
GENNUM
CORPORATION

Low Parts Compression Amplifier

GB512/LD512 DATA SHEET

FEATURES

- **44 dB typical preamplifier gain**
- **14 dB typical output stage gain**
- **compression function ratio 1:1 to 2:1 to ∞ :1**
- **automatic setting of transducer current**
- **operation down to 1.1 VDC**
- **greater than 40 dB volume control range**

STANDARD PACKAGING

- 8 pin PLID
- 8 pin SLT (LD512)
- Chip (61 x 61 mils)
Au Bump

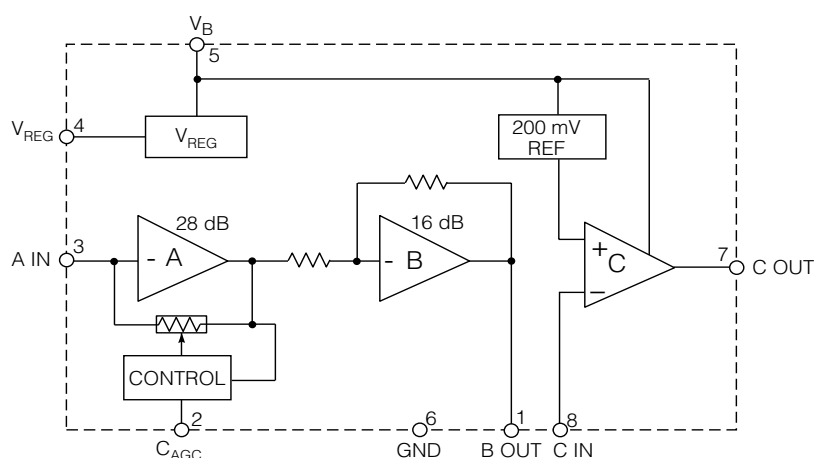
DESCRIPTION

The GB512 and LD512 are 8 pin stand-alone input compression amplifiers requiring minimal external parts. Each consists of a voltage regulator for the electret microphone providing a high power supply rejection ratio (PSRR), a compression stage which has a 2:1 compression ratio, and an auto-biasing, class A, voltage drive output stage.

The auto-bias output stage can drive a variety of impedances ranging from 500 Ω to 5 k Ω without adding any external resistors to set the bias.

The GB512 and LD512 are recommended for low to medium gain/output ITE and ITC type hearing aids.

The GB512 is tested to tighter test limits.

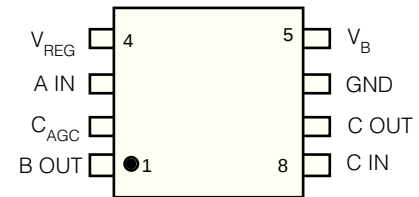


BLOCK DIAGRAM

ABSOLUTE MAXIMUM RATINGS

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

CAUTION
CLASS 1 ESD SENSITIVITY

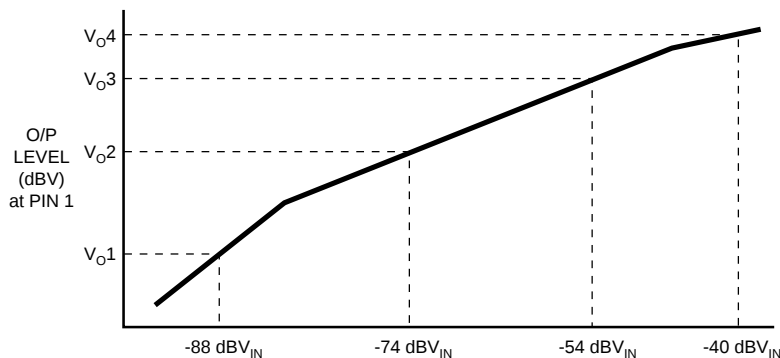
**PIN CONNECTION****ELECTRICAL CHARACTERISTICS**

Conditions : Temperature 25°C, Frequency 1 kHz, Supply Voltage 1.3 VDC.

