

INFRARED REMOTE CONTROL RECEIVER

■ GENERAL DESCRIPTION

The NJL30H/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 power saving light. The NJL30H/V000A series have six kinds of package including seven types of metal case to meet the various applications.

■ 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. Home application such as Room light, Fan, etc.
2. AV instruments such as Audio, TV, DVD, STB etc.

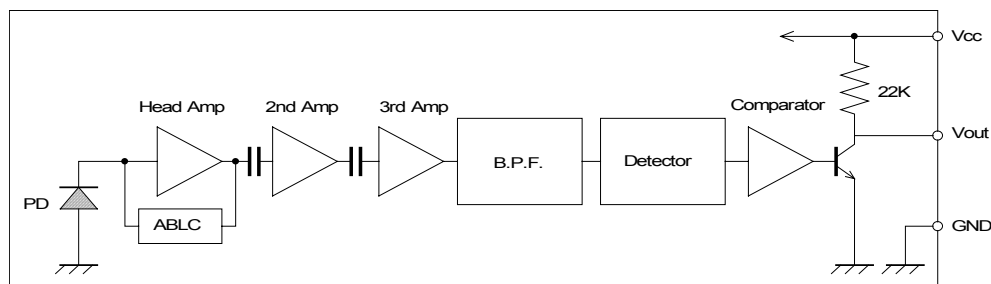
■ LINE-UP

Mold type	
View	Side
Height	6.3mm
Carrier Frequency	
$f_0=36$ kHz	NJL31V360A-M
36.7 kHz	NJL31V367A-M
38 kHz	NJL31V380A-M
40 kHz	NJL31V400A-M

Metal Case type					
View	Top				
Height	5.7mm	5.7mm	8mm	11mm	15mm
Carrier Frequency					
$f_0=36$ kHz	NJL31H360A-M	NJL31H360AF3-M	NJL32H360A	NJL33H360A	NJL34H360A
36.7 kHz	NJL31H367A-M	NJL31H367AF3-M	NJL32H367A	NJL33H367A	NJL34H367A
38 kHz	NJL31H380A-M	NJL31H380AF3-M	NJL32H380A	NJL33H380A	NJL34H380A
40 kHz	NJL31H400A-M	NJL31H400AF3-M	NJL32H400A	NJL33H400A	NJL34H400A

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

■ BLOCK DIAGRAM



NJL31H/31V/32H/33H/34H000A

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

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

■ RECOMMENDED OPERATING CONDITION

Supply Voltage Range V_{cc} 2.7 V to 5.5V

■ ELECTRO-OPTICAL CHARACTERISTICS (V_{cc}=3.3V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I _{cc}	No Signal Input	—	0.43	0.56	mA
Transmission Distance	L _c	Direction of Ray Axis *1	13	18	—	m
Directivity	θ _L	Angle of half L _c , Horizontal *2	—	45	—	deg
	θ _V	Angle of half L _c , Vertical *2	—	30	—	deg
Output Voltage Low	V _L	No Load	—	0.2	0.5	V
Output Voltage High	V _H	No Load	2.8	—	—	V
Low Level Pulse Width	T _{wL}	See Test Circuit	400	—	950	μs
High Level Pulse Width	T _{wH}	See Test Circuit	250	—	800	μs
Center Frequency	f _o	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 in as follows:

(1) Standard transmitter:

Transmitting waveform is shown in Fig.1

Transmitting power should be adjusted so that output voltage V_{out} will be 400mV_{p-p}. (Test circuit is shown in Fig.2)

Regarding IR LED used for transmitter,

λ_p=940nm, Δλ=50nm.

