

This product is under development, and specifications are subject to change without notice.

Optical Touchless Sensor

■ FEATURES

- Miniature, thin package : (3.6 X 5.8 X 1.2mm)
- External disruptive light tolerance (10,000lux)
- Built-in interference prevention for adjoin sensors
- Digital output (Normally off type)
- Pb free solder re-flowing permitted : 260°C, 2times
- Halogen free, Pb free, Compliant with RoHS directive

■ APPLICATION

- Operation Switch
- Operation panel

■ GENERAL DESCRIPTION

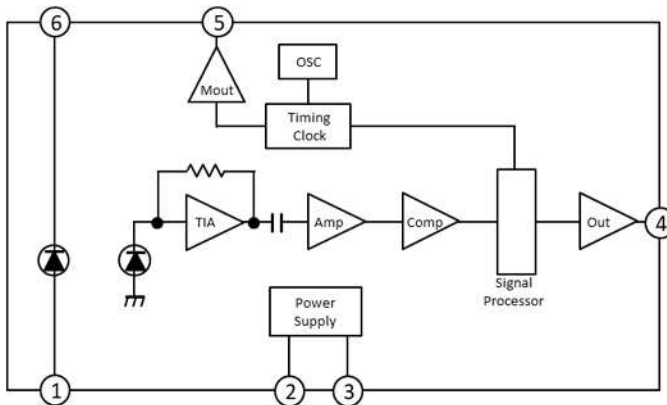
The NJL5830R is a reflective sensor that incorporates a high power infrared LED and photosensitive IC in a unique package.

The NJL5830R enables touchless operation without directly touching the buttons.

Touchless operation of buttons on highly public equipment contributes to countermeasures against bacterial infection and improvement of hygiene.

It is also highly resistant to ambient light, and can be used for outdoor equipment.

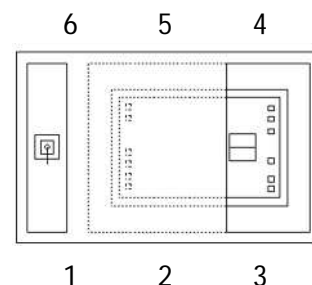
■ BLOCK DIAGRAM



■ PIN CONFIGURATION

PIN NO.	SYMBOL	DESCRIPTION
1	Anode (LED)	Anode for LED
2	V _{CC}	Power Supply
3	GND	GND
4	OUT	Output
5	MOUT	Modulation Output for LED
6	Cathode (LED)	Cathode for LED

(Top View)



■ ORDERING INFORMATION

PART NUMBER	PACKAGE OUTLINE	RoHS	HALOGEN-FREE	TERMINAL FINISH	MARKING	WEIGHT (mg)	MOQ(pcs)
NJL5830R	COBP	✓	✓	Au	No marking	TBD	(3,000)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25deg.C)

Parameter	Symbol	Rating	Unit
Emitter			
Forward Current (Continuous)	I _F	30	mA
pulse forward current(Continuous)*1	I _{FP}	200	mA
Reverse Voltage (Continuous)	V _R	6	V
Power Dissipation	P _D	55	mW
Detector(PDIC)			
Supply Voltage	V _{CC}	15	V
Power Dissipation	P _{PDIC}	50	mW
Coupled *2			
Total Power Dissipation	P _{tot}	100	mW
Operating Temperature	T _{opr}	-30 to +70	°C
Storage Temperature	T _{stg}	-30 to +85	°C
Reflow Soldering Temperature	T _{sol}	260	°C

*1 : when the pulse width is 3.5μsec,pulse period 112μsec

*2 : Use the recommended reflector.

