

# IR Receiver Module

## RPM7236-Hx series

RPM7236-Hx series are remote control receiver module. Small-sized, light-weight, and low voltage operated (from 2.7V) modules have been achieved by using resin mold.

### ●Applications

All household electric appliances such as TV, DVD, air conditioner and audio equipment

### ●Features

- 1) Low voltage operation. ( $V_{CC}=2.7$  to  $3.6V$ )
- 2) Low current consumption. ( $I_{CC}=0.3mA$ ,  $V_{CC}=3V$ )
- 3) Superior anti  $V_{CC}$  noise characteristics.
- 4) 5 types of holders available to each set.

### ●RPM7236-Hx series

| Sub carrier frequency | TOP VIEW     |              |              | SIDE VIEW    |               |
|-----------------------|--------------|--------------|--------------|--------------|---------------|
|                       | RSIP-A3 (H4) | RSIP-A3 (H8) | RSIP-A3 (H9) | RSIP-A3 (H5) | RSIP-A3 (H13) |
| Hight of lens         | 15.9mm       | 7.2mm        | 12.0mm       | 9.6mm        | 15.0mm        |
| 36.0kHz               | RPM7236-H4   | RPM7236-H8   | RPM7236-H9   | RPM7236-H5   | RPM7236-H13   |

### ●Absolute maximum ratings ( $T_a=25^{\circ}C$ )

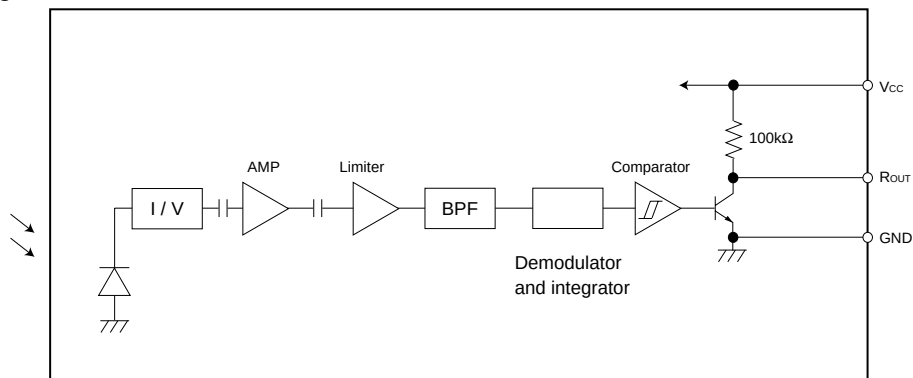
| Parameter           | Symbol    | Limits      | Unit        |
|---------------------|-----------|-------------|-------------|
| Supply voltage      | $V_{CC}$  | 6.3         | V           |
| Output current      | $I_o$     | 2.0         | mA          |
| Storage temperature | $T_{stg}$ | -30 to +100 | $^{\circ}C$ |

### ●Recommended operating conditions ( $T_a=25^{\circ}C$ )

| Parameter             | Symbol    | Min. | Typ. | Max. | Unit        |
|-----------------------|-----------|------|------|------|-------------|
| Supply voltage        | $V_{CC}$  | 2.7  | 3.0  | 3.6  | V           |
| Operating temperature | $T_{opr}$ | -10  | 25   | 75   | $^{\circ}C$ |

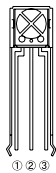
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●Block diagram



●Terminal description

| Pin No. | Pin name         | Function        |
|---------|------------------|-----------------|
| 1       | V <sub>OUT</sub> | OUTPUT TERMINAL |
| 2       | GND              | GROUND          |
| 3       | V <sub>CC</sub>  | POWER SUPPLY    |



●Electrical, Optical characteristics (Unless otherwise noted Ta=25°C, V<sub>CC</sub>=3V)

