



TSH22 AUDIO LINE DRIVER

by S. LAFFONT

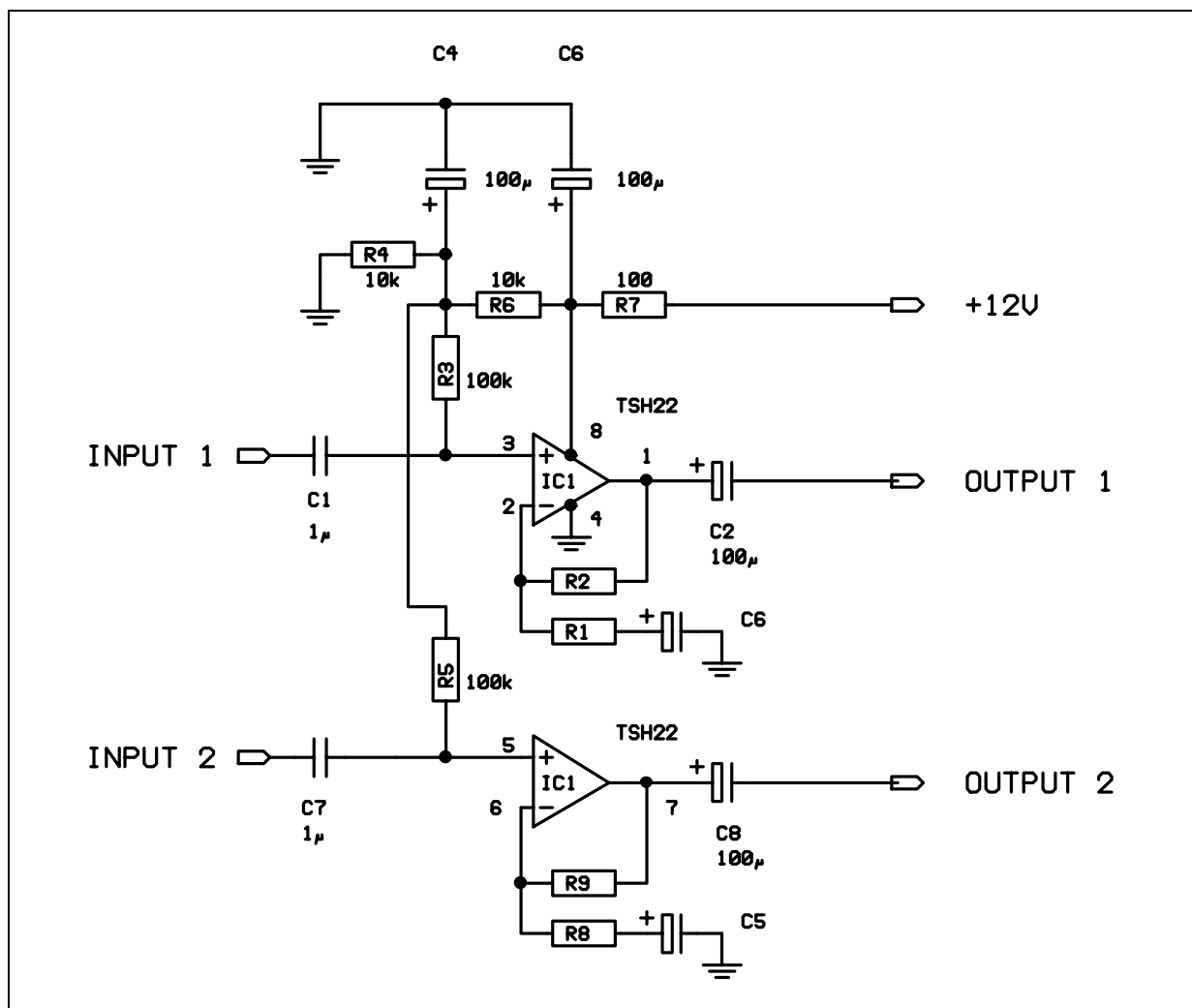
INTRODUCTION

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) :

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

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  $100\Omega$  to avoid stability problems.

