



Y.LIN ELECTRONICS CO.,LTD.

Data Sheet

Customer: _____
Part No: _____ YRMC2C12 _____
Sample No: _____
Description: _____ Receiver module _____
Item No: _____

| Customer | | | |
|----------|------------|----------|------|
| Check | Inspection | Approval | Date |
| | | | |

| Y.LIN | | | |
|-------|-------|----------|-----------|
| Drawn | Check | Approval | Date |
| | | | 2021/4/21 |

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Features:

- Wide Operating Supply Voltage 2.7V~5.5V
- Internal voltage reference circuit for wide operating built-in.
- Maximum interference safety against external light sources
- No external components necessary.
- The Center Frequency can be varied with option PADs (36.0kHz,37.9kHz,40.0kHz,56.7kHz)
- Internal filter for a high frequency lighting fluorescent lamp.
- Built-in automatic bias control for sunlight.
- Output active low.

Applications

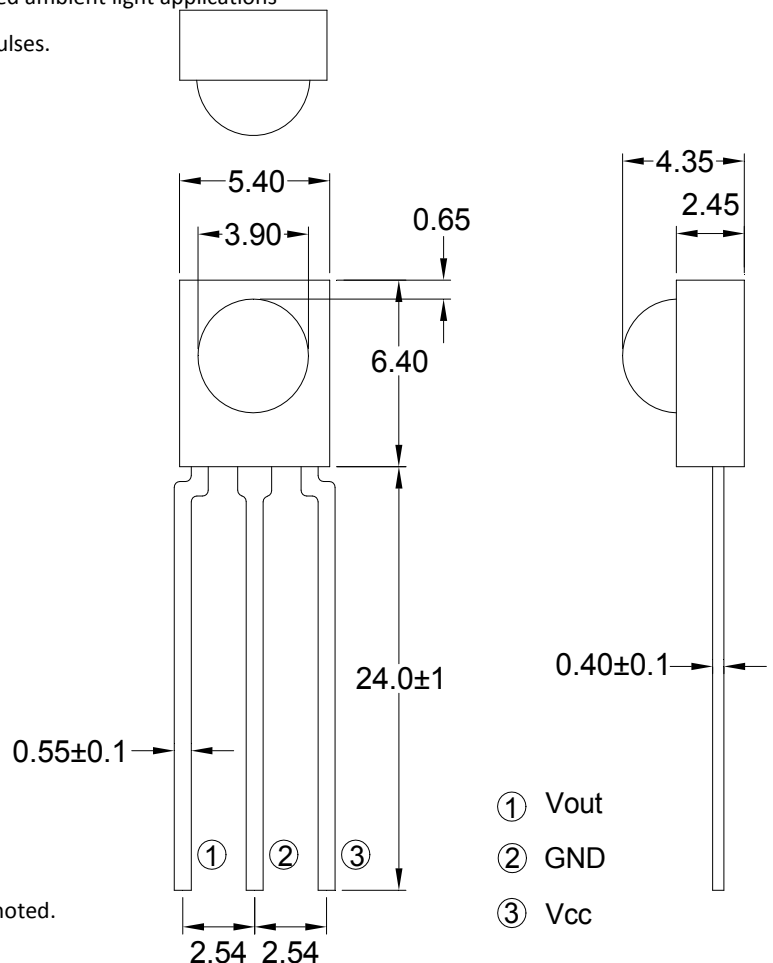
- Wireless remote control for TV, air conditioning, set-top box, fan and so on
- Wireless remote control, such as audio, toy, etc.
- Reflective sensors for hand dryers, water faucets, toilet flush
- Safety door detection, vending machine fall detection

Description

- This infrared receiver module is miniaturized infrared receivers for remote control and other applications requiring improved ambient light rejection
- The separate PIN diode and preamplifier IC are assembled on a single leadframe.
- The epoxy package contains a special IR filter.
- This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.



