Adjustable Analog Highpass Filter

GH580 - DATA SHEET

FEATURES

- **200 to 8 kHz adjustable corner frequency**
- **12 dB/oct Butterworth filter**
- **low current drain (175 μA typical)**
- **two on chip 1 nF capacitors**
- **low noise and distortion**
- **1.1 to 3.0 VDC operation**

STANDARD PACKAGING

- 8 pin PLID®
- Chip (66 x 61 mils)

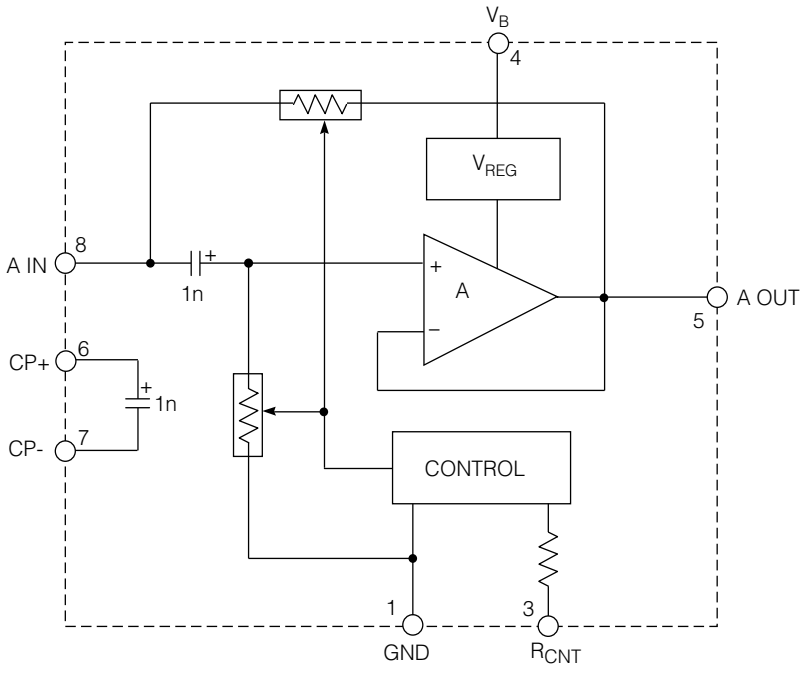
DESCRIPTION

The GH580 is a single, second order (12 dB/Oct) continuous high pass filter with an adjustable corner frequency (f_C) from 200 to 8 kHz. Adjustment of f_C is accomplished with a single 100 kΩ potentiometer connected from pin 3 to ground.

The bias circuitry is operated from an on chip voltage regulator providing good supply rejection down to 1.1 V.

The two integrated 1nF capacitors have parasitic diodes connected in parallel. This necessitates that the DC voltage at pin 6 be greater that 400 mV and less than V_B and that pins 8 and 7 be no greater than approximately 400 mV DC.

The GH580 has a dynamic range of approximately 80 dB.



BLOCK DIAGRAM

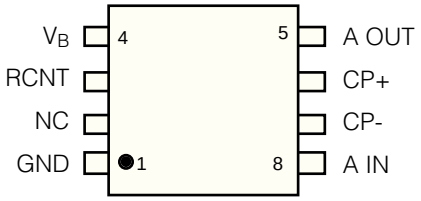
GENNUM CORPORATION P.O. Box 489, Stn. A, Burlington, Ontario, Canada L7R 3Y3 tel. +1 (905) 632-2996
Web Site: www.gennum.com E-mail: hipinfo@gennum.com

ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE/UNITS
Supply Voltage	5 V DC
Power Dissipation	25 mW
Operating Temperature Range	-10°C to +40° C
Storage Temperature Range	-20°C to +70° C

