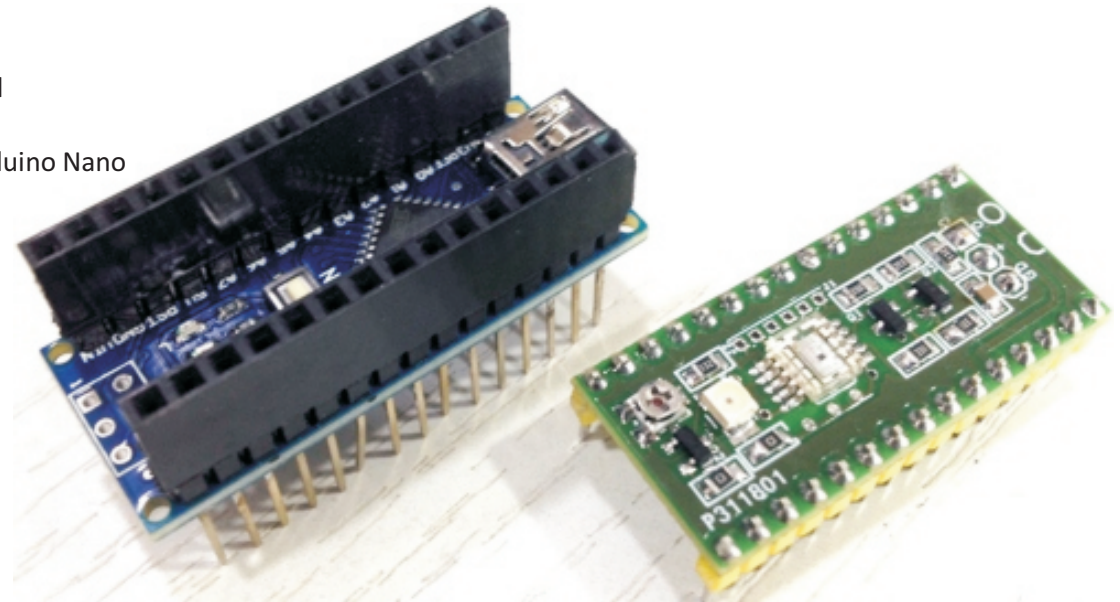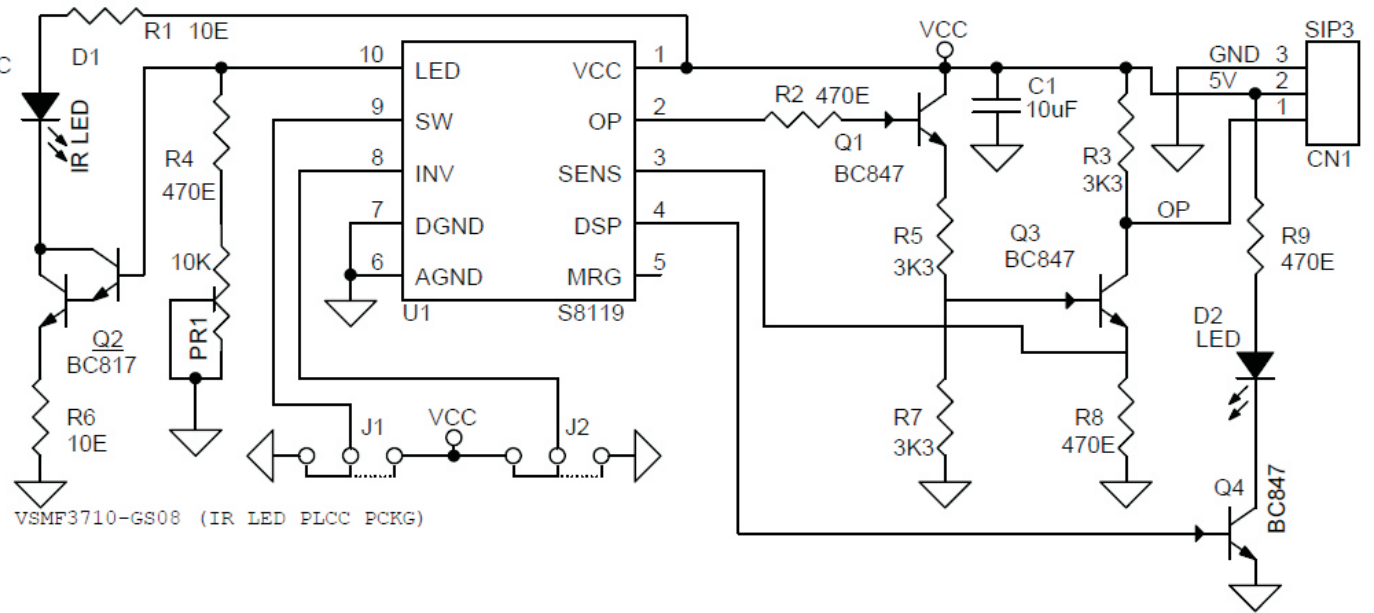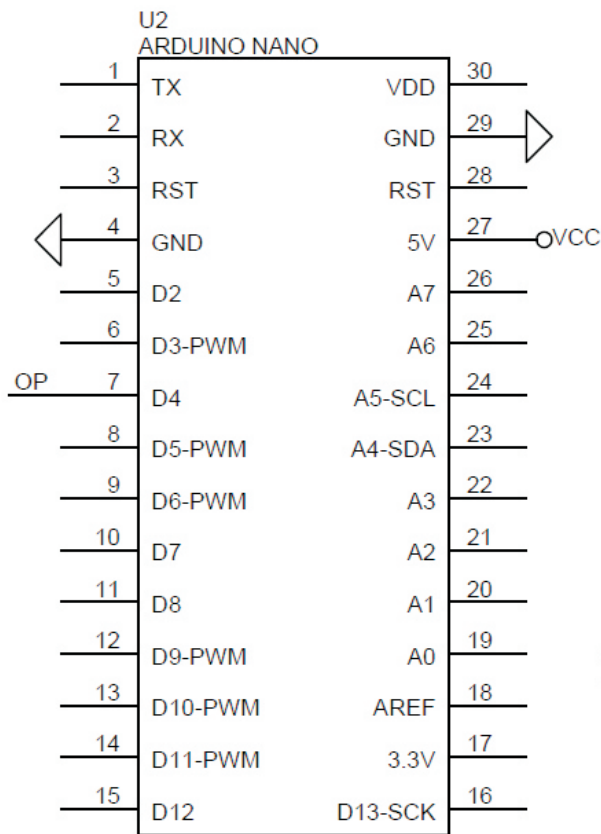## PHOTO-ELECTRIC DEFUSE SENSOR USING S8119

