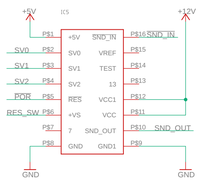
Sony SND Replacement - Through Hole

Note: This design is based on the Macintosh 128K Audio Amplifier and Volume Control.
Power On Reset Taken from 68000 Designers Handbook

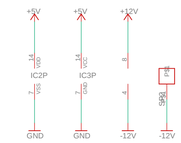
S/C: N/A	
Drawn By: DosFox	SND_Replacement
Version: V1.0	15/Oct/24 08:28
	Sheet: 1/1

ADDITIONAL ITEMS	KPN	QUANTITY

Sony SND Connector

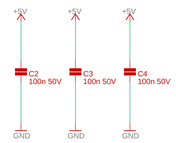


IC Power Rails

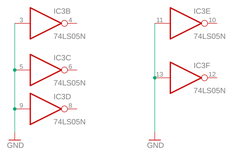


Engineers Note:
-12V is required by the 128K Audio circuitry, but is not present on the Sony SND Pinout. It will need to be tapped from elsewhere on the board.

Decoupling Capacitors

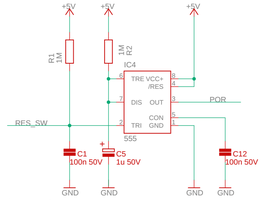


Spare Logic Gates



Engineers Note:
Dropping a hex part down when you only need a single part? Sure why not.

555 Timer POR Reset



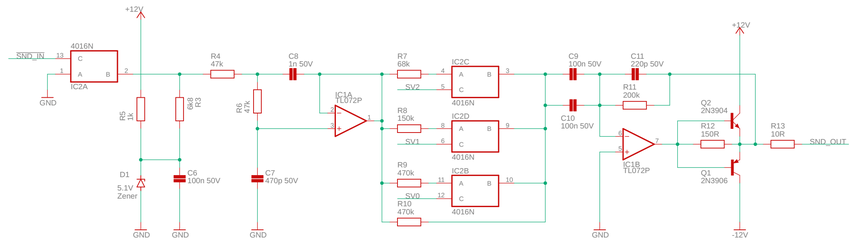
Engineers Note:
It is VITAL that the 47R resistor at R21 is removed or clipped on the Plus Logic Board. If not, the system will be held in reset.

Alternatively, replace R21 on the logic board with a 1M resistor, and Do Not Fit R2 on this SND replacement board.

Open Collector Inverter

Engineers Note:
The 74LS05 is required, as the POR is expected to be open collector
DO NOT SUBSTITUTE

Macintosh 128K Vref, Volume Control and Amp



Engineers Note:
Design taken directly from the Macintosh 128K Logic Board Schematic. The 5.1V zener is being used as an analogue reference voltage for the amplifier.
4016 is a quad analog switch, so the signal is instantly inverted by grounding the vref voltage by Switch 1.
This is then passed through to a unity gain buffer, before Switches 2-3 are used to adjust the volume by altering the resistance to the final Op-Amp.
The final op amp is the main amplifier, with the 3906 and 3904 transistors acting like a push pull output.
10R resistor has been added to the output - might be tweaked later.