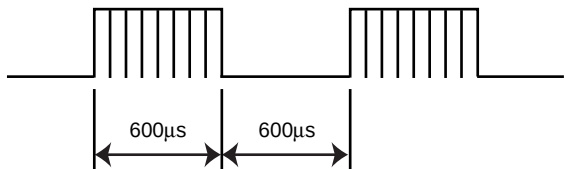
| Parameter                 | Symbol           | Min. | Typ. | Max. | Unit | Conditions                                        |
|---------------------------|------------------|------|------|------|------|---------------------------------------------------|
| Consumption current       | I <sub>CC</sub>  | —    | 300  | 500  | μA   | No outside light, no signal input.                |
| Effective distance        | L                | 10   | 15   | —    | m    | *1 Outer light condition E <sub>e</sub> < 10 (lx) |
| High level output voltage | V <sub>H</sub>   | 2.5  | —    | —    | V    | *1                                                |
| Low level output voltage  | V <sub>L</sub>   | —    | —    | 0.5  | V    | *1 I <sub>sink</sub> < 200μA                      |
| ON pulse width            | T <sub>ON</sub>  | 400  | 600  | 800  | μs   | *1 Outer light condition E <sub>e</sub> < 10 (lx) |
| OFF pulse width           | T <sub>OFF</sub> | 400  | 600  | 800  | μs   | *1 Outer light condition E <sub>e</sub> < 10 (lx) |
| Central frequency         | f <sub>0</sub>   | —    | 36.0 | —    | kHz  |                                                   |
| Horizontal half angle     | θ 1/2            | —    | 45   | —    | deg  | *2                                                |
| Vertical half angle       | θ 1/2            | —    | 35   | —    | deg  | *2                                                |

\*1 The burst wave form mentioned in Fig.1 is to be transmitted from standard transmitter(Fig.2)  
Measure 10th or later pulse width after beginning of transmission.

\*2 The angle which effective distance become 50% of L. (effective distance at θ=0°)

● Measurement Conditions

(1) Transmit signal



Carrier frequency=f<sub>0</sub>, Duty=50%

Fig.1 Transmit signal.

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## (2) Standard transmitter

$\lambda_{\text{peak}}=940\text{nm}$   
 $\Delta\lambda=40\text{nm}$

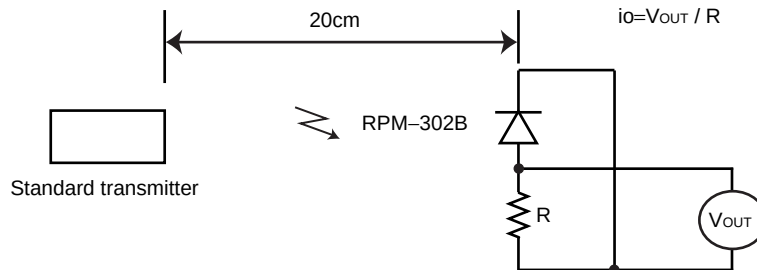


Fig.2 Measurement of standard transmitter proof reading.

When standard transmitter output the signal at Fig.1 standard photodiode output become  $i_o=5\mu\text{A}$  under the measurement condition Fig.2.

(The radiant intensity of standard transmitter :  $50\text{mW} / \text{sr}$ )

RPM-302B: standard photodiode has short current  $I_{\text{sc}}=27\mu\text{A}$  at  $E_e=1000(\text{lx})$   
 (using CIE standard light source A)

## (3) Measurement effective distance, horizontal &amp; vertical half angle

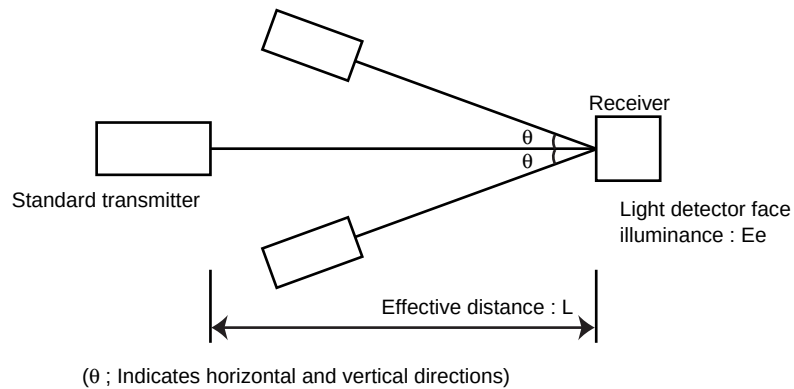


Fig.3 Measurement condition for effective distance.

