









To input stage of
5V power control circuit

5V-PWR-CTRL

BC548
T092
Q4

1.2k
R21

1.2k
R22

+12V

LM555N
U7

C12
100n

$T_{charge} = 0.693 \times (R23 + R24) \times C14$ (Watchdog timeout)

$T_{charge} = 0.693 \times (56 + 4.7) \times 22 = 925ms$

$T_{discharge} = 0.693 \times R24 \times C14$

$T_{discharge} = 0.693 \times 4.7 \times 22 = 72ms$

C13
10n
C14
22u

Keep Tperiod < 0.9s to avoid watchdog timeout

WDI

P1-16

BC548
T092
Q5

1.2k
R26

100k
R27

10k
R28

100n
C16

10k
R29

1N4148
D6

+12V

LM555N
U8

C15
100n

C17
10n
C18
10u

$T_{out} (high) = 1.1 \times R30 \times C18$

$T_{out} (high) = 1.1 \times 10 \times 10 = 110ms$

Raspberry Pi
P1 GPIO (3.3V)

High to enable watchdog

WDE

P1-18

BC548
T092
Q6

1.2k
R31

100k
R32

10k
R33

1N4148
D7

1N4148
D8

1.2k
R34

BC548
T092
Q7

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