Temperature Measurement Device

GROUP MEMBERS:

1. **MD. RAFSAN JAMIL SHOVON (11.01.05.148)**
2. **ABDULLAH AL MAMUN (11.01.05.122)**
3. **MOBASHIR RAHMAN FAHIM (11.01.05.121)**
4. **HASAN AL MAMUN (11.01.05.130)**
5. **SOLIMAN SHAHRIAR (11.01.05.109)**

Section: C

Year: 2nd

Semester: 2nd

`Working Principle :

The circuit given here is a precision LED bar graph Fahrenheit thermometer ,which can be used as a temperature measurement circuit, build around IC LM 34 (sensor) and IC LM 3914 (bar graph driver). The circuit can be modified to read in degree Celsius by replacing sensor LM 34 with LM 35. Both are inter changeable. The circuit operates of a volt power supply.

To calibrate the circuit, you will need a voltmeter. Power the circuit . Ground the negative lead of the volt meter and connect the positive lead to pins 6 and 7 of IC LM 3914. Adjust R7 so the meter reads 3.345V as possible. Now connect the positive lead of the meter to pin 4 of IC LM 3914 and change R5 until the meter reads 2.545V. Disconnect power to the circuit and remove both IC's from their holders. Check the value of R3 with an ohmmeter and remember that value. Connect the ohmmeter across R1 and set R1 to a value of exactly 3 times the value of R3. Reconnect both IC's and the circuit is ready. Here the circuit is designed for home use and reads between 60 to 80 degree F.

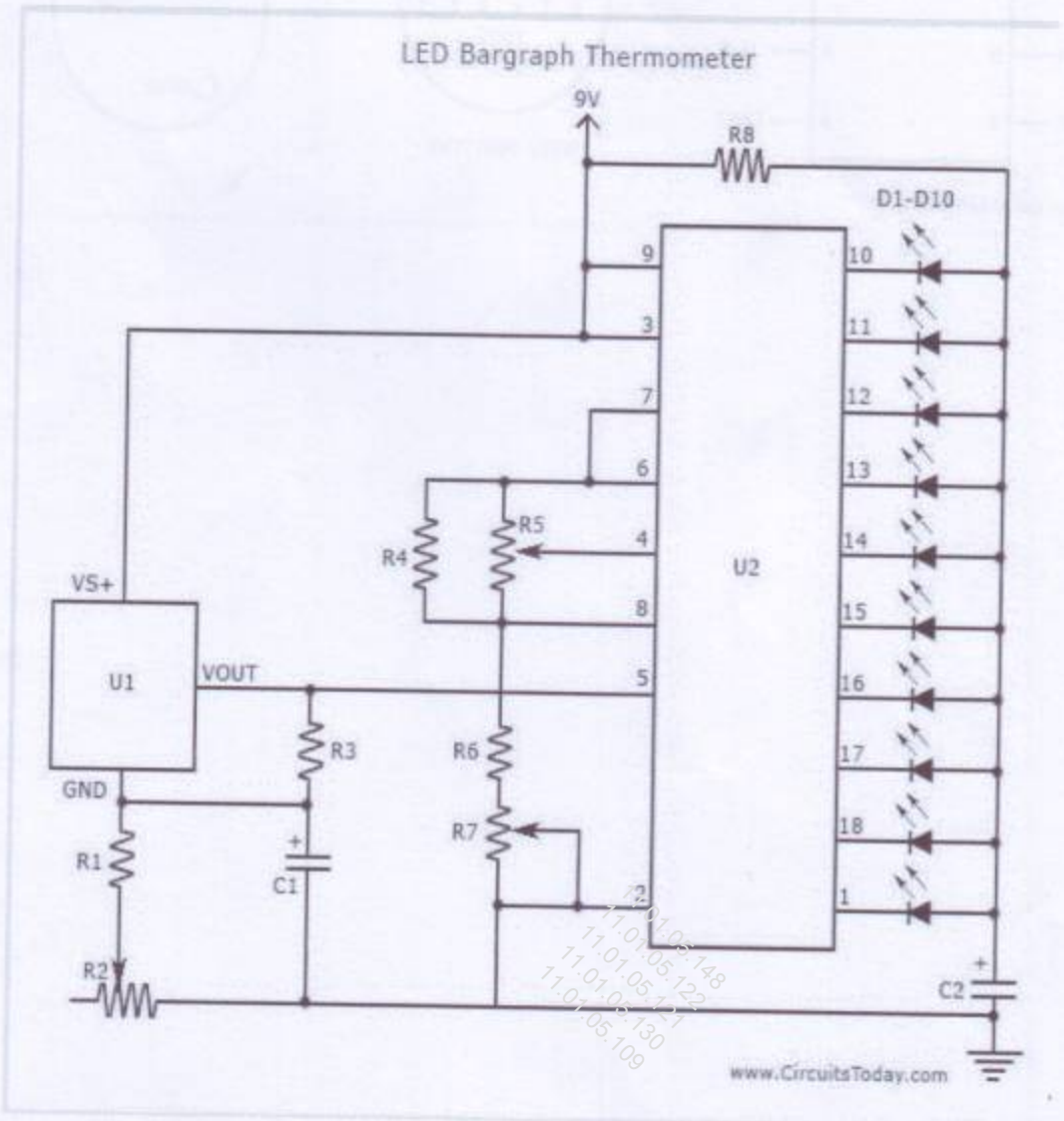
If pin 9 of IC LM 3914 is left disconnected the display will be in dot mode and R8 must be 100 Ohm. If pin 9 is connected to 9 V display will be in bar mode.

Parts list

Part.	Qty.	Description .
C1	1	1uF 25V Electrolytic Capacitor
C2	1	10uF 25V Electrolytic Capacitor
R1	1	2.2K 1/4W Resistor
R2,R5,R7	3	1K Trim Pot
R3	1	1K 1/4W Resistor
R4	1	1.5K 1/4W Resistor
R6	1	470 Ohm 1/4W Resistor
R8	1	100 Ohm Or 15 Ohm 1/4W Resistor (See Notes)
D1-D10	10	LED
U1	1	LM34DZ Precision Fahrenheit Temperature Sensor

U2		1	LM3914	Bar/Dot	Graph	Driver	IC
MISC	1	Board, Wire, Socket For IC's, Case					

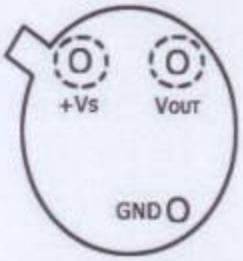
Circuit Diagram:



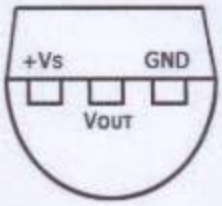
LM 3435 Pin Configuration:

LM 3435 PIN CONFIGURATION

TO-46
Metal Can Package
(Note 1)

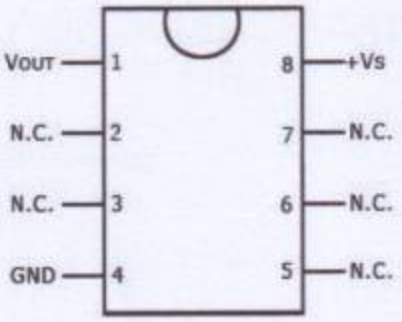


To-92
Plastic Package



BOTTOM VIEW

SO-8
Small Outline
Moulded Package



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