ORDERING INFORMATION

Device	Temperature Range	Package
MC1303P	0°C to +75°C	Plastic DIP

MC1303

DUAL STEREO PREAMPLIFIER

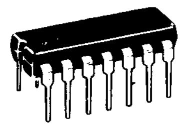
. . . designed for amplifying low-level stereo audio signals with two preamplifiers built into a single monolithic semiconductor.

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

SILICON MONOLITHIC INTEGRATED CIRCUIT

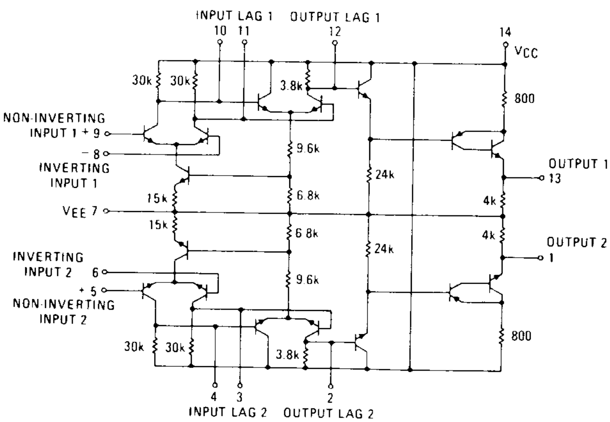


P SUFFIX
PLASTIC PACKAGE
CASE 646

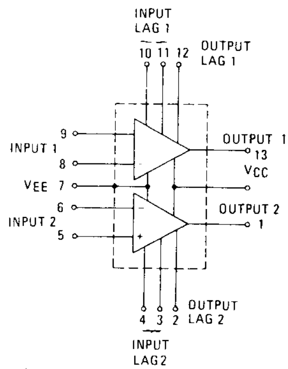
MAXIMUM RATINGS (T_A = +25°C unless otherwise noted.)

Rating	Value	Unit
Power Supply Voltage	+15 -15	Vdc
Junction Temperature	+150	°C
Operating Ambient Temperature Range	0 to +75	°C

CIRCUIT SCHEMATIC



EQUIVALENT CIRCUIT



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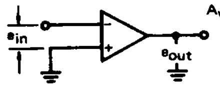
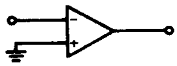
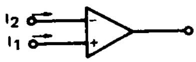
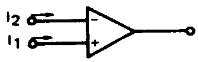
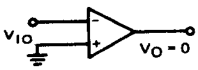
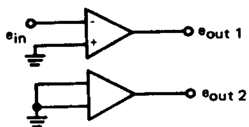
ELECTRICAL CHARACTERISTICS (Each Preamplifier) (V_{CC} = +13 Vdc, V_{EE} = -13 Vdc, T_A = +25°C unless otherwise noted).

Characteristic Definitions (linear operations)	Characteristic	Min	Typ	Max	Unit
 $A_{vol} = \frac{e_{out}}{e_{in}}$	Open Loop Voltage Gain	6,000	10,000	–	V/V
	Output Voltage Swing (R_L = 10 kΩ)	4.0	5.5	–	V(RMS)
	Input Bias Current $I_{IB} = \frac{I_1+I_2}{2}$	–	1.0	10	µA
	Input Offset Current ($I_{IO} = I_1 - I_2$)	–	0.2	0.4	µA
	Input Offset Voltage	–	1.5	10	mV
	DC Power Dissipation (Power Supply = ±13 V, V_O = 0)	–	–	400	mW
	Channel Separation (f = 10 kHz)	60	70	–	dB

THERMAL INFORMATION

The maximum power consumption an integrated circuit can tolerate at a given operating ambient temperature, can be found from the equation:

$$P_{D(T_A)} = \frac{T_{J(max)} - T_A}{R_{\theta JA}(Typ)}$$

Where: $P_{D(T_A)}$ = Power Dissipation allowable at a given operating ambient temperature. This must be greater than the sum of the products of the supply voltages and supply currents at the worst case operating condition.

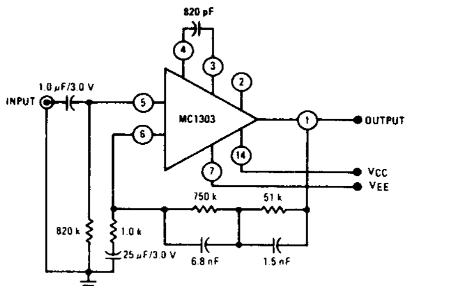
$T_{J(max)}$ = Maximum Operating Junction Temperature as listed in the Maximum Ratings Section

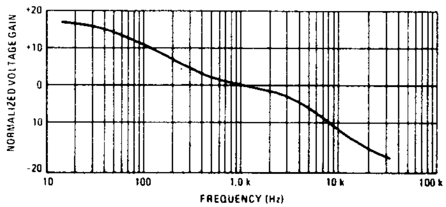
T_A = Maximum Desired Operating Ambient Temperature

$R_{\theta JA}(Typ)$ = Typical Thermal Resistance Junction to Ambient

TYPICAL PREAMPLIFIER APPLICATIONS

FIGURE 1 — MAGNETIC PHONO PLAYBACK PREAMPLIFIER/RIAA EQUALIZED



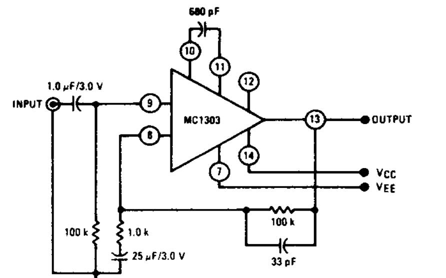


TYPICAL PERFORMANCE CHARACTERISTICS

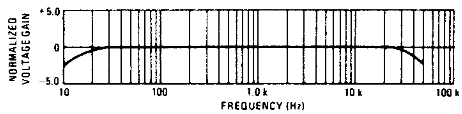
Voltage Gain	34 dB (50)@ 1.0 kHz
Input Overload Point	100 mVRMS @ 1.0 kHz
Output Voltage Swing	5.0 VRMS @ 1.0 kHz @ 0.1% THD
Output Noise Level	Better Than 70 dB Below 10 mV Phono Input (Input Shorted)

Pins not shown are not connected.