Package Dimensions in millimeters



Notes:

1. All dimensions are in millimeters.
2. All dimension tolerance is ±0.25mm unless otherwise noted.
3. Specifications are subject to change without notice

- ① Vout
- ② GND
- ③ Vcc



Selection Guide

| Part No. | Carrier frequency | Lens Type |
|----------|-------------------|-----------|
| YRMC2C12 | 38khz | Black |

Electrical And Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Min | Typ. | Max | Units | Condition |
|---------------------------|----------------------------------|---------|----------|-----|---------|--|
| Supply Voltage | Vcc | 2.7 | - | 5.5 | V | |
| Static Current | Icc | - | 0.9 | 1.5 | mA | Under no signal |
| Peak Wavelength | λ_p | - | 940 | - | nm | |
| B.P.F Center Frequency | f ₀ | - | 38 | - | KHz | |
| Reception Distance | L ₀ ($\theta=0$) | 15 | 20 | - | m | IF=200mA Vcc=5V |
| Half Angle | $\phi_{1/2}$ | - | ± 45 | - | deg | Angle of half transmission distance |
| High Level Output Voltage | V _{oh} | Vcc-0.3 | - | - | V | |
| Low level output voltage | V _{ol} | - | 0.2 | 0.4 | V | |
| High Level Pulse Width | T _{wl} | 500 | 600 | 800 | μ s | Fin=f ₀ , burst wave Vin=600us |
| Low Level Pulse Width | T _{wh} | 500 | 600 | 800 | μ s | |

Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Ratings | Units | Notice |
|-----------------------|------------------|----------|-------|---------------------------------------|
| Supply Voltage | Vcc | 6.0 | V | -- |
| Output Voltage | Vout | 6.0 | V | -- |
| Operating Temperature | T _{opr} | -25~+85 | °C | -- |
| Storage Temperature | T _{stg} | -40~+125 | °C | -- |
| Soldering Temperature | T _{sd} | 260 | °C | 2mm from mold body less than 5 sec |

Acceptable code list

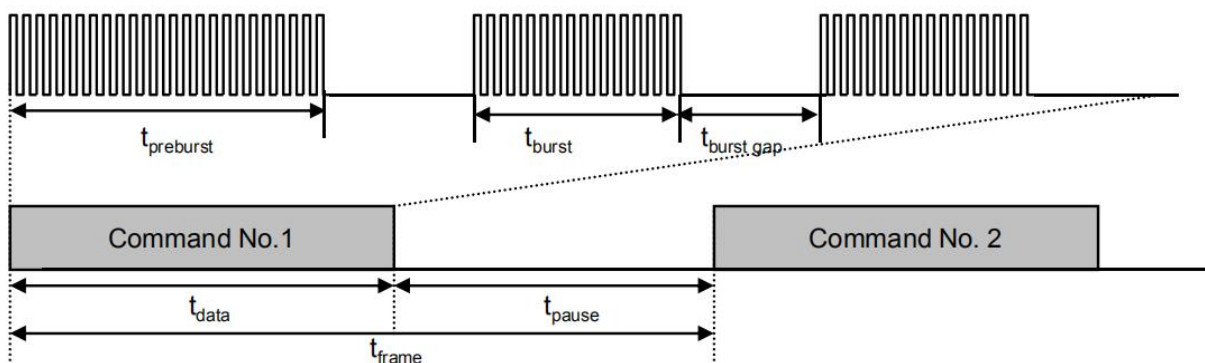
| data format | code acceptable |
|---------------------|-----------------|
| NEC | √ |
| RC5_Philips | √ |
| RC6_Philips | × |
| RCA_Thomson | × |
| Toshiba | √ |
| Sharp | √ |
| Sony 12 Bit | √ |
| Sony 15 Bit | √ |
| Sony 20 Bit | × |
| Matsushita | √ |
| Mitsubishi | √ |
| Zenith | √ |
| JVC | √ |
| Continuous code | × |
| High Data Rate code | × |

Suitable data format

| Item | Symbol | limitation |
|---|------------------|------------|
| Minimum Burst Length t_{burst} (number of pulses per burst) | t_{Burst} | 10pulses |
| Minimum Burst Gap time t_{burst_gap} (number of pulses per burst) between two burst | t_{Gap} | 14pulses |
| Minimum data pause time | t_{Pause_min} | 25ms |

