



● Description

- ✧ A miniaturized receiver for infrared remote control and IR data transmission.
- ✧ PIN diode and preamplifier are assembled on lead frame.
- ✧ The epoxy package is designed as IR filter.
- ✧ The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the operation with high data rates and long distances.

● Features

- ✧ Photo detector and preamplifier in one package
- ✧ Internal band filter for PCM frequency
- ✧ Internal shielding against electrical field disturbance
- ✧ TTL and CMOS compatibility
- ✧ Output active low
- ✧ Small size package

● Special Features

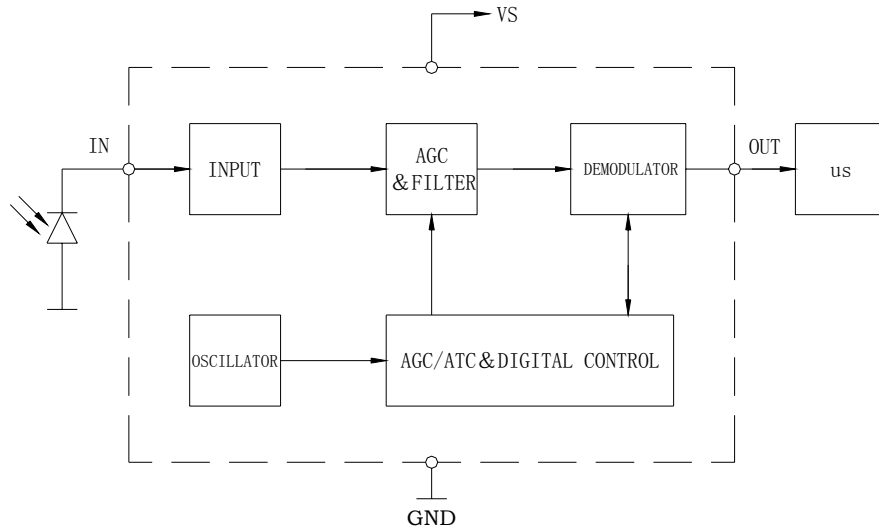
- ✧ Supply voltage 5.5 V
- ✧ Short settling time after power on
- ✧ High envelope duty cycle can be received
- ✧ Enhanced immunity against disturbance from energy saving lamps

● Application

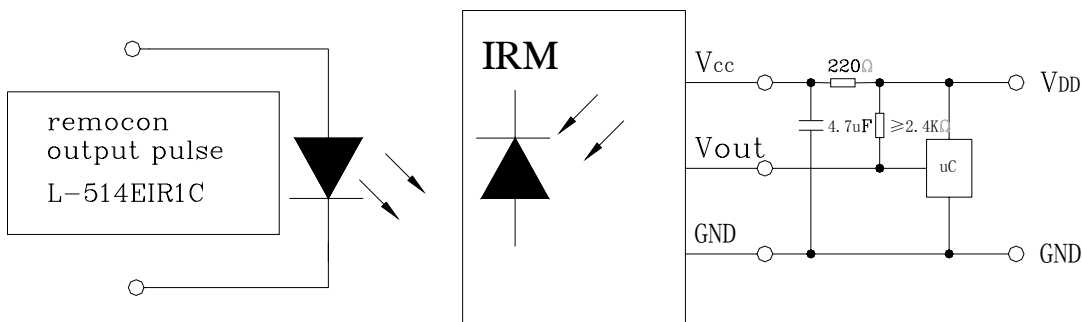
- ✧ AV instruments such as Audio, TV, VCR, CD, DVD, MD etc.
- ✧ Home appliances such as Air conditioner, Fan etc.
- ✧ The other equipments with wireless remote control.
- ✧ CATV set top boxes.
- ✧ Multi-media Equipment.
- ✧ Sensors and light barrier systems for long distances



