

## INFRARED REMOTE CONTROL RECEIVER

### ■ GENERAL DESCRIPTION

The NJL20H/V000A series are small and high performance receiving devices for infrared remote control system.

They can operate under low and wide supply voltage (2.7V to 5.5V) with enhanced immunity against all kinds of disturbance light

### ■ FEATURES

1. Wide and low supply voltage 2.7V to 5.5V
2. Low supply current 0.56mA max.
3. Mold type and metal case type to meet the design of front panel.
4. Line-up for various center carrier frequencies.

### ■ APPLICATIONS

1. AV instruments such as Audio, TV, VCR, CD, MD,DVD etc.
2. Home application such as Air-conditioner, Fan etc.
3. Battery operated instruments such as Toy, Camera etc.

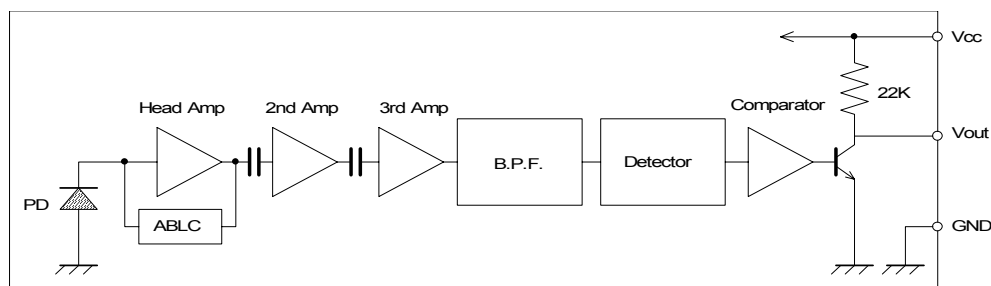
### ■ LINE-UP

| Mold/Metal case   | Mold type  |            |              |
|-------------------|------------|------------|--------------|
| View              | Side       | Top        |              |
| Hight             |            |            |              |
| Carrier Frequency | 6.3mm      | 5.4mm      | 5.4mm        |
| fo= 36 kHz        | NJL21V360A | NJL21H360A | NJL21H360AF3 |
| 36.7 kHz          | NJL21V367A | NJL21H367A | NJL21H367AF3 |
| 38 kHz            | NJL21V380A | NJL21H380A | NJL21H380AF3 |
| 40 kHz            | NJL21V400A | NJL21H400A | NJL21H400AF3 |

| Mold/Metal case   | Metal Case type |              |            |            |            |
|-------------------|-----------------|--------------|------------|------------|------------|
| View              | Side            | Top          |            |            |            |
| Hight             |                 |              |            |            |            |
| Carrier Frequency | 6.3mm           | 5.7mm        | 8mm        | 11mm       | 15mm       |
| fo= 36 kHz        | NJL21V360A-M    | NJL21H360A-M | NJL22H360A | NJL23H360A | NJL24H360A |
| 36.7 kHz          | NJL21V367A-M    | NJL21H367A-M | NJL22H367A | NJL23H367A | NJL24H367A |
| 38 kHz            | NJL21V380A-M    | NJL21H380A-M | NJL22H380A | NJL23H380A | NJL24H380A |
| 40 kHz            | NJL21V400A-M    | NJL21H400A-M | NJL22H400A | NJL23H400A | NJL24H400A |

Regarding other frequency or packages, please contact to New JRC individually.

### ■ BLOCK DIAGRAM



# NJL21H/21V/22H/23H/24H000A

## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER                   | SYMBOL           | RATINGS                          | UNIT |
|-----------------------------|------------------|----------------------------------|------|
| Supply Voltage              | V <sub>cc</sub>  | 6.3                              | V    |
| Operating Temperature Range | T <sub>opr</sub> | -30 to +85                       | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40 to +85                       | °C   |
| Soldering Temperature       | T <sub>sol</sub> | 260 (5sec. 4.0mm from mold body) | °C   |

