



## Infrared Remote-control Receiver Module

MODEL NO : IRM-8100-M-A1

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### ■ Features :

- High protection ability to EMI and metal case can be customized.
- Mold type and metal case type to meet the design of front panel.
- Elliptic lens to improve the characteristic against
- Line-up for various center carrier frequencies.
- Low voltage and low power consumption.
- High immunity against ambient light.
- Photodiode with integrated circuit.
- TTL and CMOS compatibility.
- Long reception distance.
- High sensitivity.

### ■ Description :

1. The module is a small type infrared remote control system receiver which has been developed and designed by utilizing the latest hybrid technology.
2. This single unit type module incorporates a photo diode and a receiving preamplifier IC.
3. The demodulated output signal can directly be decoded by a microprocessor.

### ■ 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

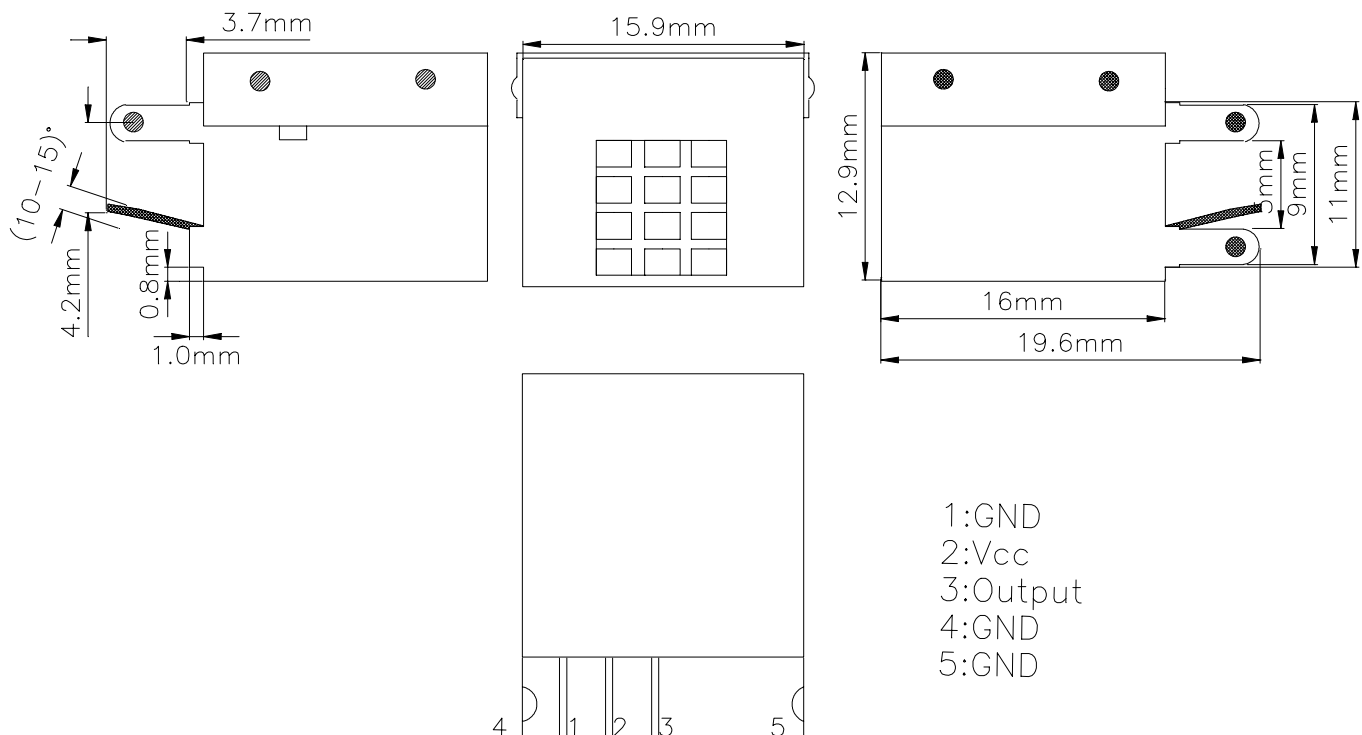
PART	MATERIAL	COLOR
Chip	Silicon	Black
Shell	Tinplate	Silver-white

