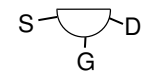
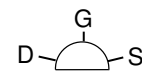
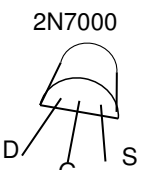
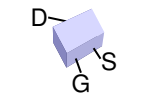
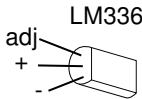
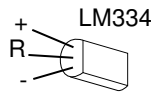


Hot water controller.

Pt 1000 resistance

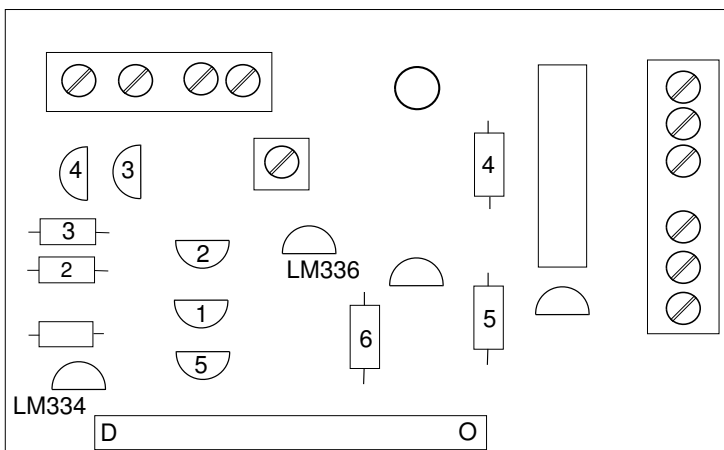
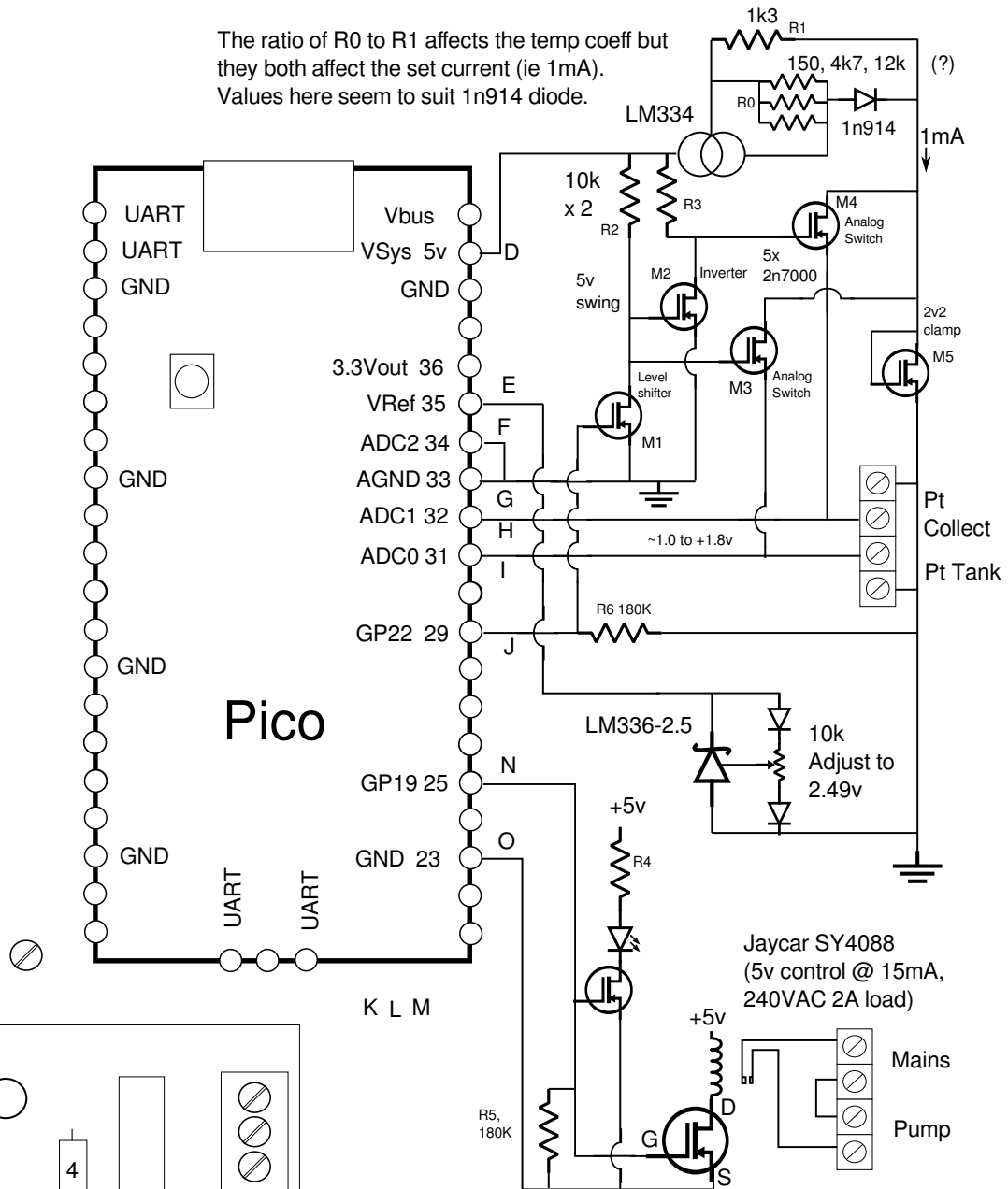
-10	960.9
-5	980.4
0	1000.0
5	1019.5
10	1039.0
15	1058.5
20	1077.9
25	1097.3
30	1116.7
35	1136.1
40	1155.4
45	1174.7
50	1194.0
55	1213.2
60	1232.4
65	1251.6
70	1270.7
75	1289.8
80	1308.9
85	1328.0
90	1347.0
95	1366.0
100	1385.0
105	1403.9
110	1422.9
150	1573.1
200	1758.4



BSS138

Source to Gate on 0.8 - 1.3v
Drain to Source on R ~ 8 ohms
2n7000
Source to Gate on at 2.0 - 2.4v
with Drain current ~1 - 2mA

The ratio of R0 to R1 affects the temp coeff but they both affect the set current (ie 1mA).
Values here seem to suit 1n914 diode.



TenthsDegrees := (adc_read() - 1645) * 1000 div 633

We are pulling VRef(ADC) down to 2.5v, this is more than the 3.0v mentioned in Pico docs, a few extra mA through R7, 200Ω rated at 100mW. Should be OK.

The Gnd symbol refers to Analog Ground not digital.

The 2n7000 with gate to drain is a 2v2 clamp, negligible leakage of 2.6uA at 1.7v (compared with 32uA from a string of forward biased diodes). At 2v, ie 200 degrees its still only about 20uA

Hot Water Controller Mk 4

David Bannon 2023-03-03