

# MC1303L

## DUAL STEREO PREAMPLIFIER

### MONOLITHIC DUAL STEREO PREAMPLIFIER

... designed for amplifying low-level stereo audio signals with two preamplifiers built into a single monolithic semiconductor.

Each Preamplifier Features:

- Large Output Voltage Swing — 4.0 V(rms) min
- High Open-Loop Voltage Gain = 6000 min
- Channel Separation = 60 dB min at 10 kHz
- Short-Circuit-Proof Design

DUAL  
STEREO PREAMPLIFIER  
INTEGRATED CIRCUIT  
  
MONOLITHIC  
SILICON EPITAXIAL PASSIVATED



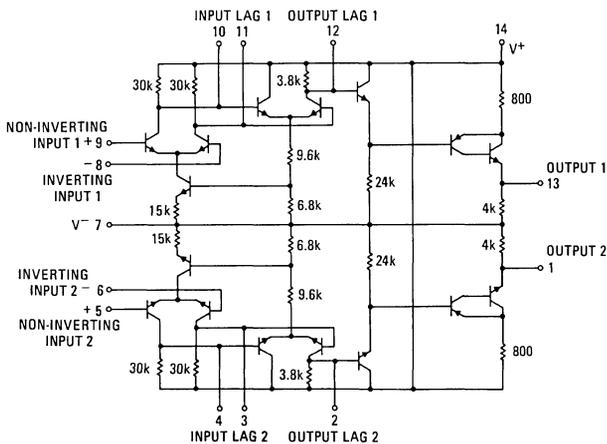
CERAMIC PACKAGE  
CASE 632  
TO-116

### MAXIMUM RATINGS ( $T_A = +25^\circ\text{C}$ unless otherwise noted)

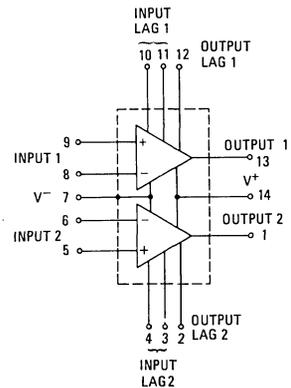
Rating	Symbol	Value	Unit
Power Supply Voltage	$V^+$ $V^-$	+15 -15	Vdc Vdc
Power Dissipation (Package Limitation) Derate above $25^\circ\text{C}$	$P_D$	625 5.0	mW mW/ $^\circ\text{C}$
Operating Temperature Range	$T_A$	0 to +75	$^\circ\text{C}$

Maximum Ratings as defined in MIL-S-19500, Appendix A.

### CIRCUIT SCHEMATIC



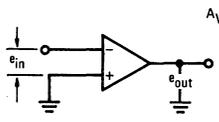
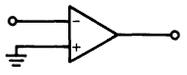
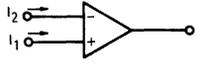
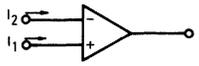
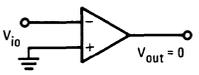
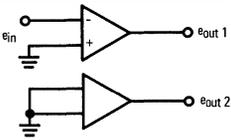
### EQUIVALENT CIRCUIT



See Packaging Information Section for outline dimensions.

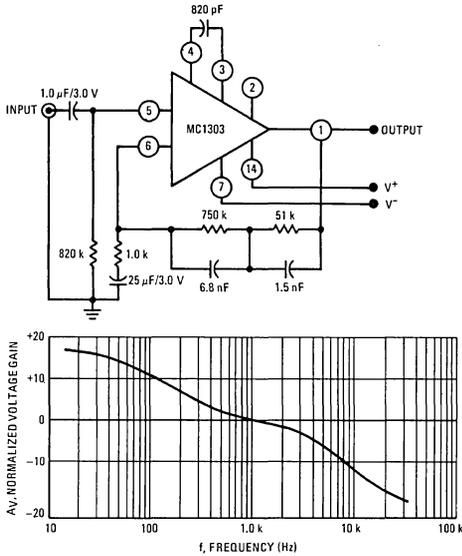
MC1303L (continued)