This is an industrial grade defuse photoelectric sensor module which is based on Optical IC S8119 from HAMAMATSU, A diffuse reflection sensor is used for the direct detection of an object, The defuse reflective sensor project consist of an Infra-RED LED and receiver the IC also provides output pulses to the IR LED which emits IR- light which is reflected by the object to be detected and seen by the S8119 IC. Both the emitter LED and receiver sensor are placed on same PCB and are configured for light to be reflected back to the sensor. The diffuse reflective type senses an object when the light beam is reflected back to the sensor. The circuit provides sensing range up to 50MM however range can be increase with help of putting sensor in metal housing shield, proper optics and IR filter, Circuit work with 5V DC., Trimmer potentiometer PR1 provided to set the sensitivity, Normally sensor output is High , its goes low once its detect an object, also D2 LED indicates the object. This board can be used as standalone sensor or as Arduino Nano shield, output of the sensor is connected to the Digital pin D4 of the Arduino Nano, with help of this shield many Reflective sensor based projects are possible. PCB Jumper J1, J2 can be left open/untouched for normal operations, refer data sheet of the IC for J1 and J2.
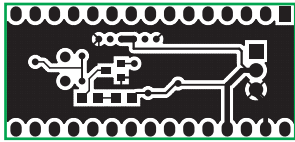
Note : Sensitivity of the IC is the reciprocal of background light level, which is constantly detected as signal by IC, If the background disturbance light strikes a part on the package of IC, this may lower the allowable background light level. Use light-impervious tape or metal shielding over the shaded area of the IC.
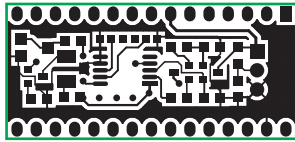
Features

- Supply 5V DC
- Output Normally High TTL, Goes Low When object detected
- Trimmer Potentiometer PR1 Sensitivity Adjust
- Output of the Sensor Connected to Digital Pin D4 of the Arduino Nano
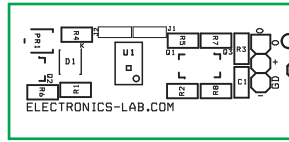- Use Shield/Isolation between IC and IR LED

U2
ARDUINO NANO

1	TX	VDD	30
2	RX	GND	29
3	RST	RST	28
4	GND	5V	27
5	D2	A7	26
6	D3-PWM	A6	25
7	D4	A5-SCL	24
8	D5-PWM	A4-SDA	23
9	D6-PWM	A3	22
10	D7	A2	21
11	D8	A1	20
12	D9-PWM	A0	19
13	D10-PWM	AREF	18
14	D11-PWM	3.3V	17
15	D12	D13-SCK	16

VCC

OP

R1 10E

D1

IR LED

R4 470E

10K

PR1

Q2
BC817

R6
10E

VSMF3710-GS08 (IR LED PLCC PCKG)

10	LED	VCC	1
9	SW	OP	2
8	INV	SENS	3
7	DGND	DSP	4
6	AGND	MRG	5

U1   S8119

J1   VCC   J2

VCC

R2 470E

Q1
BC847

R5
3K3

R7
3K3

C1
10uF

Q3
BC847

R8
470E

OP

GND 3
5V 2
1

SIP3

CN1

R3
3K3

R9
470E

D2
LED

Q4
BC847

BOTTOM

TOP

SILK SCREEN TOP
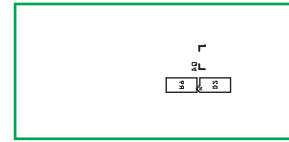
SILK SCREEN BOTTOM

BOM			
SR.	QNTY.	REF.	DESC
1	1	CN1	3 PIN HEADER CONNECTOR
2	1	C1	10uF SMD 0805
3	1	D1	VSMF3710-GS08 IR LED VISHAY
4	1	D2	LED SMD 0805
5	2	J1,J2	3 PIN PCB JUMPPER
6	1	PR1	10K SMD 3MM POT
7	3	Q1,Q3,Q4	BC847
8	2	R1,R6	10E SMD 0805
9	4	R2,R4,R8,R9	470E SMD 0805
10	3	R3,R5,R7	3K3 SMD 0805
11	1	U1	S8119 SMD HAMAMATSU
12	1	U2	ARDUINO NANO
13	1	Q2	BC817

07005