PARAMETER	SYMBOL	CONDITIONS	GB512			LD512			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Amplifier Current	I_{AMP}		110	200	290	110	200	290	μA
Regulator Voltage	V_{REG}		0.88	0.93	0.98	0.88	0.93	0.98	V_{DC}
Output Level	V_{O1}	$V_{IN} = -88 \text{ dBV}$	-47	-44	-41	-48	-44	-40	dBV
Output Level	V_{O2}	$V_{IN} = -74 \text{ dBV}$	$V_{O1} + 7$	$V_{O1} + 9$	$V_{O1} + 11$	-	-	-	dB
Output Level	V_{O3}	$V_{IN} = -54 \text{ dBV}$	$V_{O2} + 8$	$V_{O2} + 10$	$V_{O2} + 12$	$V_{O2} + 7$	$V_{O2} + 10$	$V_{O2} + 13$	dB
Output Level	V_{O4}	$V_{IN} = -40 \text{ dBV}$	-23	-20	-18	-23.5	-20	-17.5	dBV
Input Referred Noise	IRN	NFB 0.2-10kHz at 12dB/oct	-	1	3	-	1	3	μV_{RMS}
Total Harmonic Distortion	THD	$V_{IN} = -54 \text{ dBV}$	-	2	4	-	2	4	%
Receiver Bias Voltage	V_{BIAS}	Note 3	100	200	300	160	200	240	mVDC
Current Sinking Capability	I_{SINK}	Note 4	3	8	-	3	8	-	mA
Release Time Factor	T_{REL}		-	100	-	-	100	-	ms/ μF
Attack Time Factor	T_{ATT}		-	5	-	-	5	-	ms/ μF

All parameters and switches remain as shown in the Test Circuit unless stated in CONDITIONS column.

V_{PX} - actual voltage measured on the pin at given condition (X is pin number).

**Notes:**

- V_O and Distortion measurements are taken at pin 1.
- Output stage gain = $20 \log (R_F / R_S)$.
A gain of 14 dB is recommended for optimal stability. Stability is dependent upon the ratio of the receiver impedance (Z_L) and the battery impedance to R_F & R_S .
 $(R_F / R_S) < (Z_L / R_b)$
- $V_{BIAS} = V_{P5} - V_{P7}$
- Measured at pin 7

