

## 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. Six kinds of 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 Fan etc.
3. Game machine, toy etc.

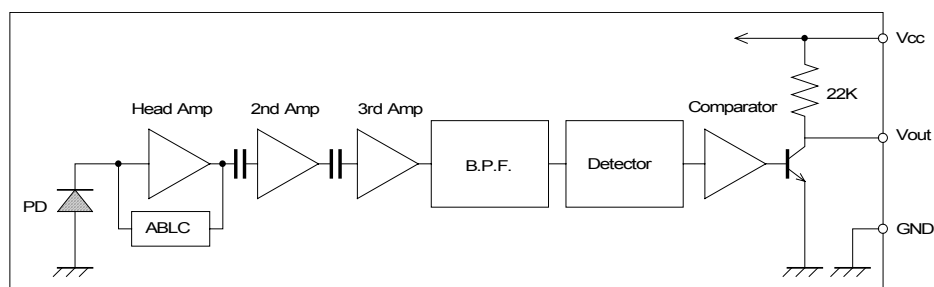
### ■ LINE-UP

View	Side
Height	6.3mm
Carrier Frequency	
F <sub>o</sub> = 36 kHz	NJL21V360A-M
36.7 kHz	NJL21V367A-M
38 kHz	NJL21V380A-M
40 kHz	NJL21V400A-M

View	Top				
Height	5.7mm	5.7mm	8mm	11mm	15mm
Carrier Frequency					
F <sub>o</sub> = 36 kHz	NJL21H360A-M	NJL21H360AF3-M	NJL22H360A	NJL23H360A	NJL24H360A
36.7 kHz	NJL21H367A-M	NJL21H367AF3-M	NJL22H367A	NJL23H367A	NJL24H367A
38 kHz	NJL21H380A-M	NJL21H380AF3-M	NJL22H380A	NJL23H380A	NJL24H380A
40 kHz	NJL21H400A-M	NJL21H400AF3-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	—	0.43	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	2.80	3.28	—	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 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 temperature 2856°K,