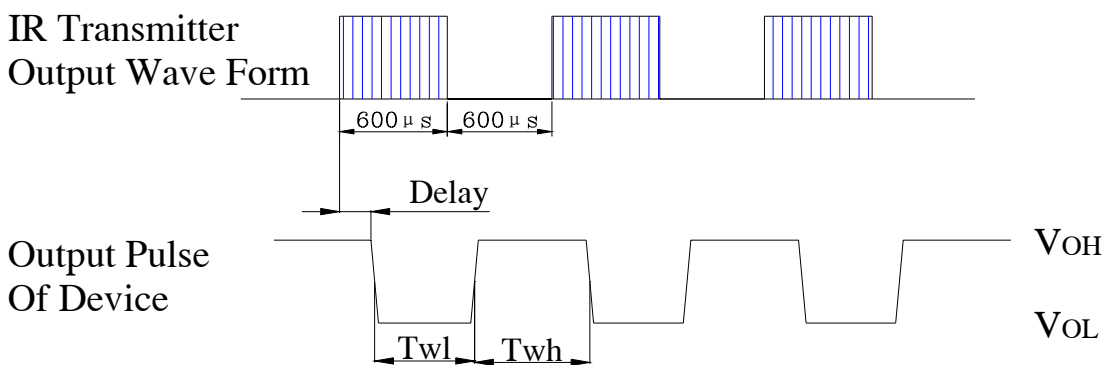
● Block Diagram



● Application Circuit

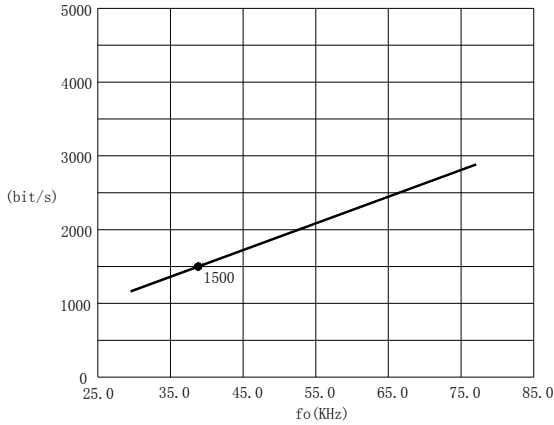


● Transmit Signal (Carrier Frequency= f_0)

