

SIGNAL MULTIPLEXING USING TSH94 STANDBY MODE

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INTRODUCTION

The TSH94 is a quad low power video operational amplifier with two operators having an independent complementary standby mode.

This standby mode decreases the consumption of the corresponding operator and puts its output in high impedance state. In this note, the two amplifiers are used to multiplex signals.

TSH94 can handle video and audio signal thanks to its 100MHz follower bandwidth, 110V/ μ s slew rate and its low voltage noise of 4.2nV/ \sqrt Hz.

Furthermore, the high switching speed of the standby mode of 200ns, allows simultaneous

transmission of small bandwidth signal as audio signals. Driving current of standby inputs is less than 2pA and Input/Output isolation in standby mode is 70dB at 10MHz.

DESCRIPTION

The operational amplifiers are used as followers, outputs and standby pins are connected together forming a very simple circuit. The only external components are the supply decoupling capacitors.

Figure 2 shows 20KHz triangle and sine wave signals of 4Vpp multiplexed at 400KHz rate. This principle can be used to transmit up to 100 audio signals on a single line using 2MHz multiplexing speed and 40KHz sample rate.

Figure 1 : Signal Multiplexing

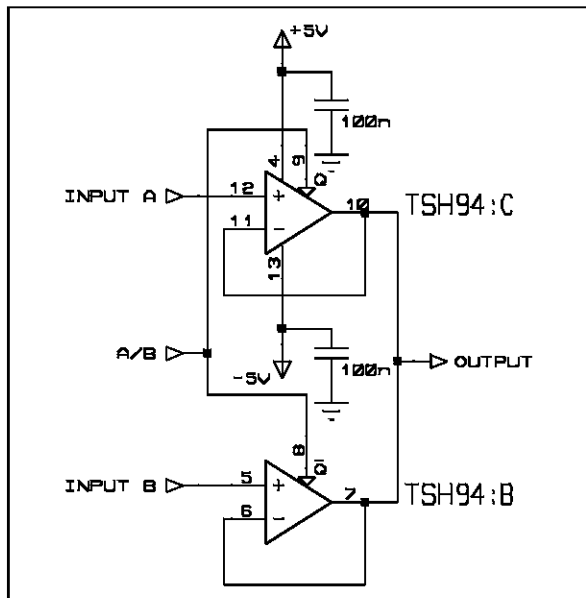
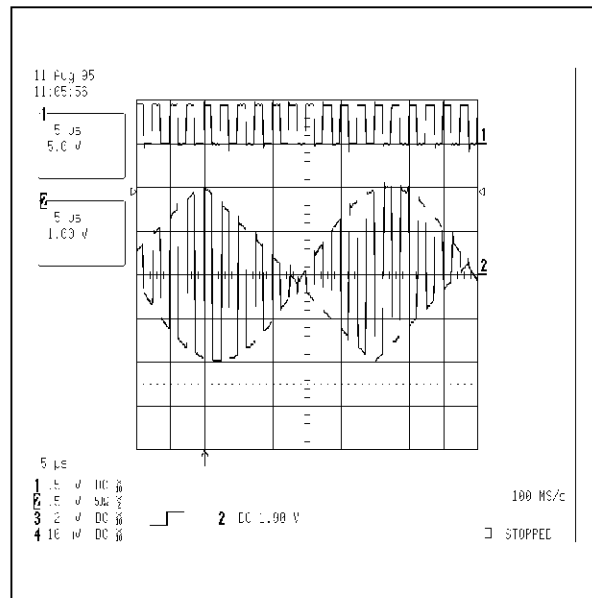


Figure 2 : Standby (1) and Output (2)



APPLICATION NOTE

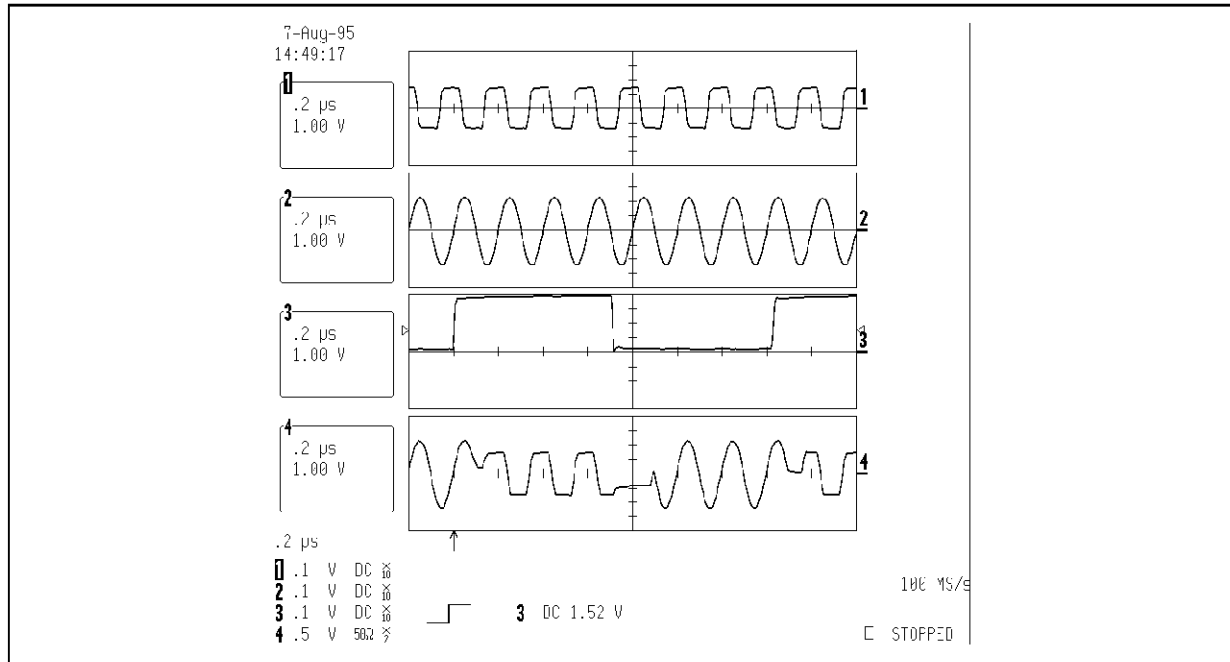
Figure 3 shows a 5MHz, 3Vpp square wave on A input and a 5MHz, 4.5Vpp sine wave on B input multiplex with a 700KHz signal.

This limitation can be avoided by using a gain circuit. Inverting input voltage is then divided by feedback resistors ratio.

SPECIAL PRECAUTIONS

In this configuration, output swing is limited by differential input voltage maximum rating at $\pm 5V$.

Figure 3 : Input A (1), Input B (2), Standby (3) and Output (4)



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