

## INFRARED REMOTE CONTROL RECEIVER

### ■ GENERAL DESCRIPTION

The NJL21H/21V/22H/23H/24H000A 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 the disturbance light.

### ■ FEATURES

1. Wide and low supply voltage 2.7V to 5.5V
2. Low supply current 0.43mA typ.  $V_{cc}=3.3V$
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, STB etc.
2. Home application such as Air-conditioner, Fan etc.
3. Game machine, toy etc.

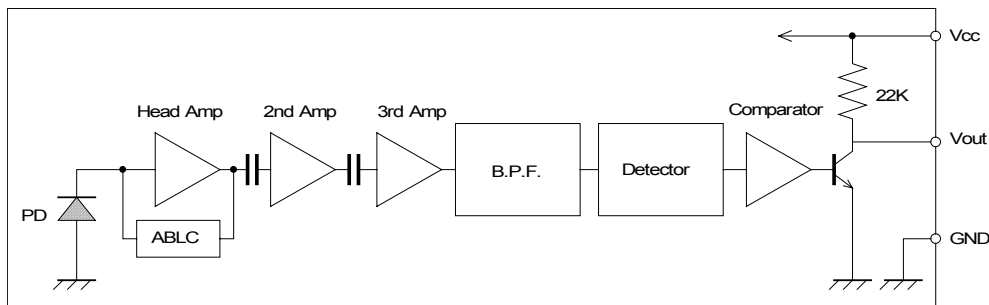
### ■ LINE-UP

Mold type			
View	Top	Top	Side
Height	5.4mm	5.4mm	6.3mm
Carrier Frequency			
Fo= 36 kHz	NJL21H360A	NJL21H360AF3	NJL21V360A
36.7 kHz	NJL21H367A	NJL21H367AF3	NJL21V367A
38 kHz	NJL21H380A	NJL21H380AF3	NJL21V380A
40 kHz	NJL21H400A	NJL21H400AF3	NJL21V400A

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

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	—	0.43	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 *3	—	45	—	deg
	θ <sub>V</sub>	Angle of half L <sub>c</sub> , Vertical *2 *3	—	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 carrier Frequency	f <sub>o</sub>	See Line-up	—	*3	—	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.

\*3:Four types of frequency :36.0, 36.7, 38.0, 40.0KHz

## ■ TEST METHOD

Test condition is 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 400mV<sub>p-p</sub>. (Test circuit is shown in Fig.2)

Regarding IR LED used for transmitter,

$\lambda_p=940\text{nm}$ ,  $\Delta\lambda=50\text{nm}$ .