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### ■ Package Dimensions :



### ■ NOTES :

1. This drawing measure is a standard value. All dimensions are in millimeter.
2. In case of designation is tolerance  $\pm 0.3\text{mm}$ .
3. Lead spacing is measured where the lead emerge from the package.
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### ■ Absolute Maximum Ratings at T<sub>A</sub> = 25°C

Parameter	Symbol	Rating	Unit	Notice
Supply Voltage	V <sub>cc</sub>	4.3~5.7	V	
Operating Temperature	T <sub>opr</sub>	-10 ~ +60	°C	
Storage Temperature	T <sub>stg</sub>	-20 ~ +70	°C	
Soldering Temperature	T <sub>sol</sub>	260	°C	4mm from mold body less than 5 seconds

### ■ Electronic Optical Characteristics :

T<sub>A</sub> = 25°C

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Supply Voltage	V <sub>cc</sub>	4.7	5	5.3	V	DC voltage
Supply Current	I <sub>cc</sub>	---	---	3	MA	No signal input
B.P.F Center Frequency	F <sub>o</sub>	---	38	---	KHz	
Peak Wavelength	λ <sub>p</sub>	---	940	---	Nm	
Reception Distance	L <sub>0°</sub>	8	---	---	m	At the ray axis *1
	L <sub>45°</sub>	4	---	---		
Half Angle(Horizontal)	Θ <sub>h</sub>	---	45	---	Deg	
High Level Pulse Width	T <sub>H</sub>	400	---	800	μs	At the ray axis *2
Low Level Pulse Width	T <sub>L</sub>	400	---	800	μs	
High Level Output Voltage	V <sub>H</sub>	4.5	---	---	V	
Low Level Output Voltage	V <sub>L</sub>	---	---	0.5	V	



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### ■ Appendix of Page 3 :

- \*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.

### ■ Test Method :

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

#### ① Measurement place

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

#### ② External light

Project the light of ordinary white fluorescent lamps which are not high Frequency lamps and must be less than 10 Lux at the module surface.  
( $E_e \leq 10 \text{Lux}$ )

#### ③ Standard transmitter

A transmitter whose output is so adjusted as to  **$V_o = 400 \text{mVp-p}$**  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  $\lambda_p = 940 \text{nm}$ ,  $\Delta\lambda = 50 \text{nm}$ . Also, photodiode is used of PD438B ( $V_r = 5 \text{V}$ ).

(Standard light / Light source temperature  $2856^\circ \text{K}$ ).

#### ④ Measuring system

According to the measuring system shown in Fig.-3

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### Module schematic & circuit :

