

## FEATURES

- 200 to 8 kHz adjustable corner frequency
- 12 dB/oct Butterworth filter
- low current drain (175  $\mu$ A 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)

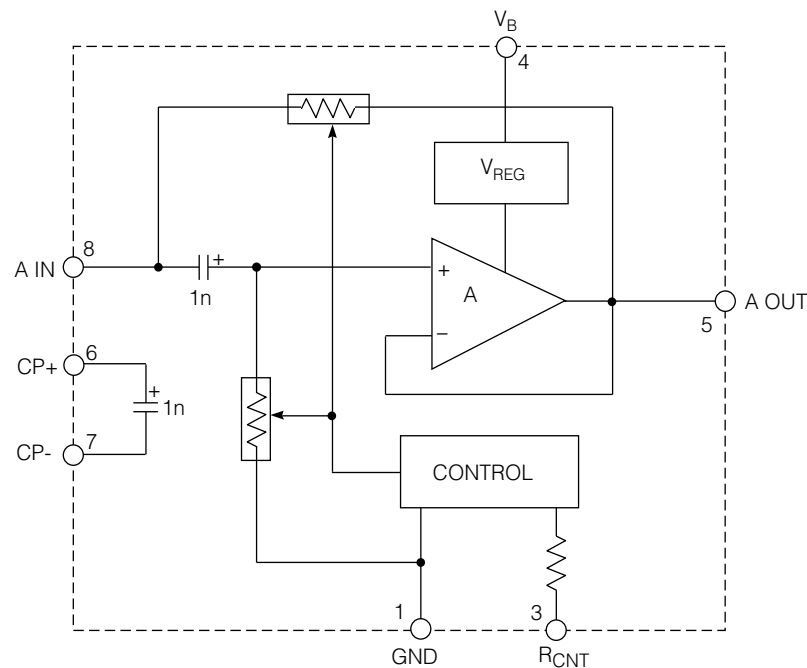
## DESCRIPTION

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 k $\Omega$  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 than 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**

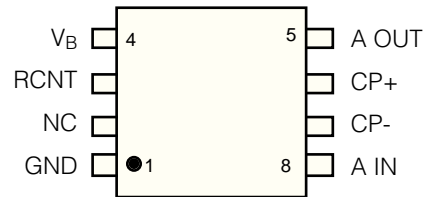
### ABSOLUTE MAXIMUM RATINGS

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	$\mu A$
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	$\mu V$
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:**
- $V_B$  modulated with 1kHz
  - $F_C = 1000 \times 2^A$ ;  $A = (I_{LOSS} - 20_{LOG}(V_{OUT}/0.04))/12$