ELECTRICAL CHARACTERISTICS (Each Preamplifier) ( $V^+ = +13$  Vdc,  $V^- = -13$  Vdc,  $T_A = +25^\circ\text{C}$  unless otherwise noted)

Characteristic Definitions (linear operations)	Characteristic	Symbol	Min	Typ	Max	Unit
	Open Loop Voltage Gain	$A_{VOL}$	6,000	10,000	-	V/V
	Output Voltage Swing ( $R_L = 10$ k $\Omega$ )	$V_{out}$	4.0	5.5	-	V(rms)
	Input Bias Current $I_b = \frac{I_1 + I_2}{2}$	$I_b$	-	1.0	10	$\mu\text{A}$
	Input Offset Current ( $I_{io} = I_1 - I_2$ )	$I_{io}$	-	0.2	0.4	$\mu\text{A}$
	Input Offset Voltage	$V_{io}$	-	1.5	10	mV
	DC Power Dissipation (Power Supply = $\pm 13$ V, $V_{out} = 0$ )	$P_D$	-	-	400	mW
	Channel Separation ( $f = 10$ kHz)	$\frac{e_{out 1}}{e_{out 2}}$	60	70	-	dB

TYPICAL PREAMPLIFIER APPLICATIONS

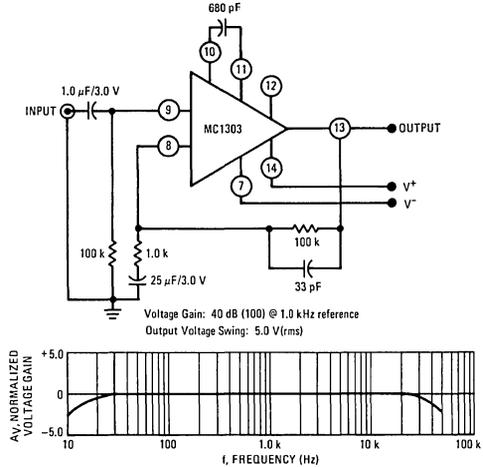
FIGURE 1 – MAGNETIC PHONO PLAYBACK PREAMPLIFIER/RIAA EQUALIZED



**TYPICAL PERFORMANCE CHARACTERISTICS**

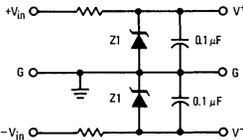
- Voltage Gain : 34 dB (50) @ 1.0 kHz
- Input Overload Point : 100 mVrms @ 1.0 kHz
- Output Voltage Swing : 5.0 Vrms @ 1.0 kHz @ 0.1% THD.
- Output Noise Level : Better Than 70 dB Below 10 mV Phono Input (Input Shorted)

FIGURE 2 – BROADBAND AUDIO AMPLIFIER



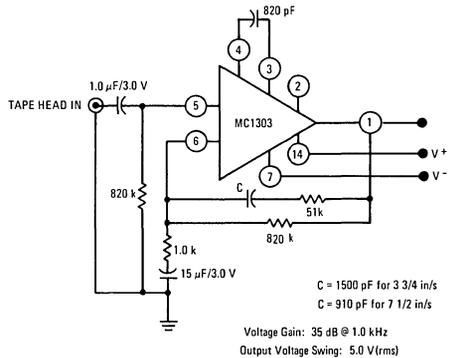
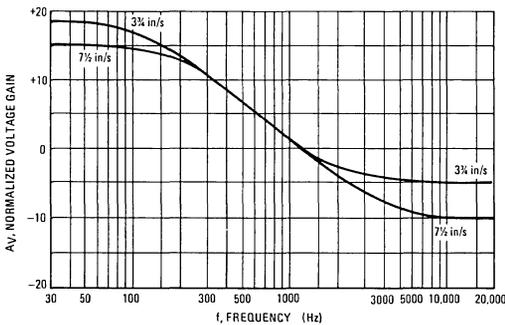
Voltage Gain: 40 dB (100) @ 1.0 kHz reference  
Output Voltage Swing: 5.0 V(rms)

SUGGESTED POWER SUPPLY CIRCUIT



Z1 = MZ-500-19 (13 V nom.)  
Select series R by allowing 11 mA for zener, and each dual 1/3 Preamplifier.