Regarding photo diode,

Sensitivity S=26nA/Lx

in case light source temperature 2856°K,

E_e=100Lx, V_R=5V

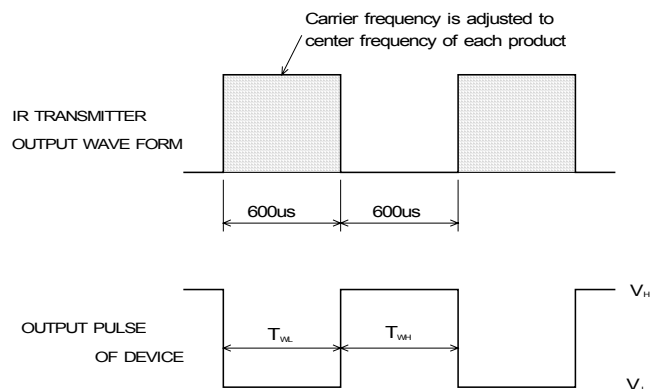
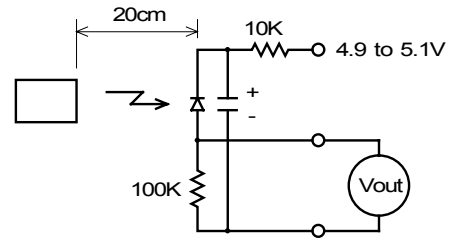
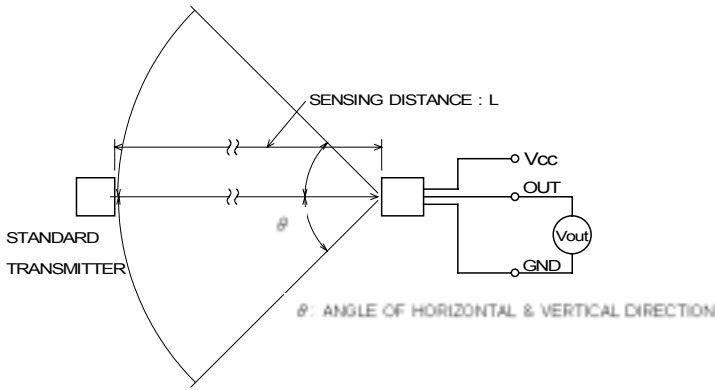


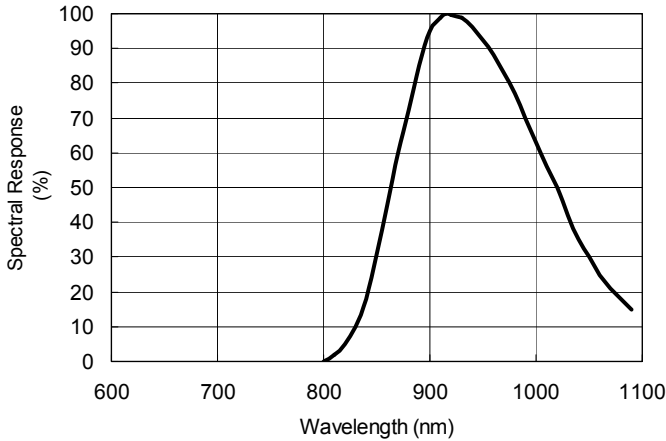
Fig.1 TRANSMITTER WAVE FORM

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

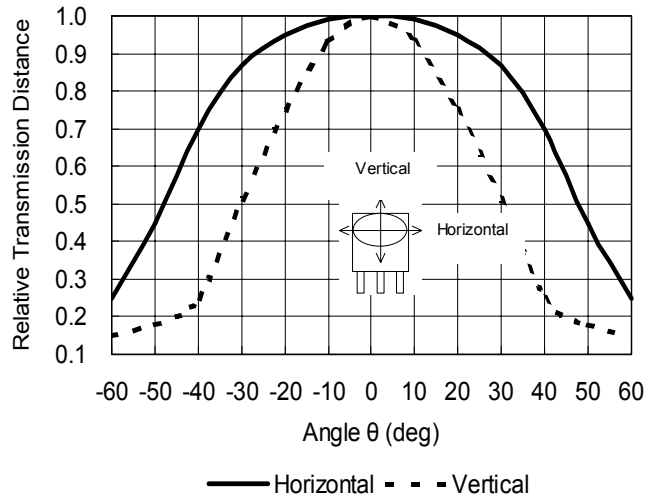


TYPICAL CHARACTERISTICS

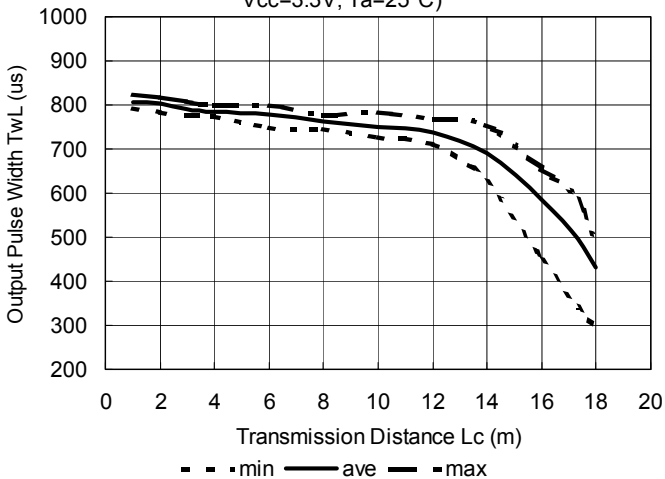
Spectral Response
($T_a=25^\circ\text{C}$)