CAUTION
CLASS 1 ESD SENSITIVITY

PIN CONNECTION



ELECTRICAL CHARACTERISTICS

Conditions: Frequency = 1 kHz, Temperature = 25°C, V_B = 1.3V

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Amplifier Current	I_{AMP}		120	175	210	µA
Bias Voltage (Pin 6)	V_{P6}		-	100	-	mV
Bias Voltage (Pin 8)	V_{P8}		-	350	-	mV
Insertion Loss	I_{LOSS}	SW1 to closed, V_{IN} = 40 mVRMS	-	1.7	2.0	dB
Output Noise	O_{NOISE}	SW1 to closed, V_{IN} = 0 mVRMS NFB 200 Hz to 10 kHz at 12dB/oct	-	5	7	µV
Distortion	THD	SW1 to closed, V_{IN} = 50 mVRMS	-	1	5	%
Supply Rejection (Pin 4 to Pin 5)	PSRR	Note 1, Pin 4 to Pin 5	48	56	-	dB
Corner Frequency	f_C	Note 2, R_{CNT} = 10.27k	1300	1650	1900	Hz

All parameters and switches remain as shown in Test Circuit unless otherwise stated in "Conditions" column

Notes: **1.** V_B modulated with 1kHz

2. $F_C = 1000 \times 2^A$; $A = (I_{LOSS} - 20_{LOG}(V_{OUT}/0.04))/12$

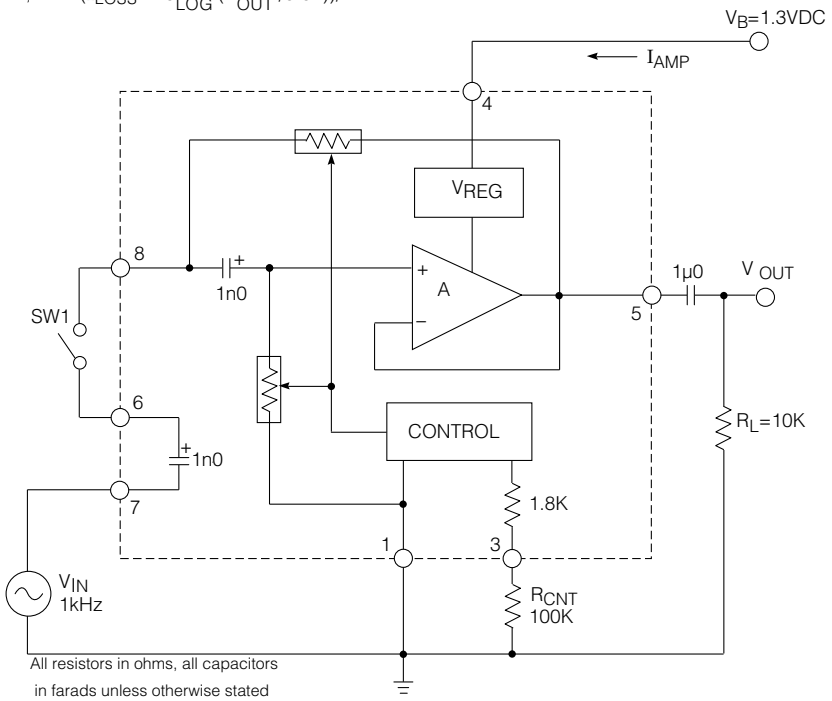
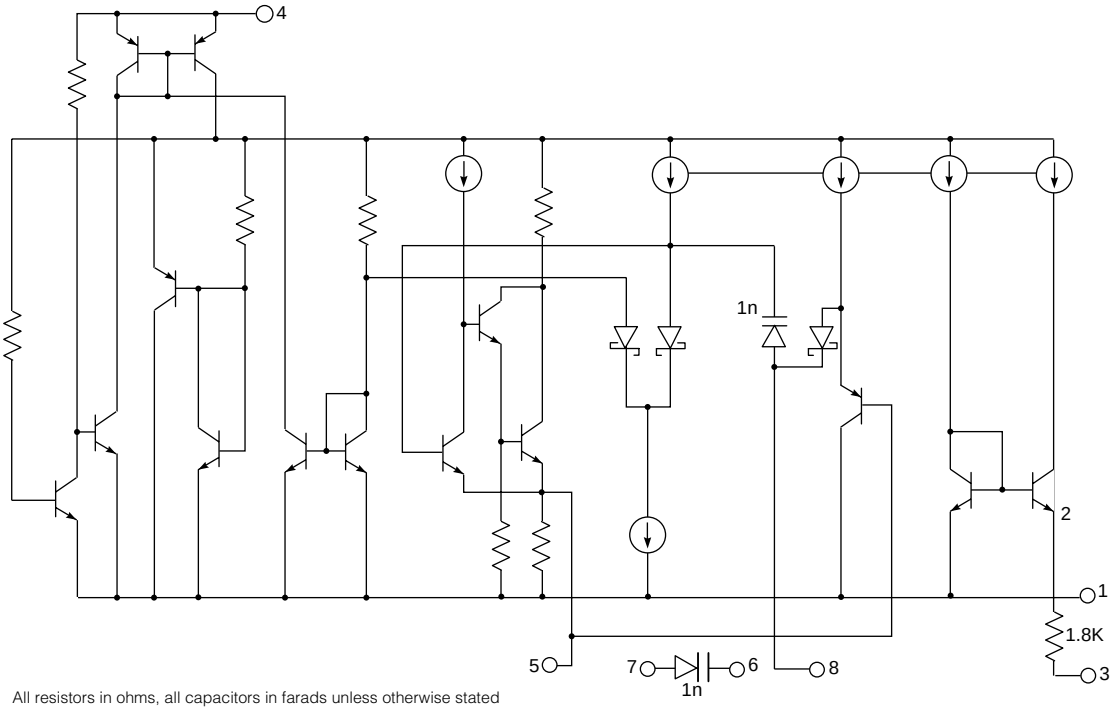