Fig 1. The diagram of min. burst length, min burst gap, data pause time

< Figure1, Typical IR signal >



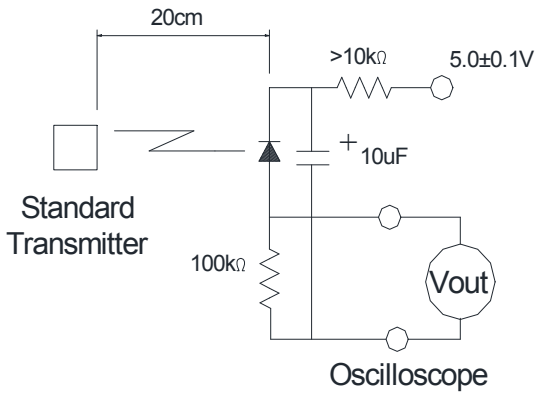
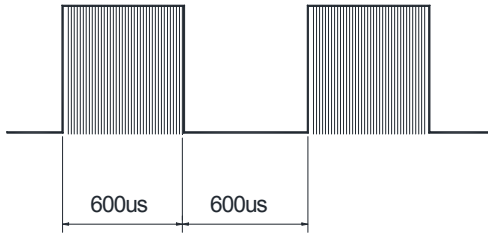
$$t_{actual_data} = t_{preburst} + \sum_n t_{burst} \quad , \quad t_{actual_gap} = t_{pause} + \sum_n (t_{burst_gap})$$

