



Infrared Remote-control Receiver Module

MODEL NO : IRM-8100-3-M

■ 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

REV : 1.1

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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.
4. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
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■ Absolute Maximum Ratings at T_A = 25°C

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

■ Electronic Optical Characteristics :

T_A = 25°C

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Supply Voltage	V _{CC}	4.7	5	5.3	V	DC voltage
Supply Current	I _{CC}	---	---	3	mA	No signal input
B.P.F Center Frequency	F _O	---	40	---	KHz	
Peak Wavelength	λ _p	---	940	---	nm	At the ray axis *1
Reception Distance	L _{0°}	8	---	---	m	
	L _{45°}	4	---	---		
Half Angle(Horizontal)	Θ _h	---	45	---	Deg	
High Level Pulse Width	T _H	400	---	800	μs	At the ray axis *2
Low Level Pulse Width	T _L	400	---	800	μs	
High Level Output Voltage	V _H	4.2	---	---	V	
Low Level Output Voltage	V _L	---	---	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°K).

④ Measuring system

According to the measuring system shown in Fig.-3

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■ Module schematic & circuit :

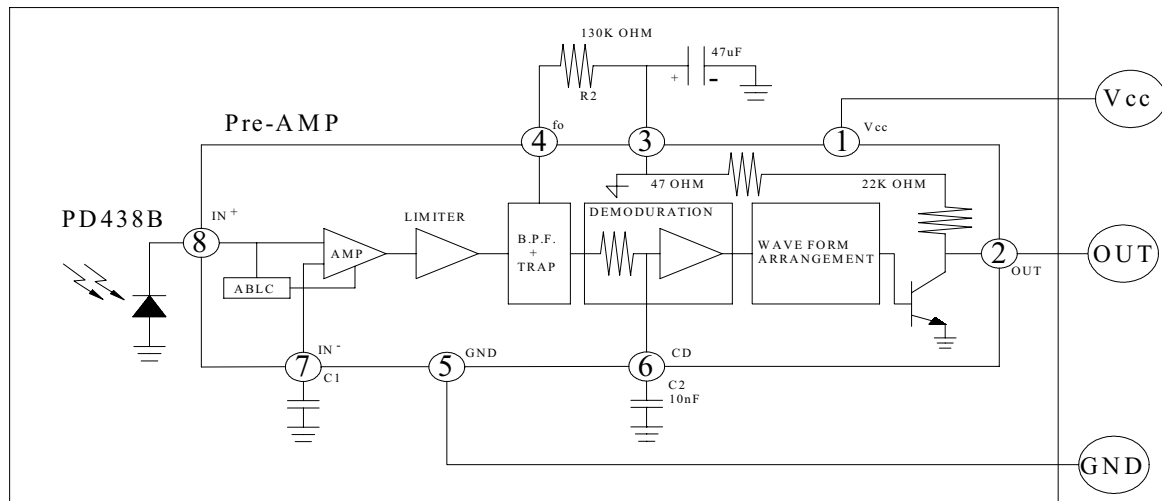


Fig.-1 Transmitter Wave Form

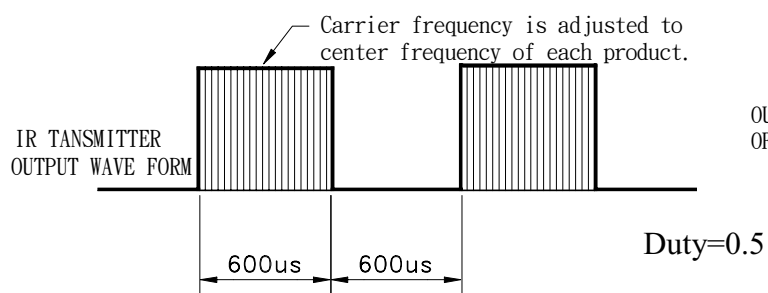


Fig.-2 Measuring Method

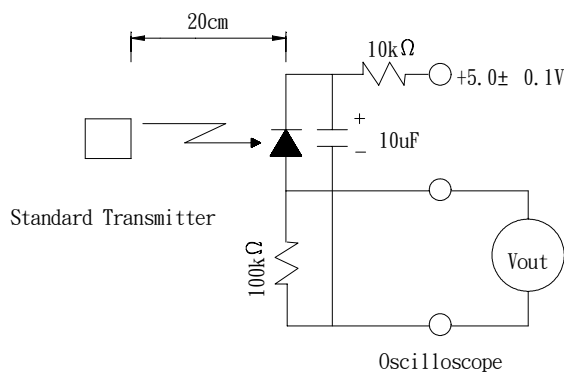
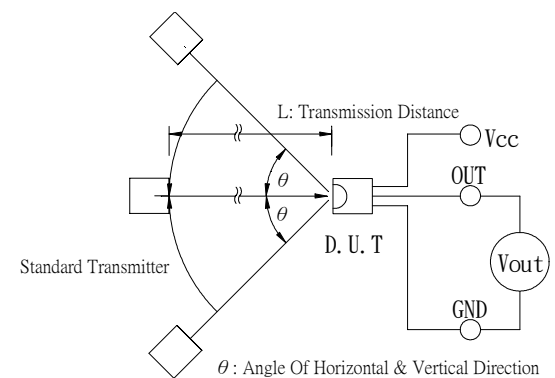


Fig.-3 Measuring System





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■ TYPICAL ELECTRICAL/OPTICAL/CHARACTERISTICS CURVES

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

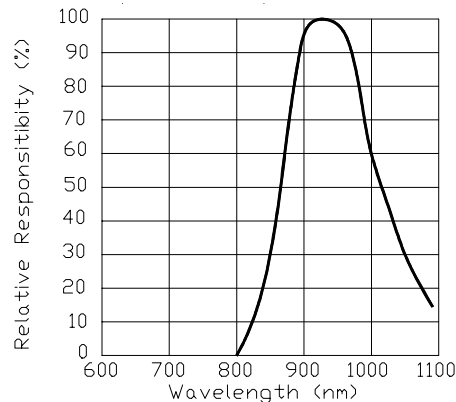


Fig.-5 Relative Transmission Distance vs. Direction

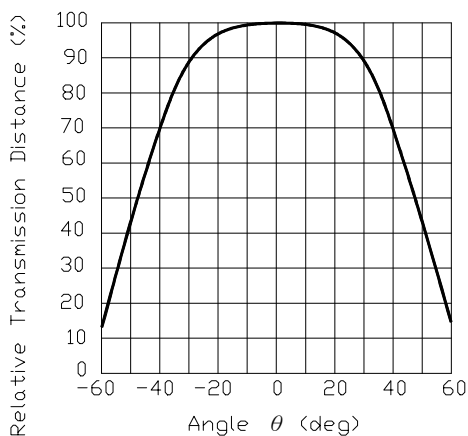


Fig.-6 Output Pulse Length vs. Arrival Distance

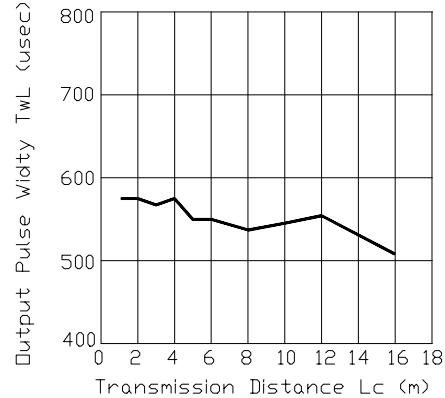


Fig.-7 Arrival Distance vs. Supply Voltage

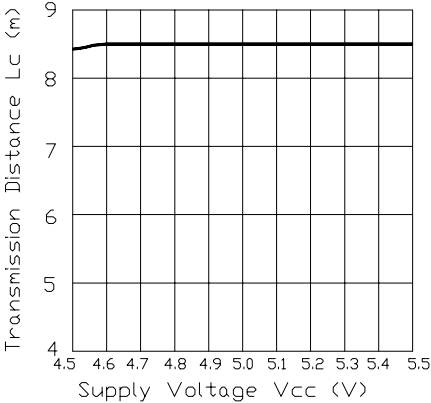


Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency

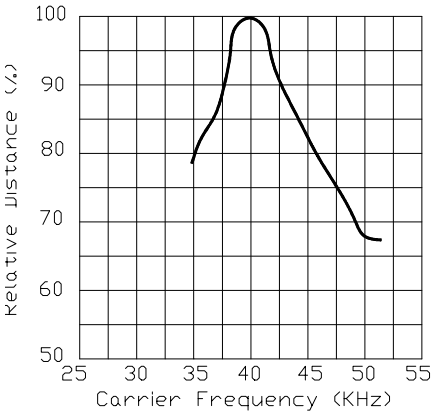
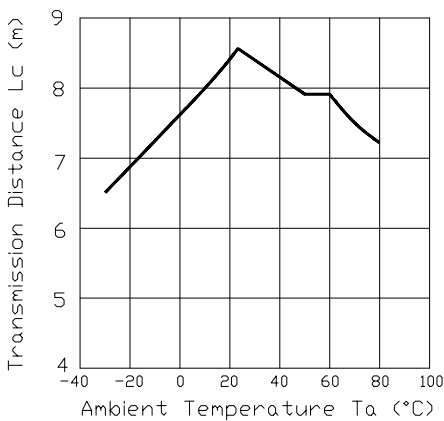


