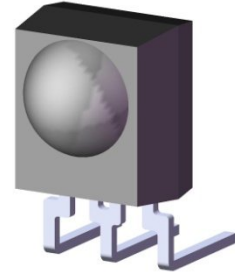


## Infrared Receiver Control Receiver Module

## IRM-36xxCF45series

### Features

- High protection ability against EMI
- Circular lens for improved reception characteristics
- Min burst length: 400us
- Min gap length: 450us
- Low operating voltage ( $V_{CC} = 2.5V$ )
- High immunity against ambient light
- Long reception range
- High sensitivity
- Pb free and RoHS compliant



1 2 3

### Description

The IRM-36xxCF45 devices are miniature type infrared receivers which have been developed and designed by using the latest IC technology, with high immunity against optical interferences and power supply noise. The photo diode and preamplifier are assembled onto a lead frame and molded into an epoxy package which operates as an IR filter. The demodulated output signal can directly be decoded by a microprocessor.

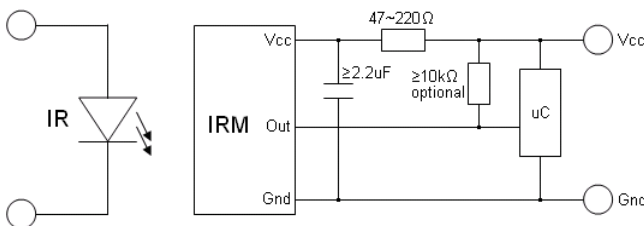
### Pin Configuration

1. OUT
2. GND
3.  $V_{CC}$

### Applications

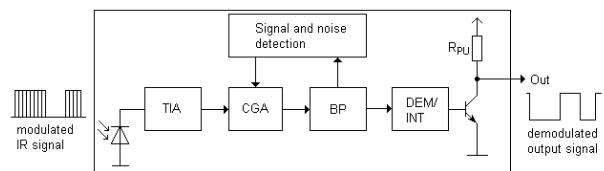
- AV equipment such as TV, VCR, DVD, CD, MD, etc.
- Toy applications
- CATV set top boxes
- Multi-media Equipment

### Application Circuit



The RC Filter must be connected as close as possible to  $V_{CC}$  and GND pins.

