FREQUENCY DEVICES

581 / 585 SERIES FILTERS FOR TELEPHONE MESSAGE CIRCUIT NOISE MEASUREMENT

FREQUENCY DEVICES INC T-64-05

DESCRIPTION

Frequency Devices 581 Series C-Message Weighting Filters and 585 Series Narrow Band Notch Filters are designed specifically to provide the C-Message Weighting frequency response and the C-Notched frequency response specified in Bell System Technical Reference 41009 for telephone message circuit noise measurements.

FEATURES

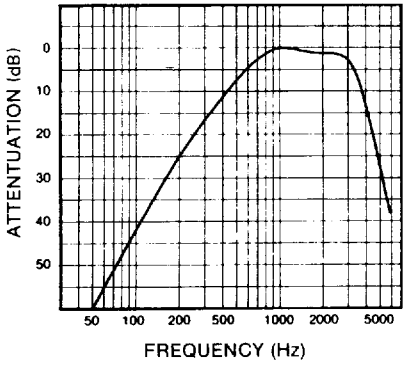
- **C-Message Response**
- **C-Notched Response**
- **Finished Filter Component**
- **Low Profile Packaging (0.4")**
- **Low Power Consumption**
- **Low Cost**

The 581 Series C-Message Weighting Filters provide the broad-band C-Message Weighted frequency response characteristic shown below. Three models give you a choice of response accuracies and size.

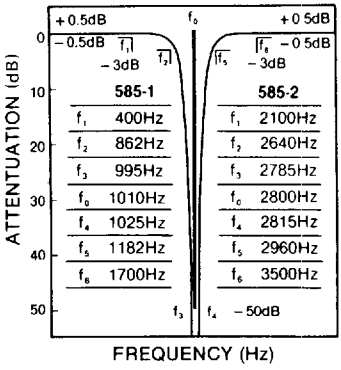
The 585 Series Narrow Band Notch Filters are designed for use with the 581 Series C-Message Weighting Filters to provide the C-Notched frequency response required for background noise measurements made while test/holding tones are being transmitted on the line. The 585 Series frequency response is shown below. Two models in the 585 Series provide notches centered at 1010Hz or 2800Hz.

The 585 Series Filters may also be used by themselves in any telecommunication application requiring rejection of the 995Hz-1025Hz band or the 2785Hz-2815Hz band of test/holding tones.

581 SERIES RESPONSE



585 SERIES RESPONSE



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FREQUENCY DEVICES™

581 SERIES
C-MESSAGE WEIGHTING FILTERS

FREQUENCY DEVICES INC

DESCRIPTION

Frequency Devices' 581 Series C-Message Weighting Filters provide the C-Message frequency response weighting characteristic specified by Bell System Technical Reference 41009 for telephone message circuit noise measurements. The theoretical C-Message characteristic simulates the perceived response of the human ear to telephone noise.

MODEL 581-1 provides a close ± 1dB approximation to the theoretical C-Message Weighting function from 60Hz to 5000Hz for applications requiring a tight tolerance.

MODEL 581-2 provides a less costly realization with looser tolerances below 300Hz and above 3000Hz.

MODEL 581-5 provides the same function as a 581-1 but in a smaller mechanical package.

MODEL 581-6 provides the same function as a 581-2 but in a smaller mechanical package.

FEATURES:

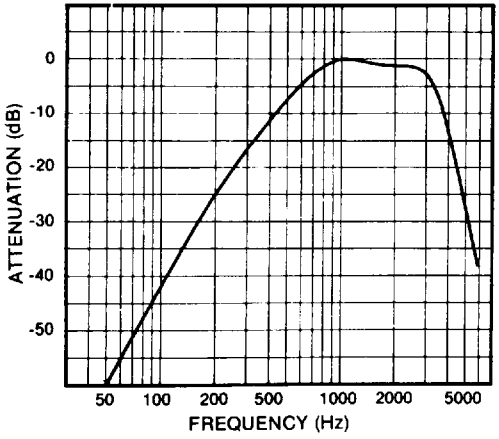
- **Finished Filter Component**
- **Low Profile Packaging (0.4")**
- **C-Message Weighting**
- **Low Cost**
- **Low Power Consumption**

APPLICATIONS

- **Telephone Message Circuit Noise Measurements**
- **Test Equipment**

FREQUENCY HERTZ	ATTENUATION dB	581-1, 581-5 TOLERANCES ± dB	581-2, 581-6 TOLERANCES ± dB
60	55.7	1	3
100	42.5	1	2
200	25.0	1	2
300	16.5	1	1
400	11.4	1	1
500	7.5	1	1
600	4.7	1	1
700	2.7	1	1
800	1.5	1	1
900	0.6	1	1
1000	0.0	0.1	0.1
1200	0.2	1	1
1300	0.5	1	1
1500	1.0	1	1
1800	1.3	1	1
2000	1.3	1	1
2500	1.4	1	1
2800	1.9	1	1
3000	2.5	1	1
3300	5.2	1	2
3500	7.6	1	2
4000	14.5	1	3
4500	21.5	1	3
5000	28.5	1	3