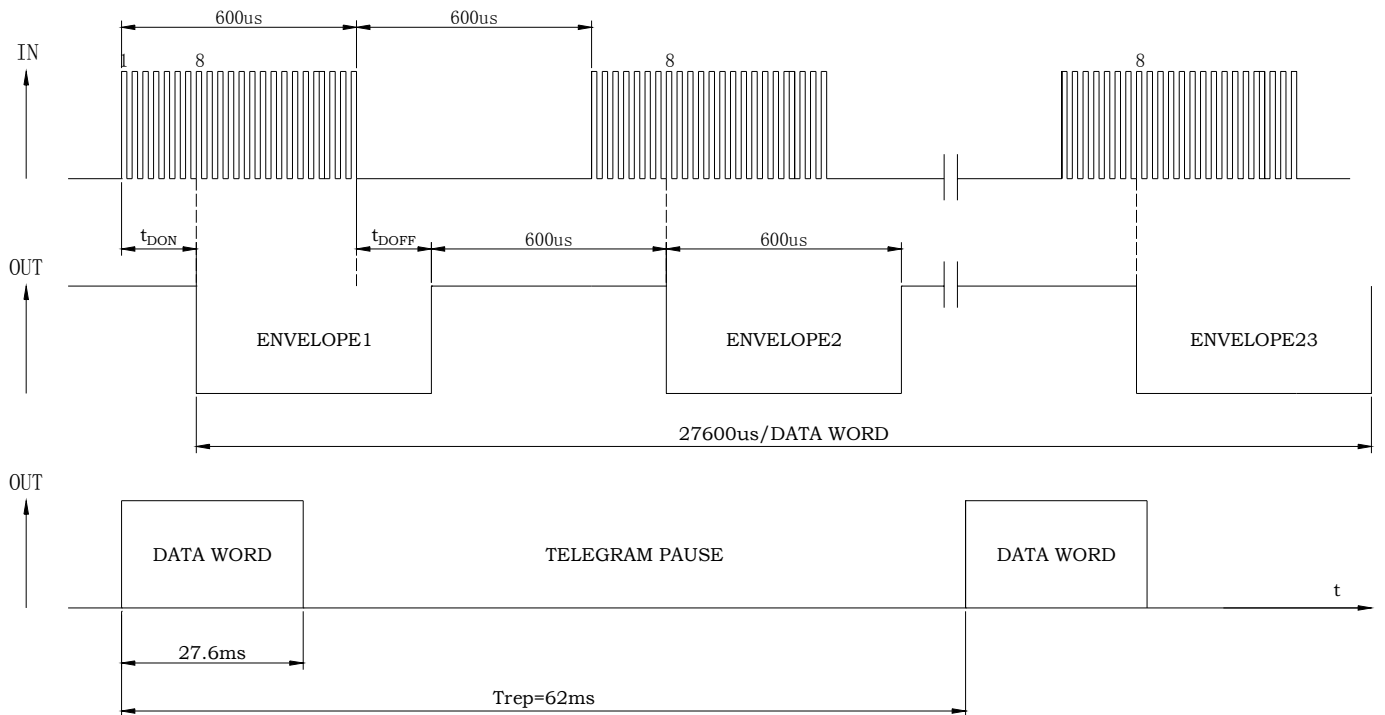




● Data Transmission Rate, $V_s=5V$



● Illustration Of Used Terms





INFRARED REMOTE CONTROL RECEIVER MODULE

PL-IRM0101-3

REV: B / 0

● Absolute Maximum Ratings : (Ta = 25°C)

| Symbol | Parameter | Ultra Condition | Unit |
|---------------------------------------------------------------------------------|-----------------------------|-----------------|------|
| Vcc | Supply Voltage | 5.5 | V |
| Tstg | Storage Temperature Range | -25to 85 | °C |
| Topr | Operating Temperature Range | -25to 85 | °C |
| Tsol | Soldering Temperature | 255(Max 5sec) | °C |
| Lead Soldering Temperature {1.6mm (0.063inch) From Body} 250±5°C For 3 Seconds. | | | |

● Electro-Optical Characteristics : (Ta = 25°C)

| Symbol | Parameter | Condition | Min. | Typ. | Max. | Unit |
|-------------|----------------------------|--------------------|------|------|------|------|
| Vcc | Supply Voltage | | 4.5 | 5 | | V |
| Icc | Current Consumption | Input signal=0 | | | 2.5 | mA |
| λP | Peak Emission Wavelength | | | 940 | | nm |
| fo | B.P.F Center Frequency | | | 38 | | KHz |
| L | Arrival Distance | L-514EIR1C | 0° | 35 | | m |
| | | | ±45° | 8 | | m |
| Voh | H Level Output Voltage | 30cm Over The Axis | 4.5 | | | V |
| Vol | L Level Output Voltage | | 0.1 | 0.5 | V | |
| Twh | H Level Output Pulse Width | Burst Wave=600 μ s | 500 | 600 | 700 | μ s |
| Twl | L Level Output Pulse Width | Period=1.2ms | 500 | 600 | 700 | μ s |
| Output Form | | Active Low Output | | | | |

Note 1. Distance between emitter & detector specifies maximum distance that output waveform satisfies the standard under the conditions below against the standard transmitter.

- ✧ Measuring place-----Indoors without extreme reflection of light.
- ✧ Ambient light source-----Detecting surface illumination shall be 200±50Lux under ordinary fluorescence lamp of no high frequency lighting.
- ✧ Standard transmitter-----Burst wave indicated shall be arranged to 50mVp-p under the measuring circuit.

Note 2. (Electro-optical characteristics) shall be satisfied after leaving 2 hours in the normal temperature.



● Typical Characteristics (Ta=25°C)