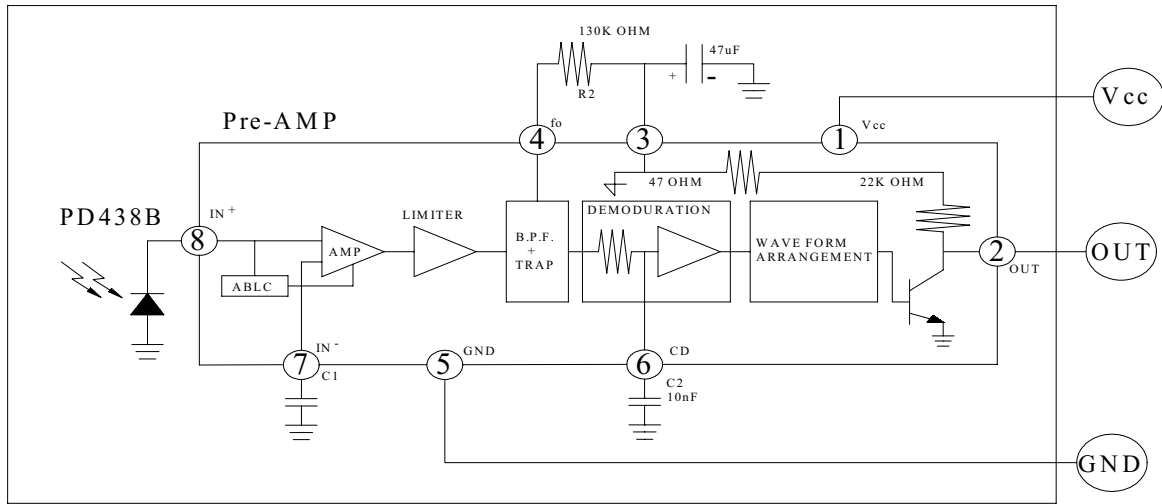


Fig.-1 Transmitter Wave Form

D.U.T output Pulse

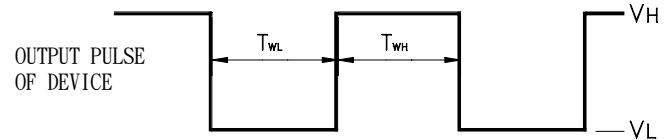
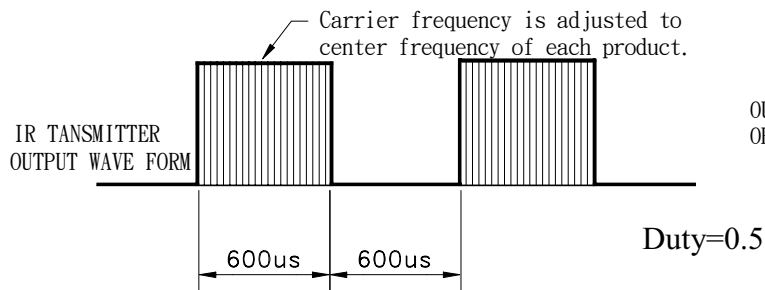
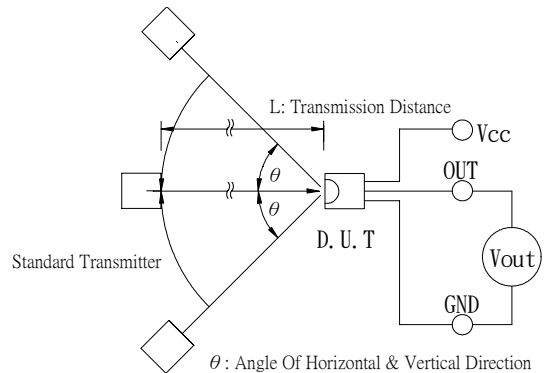
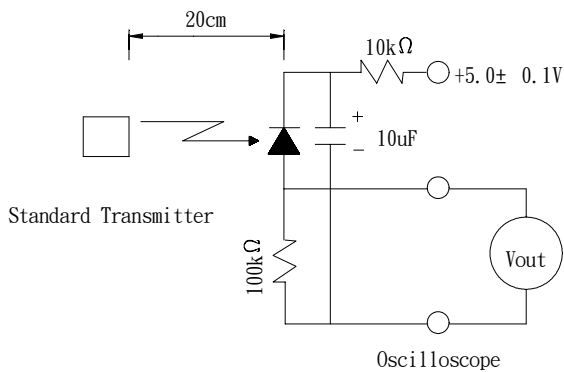