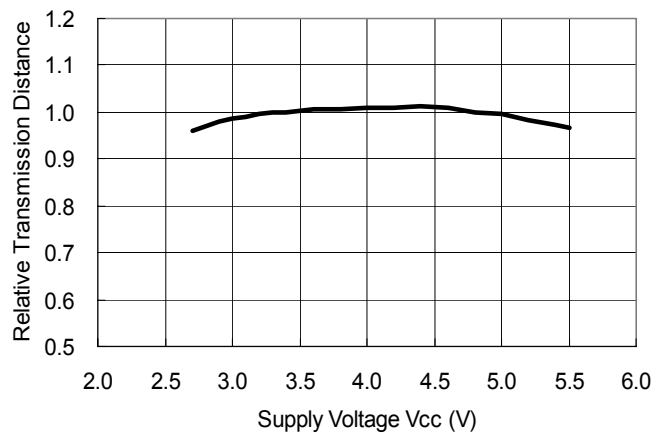
Directivity
($T_a=25^\circ\text{C}$)



Output Pulse Width vs. Distance
(Input Pulse Width=600us, Repeat Time=65ms
 $V_{cc}=3.3\text{V}$, $T_a=25^\circ\text{C}$)

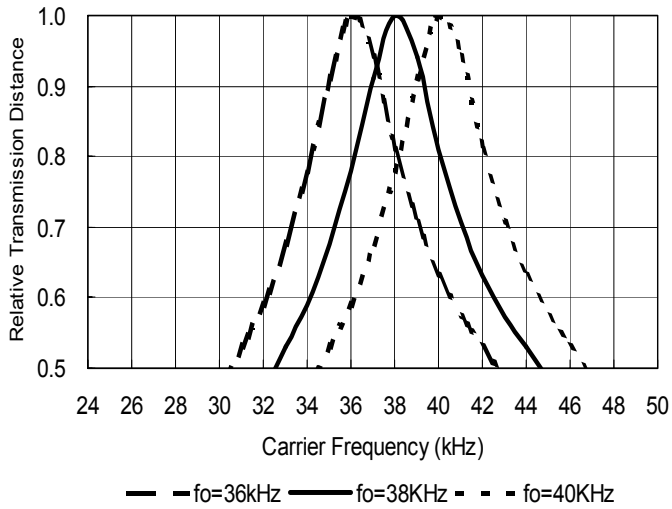


Transmission Distance vs. Supply Voltage
($T_a=25^\circ\text{C}$)

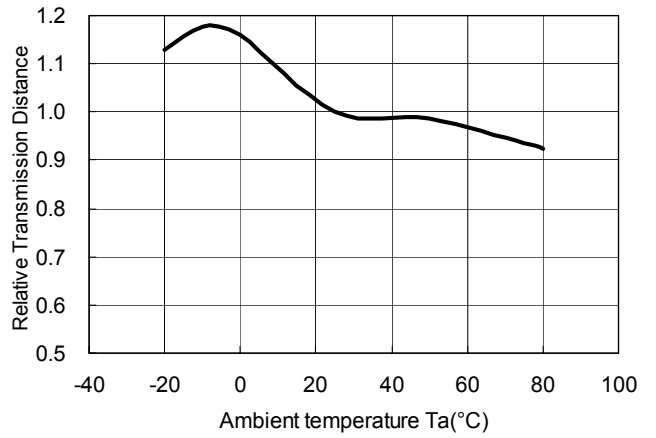


NJL31H/31V/32H/33H/34H000A

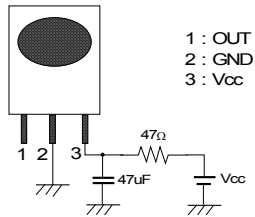
Transmission Distance vs. Carrier Frequency
(Vcc=3.3V, Ta=25°C)



Transmission Distance vs. Temperature
(Vcc=3.3V)



