
**FEATURES**

- Gennum's GL504 preamp
- mounts on back of Microtronic PJ88S VC Socket
- low external parts count
- designed to drive Class D integrated receivers
- adjustable peak clipper
- low current drain (150  $\mu$ A) typical
- low noise and distortion

**STANDARD PACKAGING**

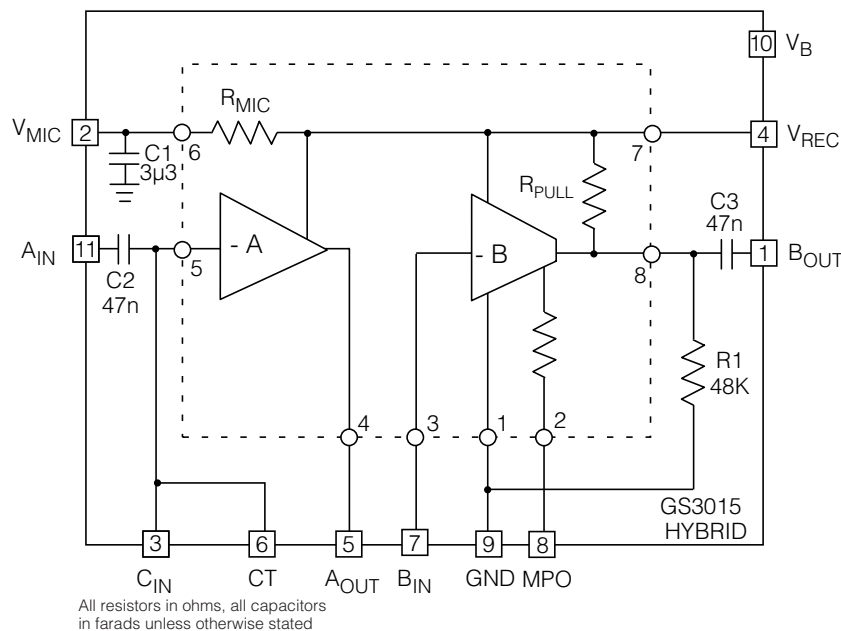
- Hybrid Typical Dimensions  
0.192 in x 0.194 in x 0.113 in  
(4.88 mm x 4.93 mm x 2.85 mm)

**DESCRIPTION**

The GS3015 incorporates Gennum's GL504 preamp, three of the required capacitors and a mid supply referencing 48K resistor. All that is required for a fully functional hearing aid system is the addition of a microphone, receiver, volume control, interstage coupling capacitor and an MPO adjusting potentiometer.

The GS3015 has been designed to mount on the back of the Microtronics PJ88S Socket Volume Control. This translates to a saving in space within the hearing instrument, as the circuitry mounts directly beneath the volume control. If the VC requires replacing, it is a simple procedure to remove the defective unit from the socket and install a new device. This does not disturb the electronic circuitry.

The major advantage of the GL504 over other preamplifiers is the electronic MPO adjustment. Since conventional MPO is not possible in a class D receiver, Gennum provides it in the preamp.


**BLOCK DIAGRAM**

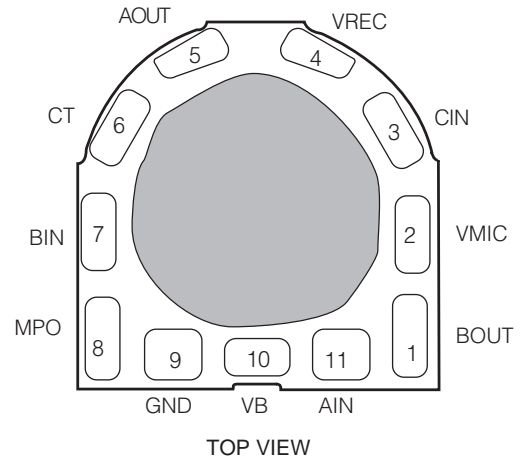
## ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE/UNITS
Supply Voltage	3 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

