



TSH22 AUDIO LINE DRIVER

by S. LAFFONT

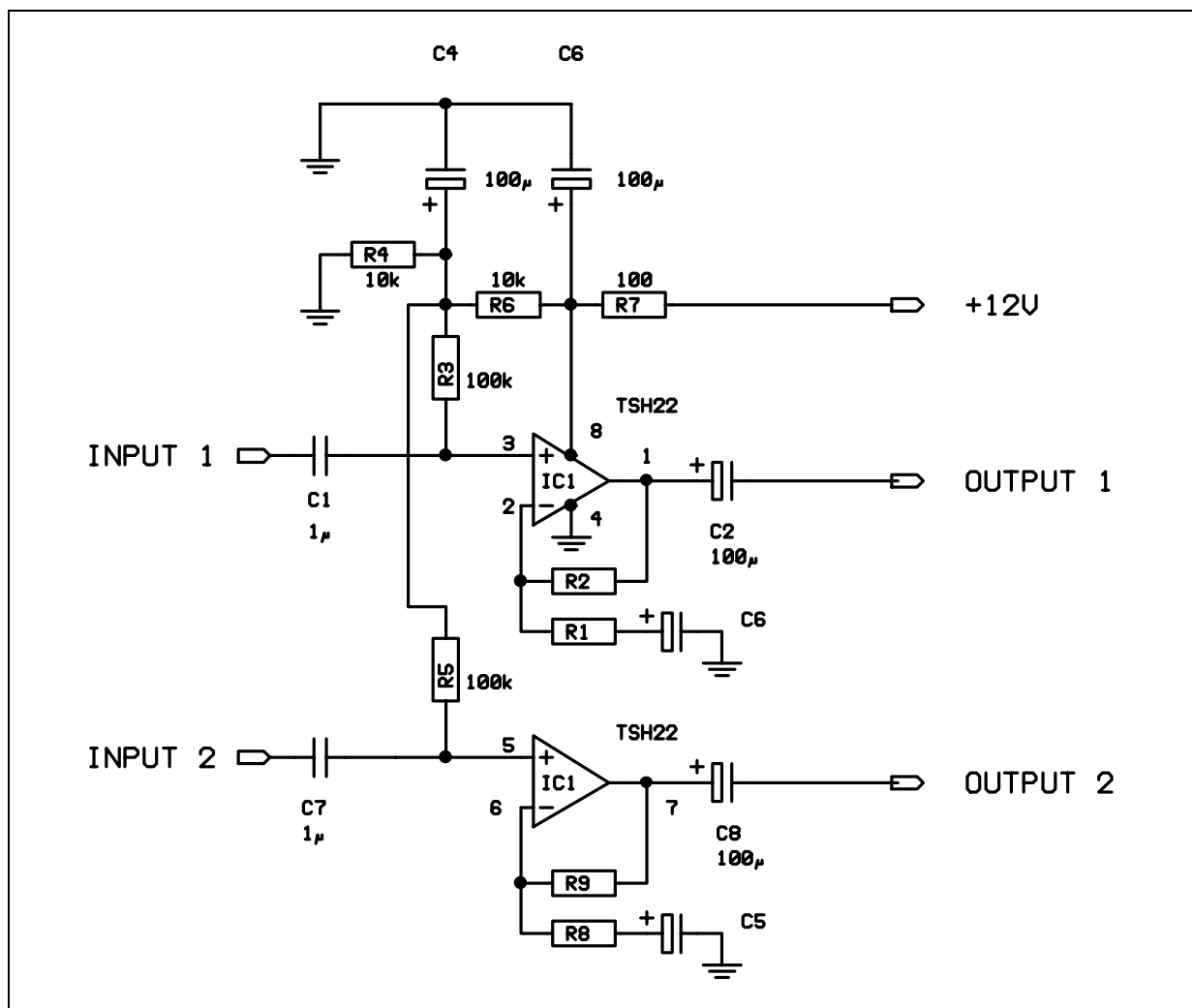
INTRODUCTION

This technical note describes an audio line driver using a TSH22. This integrated circuit exhibits a wide bandwidth (25MHz gain bandwidth product), low distortion and an output current sufficient to drive medium impedance loads at a high level of modulation.

SCHEMATIC

The two TSH22 operators are used in non inverting mode with a gain settable by resistors. A single power supply is necessary ; two resistors (R4 & R6) are used to make a phantom ground at $V_{CC}/2$.