## ■ RECOMMENDED OPERATING CONDITION

Supply Voltage Range    V<sub>cc</sub>    2.7 V    to    5.5V

## ■ ELECTRO-OPTICAL CHARACTERISTICS (V<sub>cc</sub>=3.3V, Ta=25°C)

| PARAMETER              | SYMBOL          | TEST CONDITION                                  | MIN  | TYP | MAX  | UNIT |
|------------------------|-----------------|-------------------------------------------------|------|-----|------|------|
| Supply Current         | I <sub>cc</sub> | No Signal Input                                 | —    | —   | 0.56 | mA   |
| Transmission Distance  | L <sub>c</sub>  | Direction of Ray Axis    *1                     | 13   | 18  | —    | m    |
| Directivity            | θ <sub>L</sub>  | Angle of half L <sub>c</sub> , Horizontal    *2 | —    | 45  | —    | deg  |
|                        | θ <sub>V</sub>  | Angle of half L <sub>c</sub> , Vertical    *2   | —    | 30  | —    | deg  |
| Output Voltage Low     | V <sub>L</sub>  | No Load                                         | —    | 0.2 | 0.5  | V    |
| Output Voltage High    | V <sub>H</sub>  | No Load                                         | 2.8  | —   | —    | V    |
| Low Level Pulse Width  | T <sub>wL</sub> | See Test Circuit                                | 400  | —   | 850  | μs   |
| High Level Pulse Width | T <sub>wH</sub> | See Test Circuit                                | 350  | —   | 800  | μs   |
| Center Frequency       | f <sub>o</sub>  | See Line-up                                     | 36.0 | —   | 40.0 | kHz  |

Note \*1:Test with each center carrier frequency under the test condition shown below.

\*2:Place major axis of elliptic lens in horizontal direction and minor vertical.

## ■ TEST METHOD

Test condition in as follows:

### (1) Standard transmitter:

Transmitting waveform is shown in Fig.1

Transmitting power should be adjusted

so that output voltage V<sub>out</sub> will be

400mVp-p.(Test circuit is shown in Fig.2)

Regarding IR LED used for transmitter,

λ<sub>p</sub>=940nm, Δλ=50nm.

Regarding photo diode,

Sensitivity    S=26nA/Lx

in case light source temperature2856°K,

E<sub>e</sub>=100Lx, VR=5V

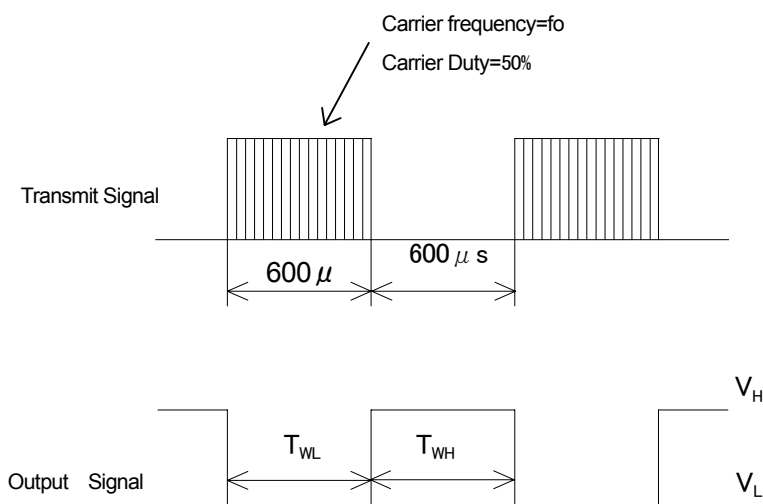
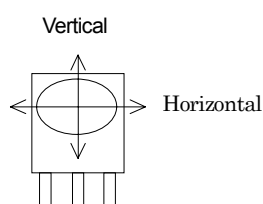
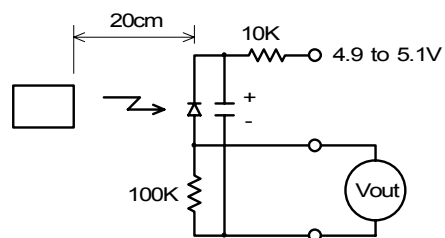
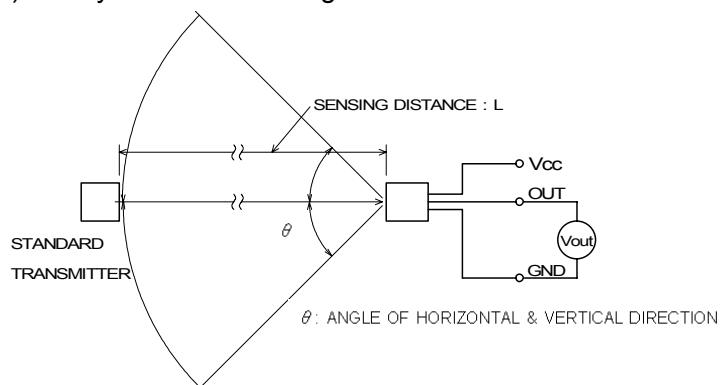
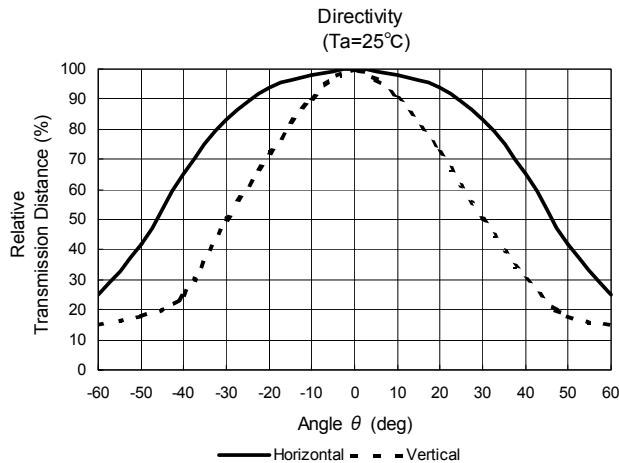
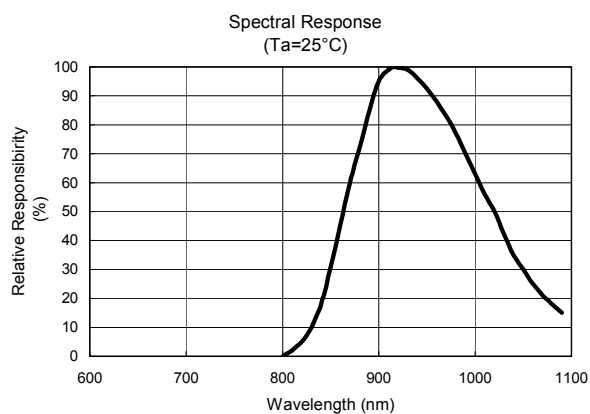


