



EVERLIGHT ELECTRONICS CO.,LTD.

Technical Data Sheet

Infrared Remote-control Receiver Module

IRM-36xxAF4 SERIES

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
- Pb free
- The product itself will remain within RoHS compliant version.



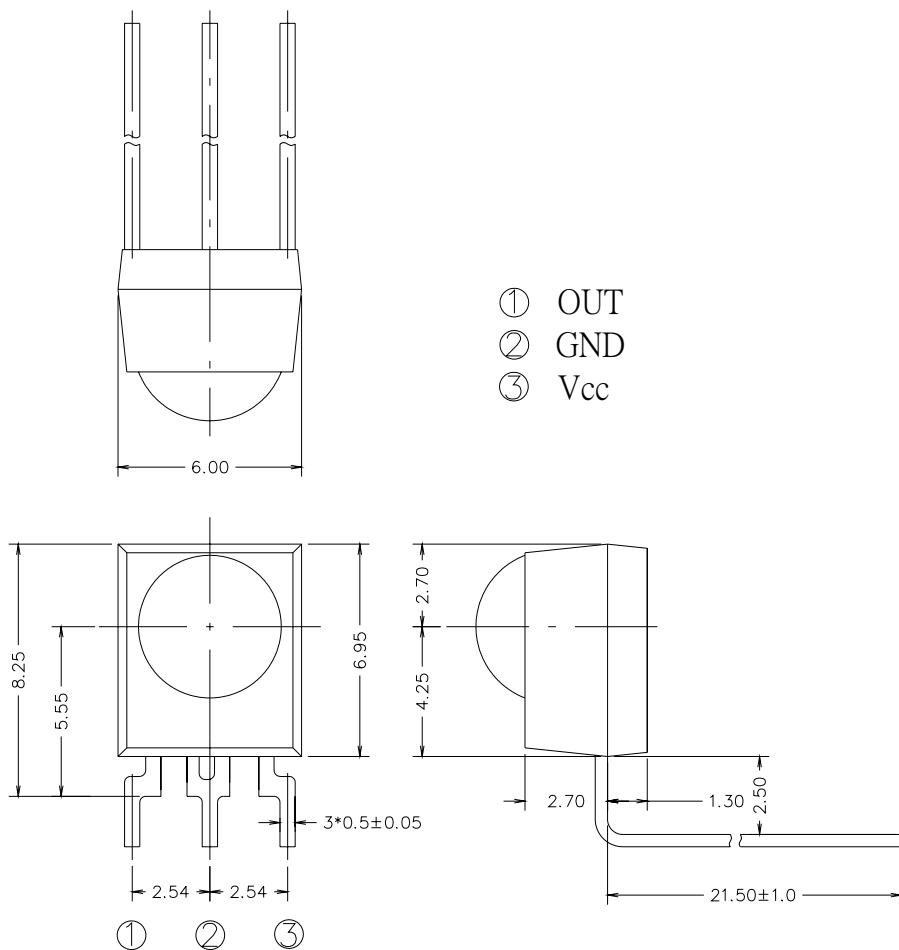
Descriptions

- The IRM-36xxAF4 SERIES 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-36xxAF4 SERIES 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
Compound	Epoxy	Black

IRM-36xxAF4 SERIES**Package Dimensions**

Notes: 1. All dimensions are in millimeters.

2. Tolerances unless dimensions $\pm 0.3\text{mm}$.

Available Types For Different Carrier Frequencies

Type	Carrier Frequencies(Typ)
IRM-3633AF4	32.7 kHz
IRM-3636AF4	36.7 kHz
IRM-3638AF4	37.9 kHz
IRM-3640AF4	40.0 kHz
IRM-3656AF4	56.7 kHz

**IRM-36xxAF4 SERIES****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

Recommended Operating Condition**Supply Voltage Rating: Vcc 2.7V to 5.5V****Electro-Optical Characteristics (Ta=25°C, and Vcc=3 V)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Consumption Current	Icc	---	1.1	2.5	mA	No signal input
Peak Wavelength	λ_p	---	940	---	nm	
Reception Distance	L_0	8	---	---	m	At the ray axis *1
	L_{45}	5	---	---		
Half Angle(Horizontal)	Θ_h	---	45	---	deg	At the ray axis *2
Half Angle(Vertical)	Θ_v	---	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	2.5	---	---	V	
Low Level Output Voltage	V_L	---	0.2	0.5	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.

