LM382-N

DESCRIPTION

The LM382 is a dual preamplifier for the amplification of low level signals in applications requiring optimum noise performance. Each of the two amplifiers is completely independent, with individual internal power supply decoupler-regulator, providing 120dB supply rejection and 60dB channel separation. Other outstanding features include high gain (100dB), large output voltage swing (V_{CC} -2V) p-p, and wide power bandwidth (75kHz, 20V p-p). The LM382 operates from a single supply across the wide range of 9 to 40V.

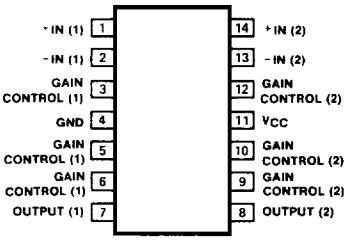
A resistor matrix is provided on the chip to allow the user to select a variety of closed loop gain options and frequency response characteristics such as flat-band, NAB or RIAA equalization. The circuit is supplied in the 14 lead dual-in-line package.

FEATURES

- **Low noise—0.8μV total equivalent input noise**
- **High gain—100dB open loop**
- **Single supply operation**
- **Wide supply range 9 to 40V**
- **Power supply rejection—120dB**
- **Large output voltage swing**
- **Wide bandwidth—15MHz unity gain**
- **Power bandwidth—75kHz, 20V p-p**
- **Internally compensated**
- **Short circuit protected**

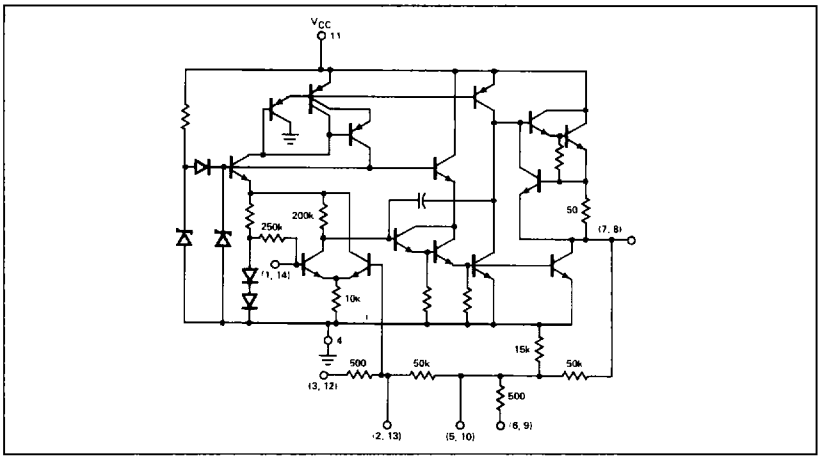
PIN CONFIGURATION

N PACKAGE



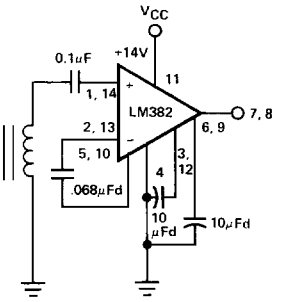
ORDER NO.
LM382N

EQUIVALENT SCHEMATIC

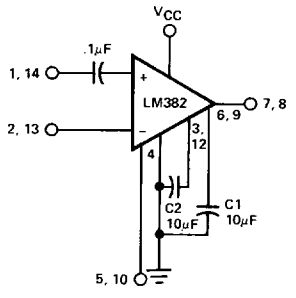


TYPICAL APPLICATIONS

TAPE PREAMPLIFIER (NAB EQUALIZATION)



PHONO PREAMP (RIAA EQUALIZATION)



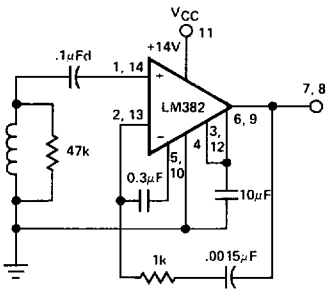
CAPACITOR	GAIN
C1 Only	40dB
C2 Only	55dB
C1 & C2	80dB

ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNIT
Supply voltage	+40	V
Power dissipation	600	mW
Operating temperature range	0 to +70	°C
Storage temperature range	-65 to +150	°C
Lead temperature (soldering, 60sec)	+300	°C

TYPICAL APPLICATIONS

FLAT RESPONSE FIXED GAIN CONFIGURATION



LM382-N

DC ELECTRICAL CHARACTERISTICS

$T_A = 25°C$, $V_{CC} = 14V$ unless otherwise specified.

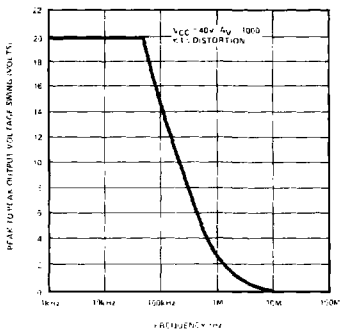
PARAMETER	TEST CONDITIONS	LM382			UNIT
		Min	Typ	Max	
Voltage gain	Open loop (differential input)		100,000		V/V
Supply current	V_{CC} 9 to 40V, $R_L = \infty$		10	16	mA
Input resistance	Positive input		100		kΩ
	Negative input		200		kΩ
Input current	Negative input		0.5		μA
Output resistance	Open loop		150		Ω
Output current	Source		8		mA
	Sink		2		mA
Output voltage swing	Peak-to-peak, R_L = 10k		V_{CC}-2		V