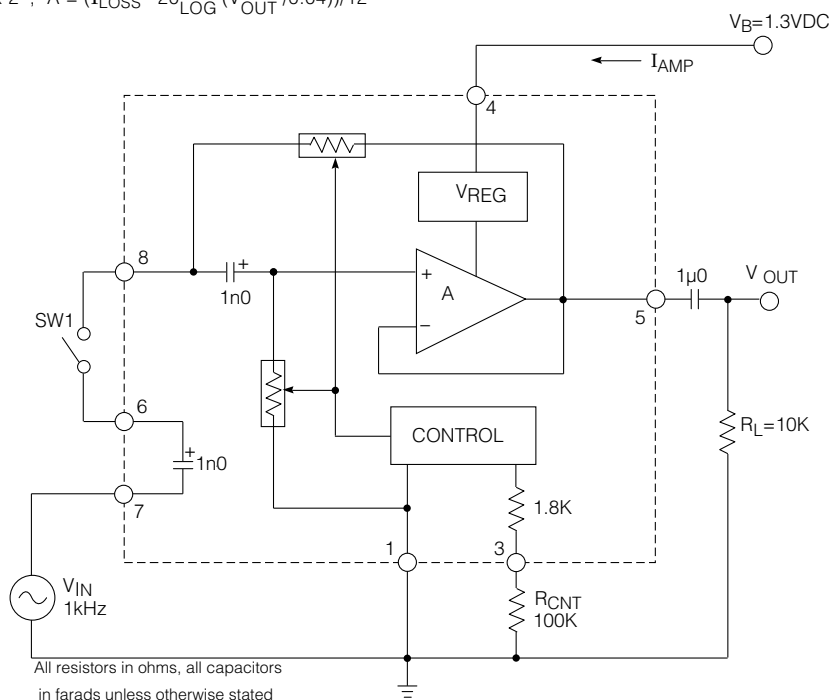


Fig. 1 Test Circuit

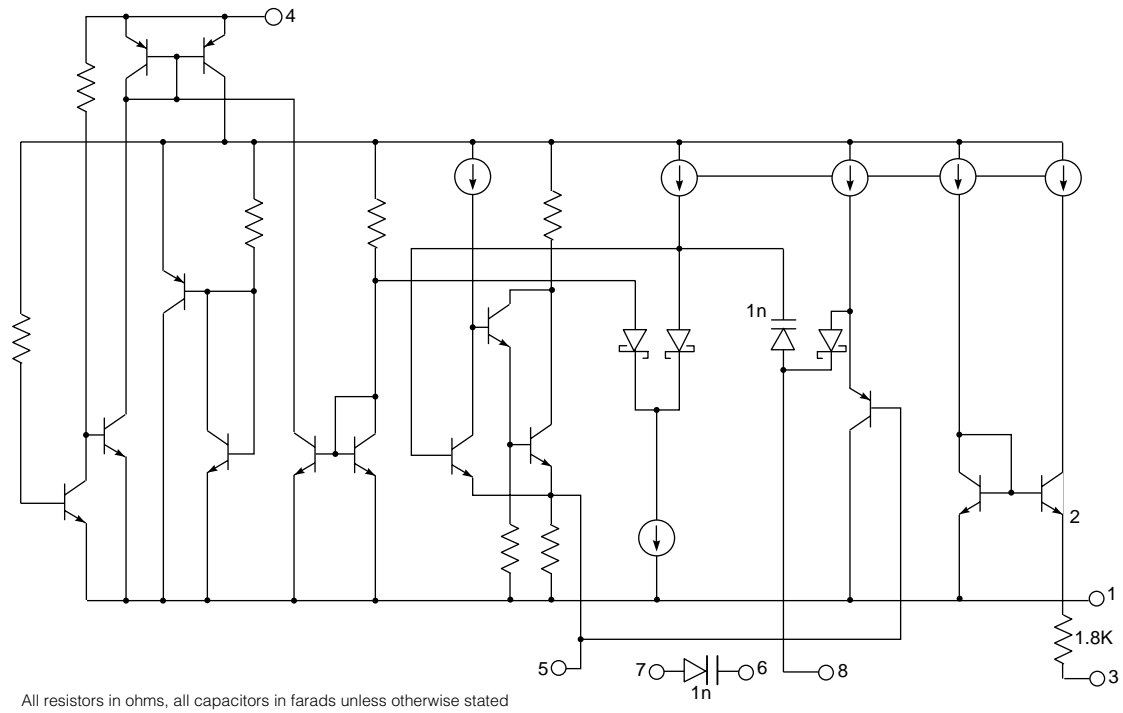


Fig. 2 Functional Schematic

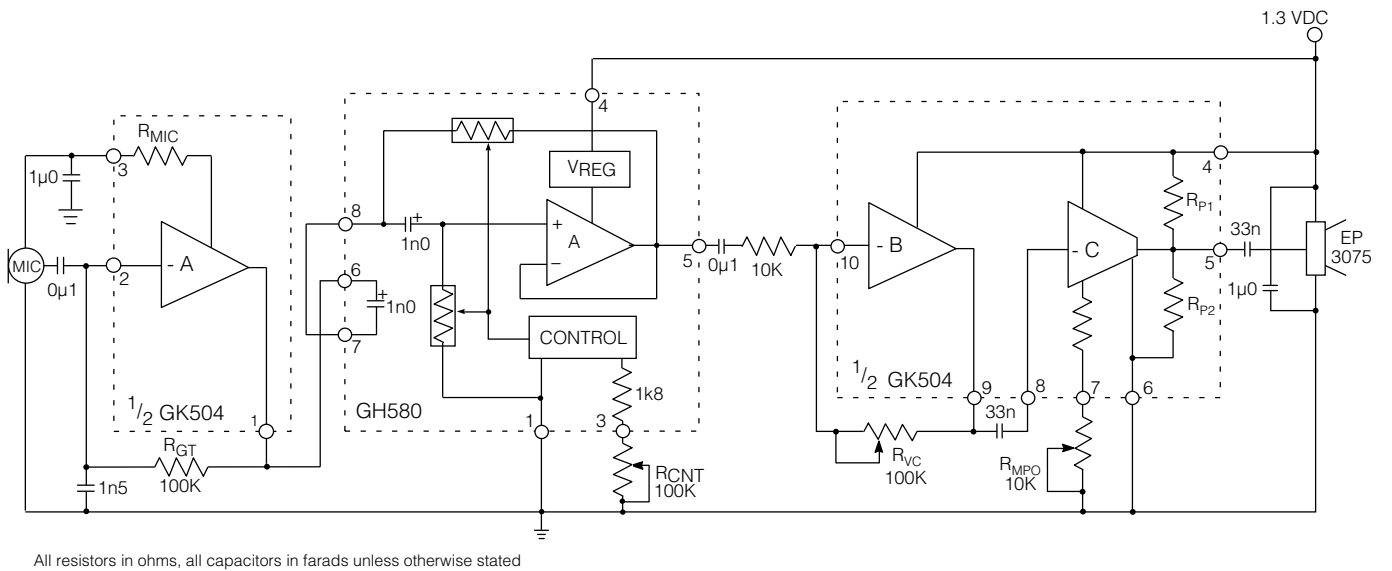


Fig. 3 Typical Hearing Instrument Application

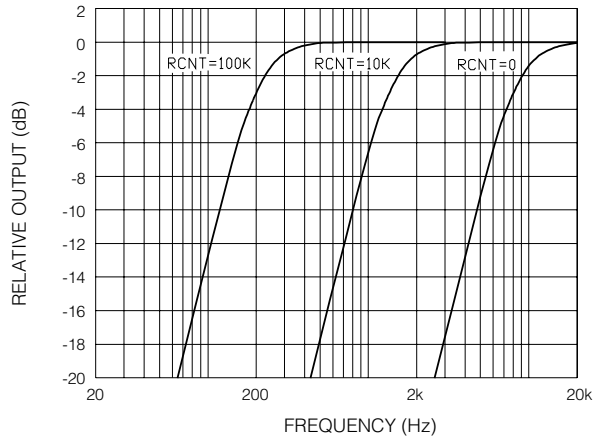


Fig. 4 Frequency Response at Various  $R_{CNT}$  Values

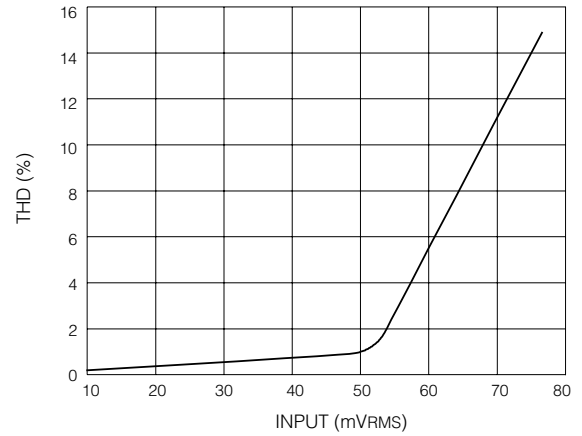