IRM-36xxAF4 SERIES**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 then 10 Lux at the module surface.

($E_e \leq 10 \text{ Lux}$)

③ Standard transmitter

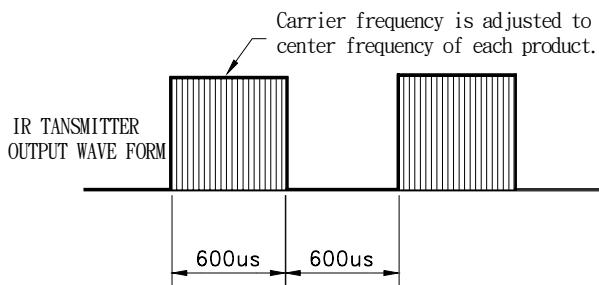
A transmitter whose output is so adjusted as to $V_o = 400 \text{ mVp-p}$ and the output Wave form shown in Fig.-1. According to the measurement method shown in Fig.-2 the standard transmitter is specified.

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($V_r = 5 \text{ V}$).

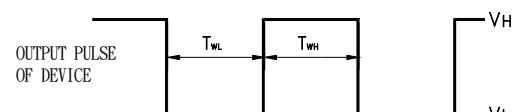
④ Measuring system

According to the measuring system shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse



IRM-36xxAF4 SERIES

Fig.-2 Measuring Method

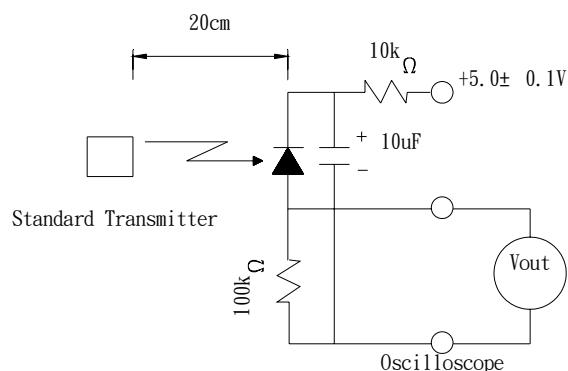
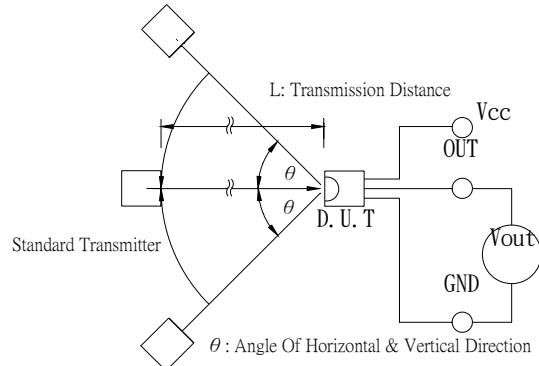
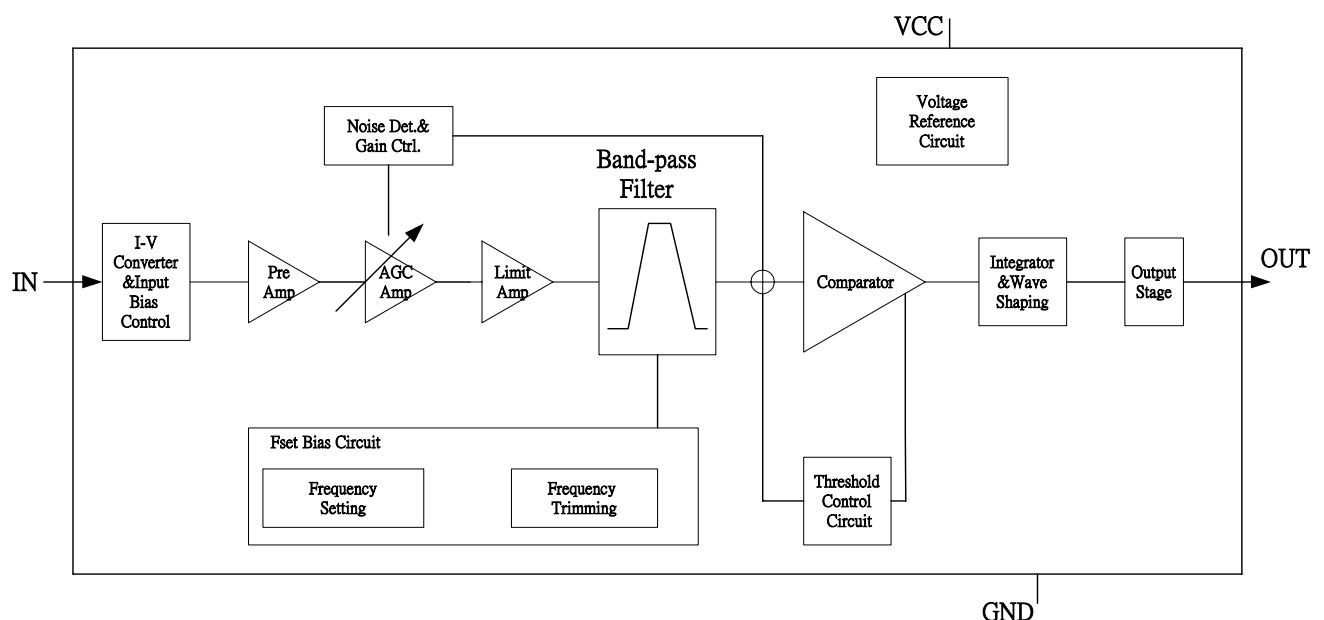