■ RECOMMENDATION OPERATING CONDITION

Parameter	Symbol	Value	Unit
Forward current	I _{FP}	20	mA
Supply voltage	V _{CC}	+5.0	V
Detection distance	Gap	(20)	mm

*1 : when the pulse width is 3.5μsec,pulse period 112μsec

■ ELECTRICAL AND OPTICAL CHARACTERISTICS (Ta=25deg.C)

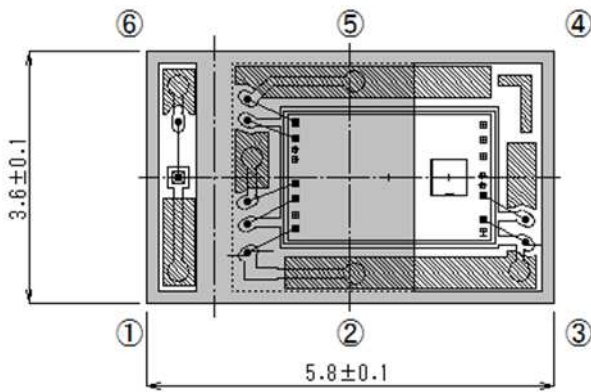
Parameter	symbol	Conditions	Min.	Typ.	Max.	Unit
Emitter						
Forward Voltage	V _F	I _F =20mA	1.3	1.5	1.9	V
Revers Voltage	I _R	V _R =6V	-	1	10	μA
Peak wavelength	λ _P	I _F =20mA	-	940	-	nm
Detector						
Supply Voltage	V _{CC}		4.5	5.0	6.0	V
Operating Current	I _{CC}	V _{CC} =5.0V, No incident light	1.4	2.0	2.7	mA
MOUT Output voltage	V _{MOUT}	V _{CC} =5.0V, Load LED-GND 1kΩ	(3.0)	(4.0)	-	V
MOUT pulse width			-	3.5	-	μs
MOUT pulse period			-	112	-	μs
High Level Output Voltage	V _{OH}	V _{CC} =5.0V, I _{SOURCE} =1mA	4.5	-	-	V
Low Level Output Voltage	V _{OL}	V _{CC} =5.0V, I _{SINK} =1mA	-	-	0.5	V
Coupled*2						
L-H Threshold voltage	IFLH	V _{CC} =5.0V, d=20mm(Al Mirror) *1	-	(10)	(15)	mA
Hysteresis	Hys		(0.6)	(0.8)	(0.95)	

*1 : when the pulse width is 3.5μsec,pulse period 112μsec

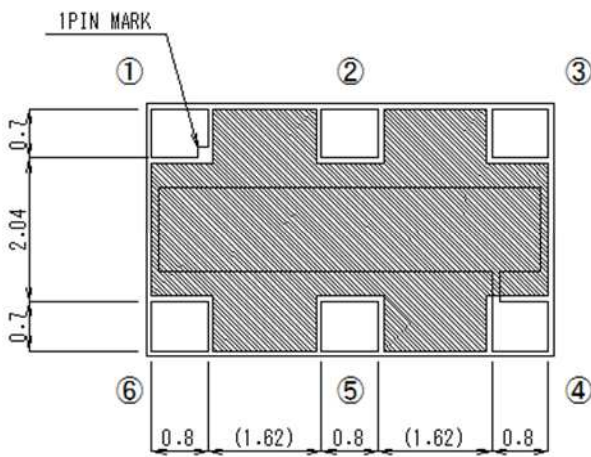
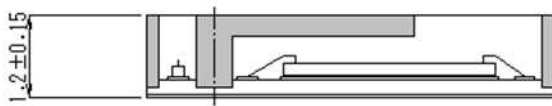
*2 : Use the recommended reflector.

Items for which only standard values are listed in the electrical and optical characteristics table are not measured due to the manufacturing process.

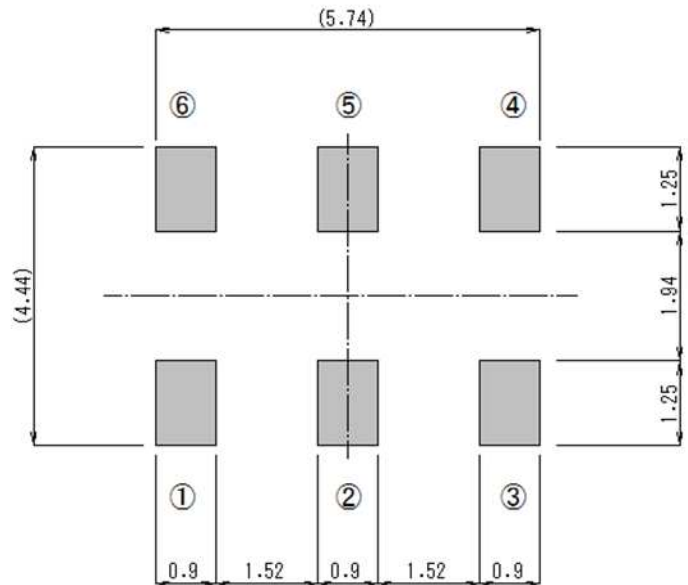
■ PACKAGE OUTLINE unit: mm



- : Anode(LED)
- : Vcc
- : GND
- : OUT
- : MOUT
- : Cathode(LED)

