Low Current Preamplifier with Output Limiting

GL504 - DATA SHEET

FEATURES

- **designed to drive class D integrated receivers**
- **MPO range externally adjustable**
- **150 μA typical current drain**
- **46 dB of adjustable gain**
- **low external parts count**

STANDARD PACKAGING

- 8 Pin MICROpac
- 8 Pin PLID®
- 8 Pin SLT
- Chip (56 x 56 mils)
  Au Bump

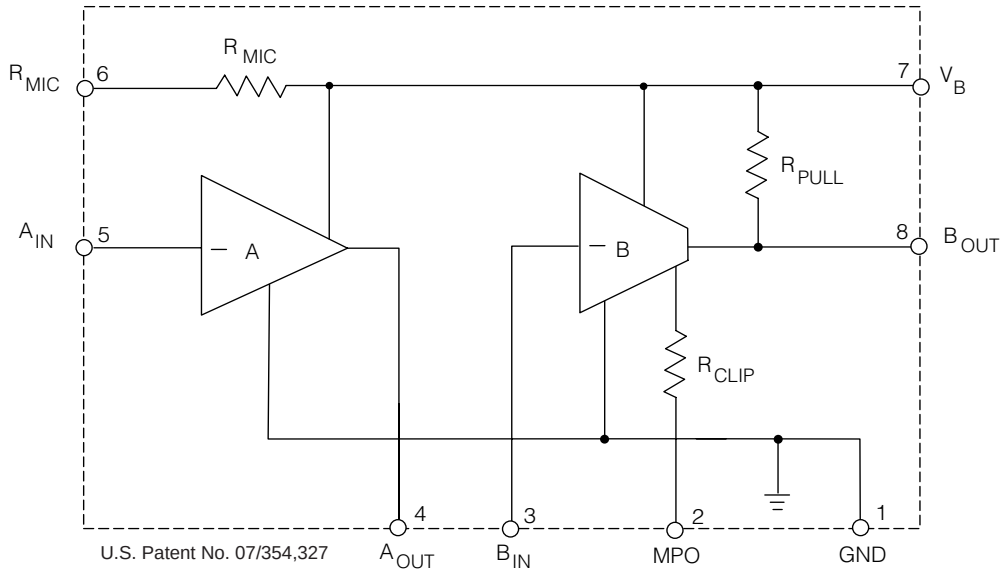
DESCRIPTION

The GL504 is a low current preamplifier designed to drive the class D series of integrated receivers. This preamp has a built-in symmetrical peak clipping output limiter, 46 dB of adjustable gain, and requires few external components.

Composed of two stages, an inverting preamp with gain of 28 dB, and a transconductance block with gain of 18 dB, the GL504 is easily configured for mid-supply reference as required by the class D receivers.

The two stages of the GL504 must be AC coupled in order to maintain the DC bias conditions of each stage. Also, a 48 kΩ resistor, between the output and ground, is used to keep the receivers at mid-supply reference. The minimal total parts count, excluding an MPO variable resistor, requires 3 capacitors, a 100 kΩ volume control and the 48 kΩ bias resistor at the output.

The GL504 is capable of providing a flat frequency response with very little distortion.



BLOCK DIAGRAM

Revision Date: May 1998

Document No. 510 - 99 - 06

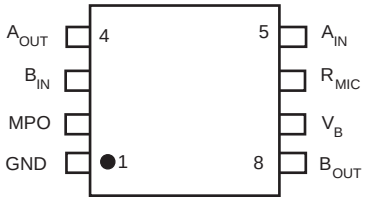
GENNUM CORPORATION P.O. Box 489, Stn. A, Burlington, Ontario, Canada L7R 3Y3 tel. +1 (905) 632-2996
Web Site: www.gennum.com E-mail: hipinfo@gennum.com

ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE / UNITS
Supply Voltage	5 V
Operating Temperature	-10°C to +40°C
Storage Temperature	-20°C to +70°C