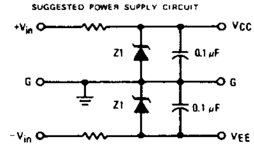
FIGURE 2 — BROAD BAND AUDIO AMPLIFIER



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



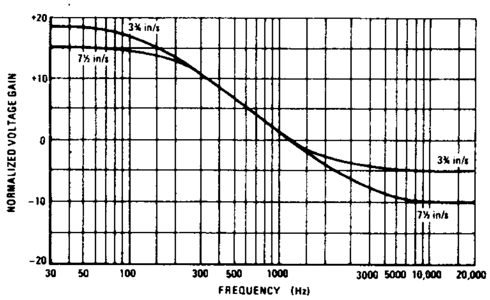
SUGGESTED POWER SUPPLY CIRCUIT

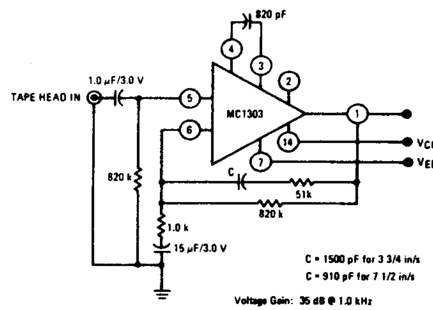


Z1 MZ 500-19 (13 V nom.)
Select series R by allowing 11 mA for zener, and each dual I/C Preamplifier

Pins not shown are not connected.

FIGURE 3 — NAB TAPE HEAD EQUALIZATION





C = 1500 pF for 3 3/4 in/s
C = 910 pF for 7 1/2 in/s

Pins not shown are not connected.

Voltage Gain: 35 dB @ 1.0 kHz
Output Voltage Swing: 5.0 V(RMS)

FIGURE 4 – POWER DISSIPATION versus SUPPLY VOLTAGE

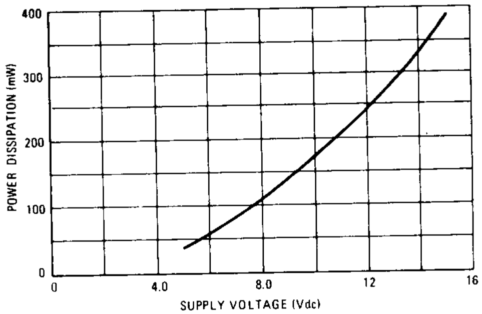


FIGURE 5 – OUTPUT LINEARITY

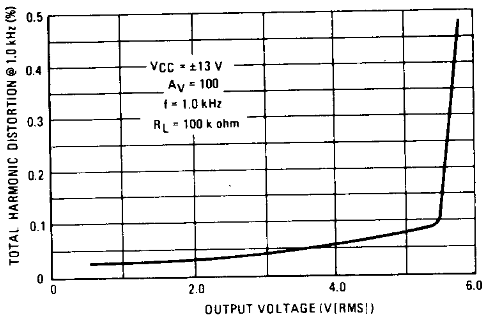
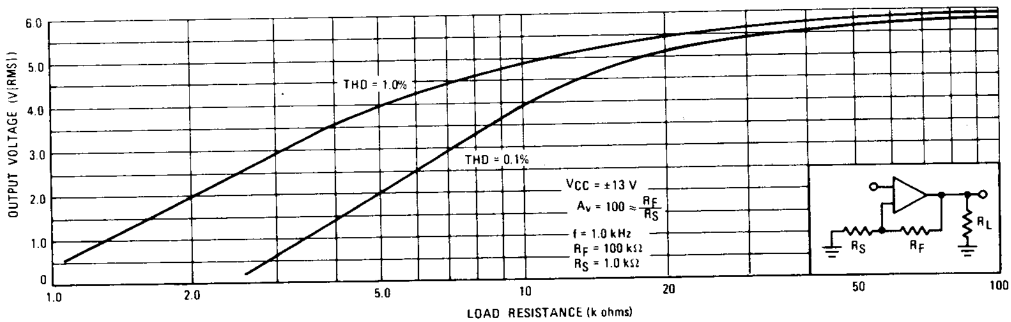


FIGURE 6 – INFLUENCE OF OUTPUT LOADING



NOISE CHARACTERISTICS

FIGURE 7A – INFLUENCE OF SOURCE RESISTANCE & BANDWIDTH

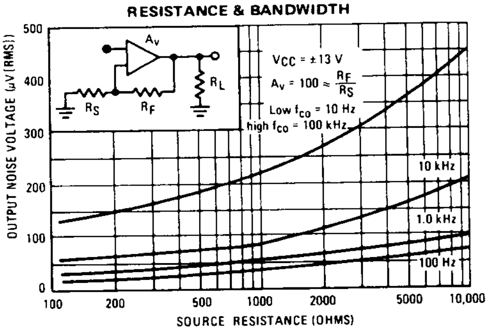


FIGURE 7B – INFLUENCE OF VOLTAGE GAIN & BANDWIDTH