Fig. 1 Test Circuit



All resistors in ohms, all capacitors in farads unless otherwise stated

Fig. 2 Functional Schematic

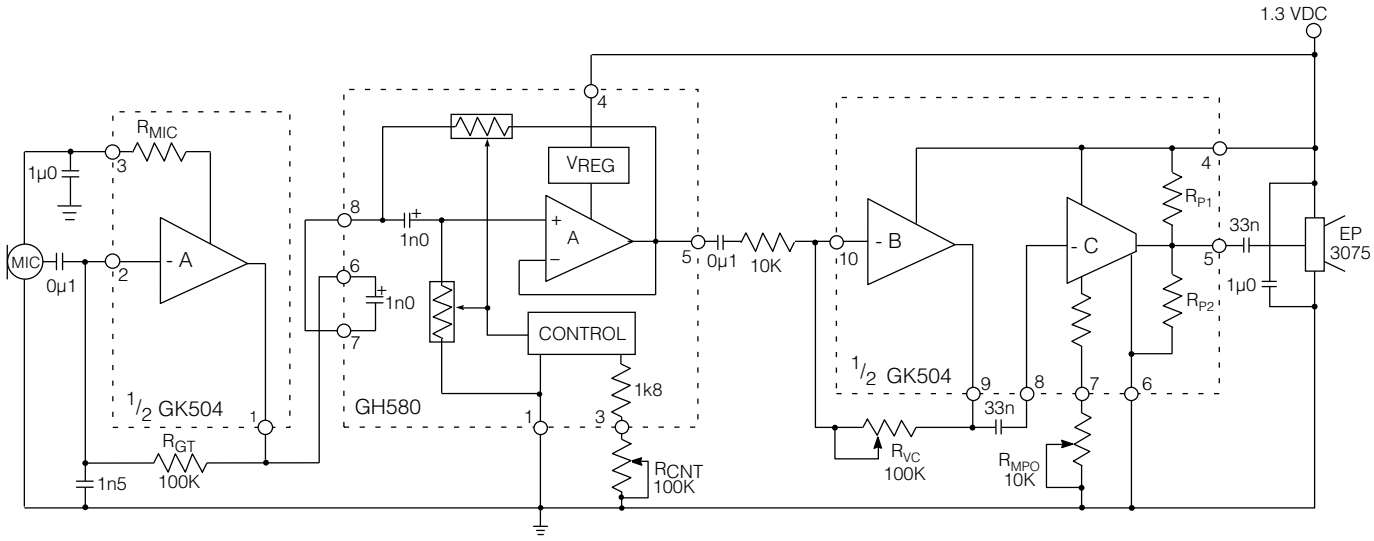


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Fig. 3 Typical Hearing Instrument Application