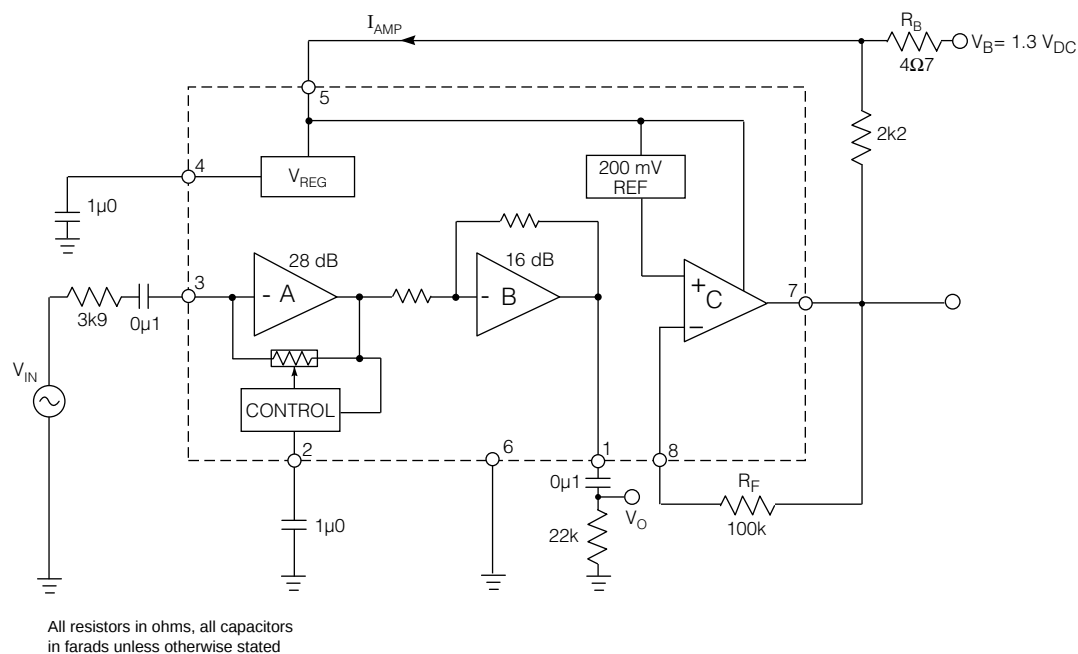


Fig. 1 Test Circuit

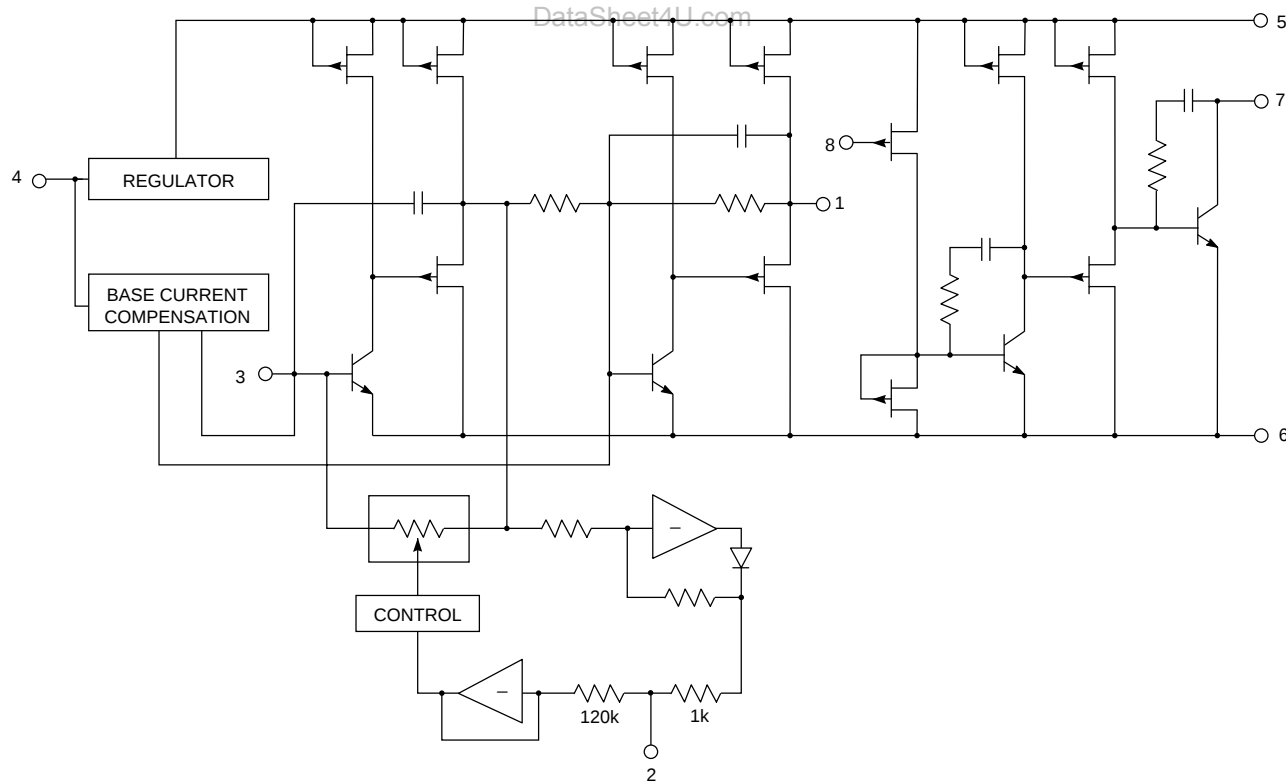


Fig. 2 Functional Schematic

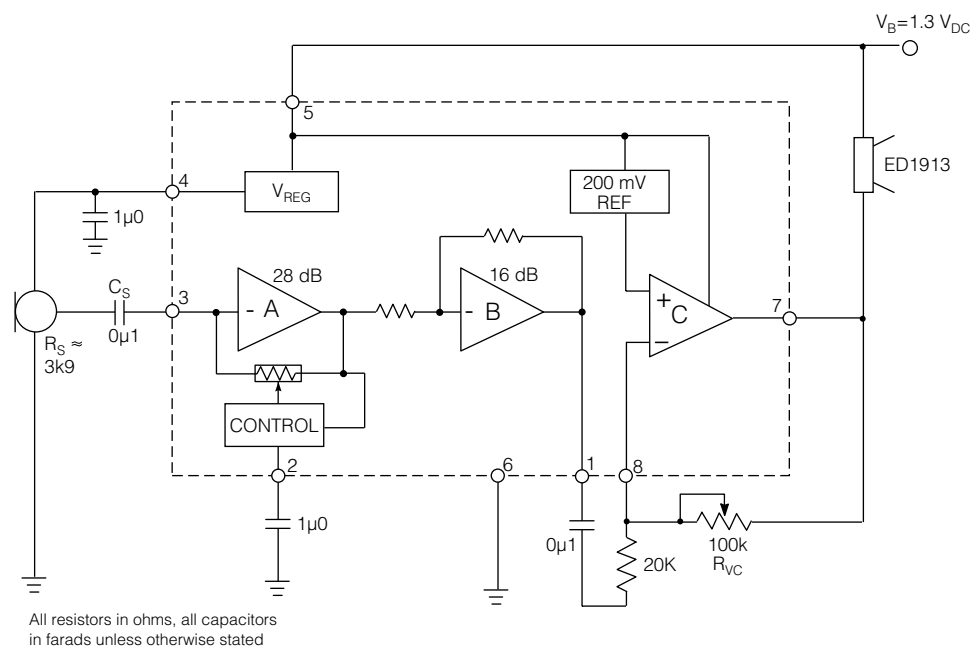