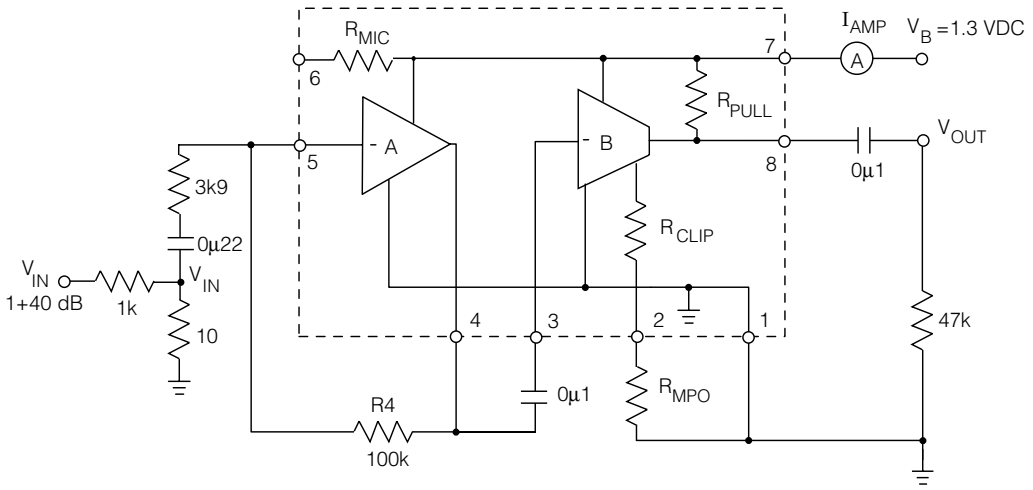
CAUTION
Class 1 ESD Sensitivity

PIN CONNECTION



ELECTRICAL CHARACTERISTICS (refer to test circuit) Supply Voltage = 1.3 V, Test Frequency 1kHz

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Amplifier Current	I_{AMP}	RMPO = 0	75	150	225	µA
Microphone Resistance	R_{MIC}		3.0	4.0	5.3	kΩ
Input Referred Noise	IRN	NFB 0.2 to 10kHz at 12 dB/oct	-	2	-	µVRMS
Gain	A_V	V_{IN} = -80 dBV	44.5	46.5	48.5	dB
MPO Level	MPO	V_{IN} = -50 dBV R_{MPO} = 0	-16	-14	-12	dBV
Change in MPO	ΔMPO	V_{IN} = -50 dBV R_{MPO} = 10 kΩ	10	12	14	dB
Preamp A input Bias Current	$I_{BIAS\ A}$		-25	0	+25	nA
Pull-up Resistance	R_{PULL}		40	48	58	kΩ
Gain Loss	ΔGAIN	R4 = 10 k, V_{IN} = -70 dBV, RMPO = 50 k	-	0	2.5	dB



All resistors in ohms, all capacitors in µF, unless otherwise stated.