Fig.1 TRANSMITTER WAVE FORM

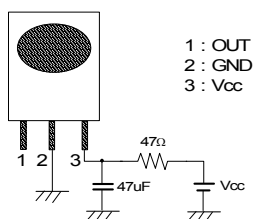
(2) Test system: Shown in Fig.3.



## TYPICAL CHARACTERISTICS



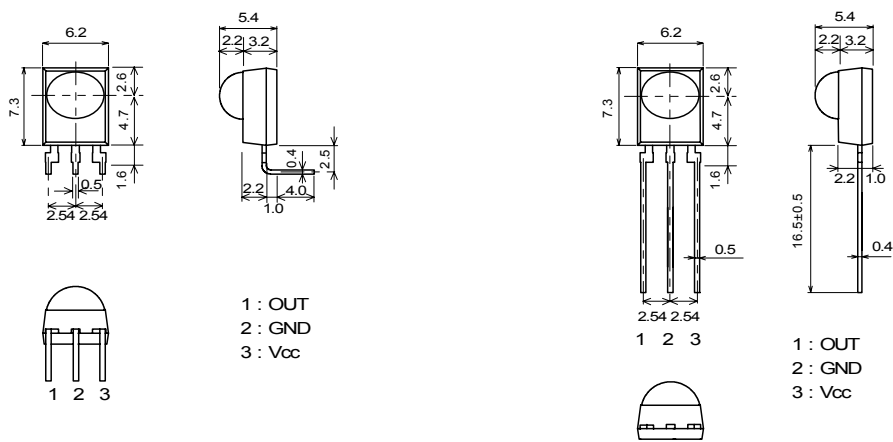
## RECOMMENDED APPLICATION CIRCUIT



RC Filter should be connected closely between Vcc pin and GND pin.