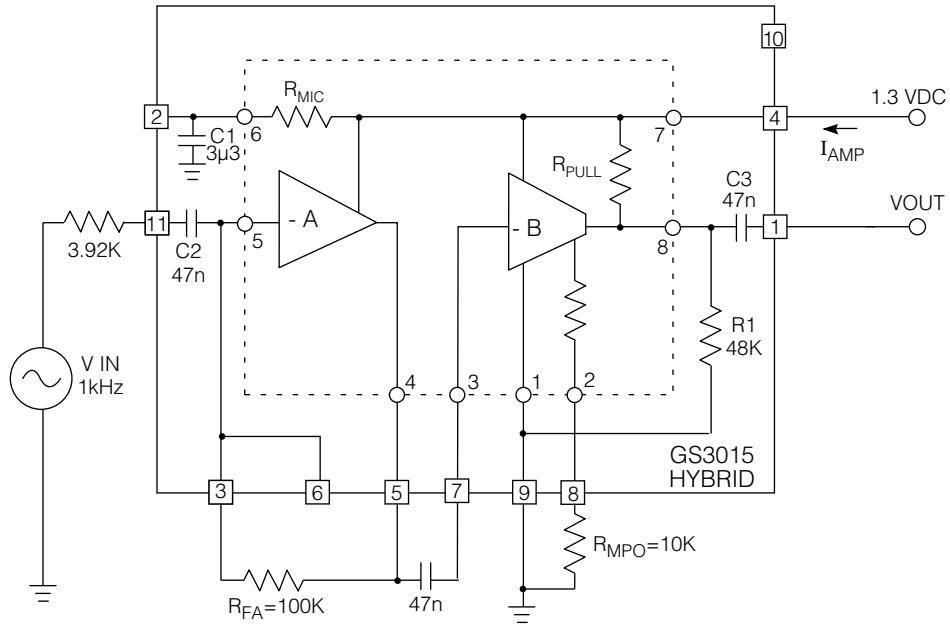


## ELECTRICAL CHARACTERISTICS

Conditions: Frequency = 1 kHz, Temperature = 25°C

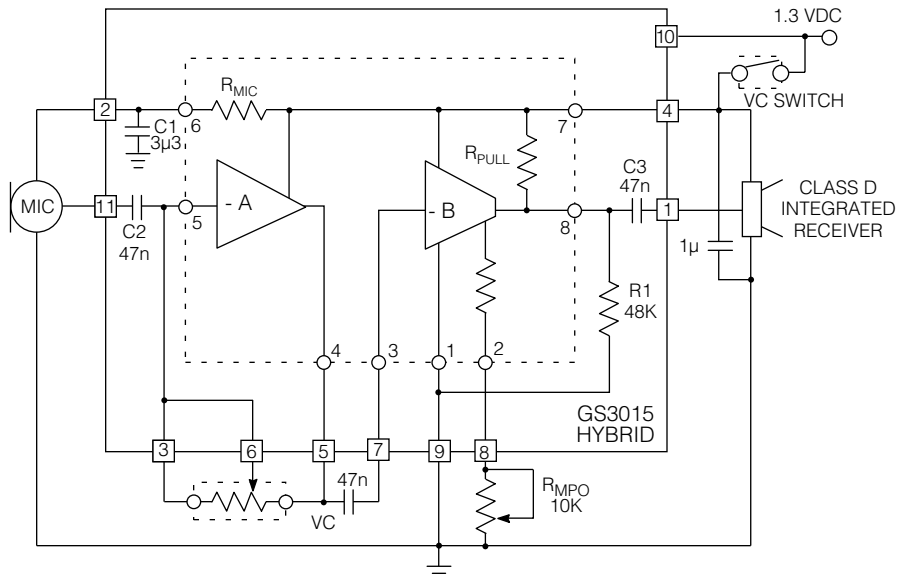
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Amplifier Current	$I_{AMP}$	$V_{IN} = 0, R_{MPO} = 0\Omega$	75	150	225	$\mu A$
System Gain	$A_V$	$V_{IN} = -80 \text{ dBV}, R_{MPO} = 0\Omega, \text{Freq.} = 5 \text{ kHz}$	44.5	46.5	48.5	dB
Maximum Output	MPO	$V_{IN} = -50 \text{ dBV}, R_{MPO} = 0\Omega$	-16	-14	-12	dBV
MPO Range	$\Delta MPO$	$V_{IN} = -50 \text{ dBV}, R_{MPO} = 10 \text{ k}\Omega$	10	12	14	dB
Input Referred Noise	IRN	NFB 0.2 to 10 kHz at 12 dB/oct	-	2	-	$\mu V_{RMS}$
Distortion	THD		-	<1.0	-	%
On Chip Pull-up Resistance	$R_{PULL}$		-	48	-	k $\Omega$
On Chip Microphone Resistor	$R_{MIC}$		-	4	-	k $\Omega$
Mic Decoupling Capacitor	C1		-20%	3.3	+20%	$\mu F$
Input Coupling Capacitor	C2		-10%	0.047	+10%	$\mu F$
Output Coupling Capacitor	C3		-10%	0.047	+10%	$\mu F$
Output Resistor	R1		-5%	48	+5%	k $\Omega$
Output Impedance (Pad 1)	$R_{OUT}$		-	24	-	k $\Omega$