SCHEMATIC DIAGRAM



APPLICATION NOTE

GAIN AND BANDWIDTH

The overall gain for a frequency in the bandwidth is given by the two following equations :

- Gain channel 1 = $(R1 + R2)/R1$
- Gain channel 2 = $(R8 + R9)/R8$

Note that for gain equal or less than 40dB (100 times) the high frequency bandwidth is far above the audio band ($\gg 20\text{kHz}$) due to the 25MHz gain-bandwidth product of the TSH22 amplifier.

The low frequency bandwidth is limited at the input by C1 (channel 1) and C7 (channel 2) :

- $F_{\text{Cin channel 1}} = \frac{1}{2 \cdot \pi \cdot R3 \cdot C1}$
- $F_{\text{Cin channel 2}} = \frac{1}{2 \cdot \pi \cdot R5 \cdot C7}$

If the distributor is used with gain, the low frequency bandwidth is limited by the time constant R1.C6 (channel 1) or R8.C5 (channel 2).

OUTPUT LOAD

The load presented at the output of the distributor must have a minimum resistance of 100Ω to avoid stability problems.

If cables are used, it is recommended to drive them through resistors (serially connected with the output capacitors C2 & C8) whose value is equal to the characteristic impedance of these cables.

POWER SUPPLY

A power supply with a voltage between 8V and 30V is recommended. With a 12V supply, a 600Ω impedance line can be driven at +10dBm with a distortion less than 0.05% @ 1kHz

Figure 1 - PHOTO PLOT (top view - not to scale)