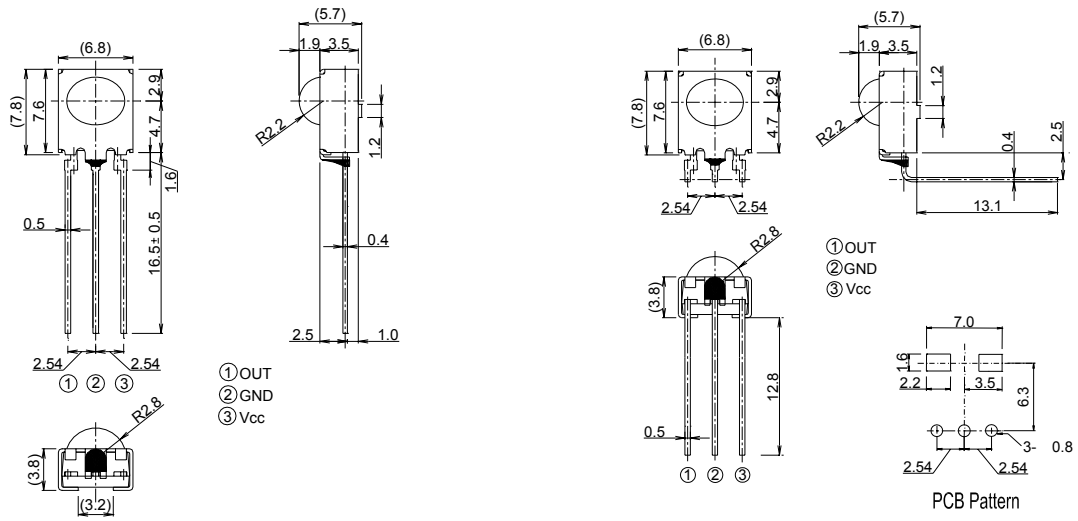
RECOMMENDED APPLICATION CIRCUIT



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

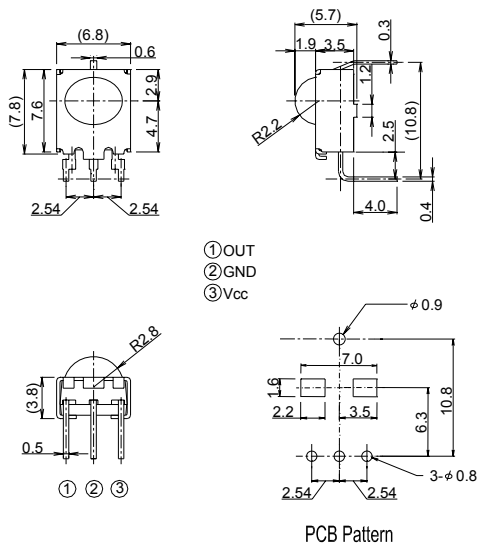
NJL31H/31V/32H/33H/34H000A

OUTLINE



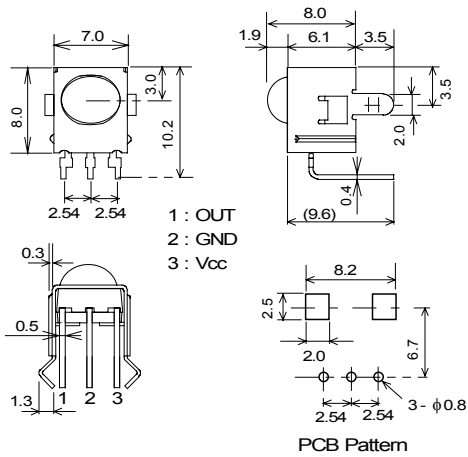
NJL31V000A-M
UNIT:mm

NJL31H000AF3-M
UNIT:mm

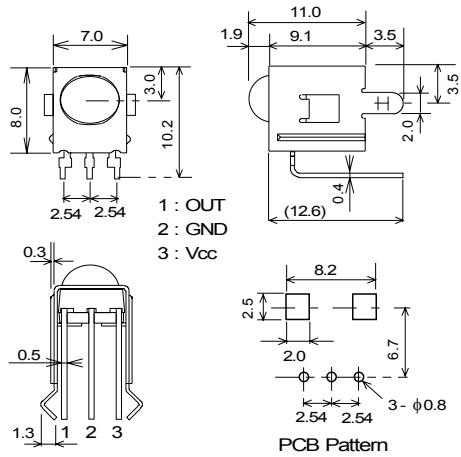


NJL31H000A-M
UNIT:mm

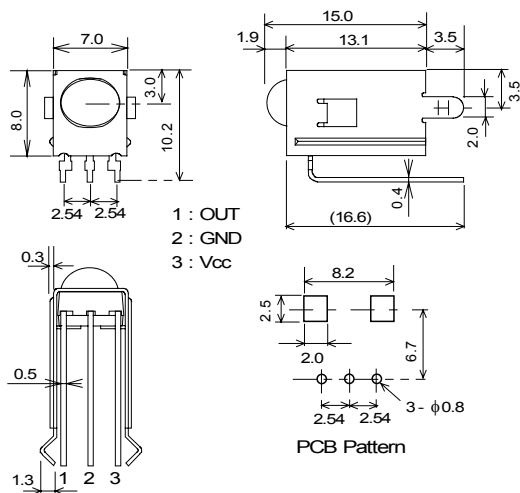
NJL31H/31V/32H/33H/34H000A



NJL32H000A
UNIT:mm



NJL33H000A
UNIT:mm



NJL34H000A
UNIT:mm

1. Tolerance is $\pm 0.3\text{mm}$ unless otherwise noted.
2. Regarding NJL31H000A-M and NJL32H/33H/34H000A ground metal case on PCB. Metal case is not connected to GND pin inside.

[CAUTION]
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