FREQUENCY RESPONSE



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FREQUENCY DEVICES

581 SERIES OPERATING CHARACTERISTICS

FREQUENCY DEVICES INC

	581-1	581-2	581-5	581-6	UNITS
GAIN AT 1KHZ (Non-Inverting)	0 ± 0.1				dB
INPUT					
Impedance	10				k Ω min
Source Impedance[2]	600				Ω max
Bias Current[3]	0				
Voltage Range	± 10				V min
Maximum Safe Voltage	$\pm V_S$				V_p
OUTPUT					
Resistance	1				Ω
Rated Output[4]	± 10 @ 2				V @ mA
Offset Voltage	± 5				mV
Offset Drift	± 100				μV/°C
Noise[5]	50				μV RMS
POWER SUPPLY ($\pm V_S$)					
Rated Voltage	± 15				Vdc
Operating Range	± 5 to ± 18				Vdc
Quiescent Current	± 3				mA
TEMPERATURE					
Operating Range	0 to + 70				°C
Storage Range	− 25 to + 85				°C

NOTES

1 Typical at 25°C and V_S = ± Vdc except as noted.
2 Larger series input resistance will degrade performance.
3 Capacitor coupled.
4 Short circuit protected to ground.
5 With input grounded, dc to 50kHz excluding dc offset.

Specifications are subject to change without notice.

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FREQUENCY DEVICES™

585 SERIES NARROW BAND NOTCH FILTERS

FREQUENCY DEVICES INC

DESCRIPTION

Frequency Devices' 585 Series Narrow Band Notch Filters are designed for use with the 581 Series C-Message Weighting Filters to provide the "C-Notched" characteristic specified by Bell System Technical Reference 41009 for background noise measurements made while test/holding tones are transmitted on the line. A three pole-pair band-reject design realizes 3dB and 50dB attenuation bandwidths that conform with Bell System specifications.

Model 585-1 has 50dB of attenuation from 995Hz to 1025Hz to eliminate 1000Hz test tones, 1004Hz holding tones and 1020Hz tones often used for phase jitter measurements.

Model 585-2 has 50dB of attenuation from 2785Hz to 2815Hz to eliminate the 2800Hz holding tone commonly used.

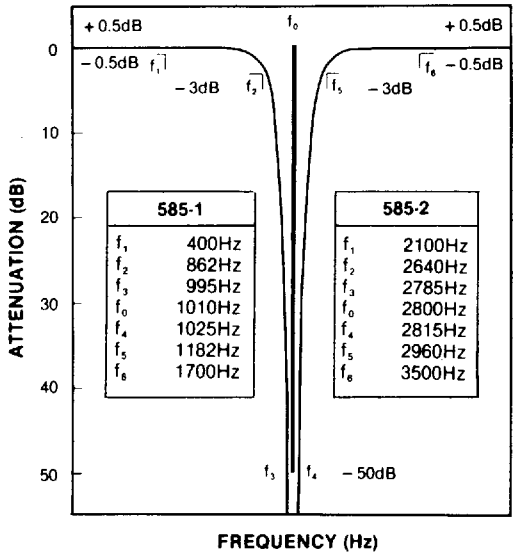
FEATURES

- **C-Notched Response**
- **Finished Filter Component**
- **Low Profile Packaging**
- **Low Cost**

APPLICATIONS

- **Telephone Message Circuit Noise Measurements**
- **Test Equipment**
- **Central Office Receivers**
- **Remove Test/Holding Tones**

FREQUENCY RESPONSE



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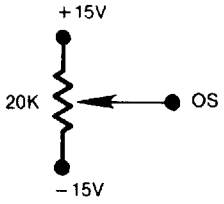
FREQUENCY DEVICES INC

	585-1,5 585-2,6	UNITS
PASSBAND GAIN (Inverting)	0 ± 0.3	dB
INPUT		
Impedance	20 min	kΩ
Bias Current	10	nA
Voltage Range	±10	V
Maximum Safe Voltage	$\pm V_S$	V
OUTPUT		
Resistance	10	Ω
Rated Output[2]	±10 @5	V @mA
Full Power Response	10	kHz
Offset Voltage[3]	±5	mV
Offset Drift	±50	μV/°C
Noise[4]	50	μV RMS
POWER SUPPLY ($\pm V_S$)		
Rated Voltage	±15	Vdc
Operating Range	±5 to ±18	Vdc
Quiescent Current	±25	mA
TEMPERATURE		
Operating Range	0 to +70	°C
Storage Range	−25 to +85	°C

NOTES
1 Typical at 25°C and V_S = ±15Vdc except as noted.
2 Short circuit protected to ground.
3 Externally adjustable to zero.
4 With input grounded, dc to 50kHz excluding dc offset.