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

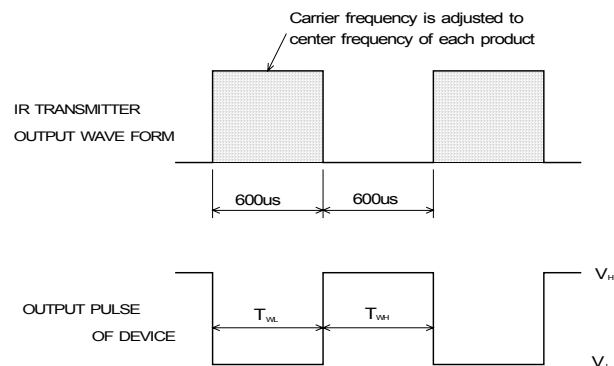


Fig.1 TRANSMITTER WAVE FORM

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

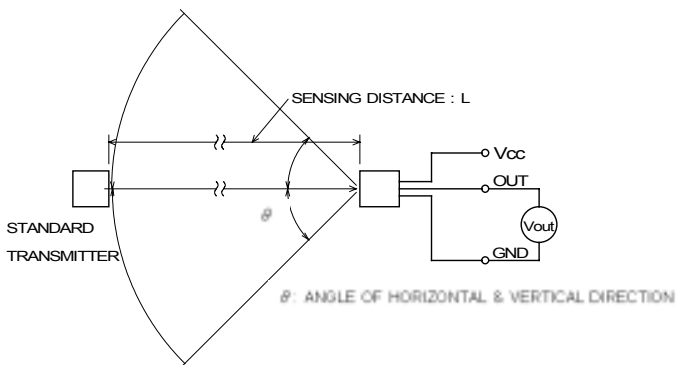


Fig.3 TEST SYSTEM

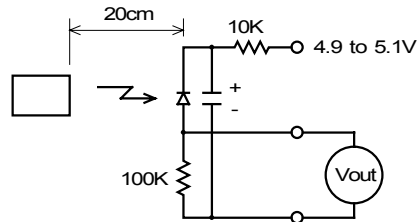
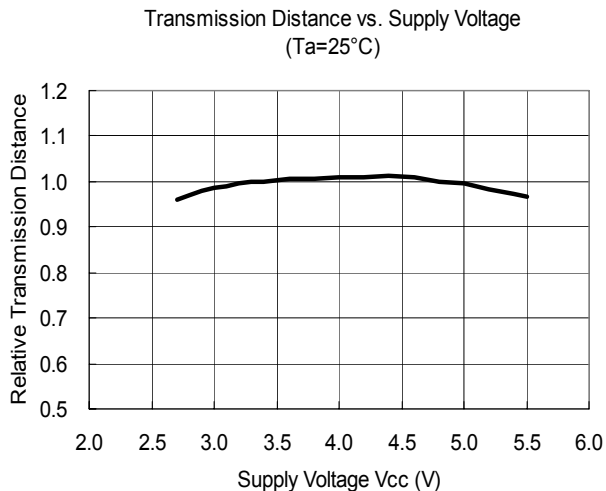
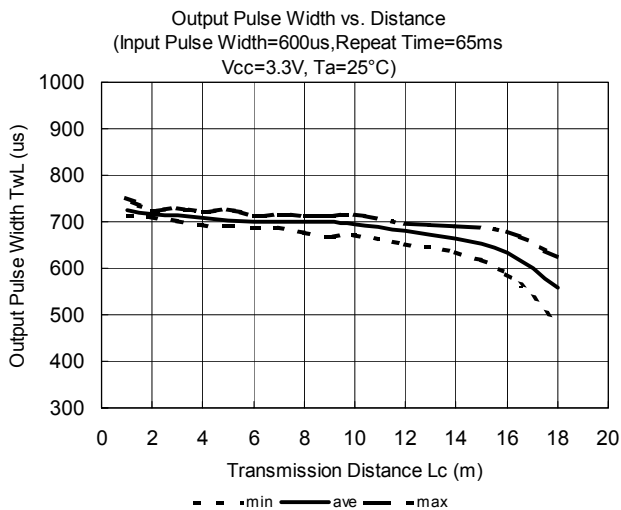
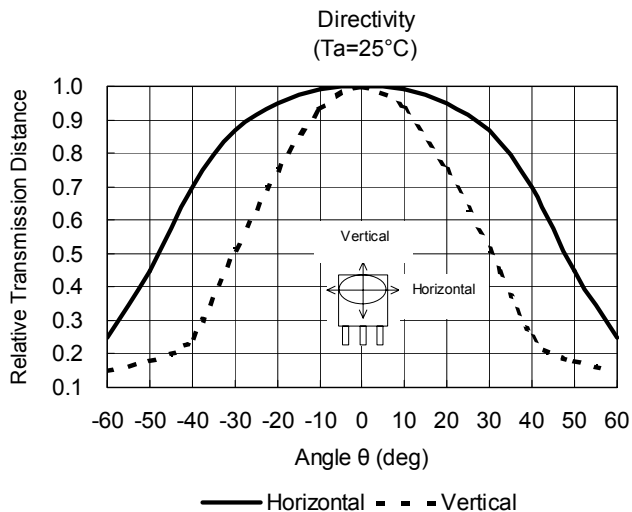
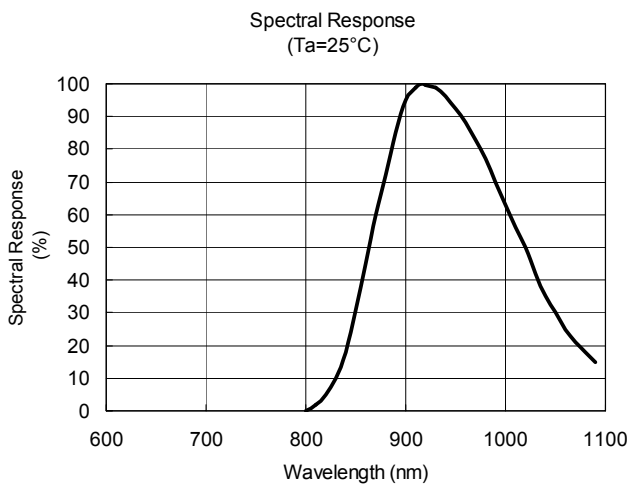