$$t_{actual_gap} \geq 2.0 * t_{actual_data} \quad (1)$$

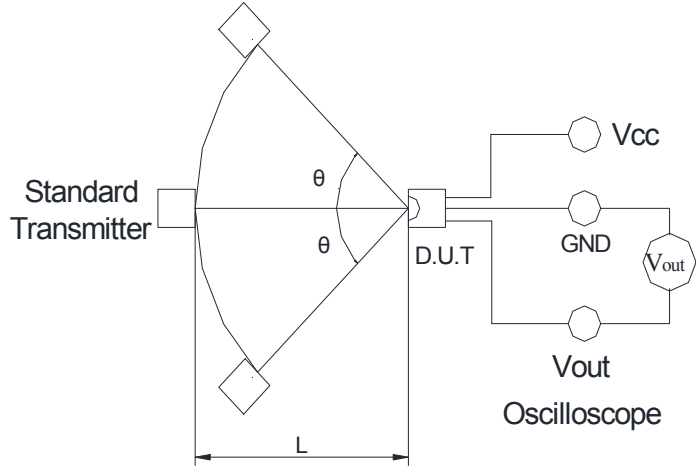
Test Method

A. Standard Transmitter

Transmitter Output

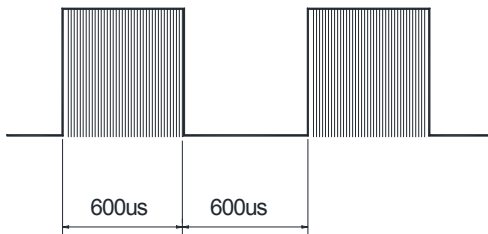


B. Detection Length Test

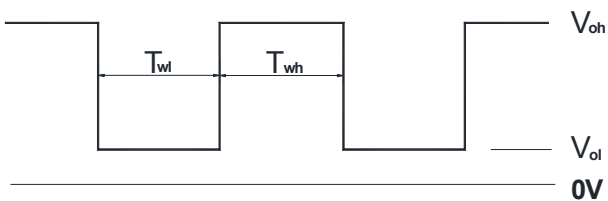


C. Pulse Width Test

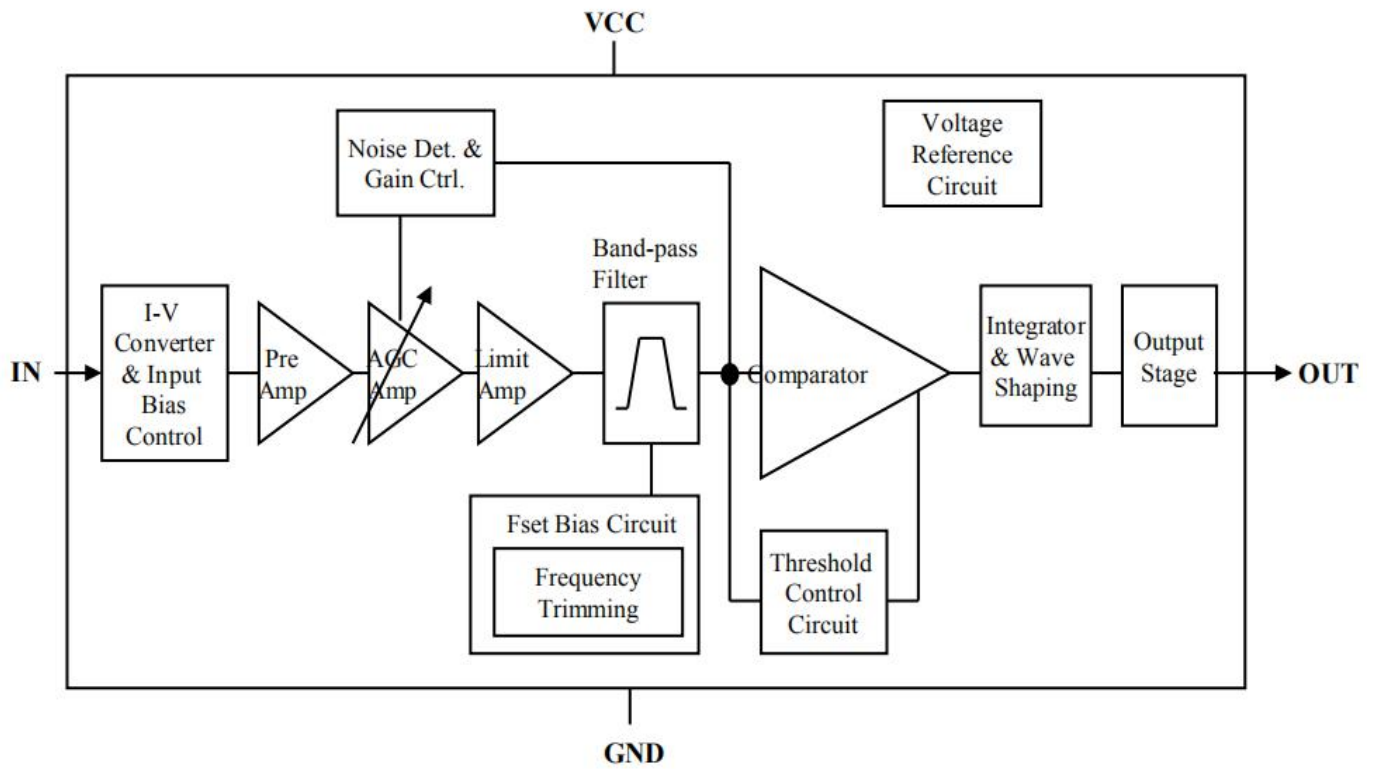
Transmitter Output



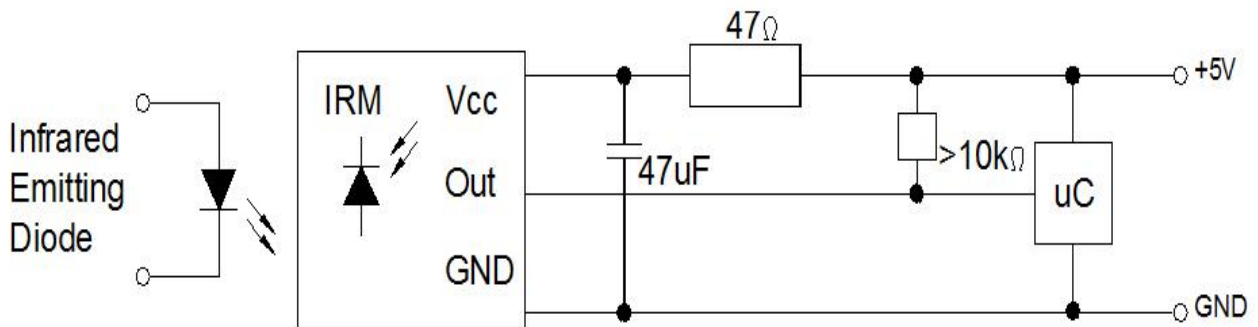
D.U.T Output Pulse



Block Diagram



Application Circuit





Characteristic Curves (Ta=25°C)