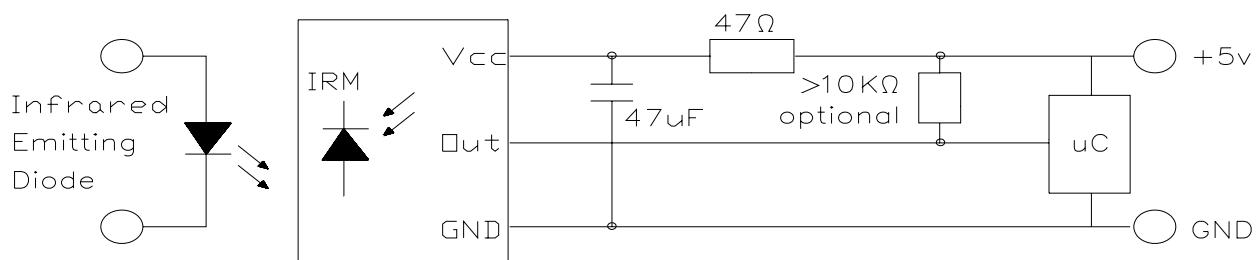
Fig.-3 Measuring System



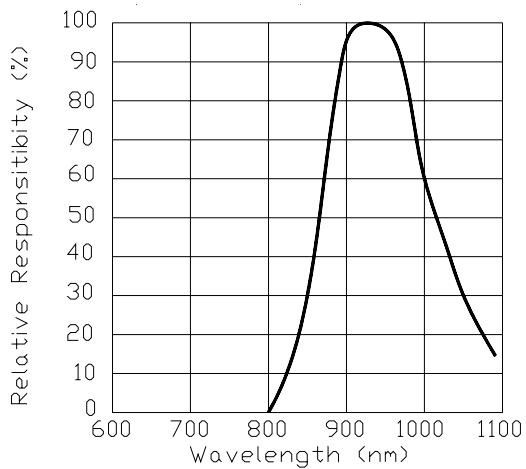
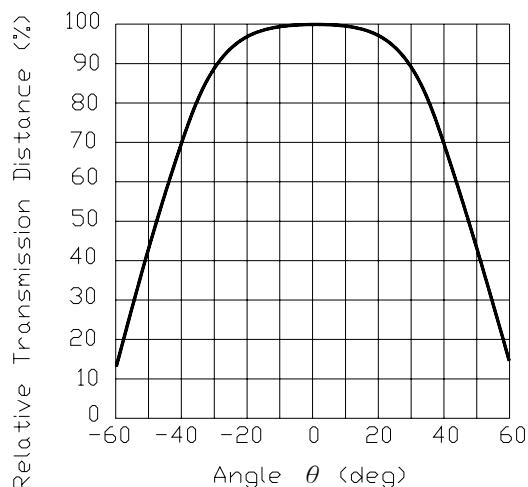
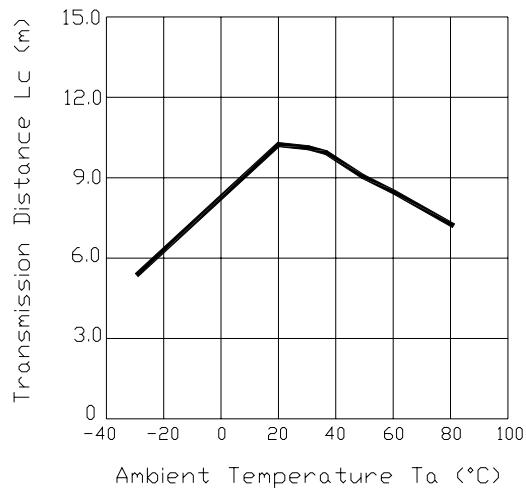
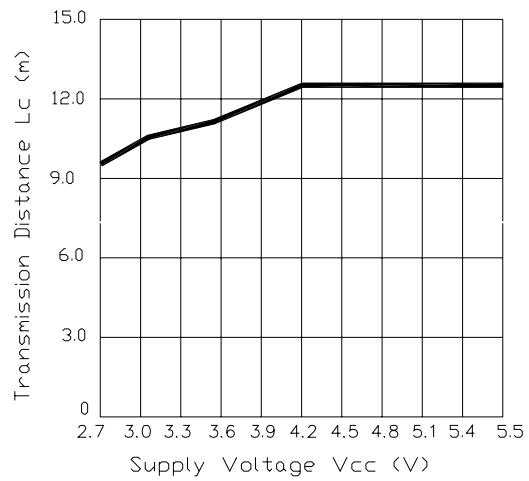
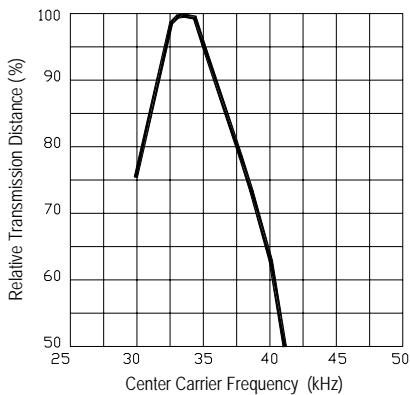