Fig. 1 Test Circuit

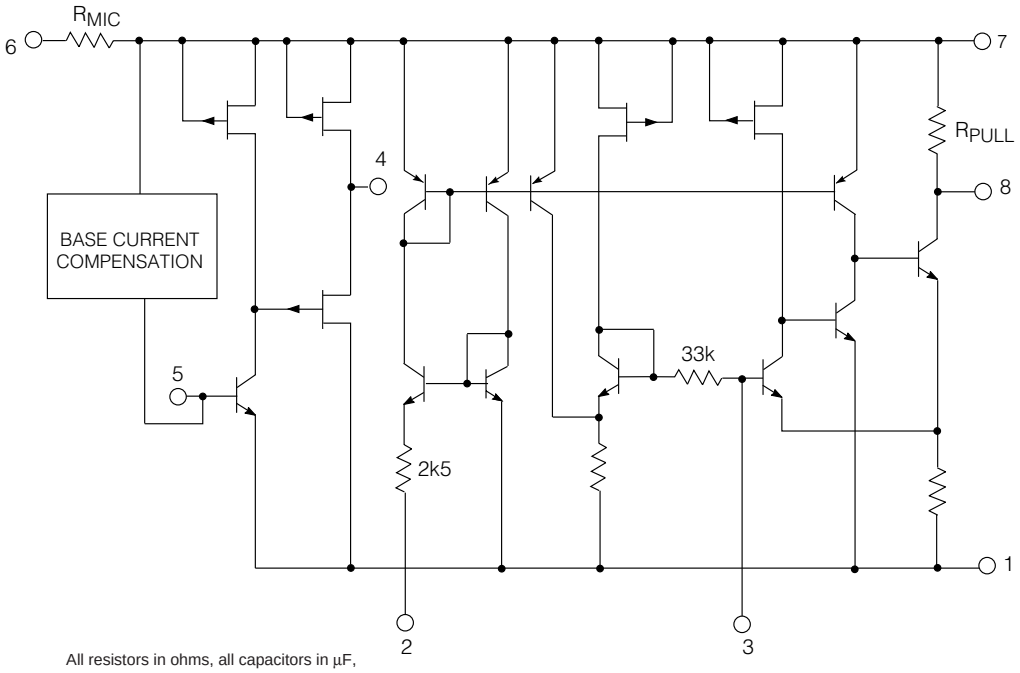


Fig. 2 Functional Schematic

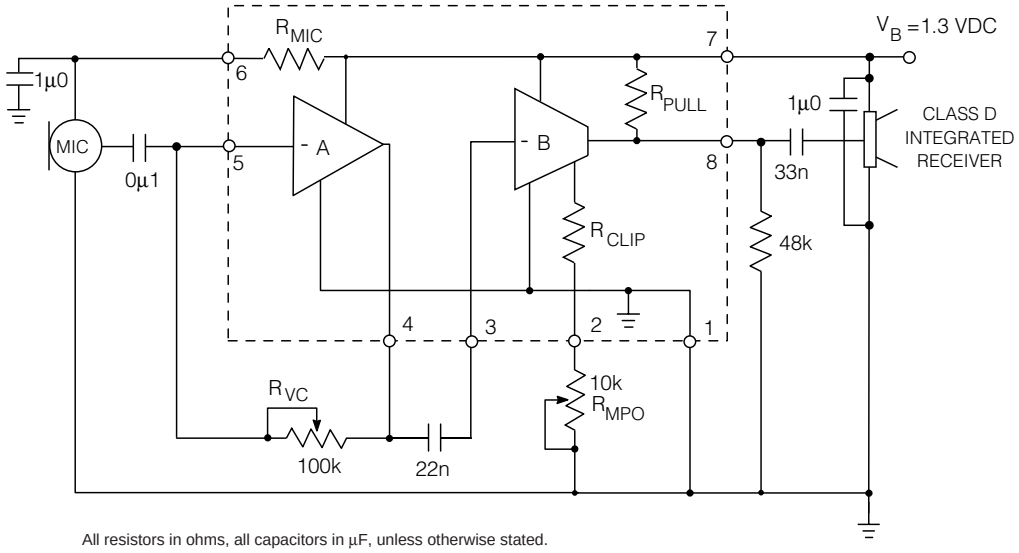


Fig. 3 Typical Application Circuit

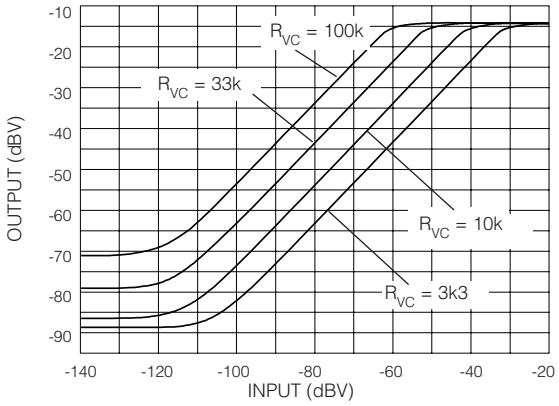


Fig. 4 I/O Curves at Various R_{VC} Settings

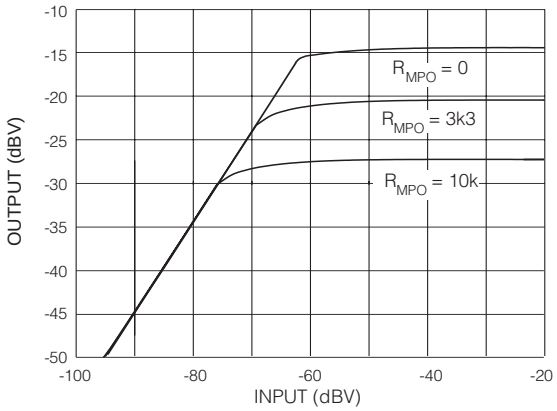


Fig. 5 I/O for Various MPO Values

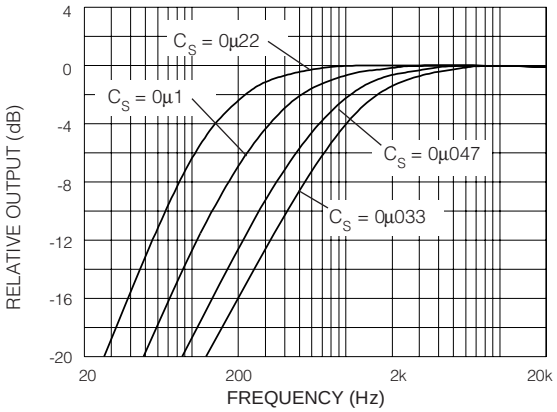


Fig. 6 Frequency Response for Various C_S Values

