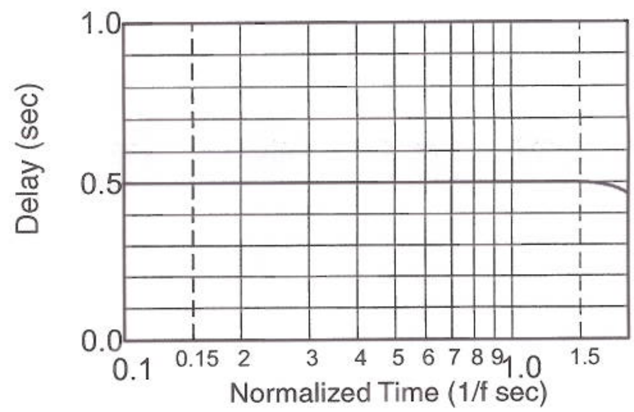
1. **Normalized Group Delay:** The above delay data is normalized to a corner frequency of 1.0Hz. The actual delay is the normalized delay divided by the actual corner frequency (fc).

$$\text{Actual Delay} = \frac{\text{Normalized Delay}}{\text{Actual Corner Frequency (fc) in Hz}}$$

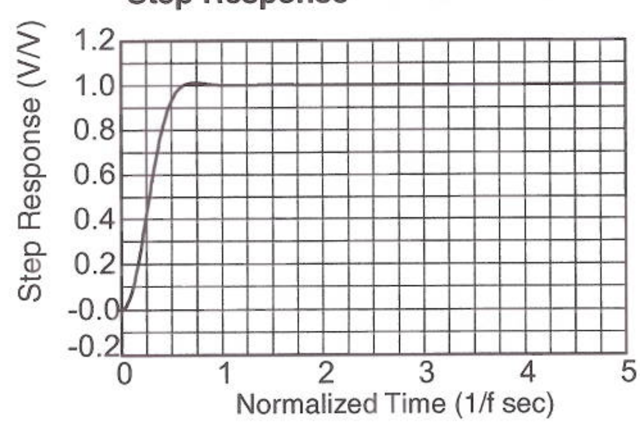
Frequency Response



Delay (Normalized)



Step Response



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Appendix A

Low-Pass

8-Pole

Butterworth

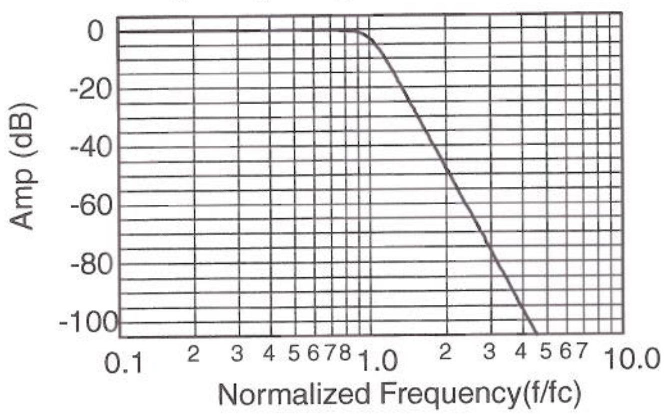
Theoretical Transfer Characteristics

f/fc (Hz)	Amp (dB)	Phase (deg)	Delay[1] (sec)
0.00	0.00	0.00	.816
0.10	0.00	-29.4	.819
0.20	0.00	-59.0	.828
0.30	0.00	-89.1	.843
0.40	0.00	-120	.867
0.50	0.00	-152	.903
0.60	-0.001	-185	.956
0.70	-0.014	-221	1.04
0.80	-0.121	-261	1.19
0.85	-0.311	-283	1.29
0.90	-0.738	-307	1.40
0.95	-1.58	-333	1.48
1.00	-3.01	-360	1.46
1.10	-7.48	-408	1.17
1.20	-12.9	-445	.873
1.30	-18.2	-472	.672
1.40	-23.4	-494	.540
1.50	-28.2	-511	.448
1.60	-32.7	-526	.380
1.70	-36.9	-539	.328
1.80	-40.8	-550	.287
1.90	-44.6	-560	.253
2.00	-48.2	-568	.226
2.25	-56.3	-586	.174
2.50	-63.7	-600	.139
2.75	-70.3	-611	.113
3.00	-76.3	-621	.094
3.25	-81.9	-629	.080
3.50	-87.1	-635	.069
4.00	-96.3	-646	.052
5.00	-112	-661	.033
6.00	-125	-671	.023
7.00	-135	-678	.017
8.00	-144	-683	.013
9.00	-153	-687	.010
10.0	-160	-691	.008

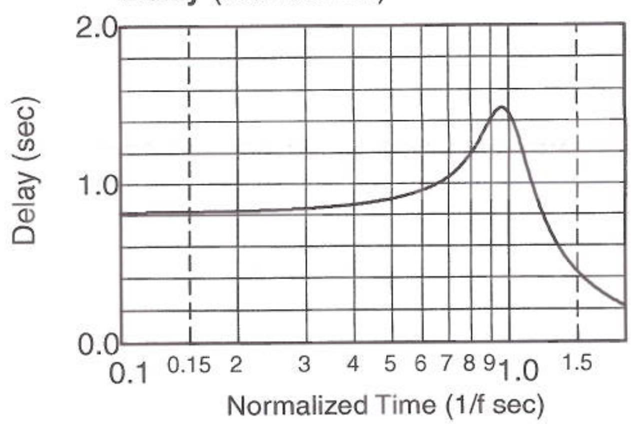
1. **Normalized Group Delay:**
The above delay data is normalized to a corner frequency of 1.0Hz. The actual delay is the normalized delay divided by the actual corner frequency (fc).

$$\text{Actual Delay} = \frac{\text{Normalized Delay}}{\text{Actual Corner Frequency (fc) in Hz}}$$

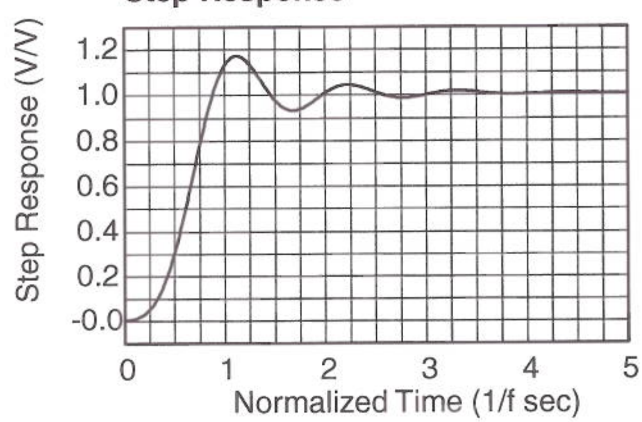
Frequency Response



Delay (Normalized)



Step Response



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