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



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

Fig.1 Production Test Circuit



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

Fig. 2 Typical Hearing Instrument Application

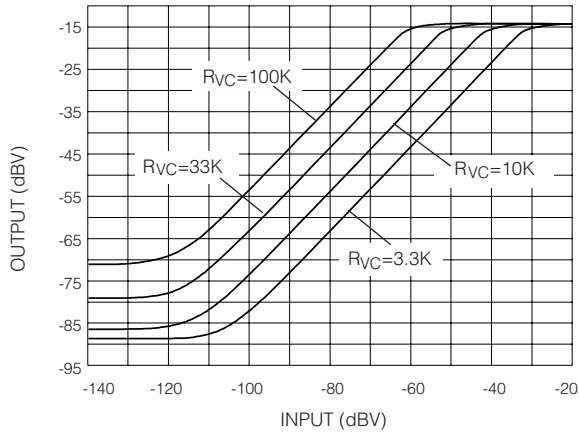


Fig. 3 I / O for Various  $R_{VC}$  Values

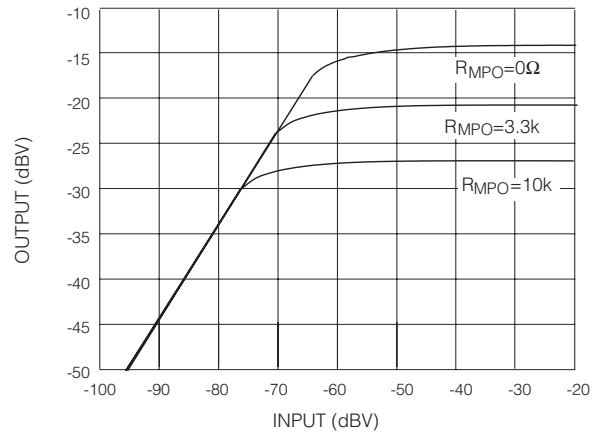


Fig. 4 I / O for Various  $R_{MPO}$  Values

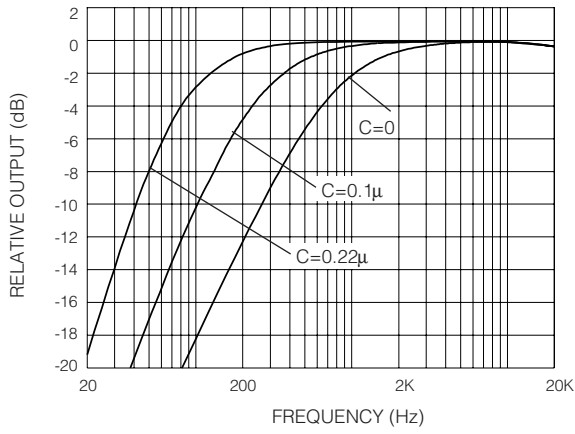


Fig. 5 Frequency Response for Various  $C1/C2$  Values

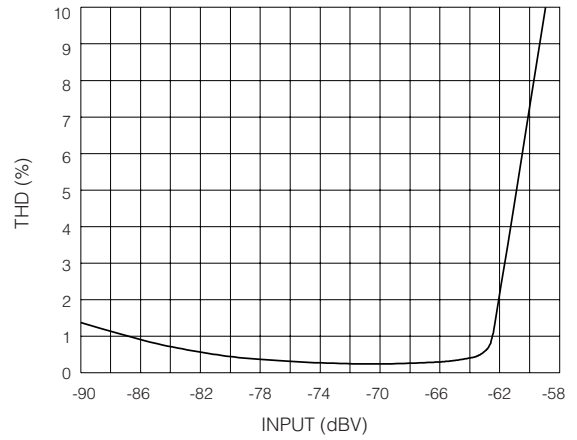


Fig. 6 Distortion vs Input Level ( $R_{VC}=100k\Omega$ )

