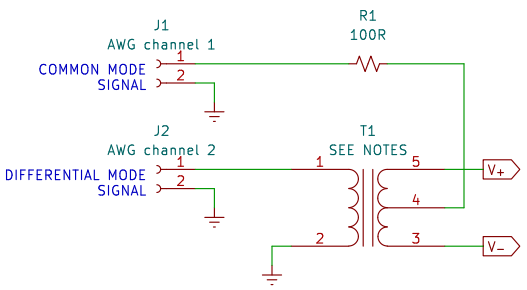
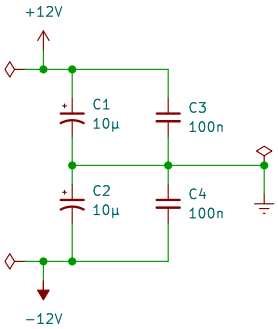
TEST RIG



T1 is a small 120V:6.3VCT power transformer
Triad Magnetics F−14X or similar.
Suitable transformers can often be scavenged
from discarded equipment with linear
power supplies.

POWER AND BYPASSING

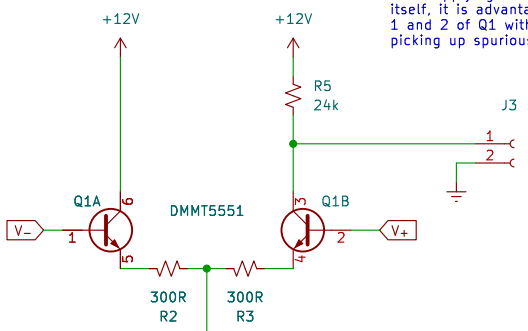


Place C3, C4 as close to Q1 as possible.

LONG−TAILED PAIR

Test rig allows testing the pair's response to common mode and differential signals, together or separately.

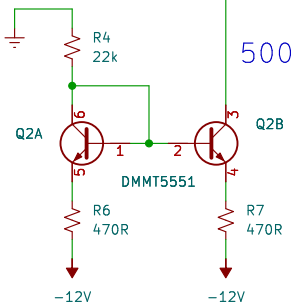
When applying the common mode signal by itself, it is advantageous to short pins 1 and 2 of Q1 with a short jumper to avoid picking up spurious differences.



This circuit can be breadboarded starting with the circuit from episode 14, removing R4 and replacing it with the current source. All other subcircuits are unchanged between the two episodes.

Test first with R2 and R3 in place.
Then remove R2 and R3 and replace with short circuits.
Observe that the gain is improved, the CMRR is unchanged,
the circuit remains thermally stable,
but large signals suffer soft clipping.

500 µA CURRENT SOURCE



open source hardware

Transistors 101, episode 15
The differential pair: improving CMRR
Kludges from Kevin's Cave

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File: LongTailedPair2.kicad_sch

Title: Long−tailed pair: the basic circuit

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