Fig. 3 Typical Hearing Aid Application

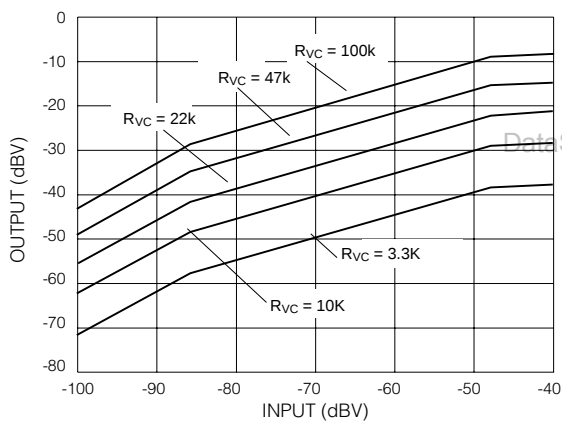
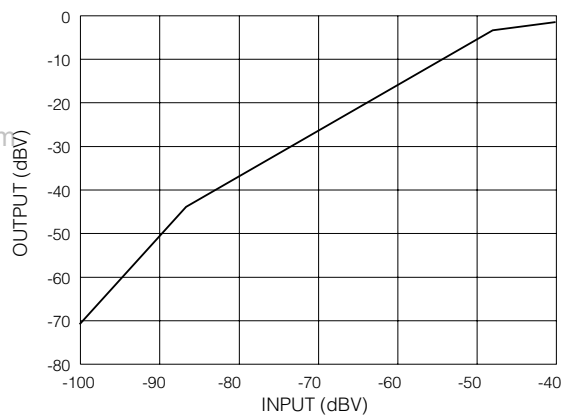
Fig. 4 I/O Characteristics at Various R_{VC} Values (Pin 7)