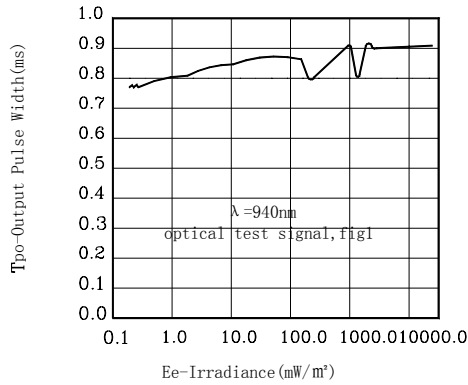


Figure1.Output Pulse Diagram

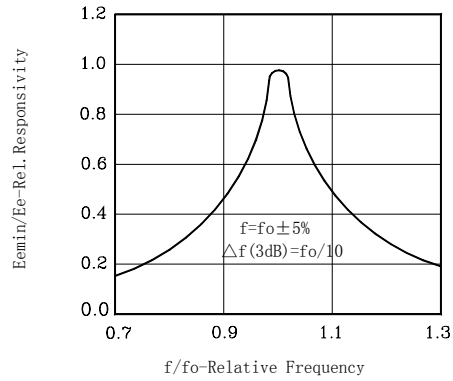


Figure3.Frequency Dependence of Responsivity

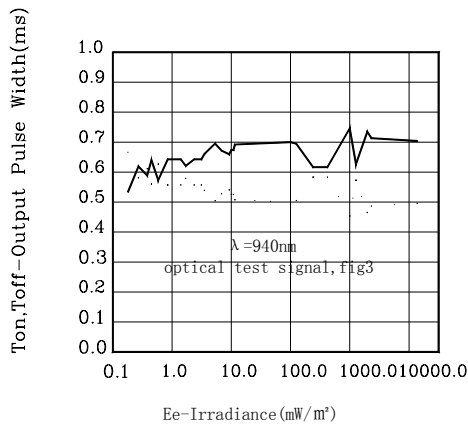


Figure2.Output Pulse Diagram

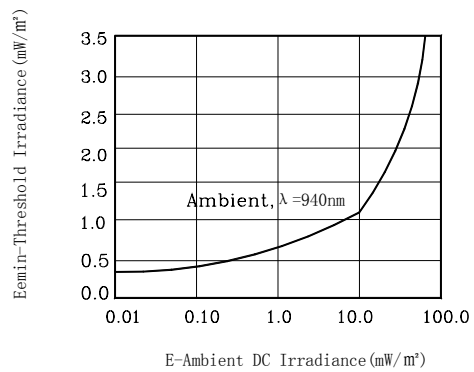


Figure4.Sensitivity In Bright Ambient

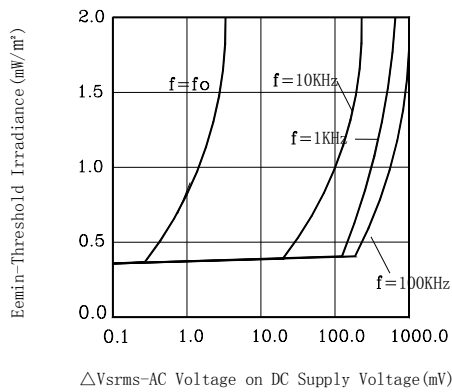


Figure5.Sensitiy vs.Supply Voltage Distances

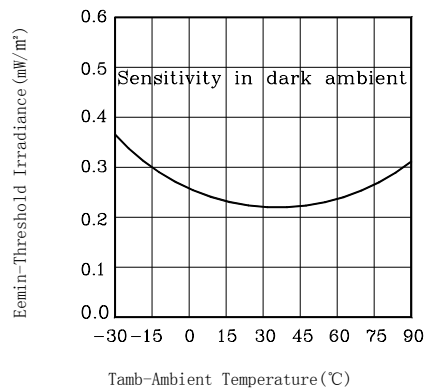


Figure8.Sensitivity vs.Ambient Temperature



● Typical Characteristics (Ta=25°C)