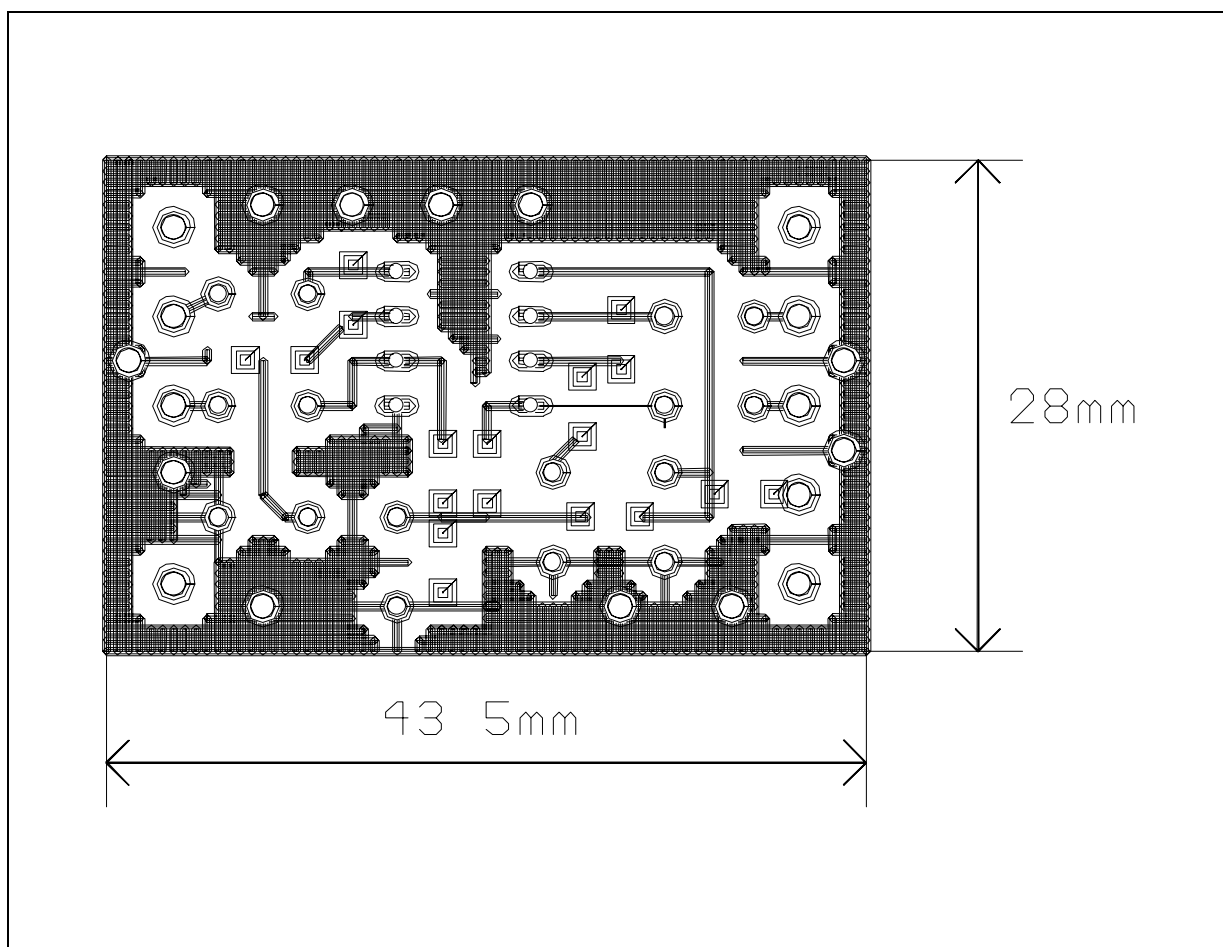
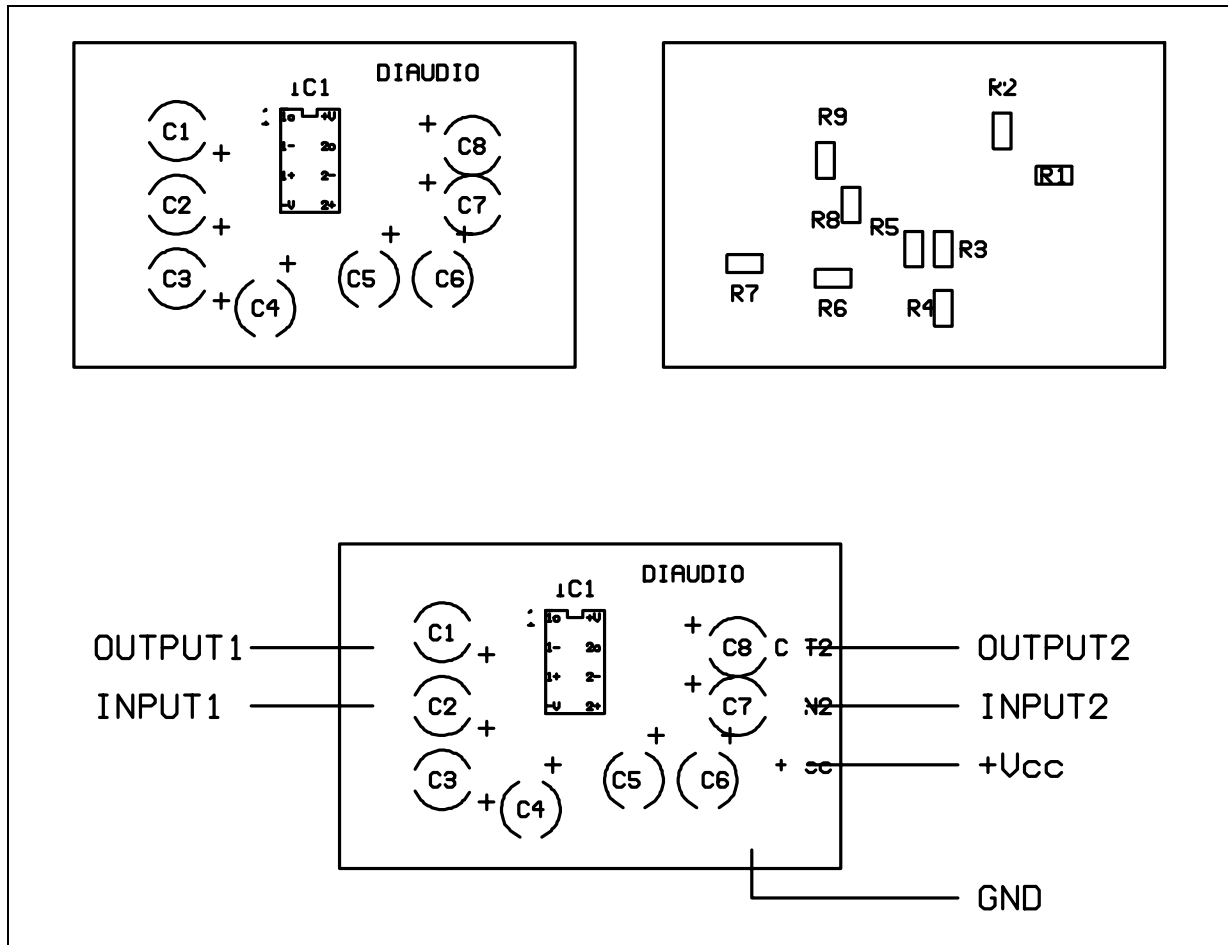


Figure 2 - PHOTO PLOT (top view - not to scale)



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