Fig.1 Relative Supply Current Vs Supply Voltage

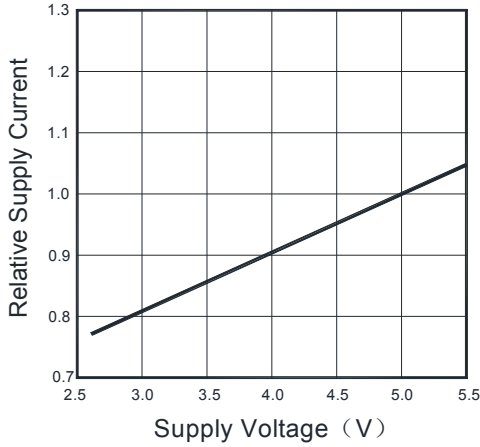


Fig.2 Relative Supply Current Vs Ambient Temperature

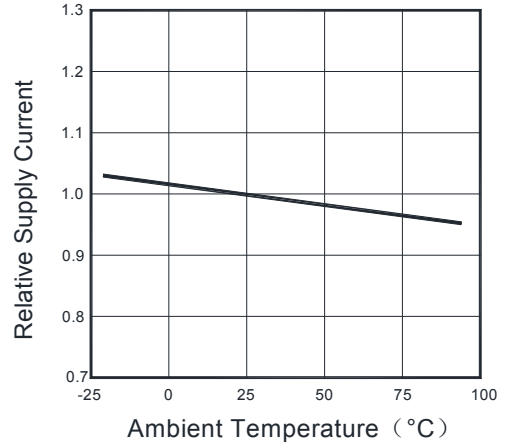


Fig. 3 - Relative sensitivity VS Relative Frequency

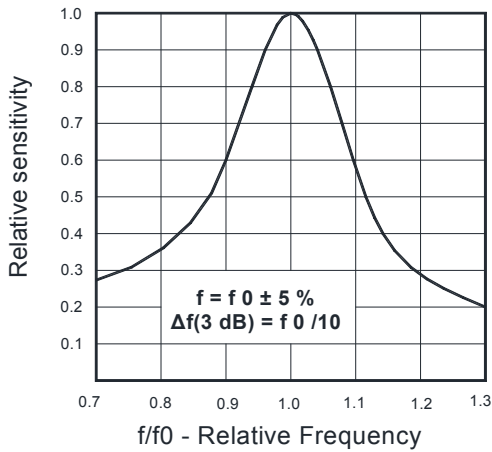


Fig.4 Relative Photo current Vs Irradiance

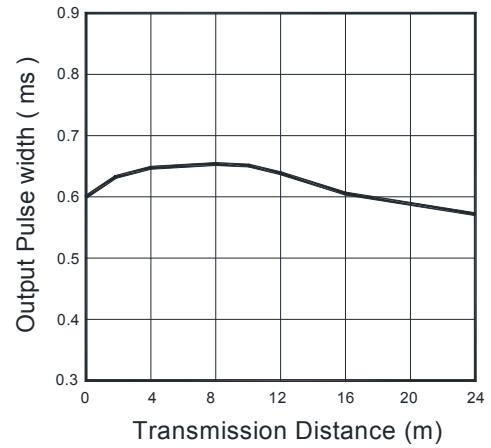


Fig.5 - Relative Sensitivity vs Sensitivity angle

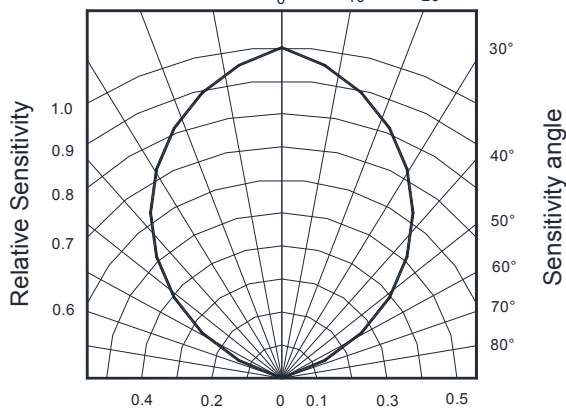
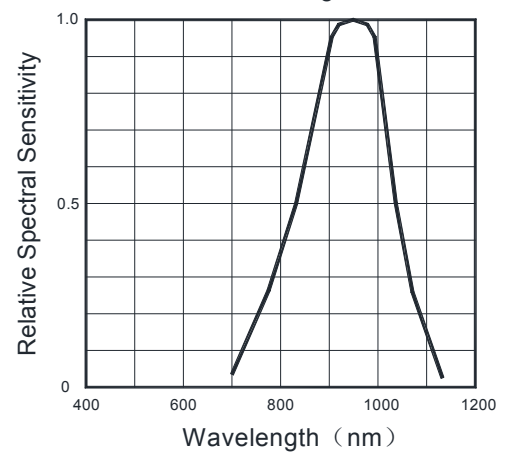


Fig.6 Relative Spectral Sensitivity vs Wavelength





Reliability Test Item And Condition

| Test Item | Test Condition | Ref.Standard | Time | Quantity | Ac/Re |
|---|---|--------------------------|------------|----------|-------|
| Life Test | Ta=25°C±5°C IF=20mA | JESD22-A108 | 1000H | 22Pcs | 0/1 |
| Temperature cycle | 100°C±5°C 30 min. ↑↓5 min -40°C±5°C 30 min. | JEITA ED-4701 100 105 | 100 Cycles | 22Pcs | 0/1 |
| High Temperature Storage | Ta=100±5°C | JEITA ED-4701 200 201 | 1000H | 22Pcs | 0/1 |
| Low Temperature Storage | Ta=-40±5°C | JEITA ED-4701 200 202 | 1000H | 22Pcs | 0/1 |
| Storage at High Temperature/High Humidity | Ta:85±5°C ,RH:85±5% | JEITA ED-4701 100 103 | 1000H | 22Pcs | 0/1 |
| Soldering resistance | Tsol=260±5°C 10s | JEITA ED-4701 300 302 | 1 times | 22Pcs | 0/1 |
| Solderability | Tsol=235±5°C 5s | JEITA ED-4701 300 303 | 1 times | 22Pcs | 0/1 |

Criteria For Judging Damage

| Test Items | Symbol | Test conditions | Criteria For Judgement | |
|--------------------|--------|-----------------|------------------------|-------------|
| | | | Min. | Max. |
| Forward Voltage | VF | IF=20mA | | U.S.L*)x1.1 |
| Reverse Current | IR | VR = 5V | | U.S.L*)x2.0 |
| Luminous intensity | IV | IF=20mA | L.S.L*)x0.7 | |

U.S.L: Upper standard level

L.S.L: Lower standard level

The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products.It does not constitute the warranting of industrial property nor the granting of any license.



1.Storage time

LED can be stored for a year under the condition:the temperature of 5°C-28°C and humility of RH60%,These production must be re-inspected and tested before use if their storage time exceed three months.

2.ESD countermeasure

Static electricity and high volt can damage LED,The production whose Die material is InGa must strictly required to prevent ESD,must put on static glove and static fillet,Soldering tool and the cover of device must connect the ground, soldering condition follows the related stating of production specification manual.

3.Soldering

When soldering leave a minimum of 2mm clearance from the base of the lens to the soldering point.