Fig. 5 I/O Characteristics at Pin 1

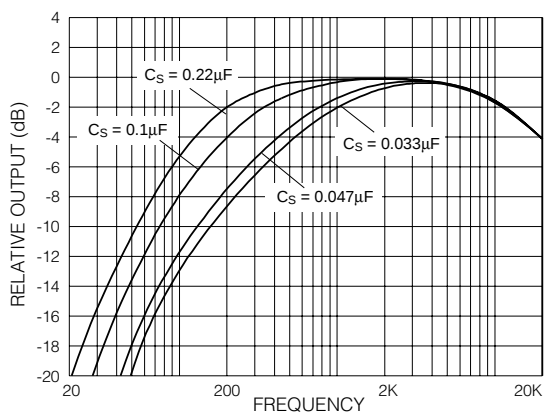
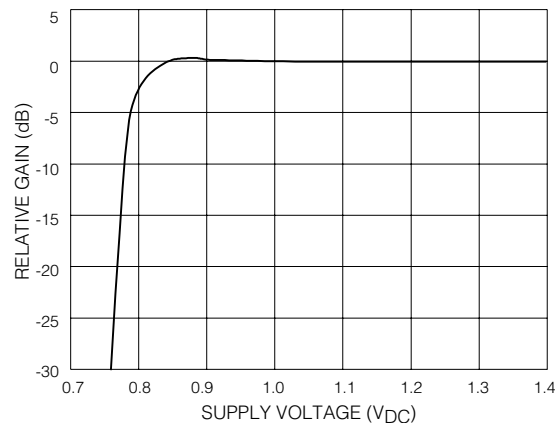
Fig. 6 Closed Loop Frequency Response at Various C_S Values

Fig. 7 Gain vs Supply Voltage

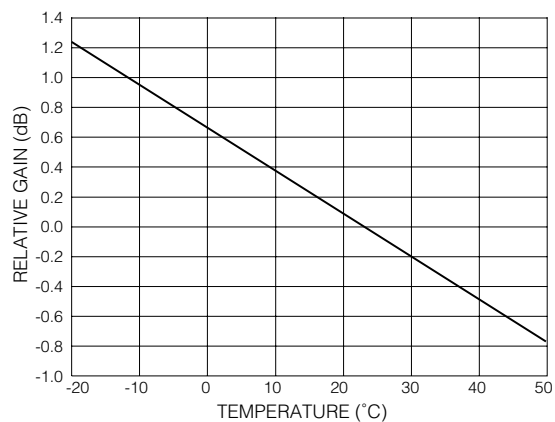


Fig. 8 Gain vs Temperature

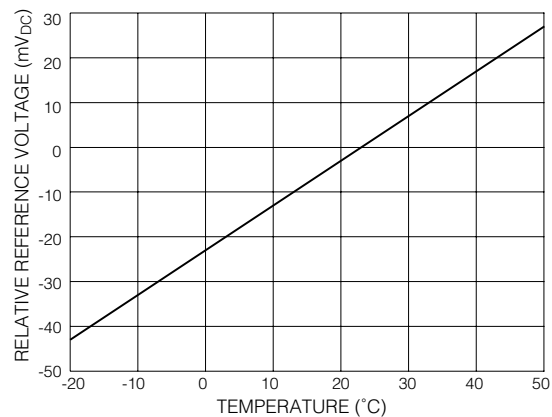


Fig. 9 Receiver Bias Voltage vs Temperature

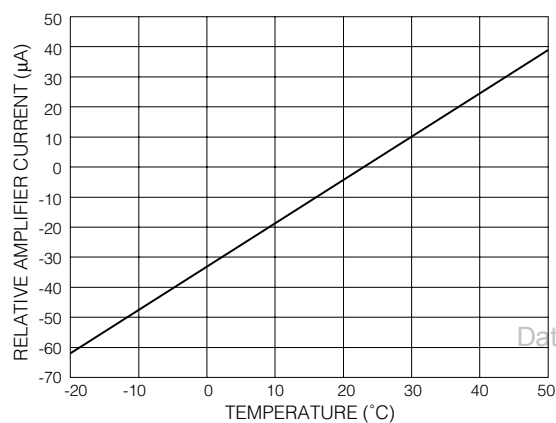


Fig. 10 Amplifier Current vs Temperature

REVISION NOTES

Changes to standard packaging information.

DOCUMENT IDENTIFICATION**PRODUCT PROPOSAL**

This data has been compiled for market investigation purposes only, and does not constitute an offer for sale.

ADVANCE INFORMATION NOTE

This product is in development phase and specifications are subject to change without notice. Gennum reserves the right to remove the product at any time. Listing the product does not constitute an offer for sale.

PRELIMINARY DATA SHEET

The product is in a preproduction phase and specifications are subject to change without notice.

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.