Effective distance L : Effective distance at  $\theta=0^\circ$  Fig.3  
 Horizontal & vertical half angle  $\theta$  : The angle which effective distance became 50% of L.

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## (4) Output signal

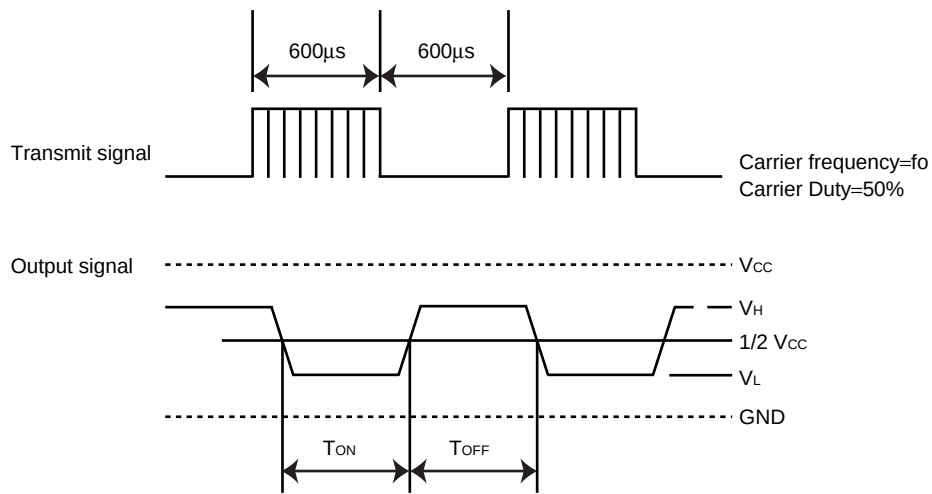


Fig.4

## (5) Measurement circuit for the output voltage and the consumption current

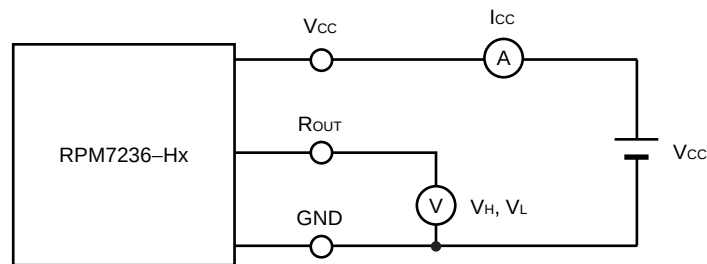


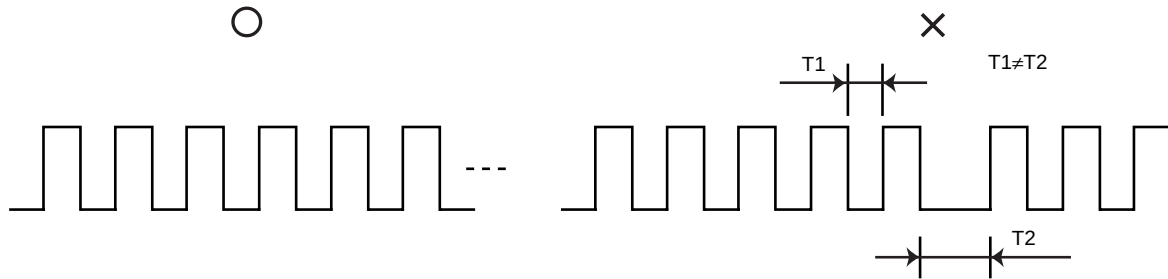
Fig.5

## ●Notes

- (1) All characteristics of the receiver in this specification are specified by supplying burst wave form with ROHM standard transmitter (Shown as 8 (2) ).  
If in case of other burst wave form will be used, please check these spec. carefully under the evaluations.
- (2) When the receiver will be used as the wire-less remote controller, please use the signal format RC5 Code, RC6 Code, RCMM Code.  
If using other signal method, signal format, the receiver might have chances to miss-function.
- (3) Please set up transmitter's carrier frequency as same as the receiver's  $f_0$  frequency. Otherwise error might be occurred.

