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**EVERLIGHT** EVERLIGHT ELECTRONICS CO.,LTD.

# **Technical Data Sheet**

## **Infrared Remote-control Receiver Module**

#### **Features :**

- Photo detector and preamplifier in one package
- Internal filter for PCM frequency
- Improved shielding against electrical field disturbance
- TTL and CMOS compatibility
- Output active low
- Low power consumption
- Improved immunity against ambient light
- Suitable burst length  $\geq$  10 cycles/burst



## Descriptions

• The IRM-8881T are miniaturized receivers for infrared remote control systems. 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. IRM-8881T is the standard IR remote control receiver series, supporting all major transmission codes.

## Applications

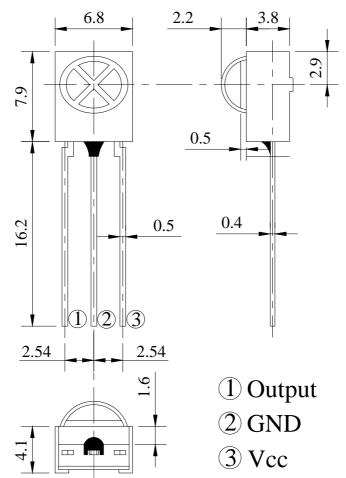
- 1. Optical switch
- 2. Light detecting portion of remote control
- AV instruments such as Audio, TV, VCR, CD, MD, etc.
- Home appliances such as Air-conditioner, Fan, etc.
- The other equipments with wireless remote control.
- CATV set top boxes
- Multi-media Equipment

PART	MATERIAL	COLOR
Chip	Silicon	Black
Metal can	Tinplate	Silver-white

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#### **Package Dimensions**



**Notes:** 1.All dimensions are in millimeters. 2.Tolerances unless dimensions ±0.3mm.

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit	Notice
Supply Voltage	Vcc	0~6	V	
Operating Temperature	Topr	-25 ~ +80	°C	
Storage Temperature	Tstg	-40 ~ +85	°C	
Soldering Temperature	Tsol	260	°C	4mm from mold body less than 10 seconds

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## **IRM-8881T**

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## **IRM-8881T**

#### **Recommended Operating Condition**

Supply Voltage Rating: Vcc 4.5V to 5.5V

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition	
Consumption Current	Icc			3	mA	No signal input	
B.P.F Center Frequency	Fo		38		KHz		
Peak Wavelength	λp		940		nm		
Reception Distance	L <sub>0</sub>	14			m		
	L <sub>45</sub>	5					
Half Angle(Horizontal)	$\Theta_{h}$		45		deg	At the ray axis *1	
Half Angle(Vertical)	θ <sub>v</sub>		45		deg		
High Level Pulse Width	$T_{\rm H}$	400		800	$\mu$ s	At the ray axis	
Low Level Pulse Width	T <sub>L</sub>	400		800	$\mu$ s	*2	
High Level Output Voltage	V <sub>H</sub>	4.5			V		
Low Level Output Voltage	VL		0.2	0.5	V		

#### Electro-Optical Characteristics (Ta=25°C, and Vcc=5 V)

\*1:The ray receiving surface at a vertex and relation to the ray axis in the range of  $\theta = 0^{\circ}$  and  $\theta = 45^{\circ}$ . \*2:A range from 30cm to the arrival distance. Average value of 50 pulses.

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#### **Test Method** :

The specified electro-optical characteristics is satisfied under the following Conditions at the controllable distance.

①Measurement place

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A place that is nothing of extreme light reflected in the room.

②External light

Project the light of ordinary white fluorescent lamps which are not high Frequency lamps and must be less then 10 Lux at the module surface.

 $(Ee \leq 10Lux)$ 

③Standard transmitter

A transmitter whose output is so adjusted as to **Vo=400mVp-p** and the output Wave form shown in Fig.-1.According to the measurement method shown in Fig.-2 the standard transmitter is specified.

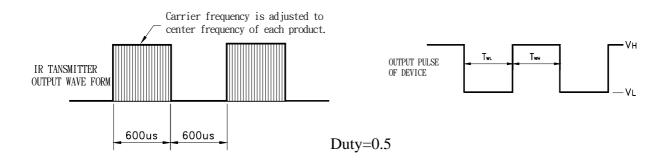
However, the infrared photodiode to be used for the transmitter should be  $\lambda p=940$ nm, $\Delta \lambda=50$ nm. Also, photodiode is used of PD438B(Vr=5V).