Fig.-9 Arrival Distance vs. Ambient Temperature





EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DMO-810-013REV : 1.1

ECN : _____

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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:65℃ 240hrs	$L_0 \leq L \times 0.8$ $L_{45} \leq L \times 0.8$ L: Lower specification limit	n=22,c=0
Temperature cycle	1 cycle -20℃ +25℃ +70℃ (30min)(5min)(30min) 50 cycle test		n=22,c=0
Thermal shock	-10℃ to +70℃ (5min) (10sec) (5min) 50 cycle test		n=22,c=0
High temperature storage	Temp: +70℃ 240hrs		n=22,c=0
Low temperature storage	Temp: -20℃ 240hrs		n=22,c=0
High temperature High humidity	Ta: 70℃,RH:85% 240hrs		n=22,c=0
Solder heat	Temp: 260± 5℃ 5sec 4mm From the bottom of the package.		n=22,c=0
Solderability	Temp: 230± 5℃ 5sec 4mm From the bottom of the package.	More than 90% of Lead to be covered by soldering	n=22,c=0



DEVICE NUMBER : DMO-810-013
ECN : _____

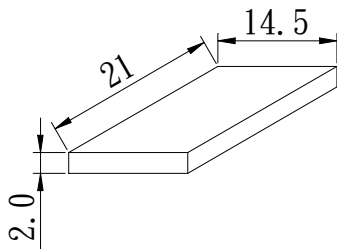
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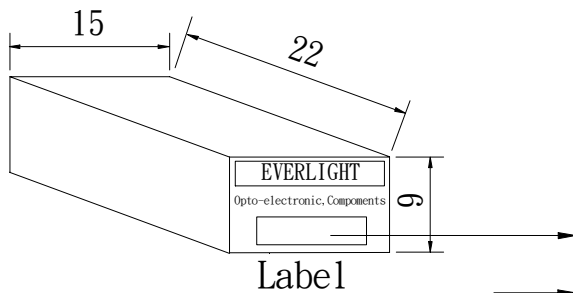
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■ Packing Specifications

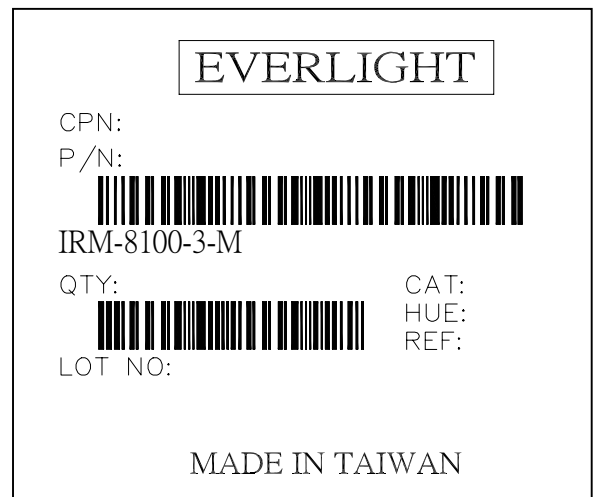
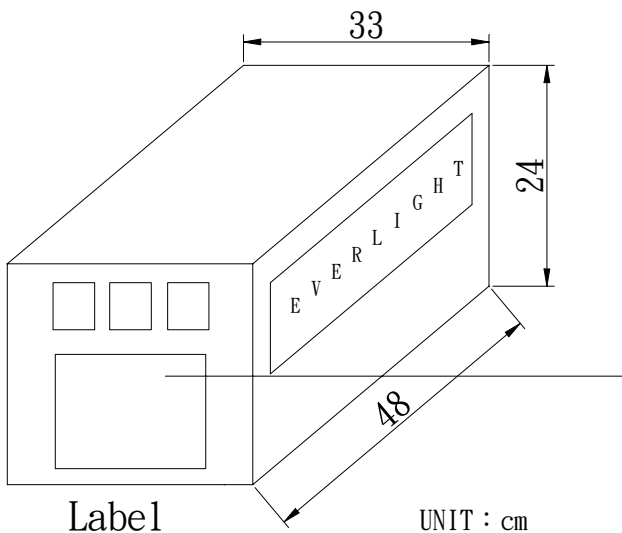
1. Plastic Case



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