### Block Diagram



## Infrared Receiver Control Receiver Module

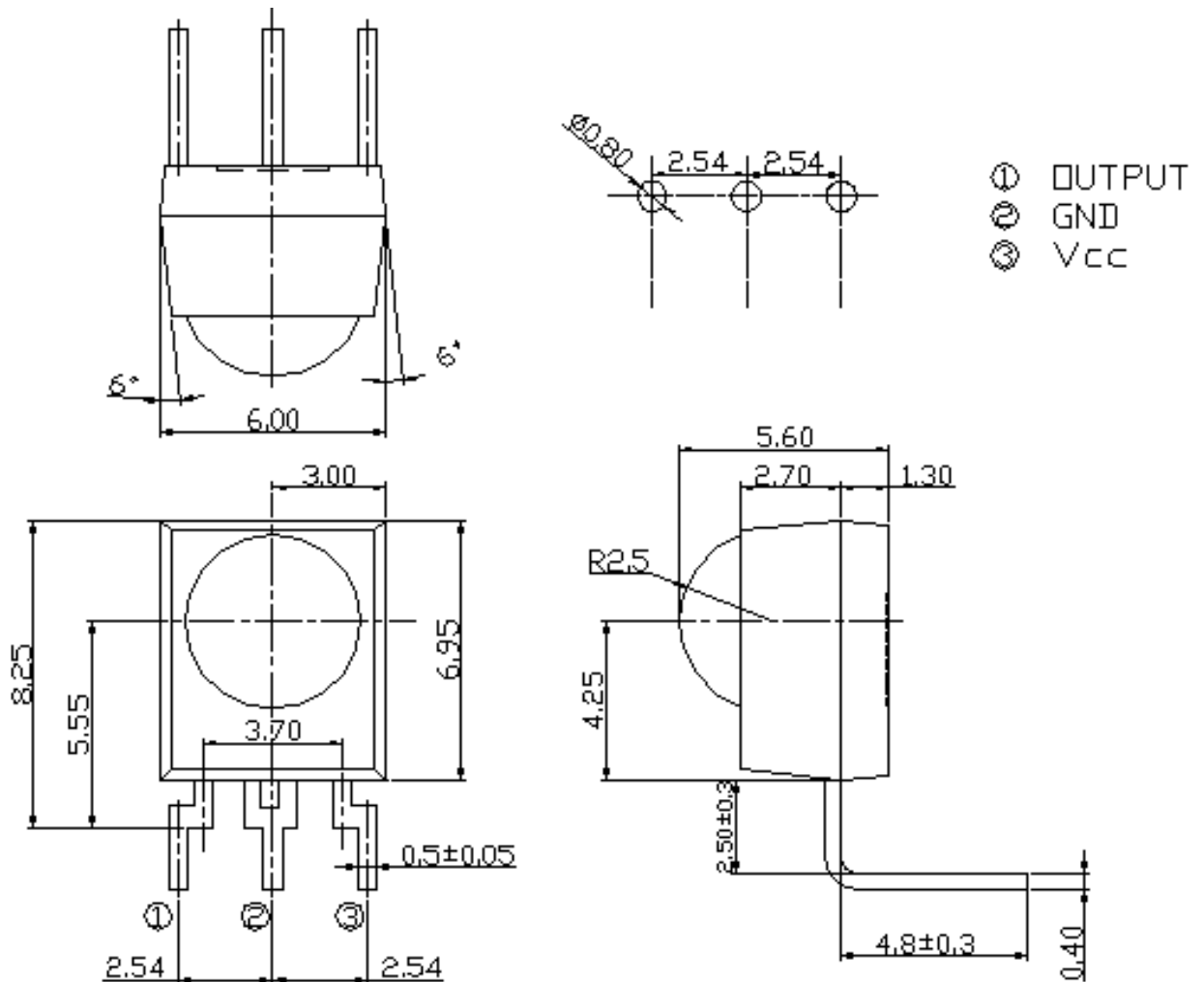
### IRM-36xxCF45 series

#### Parts Table

Model No.	Carrier Frequency
IRM-3638CF45	38 kHz
IRM-3640CF45	40 kHz

#### Package Dimensions

(Dimensions in mm)



### Absolute Maximum Ratings ( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	6	V
Operating Temperature	Topr	-25 ~ +85	$^{\circ}\text{C}$
Storage Temperature	Tstg	-40 ~ +85	$^{\circ}\text{C}$
Soldering Temperature <sup>*1</sup>	Tsol	260	$^{\circ}\text{C}$

<sup>\*1</sup> 4mm from mold body for less than 10 seconds

### Electro-Optical Characteristics ( $T_a=25^{\circ}\text{C}$ , $V_{cc}=3\text{V}$ )

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Current consumption	I <sub>cc</sub>	---	1.0	1.3	mA	No input signal
Supply voltage	V <sub>CC</sub>	2.5	-	5.5	V	
Peak wavelength	$\lambda_p$	---	940	---	nm	
Reception range	L <sub>0</sub>	14	---	---	m	See chapter , Test method'
	L <sub>45</sub>	6	---	---		
Half angle(horizontal)	$\phi_h$	---	$\pm 35$	---	deg	
Half angle(vertical)	$\phi_v$	---	$\pm 35$	---	deg	
High level pulse width	T <sub>H</sub>	450	---	750	$\mu\text{s}$	
Low level pulse width	T <sub>L</sub>	450	---	750	$\mu\text{s}$	
High level output voltage	V <sub>OH</sub>	V <sub>cc</sub> -0.4	---	---	V	Open circuit
Low level output voltage	V <sub>OL</sub>	---	0.2	0.5	V	I <sub>SINK</sub> ≤ 2mA
Internal pull up resistor	R <sub>PU</sub>	40	50	60	k $\Omega$	

### Test method

The specified electro-optical characteristics are valid under the following conditions.

1. Measurement environment

A place without extreme light reflections.

2. External light

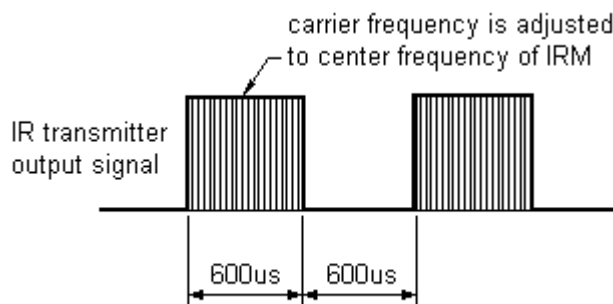
The environment contains an ordinary, white fluorescent lamp without high frequency modulation. The color temperature is 2856K and the illumination at the IR receiver is less than 10 Lux ( $E_v \leq 10\text{Lux}$ ).