AC ELECTRICAL CHARACTERISTICS

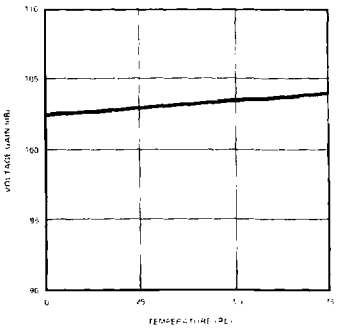
PARAMETER	TEST CONDITIONS	LM382			UNIT
		Min	Typ	Max	
Small signal bandwidth			15		MHz
Power bandwidth	20V p-p (V_{CC} = 24V)		75		kHz
Maximum input voltage	Linear operation			300	mVrms
Supply rejection ratio	f = 1kHz		120		dB
Channel separation	f = 1kHz	40	60		dB
Total harmonic distortion	60dB gain, f = 1kHz		0.1	0.3	%
Total equivalent input noise	R_S = 600Ω, 100-10,000Hz		0.8	1.2	μVrms
Noise figure	50kΩ, 100-10,000Hz		1.0		dB
	10kΩ, 100-10,000Hz		1.6		dB
	5kΩ, 100-10,000Hz		2.6		dB

TYPICAL PERFORMANCE CHARACTERISTICS

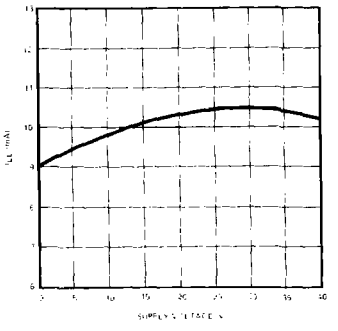
LARGE SIGNAL FREQUENCY RESPONSE



GAIN vs TEMPERATURE



V_{CC} vs I_{CC}



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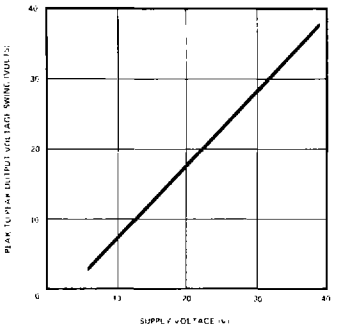
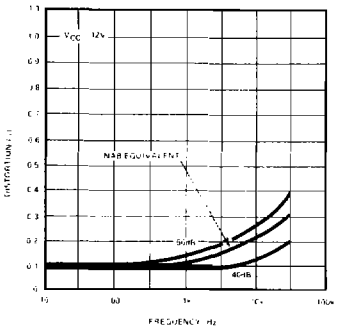
TYPICAL PERFORMANCE CHARACTERISTICS (Cont'd)

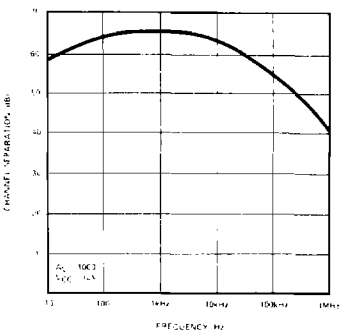
P-P OUTPUT VOLTAGE SWING vs V_{CC}



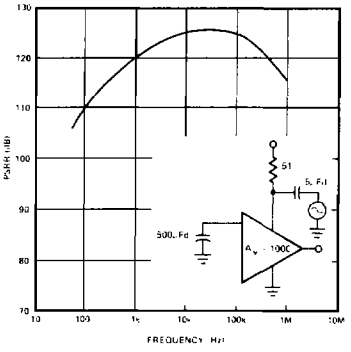
% DISTORTION



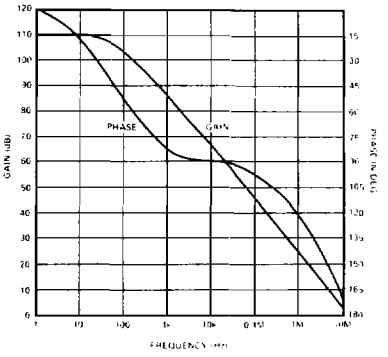
CHANNEL SEPARATION



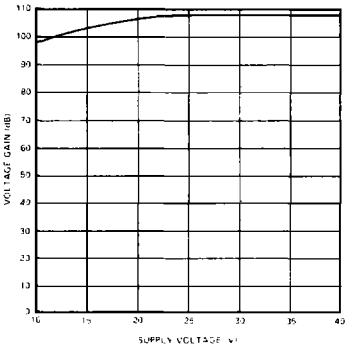
PSRR vs FREQUENCY



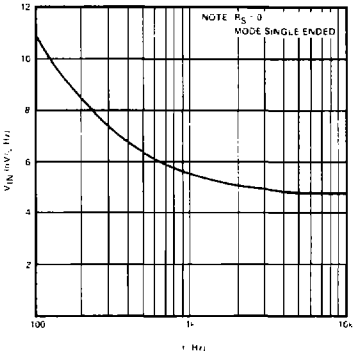
GAIN AND PHASE RESPONSE



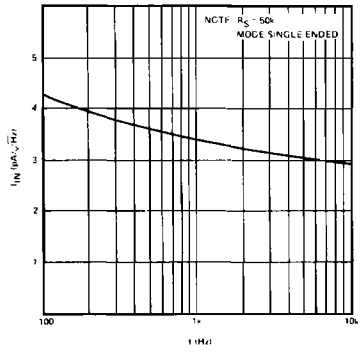
VOLTAGE GAIN vs SUPPLY VOLTAGE



NOISE VOLTAGE vs FREQUENCY



NOISE CURRENT vs FREQUENCY



PULSE RESPONSE