temp sensor V_{out}

3.3V

DVCC 1
P1.0/TA0CLK/ACLK/A0/CA0 2
P1.1/TA0.0/UCA0RXD/UCA0SOMI/A1/CA1 3
P1.2/TA0.1/UCA0TXD/UCA0SIMO/A2/CA2 4
P1.3/ADC10CLK/CAOUT/VREF-/VEREF-/A3/CA3 5
P1.4/SMCLK/UCB0STE/UCA0CLK/VREF+/VEREF+/A4/CA4/TCK 6
P1.5/TA0.0/UCB0CLK/UCA0STE/A5/CA5/TMS 7
P2.0/TA1.0 8
P2.1/TA1.1 9
P2.2/TA1.1 10

N20
PW20
(TOP VIEW)

20 DVSS
19 XIN/P2.6/TA0.1
18 XOUT/P2.7
17 TEST/SBWTCK
16 RST/NMI/SBWTDIO
15 P1.7/CAOUT/UCB0SIMO/UCB0SDA/A7/CA7/TDO/TDI
14 P1.6/TA0.1/UCB0SOMI/UCB0SCL/A6/CA6/TDI/TCLK
13 P2.5/TA1.2
12 P2.4/TA1.2
11 P2.3/TA1.0

3.3V
SW
1k

3.3V
3.3V
5V
3.3V

10 VCC
1 VCCIO
8 3V3OUT
TXD 15
RXD 2
RTS# 16
CTS# 4
7 USBDM
6 USBDP
CBUS0 12
CBUS1 11
9 RESET#
CBUS2 5
CBUS3 14
GND GND GND
3 13 17

Data −
Data +
USB Header
GND

V_{DD} 0.22 μF   0.1 μF   0.1 μF
0.22 μF
5 kΩ
VREG ROSC CP1 CP2 VCP VBB1
VDD
VBB2
100 μF
SLEEP
OUT1A
STEP
OUT1B
A4988
MS1
SENSE1
MS2
MS3
DIR
OUT2A
ENABLE
OUT2B
RESET
SENSE2
VREF GND GND

$-50\ °C \le T \le 260\ °C$

$1725\Omega \ge R(T) \ge 497\Omega$
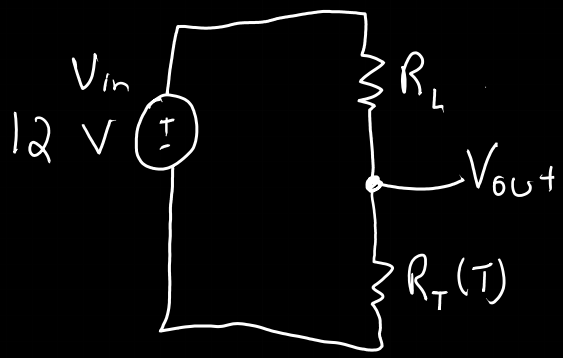
$R_T(T) = \dfrac{-385\Omega}{1°C}T + 1000\Omega$

$0V \le V_{out} \le 3.3V$

$0V \le \dfrac{-385T + 1000}{-385T + 1000 + R_L} V_{in} \le 3.3V$ $V_{out} = \dfrac{R_T(T)}{R_T(T) + R_L} V_{in}$

if $V_{in} = 12V$

$R_L =$

V_{in}
12 V
R_L
V_{out}
$R_T(T)$

ADC_{10}

$Q_V = \dfrac{V_{in}}{2^{10} - 1}$

$0.1°C \le Q_T = \dfrac{T(Q_V)}{2^{10} - 1}$