Measuring system

According to the measuring system shown in Fig.-3

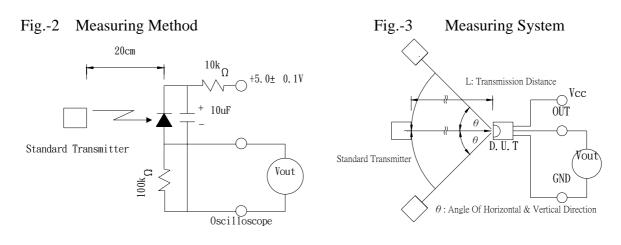
#### Fig.-1 Transmitter Wave Form

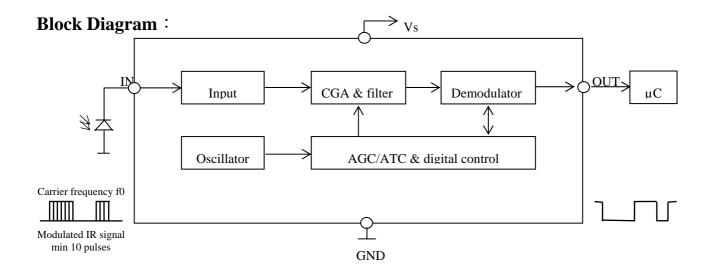
#### D.U.T output Pulse



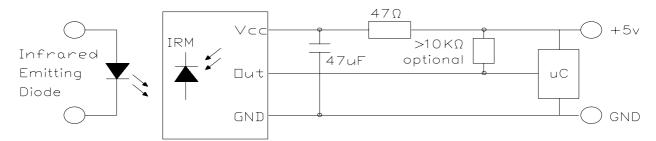
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## **Application Circuit** :



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

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## **IRM-8881T**

## **Typical Electro-Optical Characteristics Curves**

Fig.-4 Relative Spectral Sensitivity vs.

Wavelength

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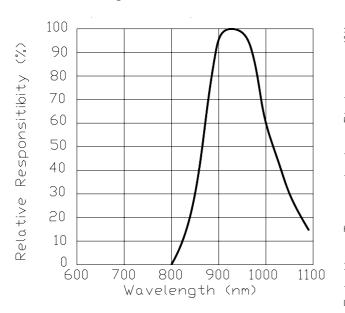
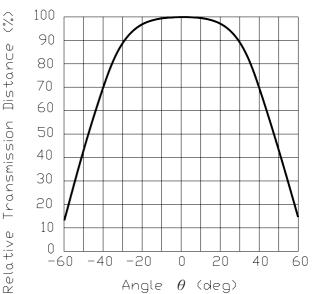


Fig.-5 Relative Transmission Distance vs. Direction



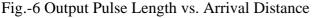
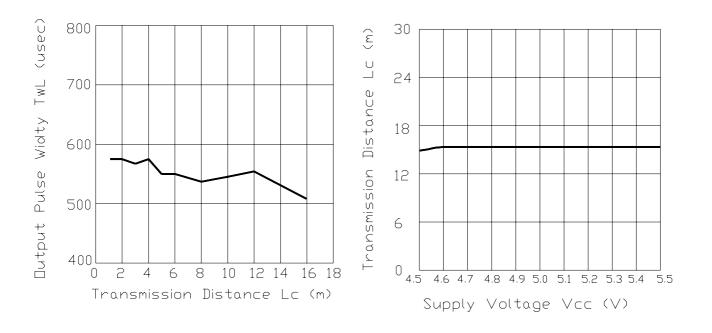


Fig.-6 Output Pulse Length vs. Arrival Distance Fig.-7 Arrival Distance vs. Supply Voltage



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## **IRM-8881T**

#### **Typical Electro-Optical Characteristics Curves**

Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency

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100  $\langle \rangle$ 90 Relative Distance 80 70 60 50 25 20 30 35 40 45 50 Carrier Frequency (KHz)

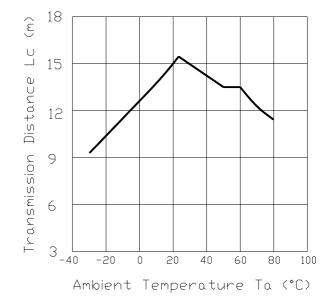


Fig.-9 Arrival Distance vs. Ambient Temperature

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## **Reliability Test Item And Condition**

The reliability of products shall be satisfied with items listed below. Confidence level : 90%

LTPD: 10%

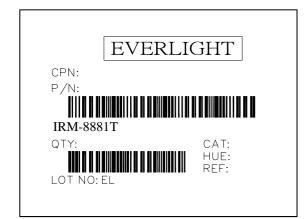
Test Items	Test Conditions	Failure Judgement Criteria	<u>Samples(n)</u> Defective(c)
Temperature cycle	$1 \text{ cycle } -25^{\circ}\text{C} \iff +85^{\circ}\text{C}$ $(30\text{min})(5\text{min})(30\text{min})$ $300 \text{ cycle test}$		n=22,c=0
High temperature test	Temp: +85℃ Vcc:5V 1000hrs	$L0 \leq L \times 0.8$ $L45 \leq L \times 0.8$	n=22,c=0
Low temperature storage	Temp: -25°C 1000hrs	L: Lower	n=22,c=0
High temperature High humidity	Ta: 85℃,RH:85% 1000hrs	specification limit	n=22,c=0
Solder heat	Temp: 260±5°C 10sec 4mm From the bottom of the package.		n=22,c=0



## **Packing Quantity Specification**

- 1.1500PCS/1Box
- 2. 10Boxes/1Carton

#### Label Form Specification



CPN: Customer's Production Number P/N : Production Number QTY: Packing Quantity CAT: Ranks HUE: Peak Wavelength REF: Reference LOT No: Lot Number MADE IN TAIWAN: Production Place

#### Notes

- 1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- 2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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