Fig. 5 Total Harmonic Distortion vs Input Level

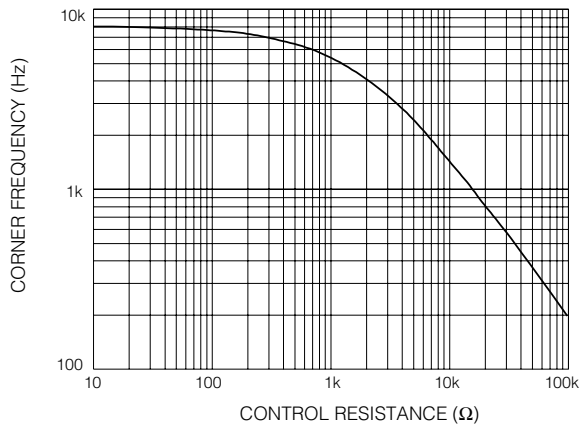


Fig. 6 Corner Frequency vs Control Resistance

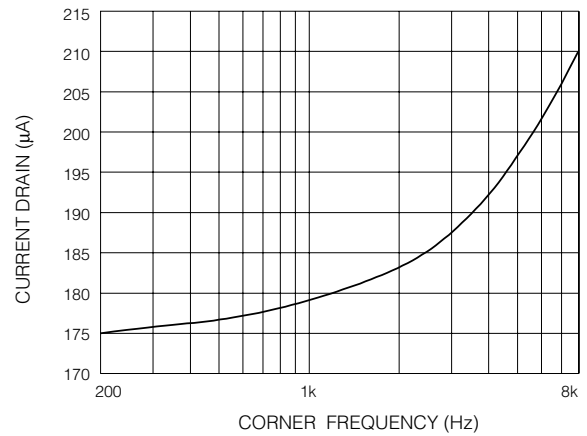


Fig. 7 Current Drain vs Corner Frequency

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**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