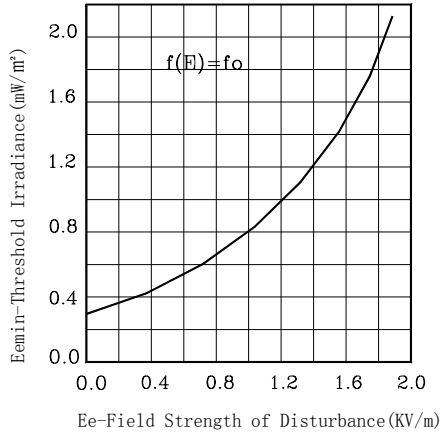


Figure6.Sensitivity vs.Electric Disturbances

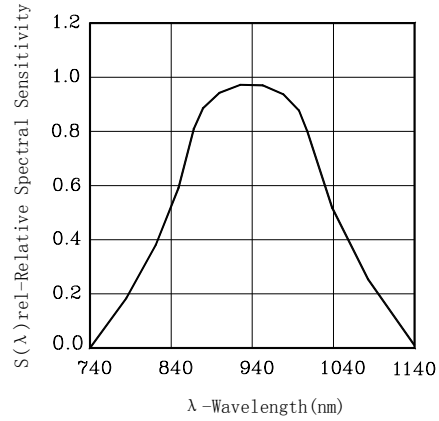


Figure9.Relative Spectral Sensitivity vs.wavelength

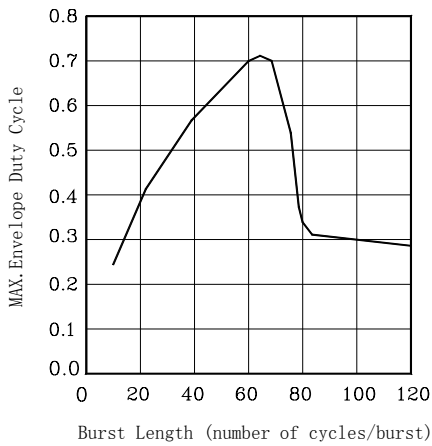


Figure7.Max.Envelope Duty Cycle vs.Burstlength

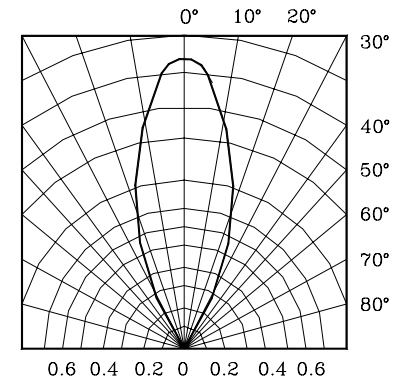


Figure10.Directivity



INFRARED REMOTE CONTROL RECEIVER MODULE

PL-IRM0101-3

REV: B / 0

● Operation Notes(Standard Condition)

| IR CODE | IR Receiver PL-IRM0101-3 | | |
|-------------------------|--------------------------|----------|-----------------|
| | Best Application | Suitable | Not Recommended |
| Grundig Code | | @ | |
| Nec Code | | @ | |
| Rc5 Code | | @ | |
| Rc6 Code | @ | | |
| Rcmm Code | @ | | |
| Rcs-80 Code | | | @ |
| R-2000 Code | | @ | |
| Rca Code | | @ | |
| Sharp Code | | @ | |
| Sony 12bit Code | | @ | |
| Sony 15bit Code | @ | | |
| Zenith Code | | @ | |
| High Data Rate Code | | | @ |
| Disturbance Suppression | @ | | |

Note: @: Best For Application

● Overview Of The Disturbance Suppression Behavior

| Disturbance Lamp | IR Receiver PL-IRM0101-3 |
|---------------------------------------------------------------|-----------------------------------|
| From Most Used Fluorescent Lamps (With Switched Supply) | Best Suppression |
| From Most Used Fluorescent Lamps (With Direct Line Supply) | Best Suppression |
| From Most Used Fluorescent Lamps (With Strong Ballast) | Possibility Of Disturbance Pulses |



- Static-Electricity Resistant Packaging

- Cautions

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. Solder the lead-pin within the condition of ratings. After soldering do not add extra force.
5. Do not wash this device. Wipe the stains of diode side with a soft cloth. You can use the solvent, ethyl alcohol or methyl alcohol or propylene only.
6. To prevent static electricity damage to the Pre-AMP make sure that the human body, the soldering iron is connected to ground before using.
7. Put decoupling device between Vcc and GND for reduce the noise from power supply line.
8. The performance of remote-control system depends on environments condition and ability of peripheral parts. Customer should evaluate the performance as total system in those conditions after system up with components such as commander and this receiver module.
9. This device is not design to endure radioactive rays and heavily charged particles.
10. In case where any trouble or questions arise, all parties agree to make full discussion covering the said problem.



● Reliability Test Item And Condition

| Test Items | Test Conditions | Failure Judgment Criteria | Samples (n) |
|--------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------|---------------|
| | | | Defectives(c) |
| High Temperature Storage | +85°C 240hrs | Performance test requirement and criteria given in page 6 should be satisfied. | N=22 C=0 |
| Low Temperature Storage | -25°C 240hrs | | N=22 C=0 |
| Temperature Cycle | -55°C-----+105°C (10min) (10min) 20cycles | | N=22 C=0 |
| High Temperature High Humidity | 85°C 85%RH 240hrs | | N=22 C=0 |
| Soldering Heat | 255±5°C 10s | | N=22 C=0 |

● Others:

The appearance and specifications of the product may be modified for improvement without notice.