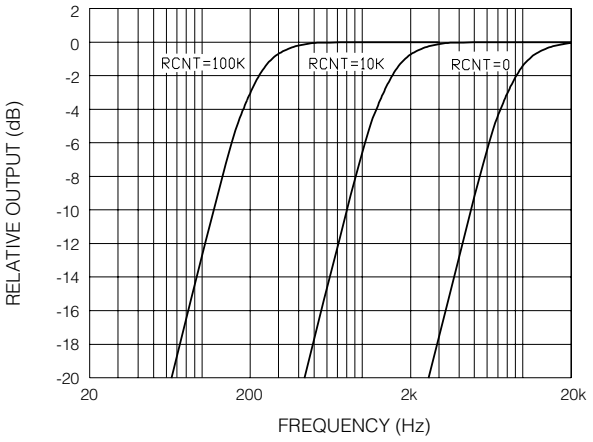

Fig. 4 Frequency Response at Various R_{CNT} Values

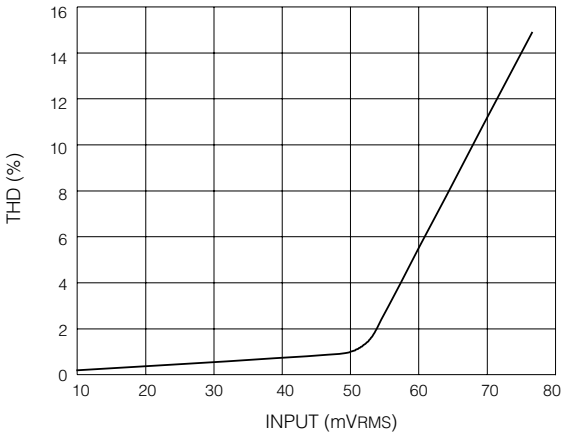

Fig. 5 Total Harmonic Distortion vs Input Level

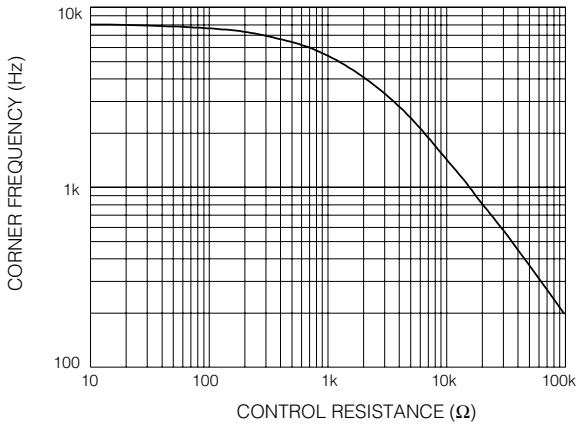

Fig. 6 Corner Frequency vs Control Resistance

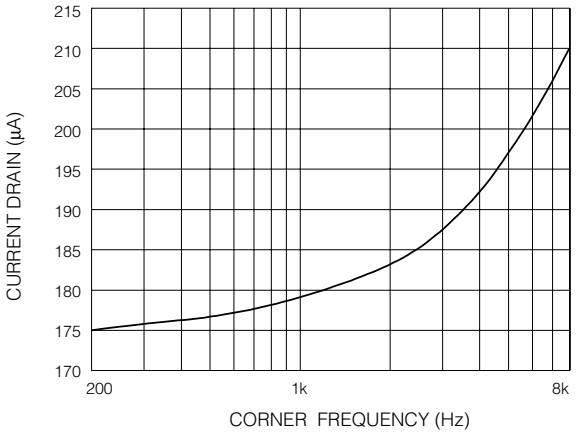

Fig. 7 Current Drain vs Corner Frequency

GENNUM CORPORATION
MAILING ADDRESS:
P.O. Box 489, Stn. A, Burlington, Ontario, Canada L7R 3Y3
Tel. +1 (905) 632-2996 Fax +1 (905) 632-2814
SHIPPING ADDRESS:
970 Fraser Drive, Burlington, Ontario, Canada L7L 5P5

GENNUM JAPAN CORPORATION
C-101, Miyamae Village, 2-10-42 Miyamae, Suginami-ku, Tokyo 168-0081, Japan Tel. +81 (3) 3334-7700 Fax: +81 (3) 3247-8839

DOCUMENT IDENTIFICATION: DATA SHEET
The product is in production. Gennum reserves the right to make changes at any time to improve reliability, function or design, in order to provide the best product possible.

REVISION NOTES:

Changes to standard packaging information