Fig.-2 Measuring Method

Fig.-3 Measuring System





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### ■ TYPICAL ELECTRICAL/OPTICAL/CHARACTERISTICS CURVES

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

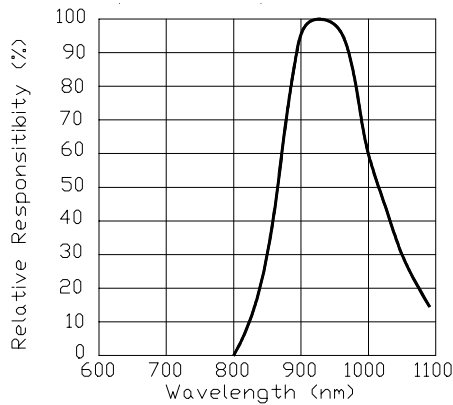


Fig.-5 Relative Transmission Distance vs. Direction

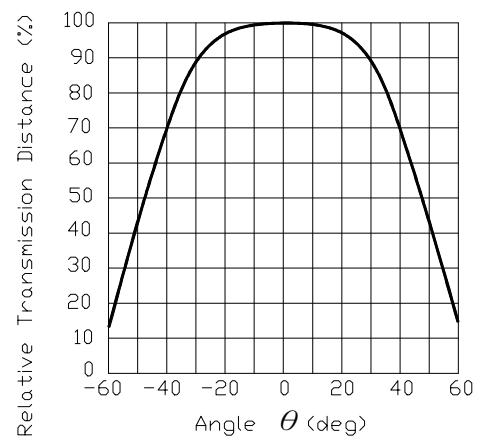


Fig.-6 Output Pulse Length vs. Arrival Distance

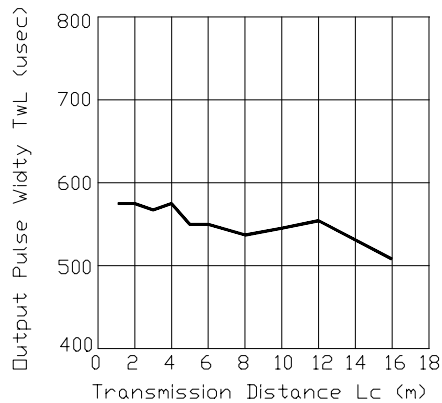


Fig.-7 Arrival Distance vs. Supply Voltage

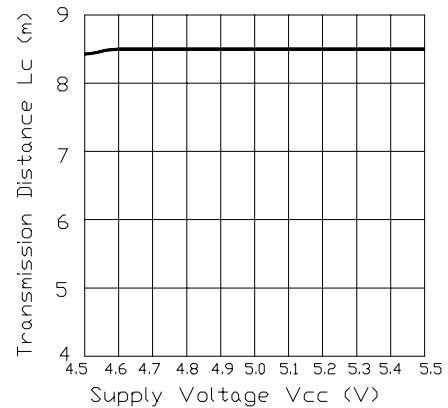


Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency

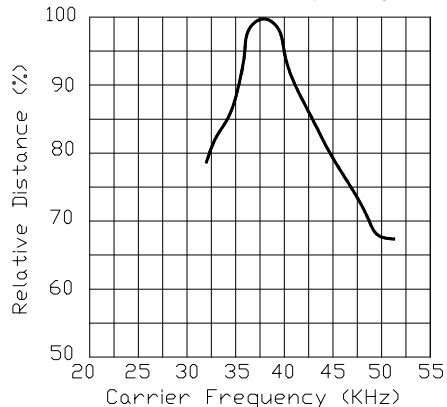
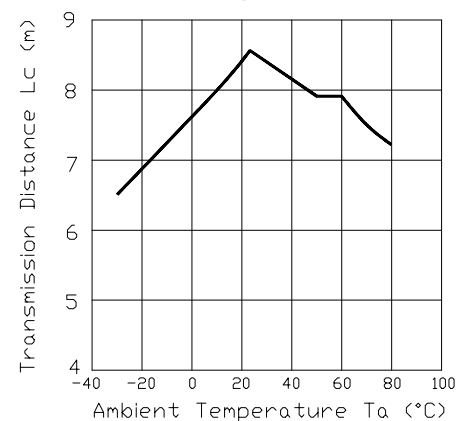


Fig.-9 Arrival Distance vs. Ambient Temperature





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DEVICE NUMBER : DMO-810-084      REV : 1.0  
ECN : \_\_\_\_\_      PAGE : 7/8