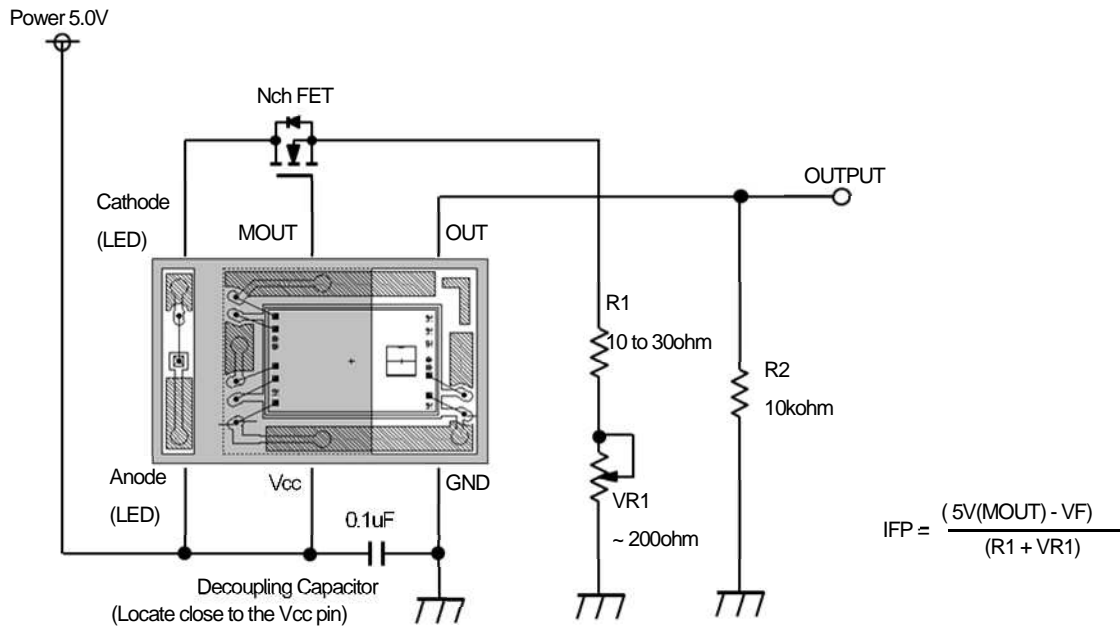


Foot Pattern



Unspecified tolerance : ± 0.1 mm

■ CONNECTION DIAGRAM



■ APPLICATION NOTES**(1) Handling warning**

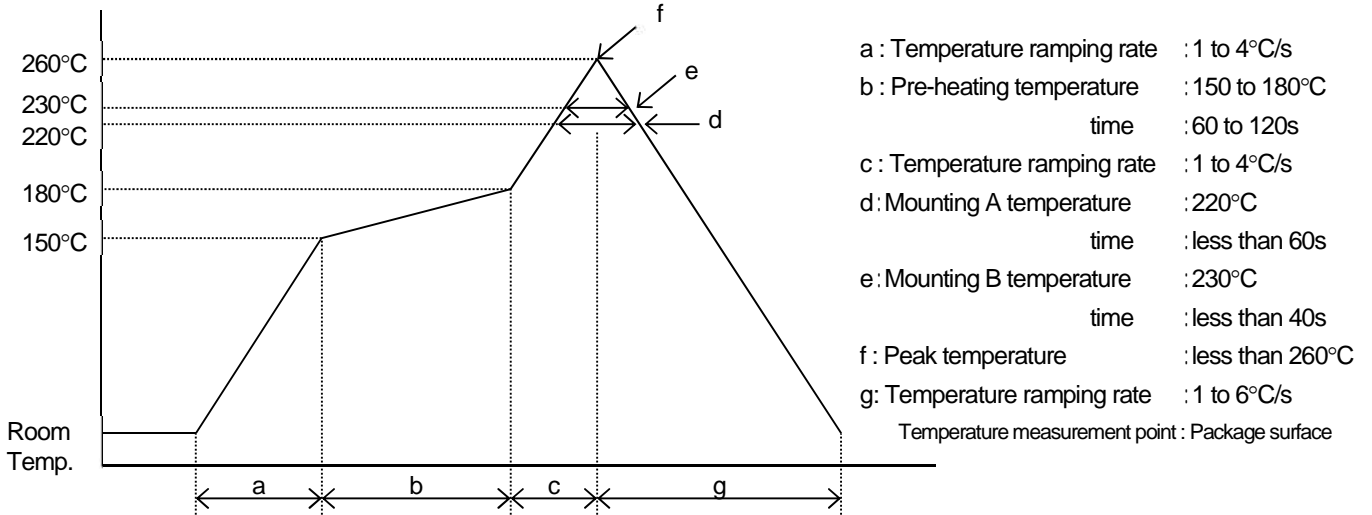
- Handle it so that it does not touch the mold part, especially the light passing surface.
- When using, be careful not to allow dust, dirt, flux, etc. to adhere to the light passing surface.
- When driving the LED with voltage, be sure to insert a resistor for current limiting. If a voltage is applied directly, the element may be destroyed due to excessive current, so please avoid it.
- When installing, the positional relationship with the reflective object is very important, Please be careful about the deviation and inclination the mounting position.

(2) Design precautions

- The characteristics may change depending on the detection target. Please refer to this datasheet and evaluate with the actual detect object.
- If the power is turned on for a long time, the output current will decrease due to the decrease in LED emission. When always energized, design the circuit in consideration of the decrease in output current.

■ INFRARED REFLOW SOLDERING METHOD

Recommended reflow soldering procedure



(NOTE1) Using reflow furnace with short wave infrared radiation heater such as halogen lamp

Regarding temperature profile, please refer to those fo reflow furnace.

In this case the resin surface temperature may become higher than lead terminals due to endothermic ally of black colored mold resin. Therefore, please avoid from direct exposure to mold resin.

(NOTE2) Other method

Such other methods of soldering as dipping the device into melted solder and vapor phase method (VPS) are not appropriate because the body of device will be heated rapidly. Therefore, these are not recommended to apply.