Regarding photo diode,

Sensitivity S=26nA/Lx

in case light source temperature 2856°K,

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

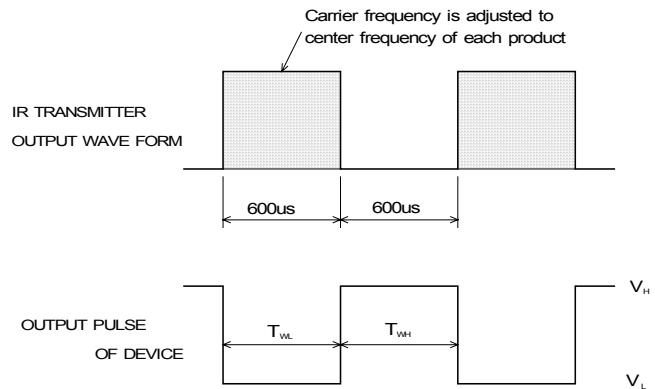
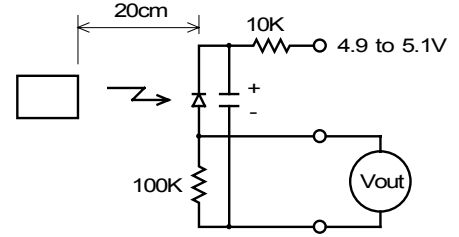
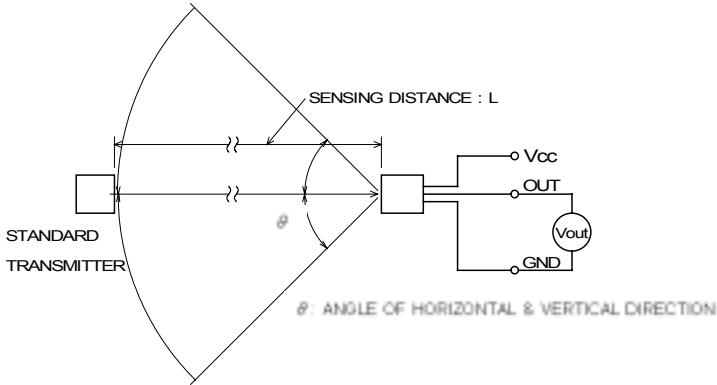
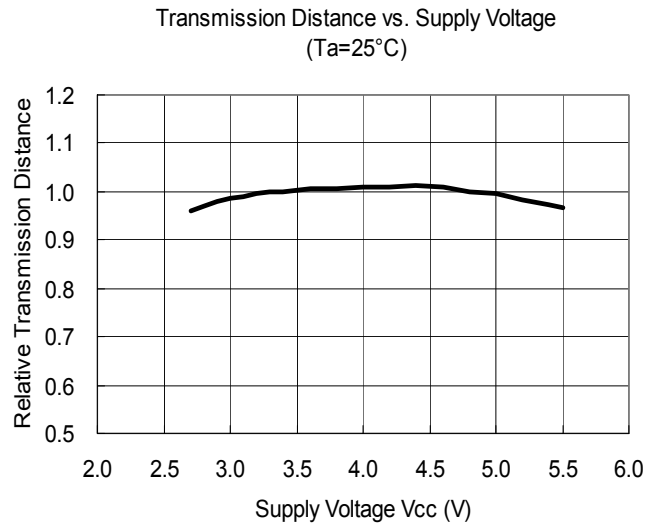
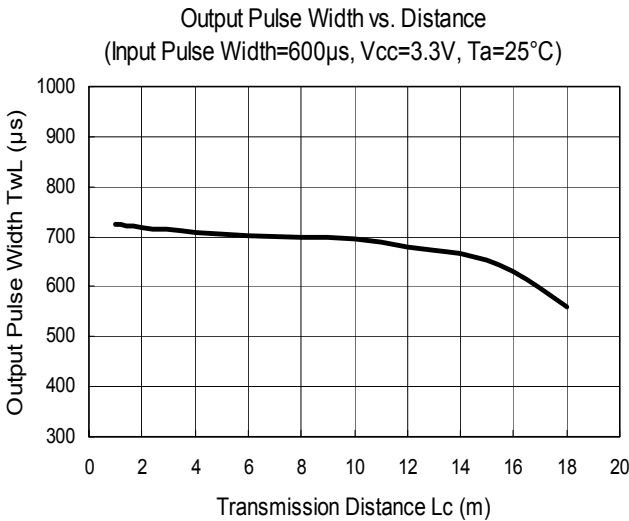
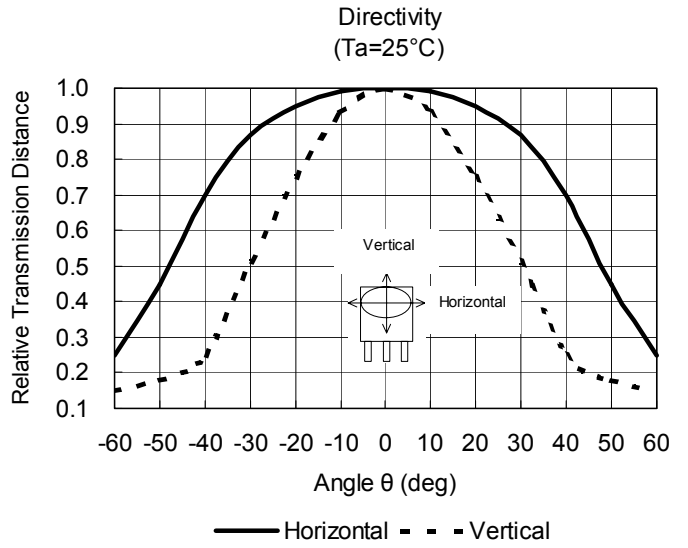
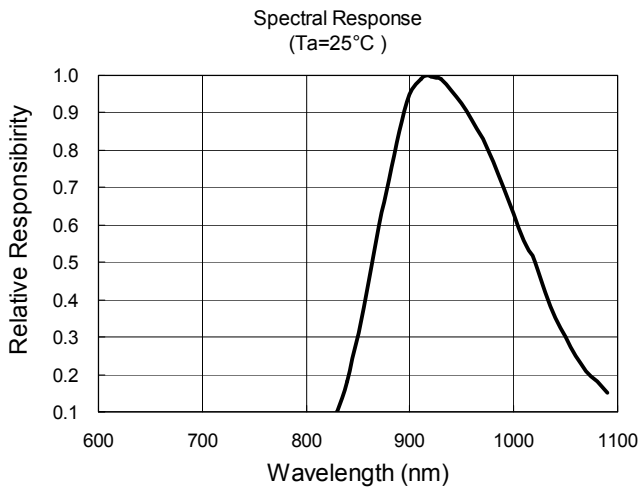