Specifications subject to change without notice.

OFFSET ADJUSTMENT
DC offset is externally adjustable to zero by an external potentiometer as shown.



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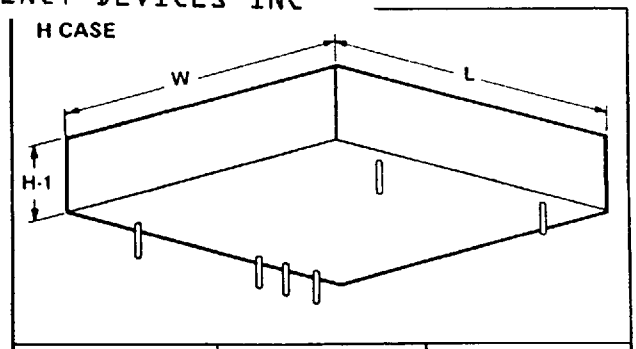
FREQUENCY DEVICES™

581 / 585 SERIES PACKAGE DATA

FREQUENCY DEVICES INC

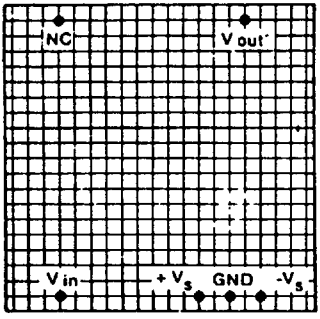
H CASE



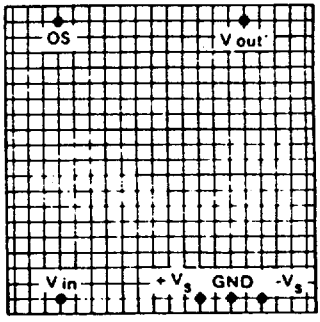
DIMENSION	MILLIMETERS	INCHES
H-1	10.2	0.4
L	50.8	2.0
W	50.8	2.0
PIN LENGTH	5.1 MIN	0.2 MIN
PIN DIA	1.02	0.04

TERMINAL DIAGRAMS

581-1, 581-2



585 SERIES



BOTTOM VIEWS 0.1 INCH GRIDS USE SOCKET S1006

Case dimensions are nominal. Pin location is ±0.13 mm (0.005in) referenced to an ideal grid.

TERMINAL KEY

V_{in}	Signal Input
V_{out}	Signal Output
NC	No Connection
OS	Offset Adjustment
$+V_S$	Supply Voltage, Positive
$-V_S$	Supply Voltage, Negative
GND	Ground, Supply Common

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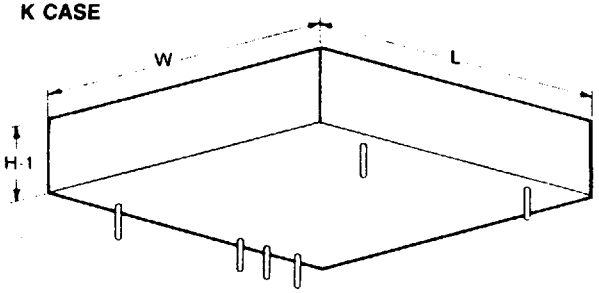
FREQUENCY DEVICES INC

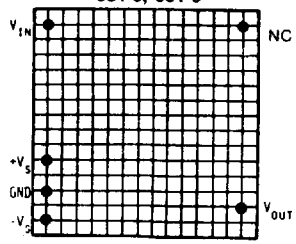
K CASE



DIMENSION	MILLIMETERS	INCHES
H-1	10.2	0.4
L	38.1	1.5
W	38.1	1.5
PIN LENGTH	5.1 MIN	0.2 MIN
PIN DIA	1.02	0.04

TERMINAL DIAGRAM

581-5, 581-6



BOTTOM VIEW 0.1 INCH GRIDS USE SOCKET S1013

TERMINAL KEY

V_{in}	Signal Input
V_{out}	Signal Output
NC	No Connection
OS	Offset Adjustment
$+V_S$	Supply Voltage, Positive
$-V_S$	Supply Voltage, Negative
GND	Ground, Supply Common

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