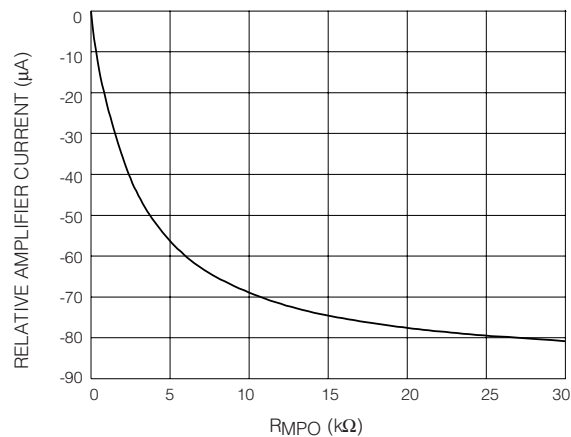


Fig. 7 Relative Amplifier Current vs MPO Resistance

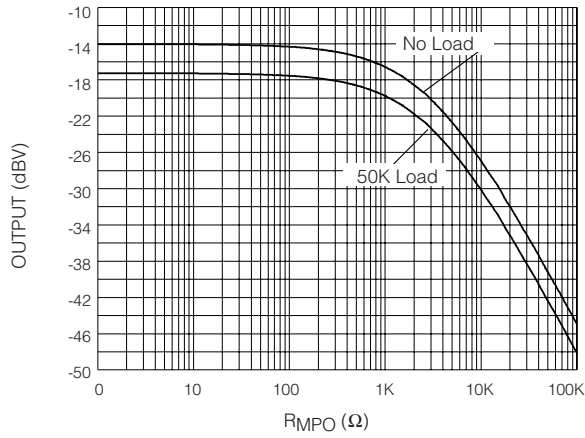


Fig. 8 Output vs MPO Resistance

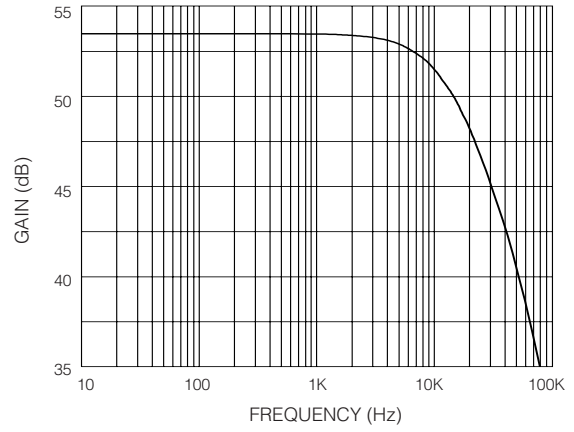
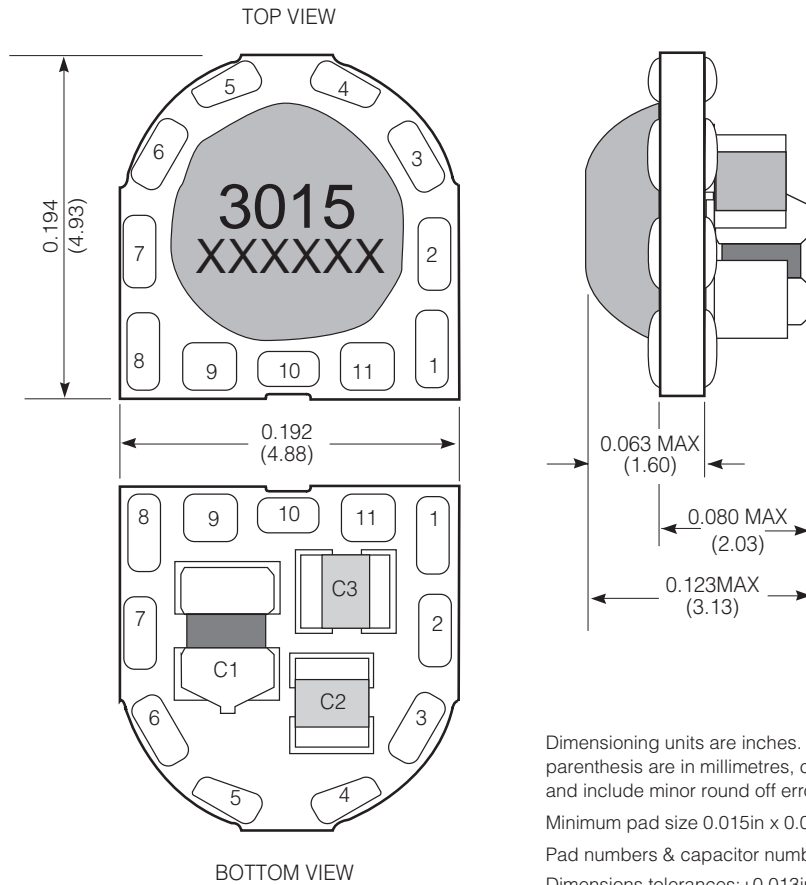


Fig. 9 Preamp A Open Loop Voltage Gain



Dimensioning units are inches. Dimensions shown in parenthesis are in millimetres, converted from inches and include minor round off errors 1.0000 inches = 25.4mm.  
 Minimum pad size 0.015in x 0.025in (0.38mm x 0.64mm).  
 Pad numbers & capacitor numbers for illustration only.  
 Dimensions tolerances: +0.013in -0.002in (+0.33mm -0.05mm) unless otherwise stated.  
 XXXXXX - work order number.

Fig. 10 Hybrid Layout and Dimensions