Fig.1 TRANSMITTER WAVE FORM

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

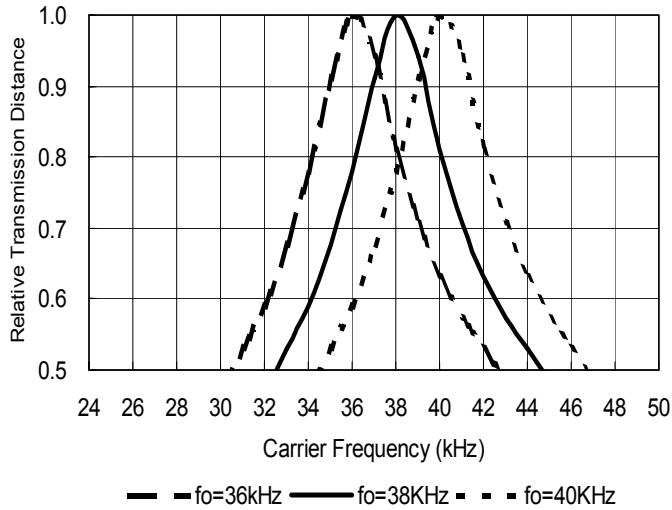


## TYPICAL CHARACTERISTICS

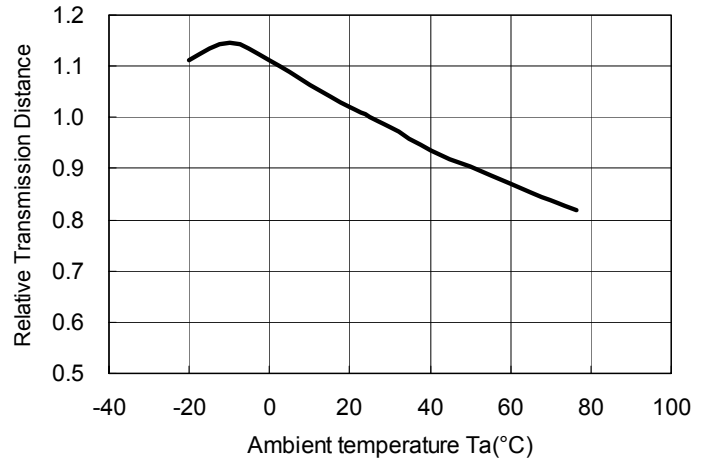


# NJL21H/21V/22H/23H/24H000A

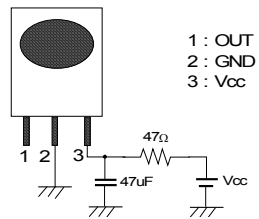
Transmission Distance vs. Carrier Frequency  
(Vcc=3.3V, Ta=25°C)



Transmission Distance vs. Temperature  
(Vcc=3.3V)