Dipping the lens into the solder must be avoided.

Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering conditions:

| Soldering iron | | Wave soldering | |
|----------------|------------------------------|-------------------------------|--------------------------|
| Temperature | 320°C Max | Pre-heat Pre-heat time | 120°C Max 120 sec.Max |
| Soldering time | 3 sec.Max (one time only) | Solder wave Soldering time | 260°C Max 5 sec.Max |

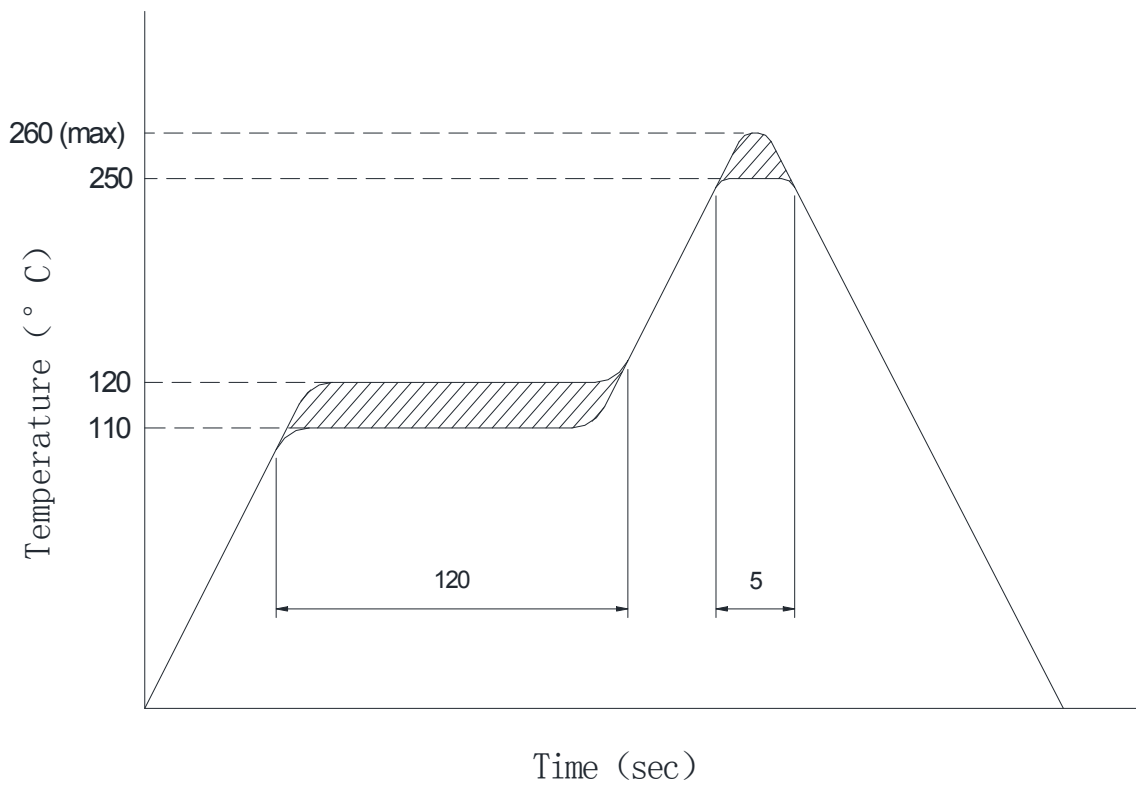
Note: Excessive soldering temperature and/or time might result in deformation of the LED lens or catastrophic failure of the LED.

4.CAUTION (When use and storage of this device)

- 1.Store and use where there is no force causing transformation or change in quality .
- 2.Store and use where there is no corrosive gas or sea(salt) breeze .
- 3.Store and use where there is no extreme humidity .
- 4.Put decoupling device between Vcc and GND for reduce the noise from power supply line .
- 5.The performance of remote-control system depends on environments condition and ability of periferal parts. Customer should evaluate the performance as total system in those conditions after system up with components such as commander , micon and this receiver module .



Soldering temperature curve chart



NOTES

After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.

A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.