

In Figure 10, the NPD5566 monolithic dual is used in a differential multiplexer application where  $R_{DS(ON)}$  should be closely matched. Since  $R_{DS(ON)}$  for the monolithic dual tracks at better than  $\pm 1\%$  over wide temperature ranges ( $-25^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ), this makes it an unusual but ideal choice for an accurate multiplexer. This close tracking greatly reduces errors due to common-mode signals.

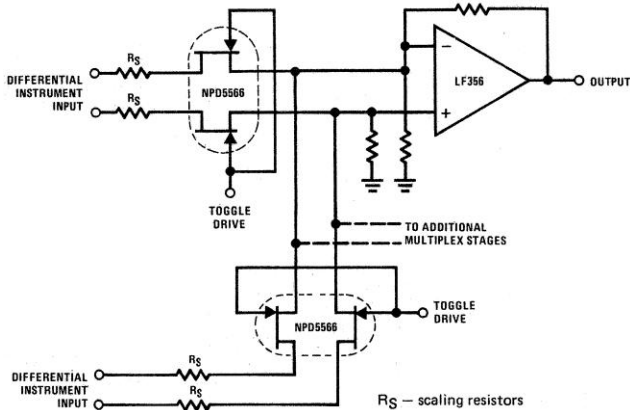


Figure 10. Differential Analog Switch

The preamplifier in Figure 11, provides proper loading to a reluctance phono cartridge. It provides approximately 35 dB of gain at 1 kHz (2.2 mV input for 100 mV output), it features S + N/N ratio of better than  $-70$  dB (referenced to 10 mV input at 1 kHz) and has a dynamic range of 84 dB (referenced to 1 kHz). The feedback provides for RIAA equalization.

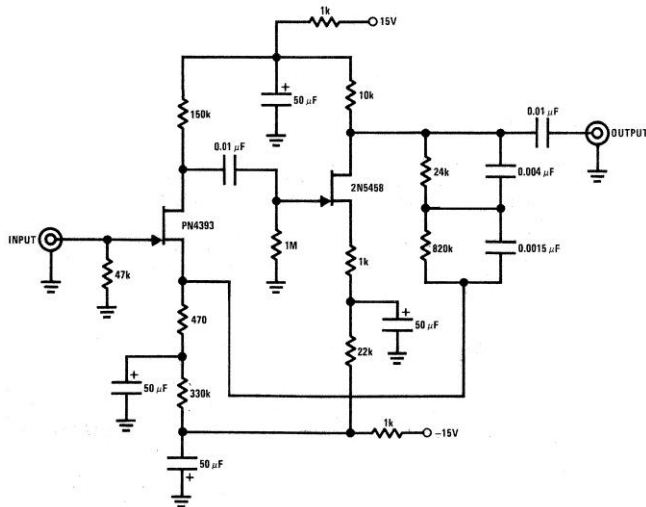


Figure 11. Magnetic Pickup Phono Preamplifier

In Figure 12, the 2N5457 acts as a voltage variable resistor with an  $R_{DS(ON)}$  of 800  $\Omega$  maximum. Since the differential voltage on the LM101 is in the low mV range, the 2N5457 JFET will have linear resistance over several decades of resistance providing an excellent electronic gain control.

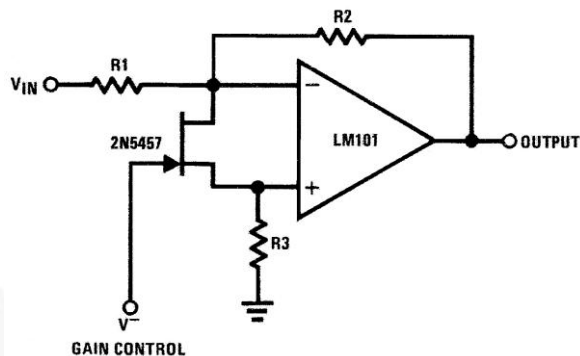


Figure 12. Voltage Controlled Variable Gain Amplifier

The PN4391, in Figure 13, provides a low  $R_{DS(ON)}$  (less than 30  $\Omega$ ). The tee attenuator provides for optimum dynamic linear range for attenuation and if complete turn-off is desired, attenuation of greater than 100 dB can be obtained at 10 MHz providing proper RF construction techniques are employed.

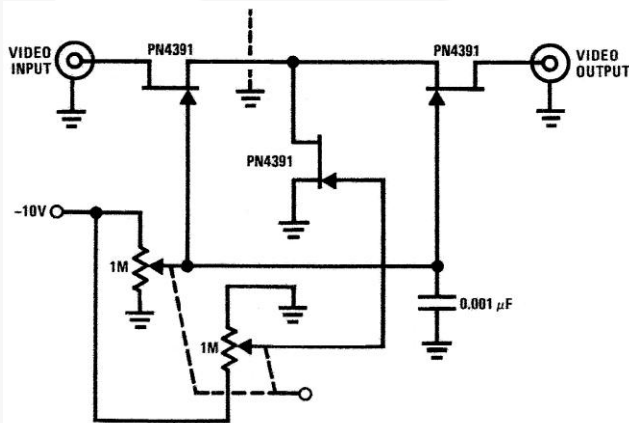


Figure 13. Variable Attenuator

In Figure 14, the 2N4391 provides a low ON resistance of 30  $\Omega$  and a high OFF impedance ( $<0.2$  pF) when OFF. With proper layout and an "ideal" switch, the performance stated above can be readily achieved.

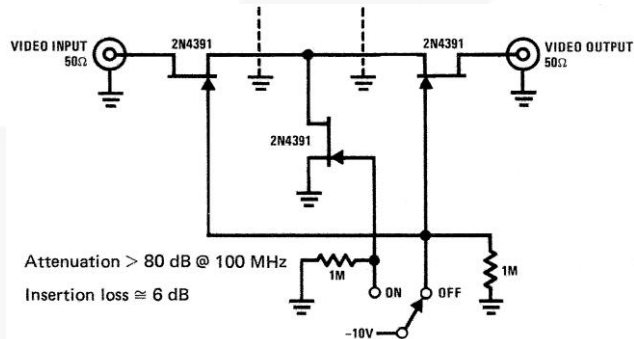


Figure 14. High Frequency Switch

Figure 15 is a simple circuit that provides for level shifting from any logic function (such as MOS) operating from minus to ground supply to any logic level (such as TTL) operating from a plus to ground supply. The 2N5639 provides a low  $R_{DS(ON)}$  and fast switching times.