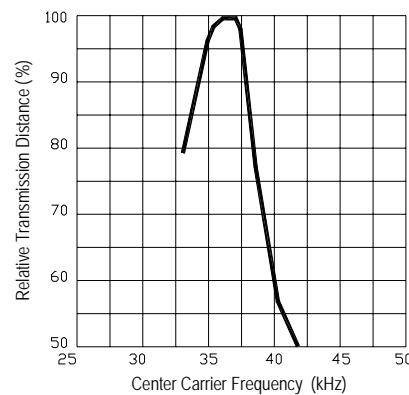
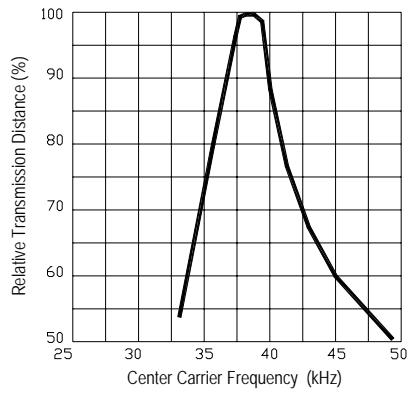
Block Diagram :



Application Circuit :



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

IRM-36xxAF4 SERIES
Typical Electro-Optical Characteristics Curves
Fig.-4 Relative Spectral Sensitivity vs. Wavelength