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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	Samples(n) Defective(c)
Operation life	Vcc=5V, Ta:25°C 1000hrs	$L_0 \leq L \times 0.8$ $L_{45} \leq L \times 0.8$  L: Lower specification limit	n=22,c=0
Temperature cycle	1 cycle -40°C +25°C +70°C (30min)(5min)(30min) 50 cycle test		n=22,c=0
Thermal shock	-10°C to +70°C (5min) (10sec) (5min) 50 cycle test		n=22,c=0
High temperature storage	Temp: +70°C 1000hrs		n=22,c=0
Low temperature storage	Temp: -20°C 1000hrs		n=22,c=0
High temperature High humidity	Ta: 85°C, RH:85% 1000hrs		n=22,c=0
Solder heat	Temp: 260± 5°C 5sec 4mm From the bottom of the package.		n=22,c=0
Solderability	Temp: 230± 5°C 5sec 4mm From the bottom of the package.		More than 90% of Lead to be covered by soldering

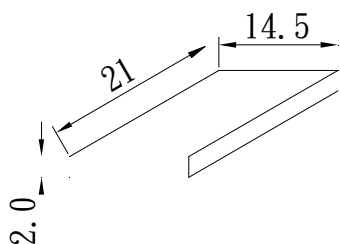


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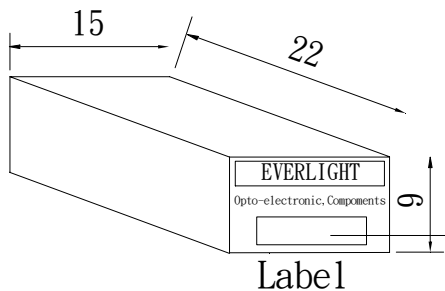
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### ■ Packing Specifications

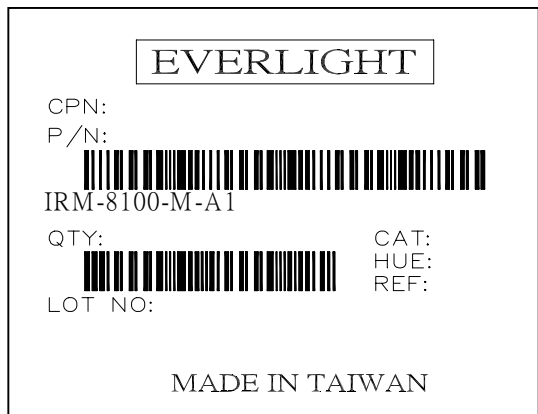
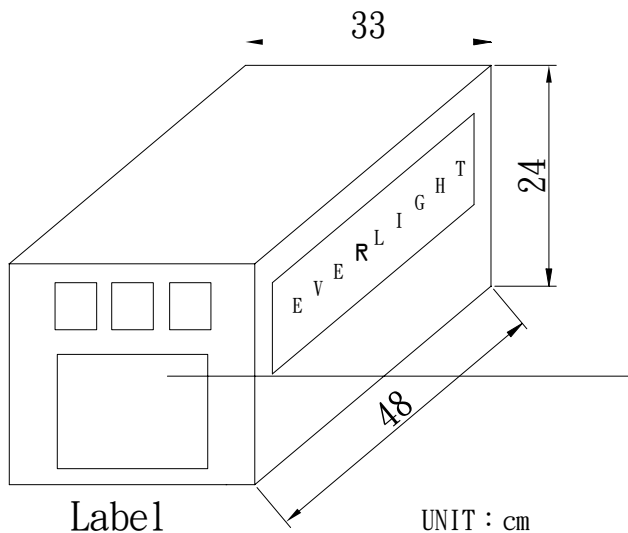
#### 1. Plastic Case



#### 2. Box



#### 3. Carton



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

### ■ Packing Quantity Specification

- 1. 40 Pcs/1Plastic Case , 4Plastic Cases/1Box
- 2. 10 Boxes/1Carton