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(4) If transmission signal has non-continuous carrier, error might be occurred. Continuous carrier is necessary.



(5) The receiver was designed to use as in-door use only.

Therefore, please understand that the receiver cannot cover all characteristics, in case of using it out-door.

(6) Noise environment (Light noise from inverter Lamp, and other kind of Lamps, Power ripple, electromagnetic noise from power circuit, and etc) may cause a reduced effective distance.

(7) The receiver may not work properly if the receiving signal judgment is done by single pulse due to the surrounding / environmental noises.

To prevent such misjudgment, please make sure that the receiver is set up to work only when receiving series of the coded signal.

(8) Emitting unit (remote control transmitter) has to be considered about its emitting device function, characteristics and characteristics of the receiver.

(9) Attach holder on PCB pattern.

(Holder do not conduct to GND)

(10) Do not supply unnecessary stress to lead and holder.

(11) Please pay attention to the lens carefully.

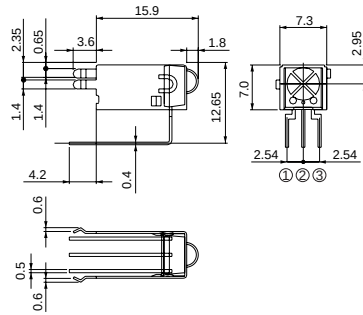
It might have a chance to miss-function when the lens get dust or dirty.

Also, please do not touch the lens.

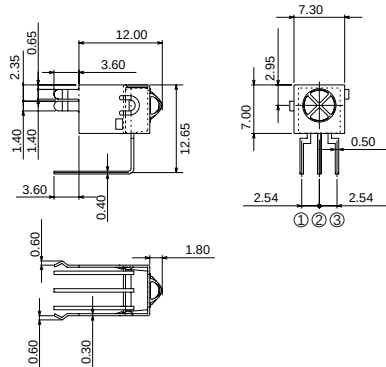
(12) In order to protect the products from ESD, human body, solder iron and etc. are required to be grounded.

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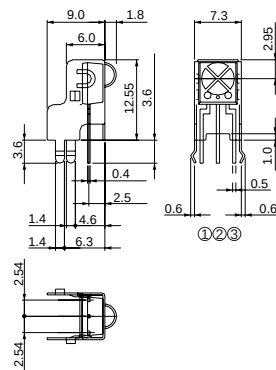
## ●External dimensions (Unit : mm)



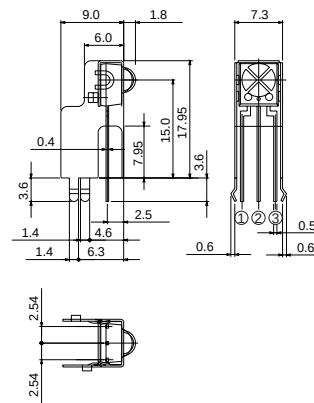
RSIP-A3(H4)



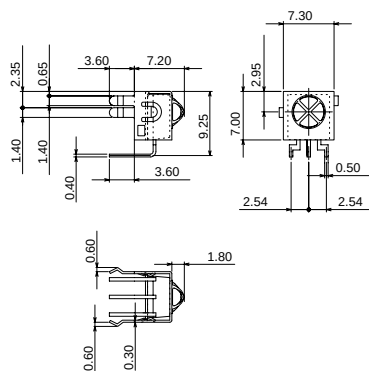
RSIP-A3(H9)



RSIP-A3(H5)



RSIP-A3(H13)



RSIP-A3(H8)

| PIN No. |     |
|---------|-----|
| ①       | ROU |
| ②       | GND |
| ③       | VCC |

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