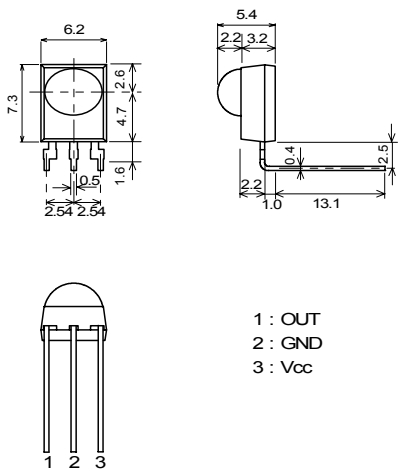
# NJL21H/21V/22H/23H/24H000A

## OUTLINE

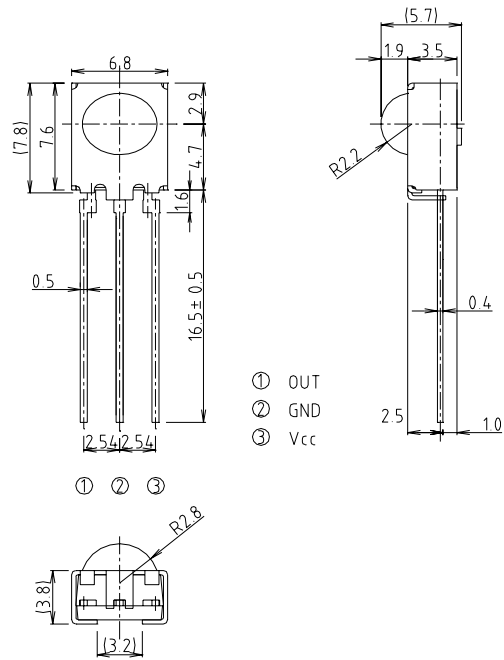


NJL21H000A  
UNIT:mm

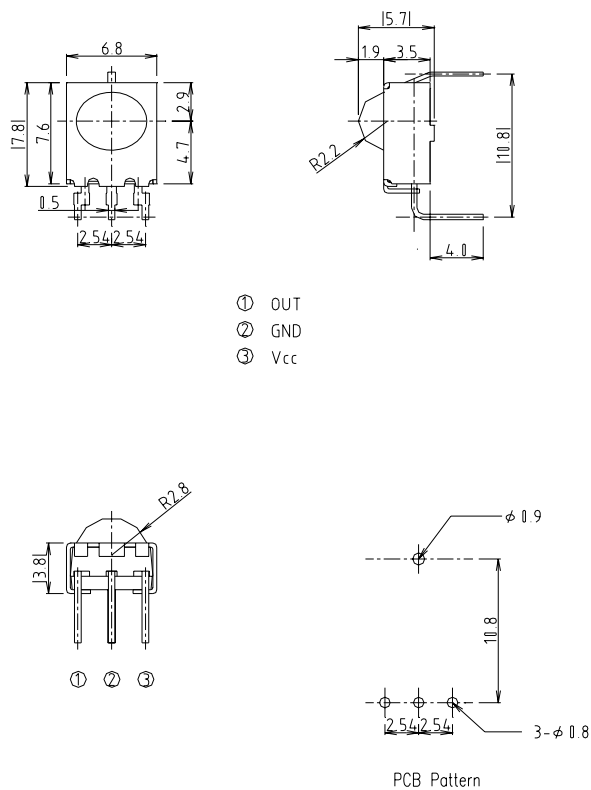
NJL21V000A  
UNIT:mm



NJL21H000AF3  
UNIT:mm

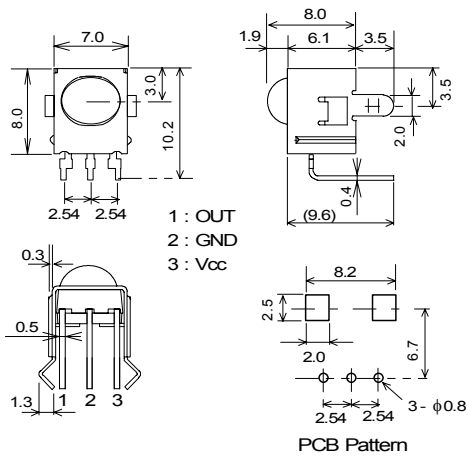


NJL21V000A – M  
UNIT:mm

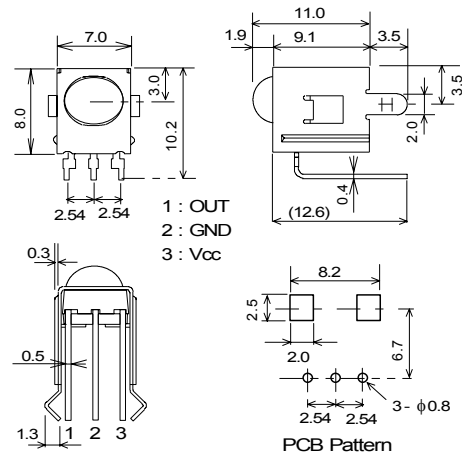


NJL21H000A – M  
UNIT:mm

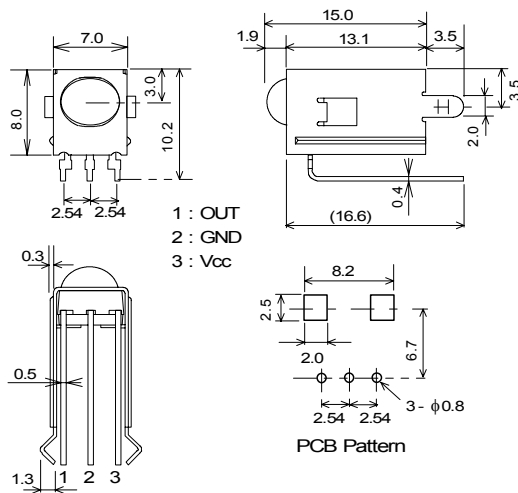
# NJL21H/21V/22H/23H/24H000A



NJL22H000A  
UNIT:mm



NJL23H000A  
UNIT:mm



NJL24H000A  
UNIT:mm

1. Tolerance is  $\pm 0.3\text{mm}$  unless otherwise noted.
2. Ground metal case on PCB. Metal case is not connected to GND pin inside. Tolerance is  $\pm 0.3\text{mm}$  unless otherwise noted.

## [CAUTION]

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