Fig.-5 Relative Transmission Distance vs. Direction

Fig.-6 Arrival Distance vs. Ambient Temperature

Fig.-7 Arrival Distance vs. Supply Voltage

Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency
IRM-3633AF4

IRM-3636AF4

IRM-3638AF4


IRM-36xxAF4 SERIES**Typical Electro-Optical Characteristics Curves**

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

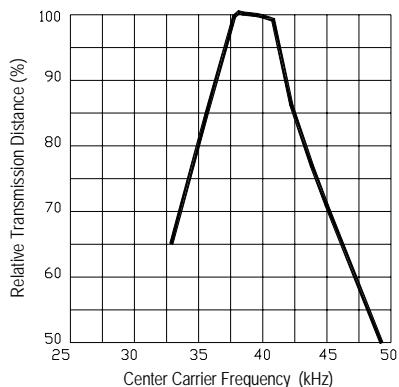
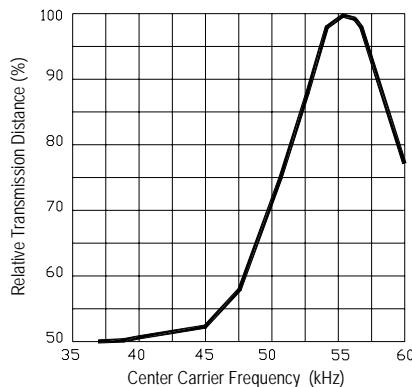
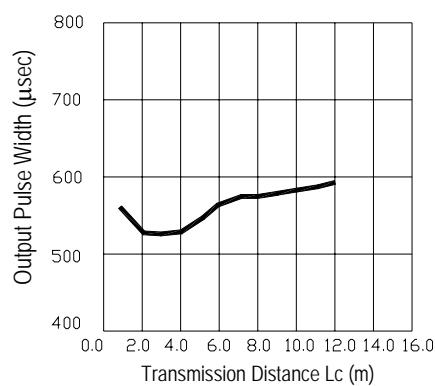
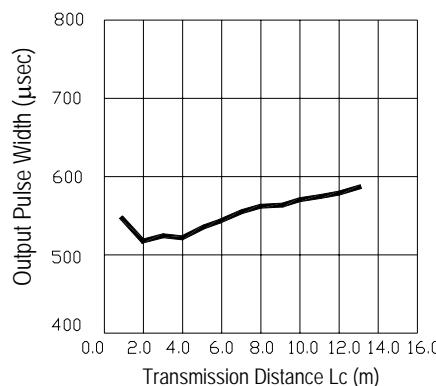
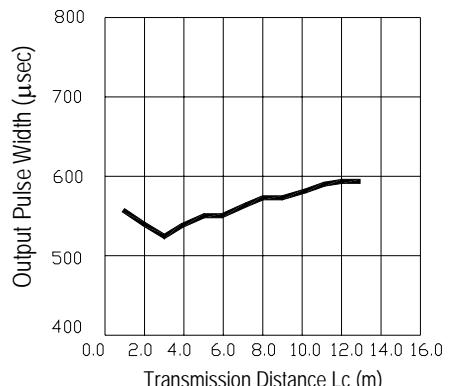
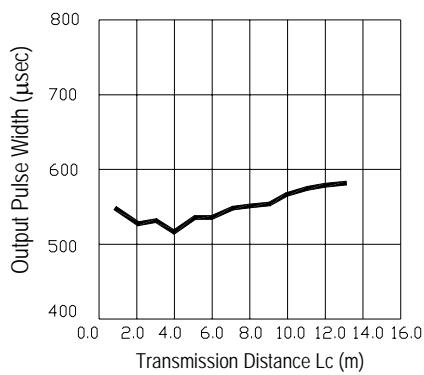
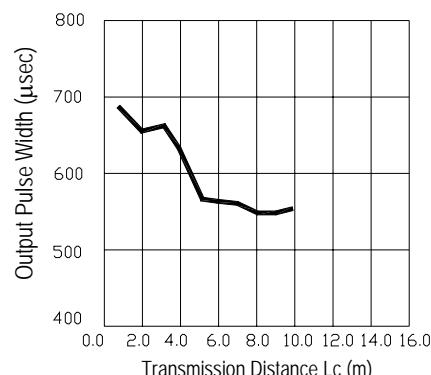
IRM-3640AF4**IRM-3656AF4**

Fig.-9 Relative Transmission Distance vs. Center Carrier Frequency

IRM-3633AF4**IRM-3636AF4****IRM-3638AF4****IRM-3640AF4****IRM-3656AF4**



IRM-36xxAF4 SERIES**■ 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)
Temperature cycle	1 cycle -40°C +25°C +85°C (30min)(5min)(30min) 300 cycle test		n=22,c=0
High temperature test	Temp: +85°C Vcc:5V 1000hrs	L0 ≤ Lx0.8 L45 ≤ Lx0.8	n=22,c=0
Low temperature storage	Temp: -40°C 1000hrs	L: Lower specification limit	n=22,c=0
High temperature High humidity	Ta: 85°C,RH: 85% 1000hrs		n=22,c=0
Solder heat	Temp: 260±5°C 10sec 4mm From the bottom of the package.		n=22,c=0



IRM-36xxAF4 SERIES

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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