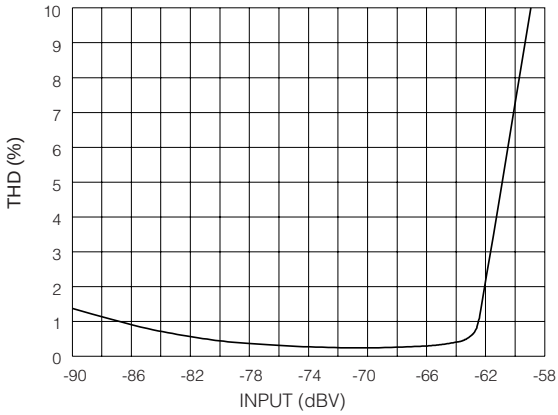


Fig. 7 Distortion vs Input Level (R_{VC}=100kΩ)

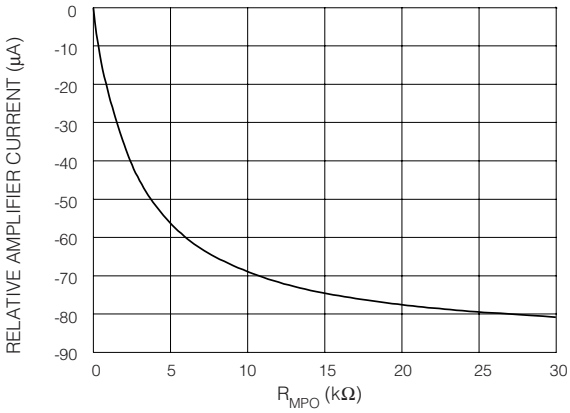


Fig. 8 Quiescent Current vs MPO Resistance

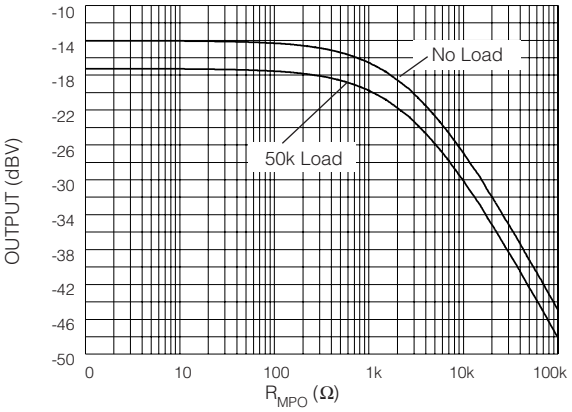


Fig. 9 Output vs MPO Resistance

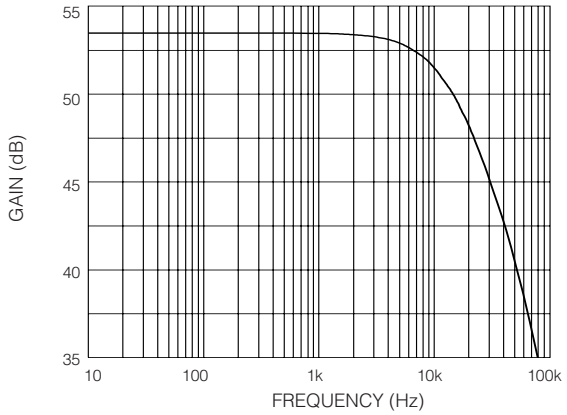


Fig. 10 Preamplifier A Open Loop Voltage Gain

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:

Updated to Data sheet