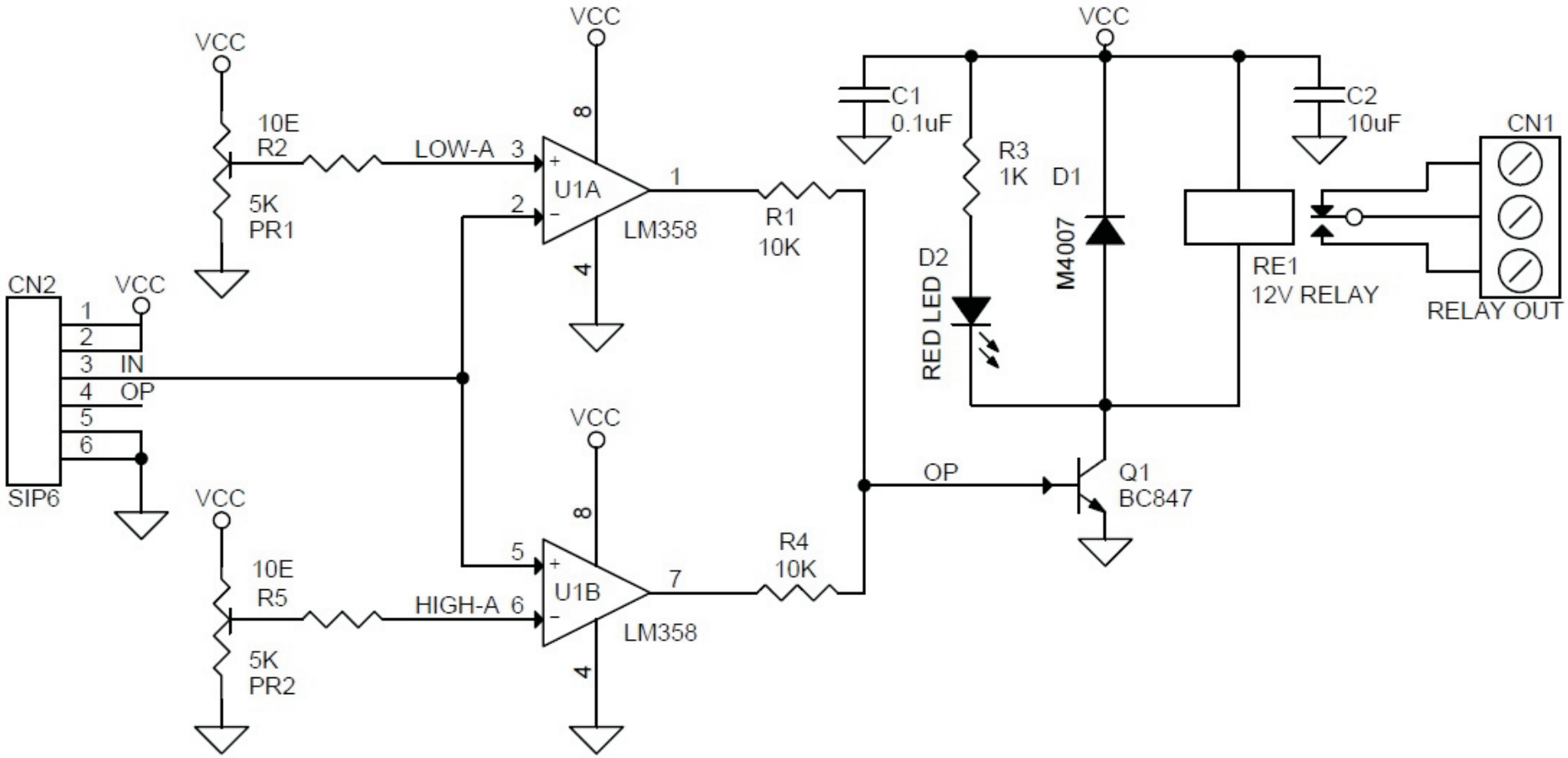
Window Comparator / Window Detector

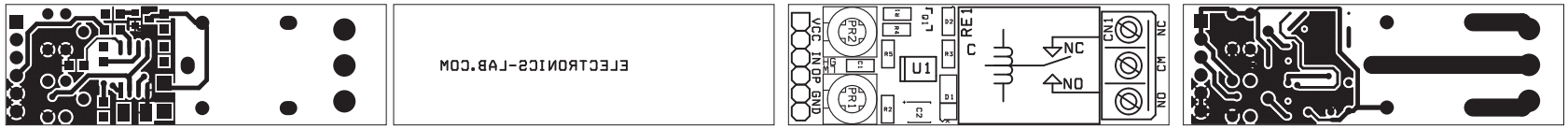
A window detector circuit, also called window comparator circuit or dual edge limit detector circuits is used to determine whether an unknown input is between two precise reference threshold voltages. It employs two comparators to detect over-voltage or under-voltage.

This circuit utilizes two comparators in parallel to determine if a signal is between two reference voltages. If the signal is within the window, the output is low thus RELAY is in off condition and also LED is off. Relay provides normally ON and normally OFF switch. If the signal level is outside of the window, the output is high and Relay is in ON condition. For this design, the reference voltages are generated with help of two Trimmer potentiometer. One pot used to set the high voltage level and another one to set the low level voltage adjust. LM358 op-amp used as comparator, circuit works with 12V DC supply and consumes 50mA current when Relay is ON state.

Features

- Supply 12V DC
- Two Trimmer Potentiometer Low/High Ref. Adjust
- Relay Switch 230V AC 7 Amps
- Normally Output and Normally Closed Relay Switch
- Window detector voltage span 0-12V


VCC
10E
R2
5K
PR1
LOW-A
3
2
U1A
LM358
8
4
1
R1
10K
VCC
C1
0.1uF
R3
1K
D1
M4007
D2
RED LED
VCC
C2
10uF
CN1
RE1
12V RELAY
RELAY OUT
CN2
VCC
1
2
3 IN
4 OP
5
6
SIP6
VCC
10E
R5
5K
PR2
HIGH-A
6
5
U1B
LM358
8
4
7
R4
10K
VCC
OP
Q1
BC847



TOP LAYER | SILK SCREEN BOTTOM | SILK SCREEN TOP | BOTTOM LAYER

PCB Dimensions 53.56mm X 16.99mm

BOM			
SR.	QNTY.	REF.	DESC.
1	1	CN1	3 PIN SCREW TERMINAL
2	1	CN2	6 PIN MALE HEADER CONNECTOR
3	2	C1,C2	0.1uF SMD 0805
4	1	D1	1N4007 SMD
5	1	D2	RED LED SMD 0805
6	2	PR1,PR2	5K TRIMMER POT
7	1	Q1	BC847 SOT23
8	1	RE1	12V RELAY
9	2	R1,R4	10K SMD 0805
10	2	R2,R5	10E SMD 0805
11	1	R3	1K SMD 0805
12	1	U1	LM358 SMD SO8