If cables are used, it is recommended to drive them through resistors (serially connected with the output capacitors C2 & C8) whom 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  $600\Omega$  impedance line can be driven at +10dBm with a distortion less than 0.05% @ 1kHz

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

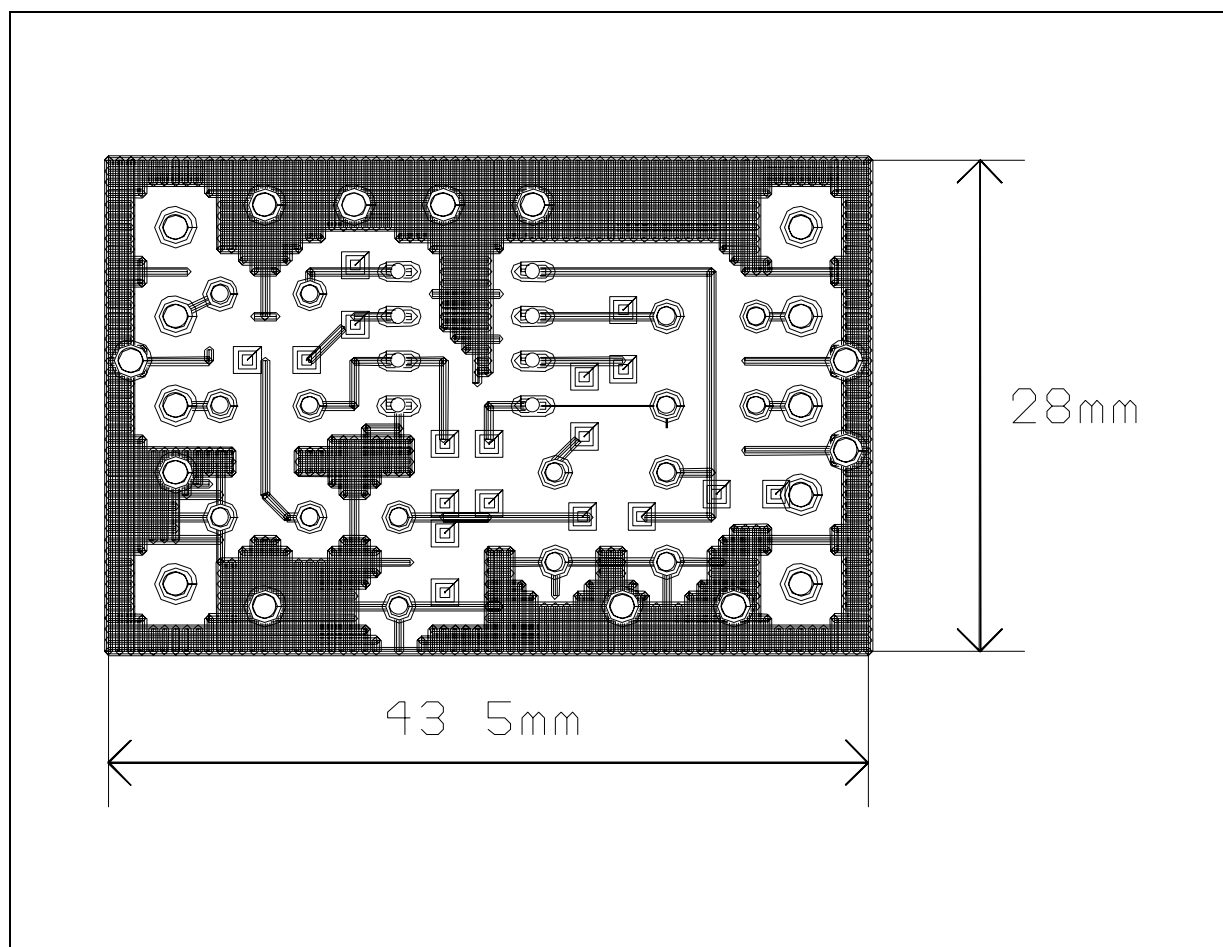
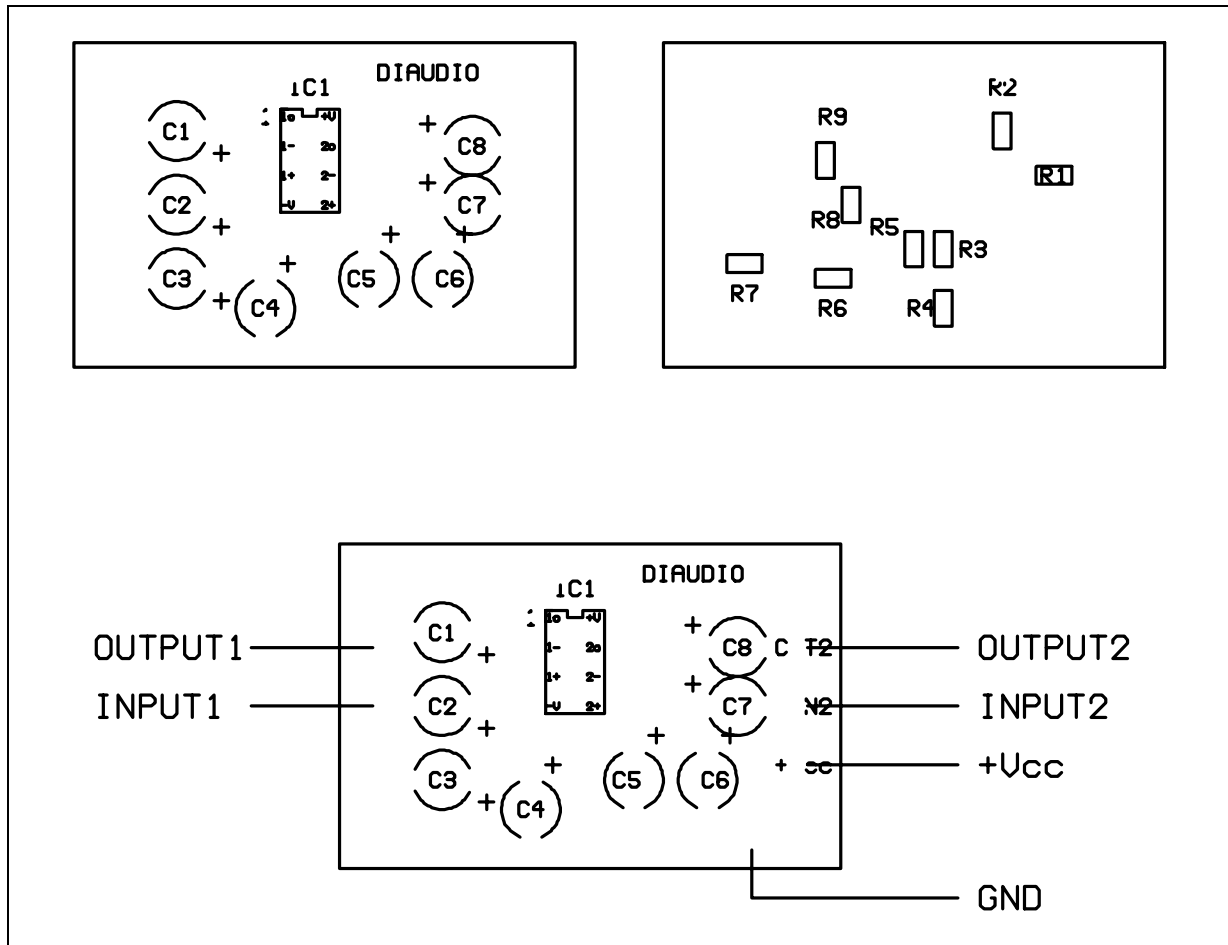


Figure 2 - PHOTO PLOT (top view - not to scale)



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