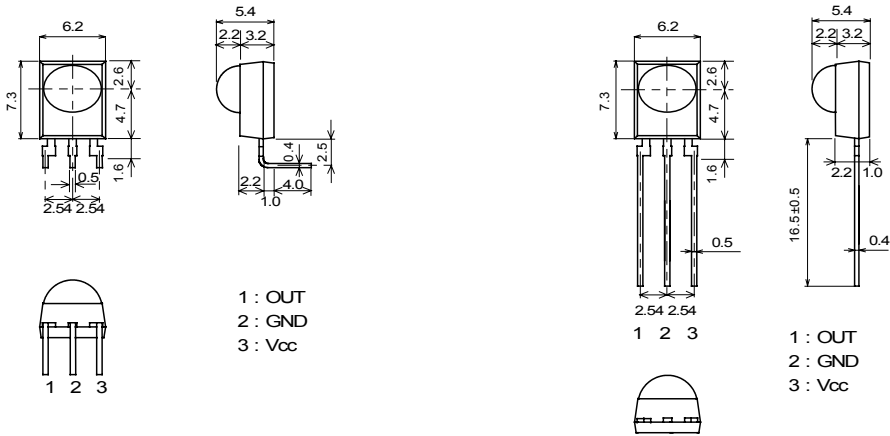
## RECOMMENDED APPLICATION CIRCUIT



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

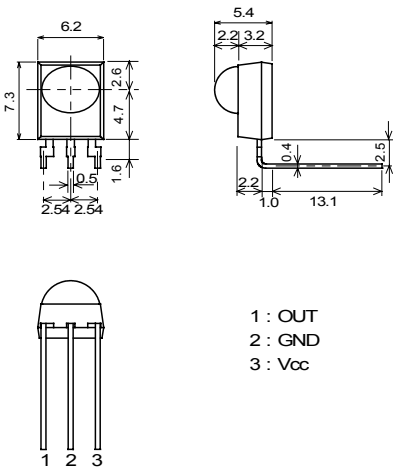
# NJL21H/21V/22H/23H/24H000A

## OUTLINE



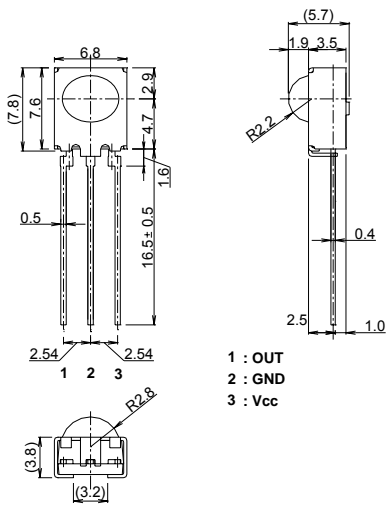
NJL21H000A  
UNIT:mm

NJL21V000A  
UNIT:mm

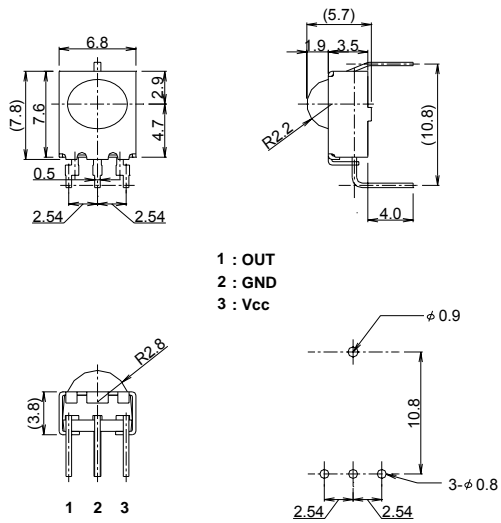


NJL21H000AF3  
UNIT:mm

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



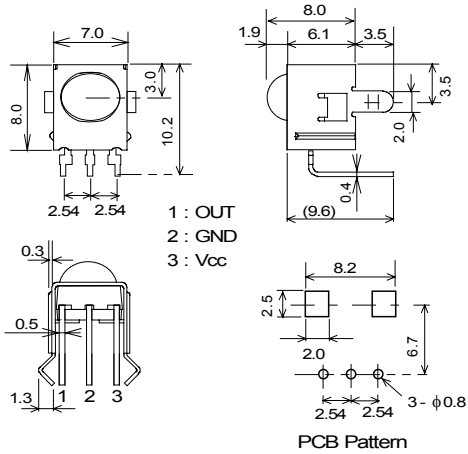
NJL21V000A-M  
 UNIT:mm



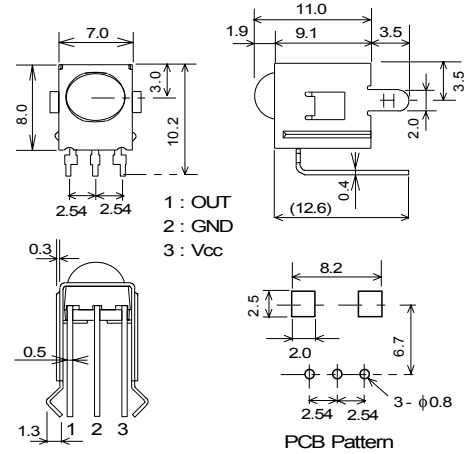
PCB pattern

NJL21H000A-M  
 UNIT:mm

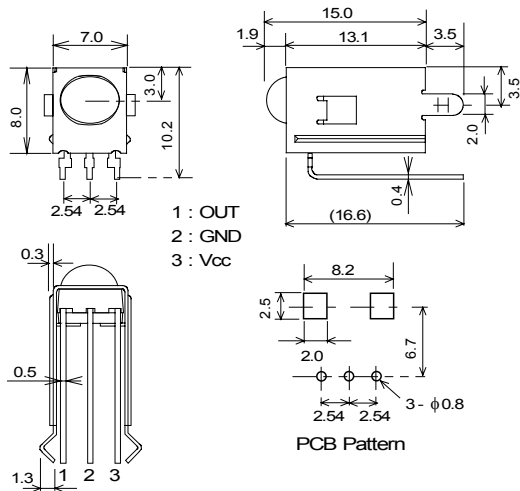
# NJL21H/21V/22H/23H/24H000A



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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