FIGURE 3 – NAB TAPE HEAD EQUALIZATION



C = 1500 pF for 3 3/4 in/s  
C = 910 pF for 7 1/2 in/s  
Voltage Gain: 35 dB @ 1.0 kHz  
Output Voltage Swing: 5.0 V(rms)

FIGURE 4 – POWER DISSIPATION versus SUPPLY VOLTAGE

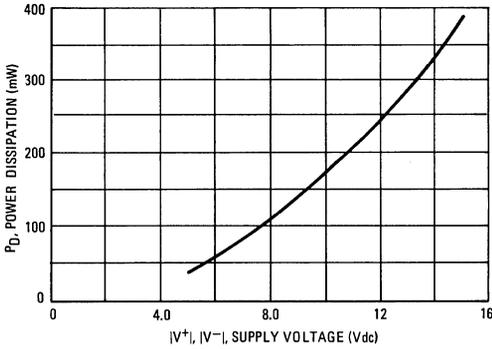


FIGURE 5 – OUTPUT LINEARITY

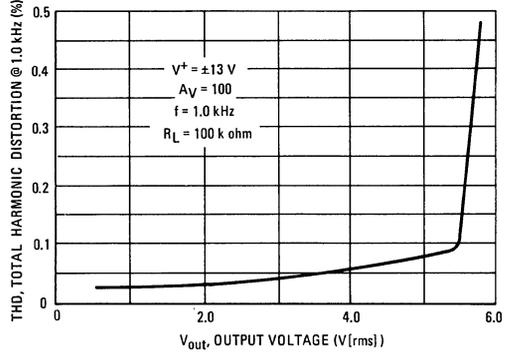
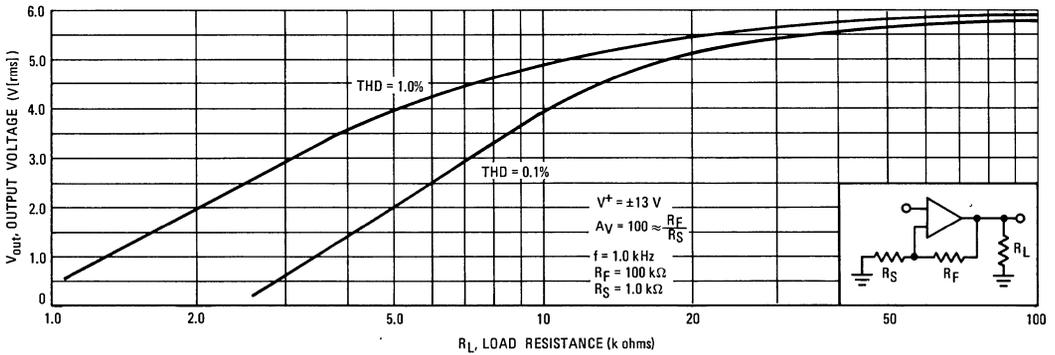


FIGURE 6 – INFLUENCE OF OUTPUT LOADING



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NOISE CHARACTERISTICS

FIGURE 7A – INFLUENCE OF SOURCE RESISTANCE & BANDWIDTH

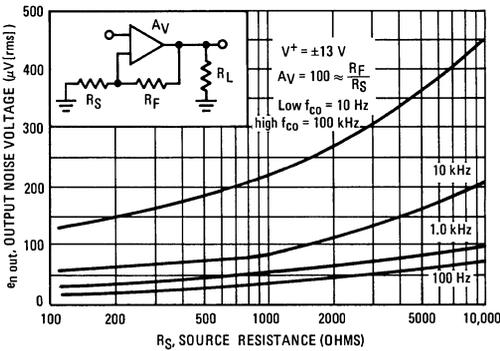


FIGURE 7B – INFLUENCE OF VOLTAGE GAIN & BANDWIDTH