(NOTE3) The resin gets softened right after soldering, so, the following care has to be taken

Not to contact the lens surface to anything.

Not to dip the device into water or any solvents.

■ FLOE SOLDERING METHOD

Flow soldering is not possible.

■ IRON SOLDERING METHOD

Iron soldering is not possible.

■ CLEANING

Avoid cleansing after reflowing this product.

■ IC STORAGE CONDITIONS AND ITS DURATION

(1) Temperature and humidity ranges

Pack Sealing	Temperature:	5 to 40 [°C]
	Humidity:	40 to 80 [%]
Pack Opening	Temperature:	5 to 30 [°C]
	Humidity:	40 to 70 [%]

After opening the bag, solder products within 48h.

Avoid a dry environment below 40% because the products are easily damageable by the electrical discharge.

Store the products in the place where it does not create dew with the products due to a sudden change in temperature.

- (2) When baking, place the reel vertically to avoid load to the side.
- (3) Do not store the devices in corrosive-gas atmosphere.
- (4) Do not store the devices in a dusty place.
- (5) Do not expose the devices to direct rays of the sun.
- (6) Do not allow external forces or loads to be applied to IC's.
- (7) Be careful because affixed label on the reel might be peeled off when baking.
- (8) The product is recommended to do the baking before using for the stability of the quality.

■ BAKING

In case of keeping expect above condition be sure to apply baking.

Baking method: Ta=60°C, 48 to 72h, One time baking is allowed

■ STORAGE DURATION

Within a year after delivering this device.

For the products stored longer than a year, confirm their terminals and solderability before they are used.

■ MOISTURE SENSITIVITY LEVELS

JEDEC : Level 4

[CAUTION]

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