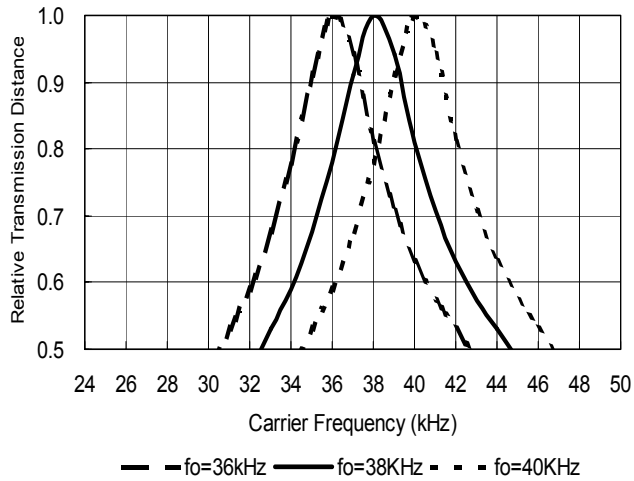
Fig.2 STD. TRANSMITTER TEST CIRCUIT

## ■ TYPICAL CHARACTERISTICS

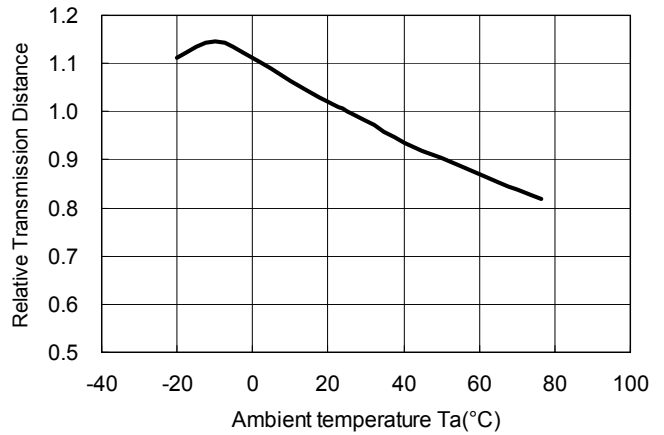


# NJL21H/21V/22H/23H/24H000A

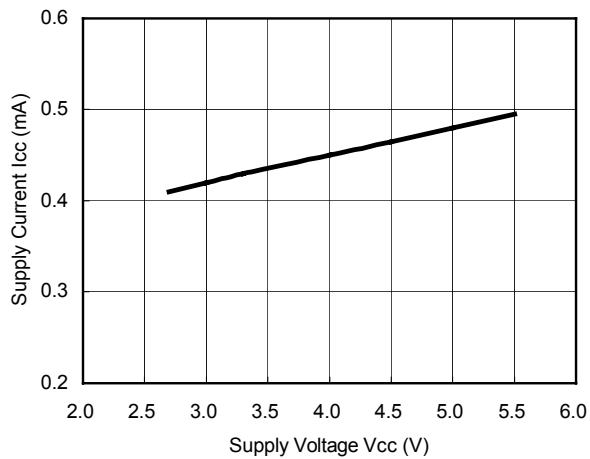
Transmission Distance vs. Carrier Frequency  
(Vcc=3.3V, Ta=25°C)



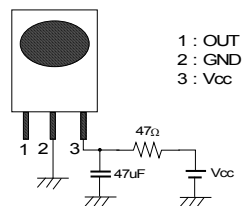
Transmission Distance vs. Temperature  
(Vcc=3.3V)



Supply Current vs. Supply Voltage



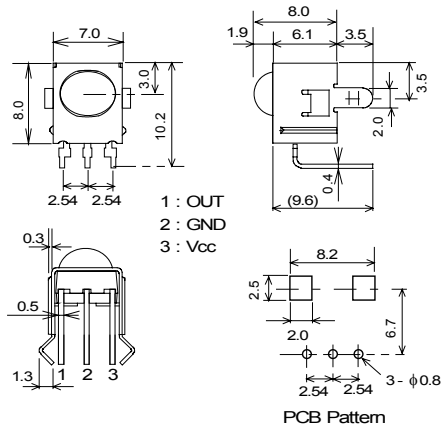
## RECOMMENDED APPLICATION CIRCUIT



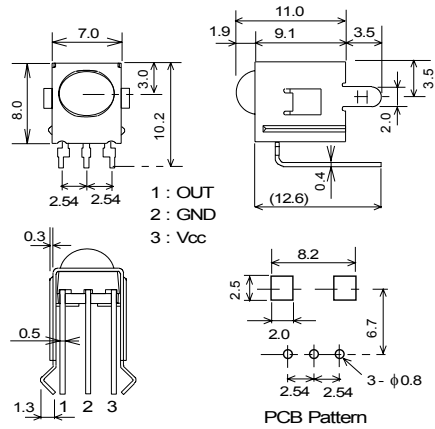
RC Filter should be connected closely between Vcc pin and GND pin.



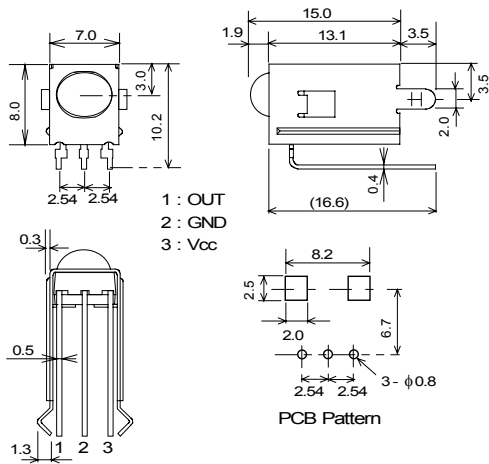
# NJL21H/21V/22H/23H/24H000A



NJL22H000A  
UNIT:mm



NJL23H000A  
UNIT:mm



NJL24H000A  
UNIT:mm

[CAUTION]  
The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.