3. Standard transmitter

The test transmitter is calibrated by using the circuit shown in figure 2. The radiation intensity of the transmitter is adjusted until  $V_o=400\text{mVp-p}$ . Both, the test transmitter and the photo diode, have a peak wavelength of 940nm. The photo diode for calibration is PD438B ( $\lambda_p=940\text{nm}$ ,  $V_r=5\text{V}$ ).

4. The measurement system is shown in Fig.-3

Fig.-1 Transmitter Wave Form



D.U.T output Pulse

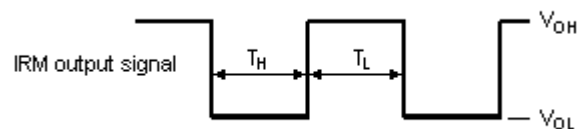


Fig.-2 standard transmitter calibration

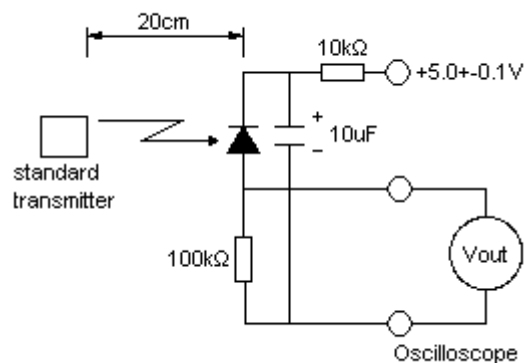
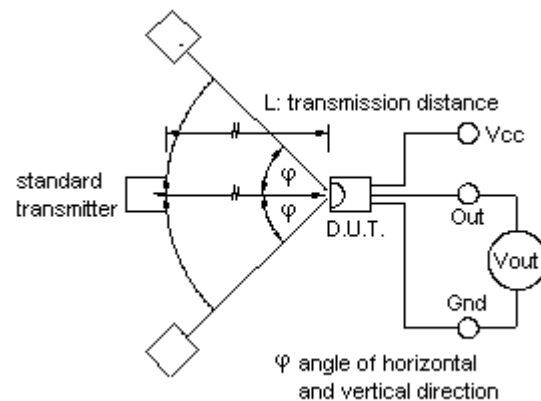


Fig.-3 Measuring System



### Typical Electro-Optical Characteristic Curves

Fig.4 Relative Responsibility vs. Wavelength

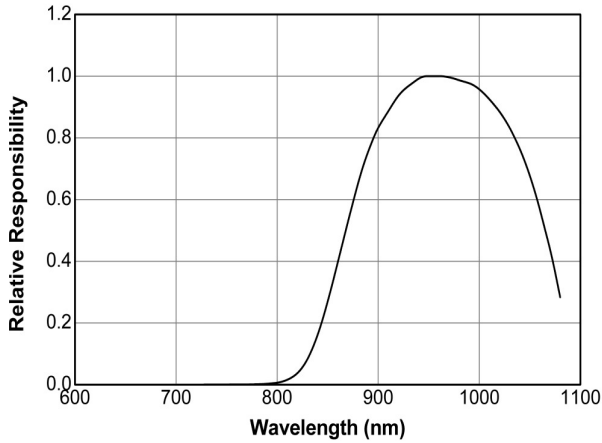


Fig.5 Relative Sensitivity vs. Angle

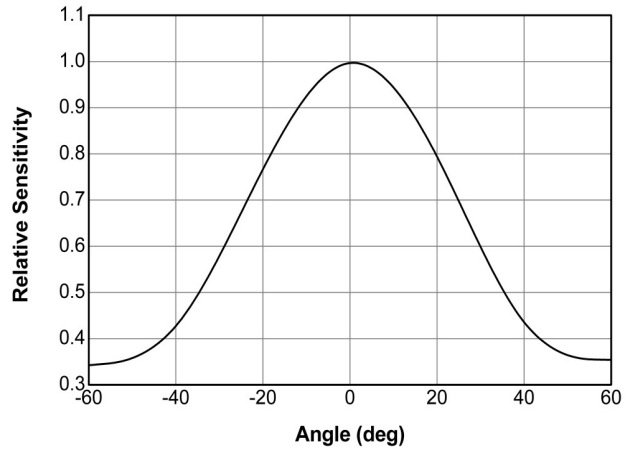


Fig.-6 Output Pulse Width vs. Transmission Distance

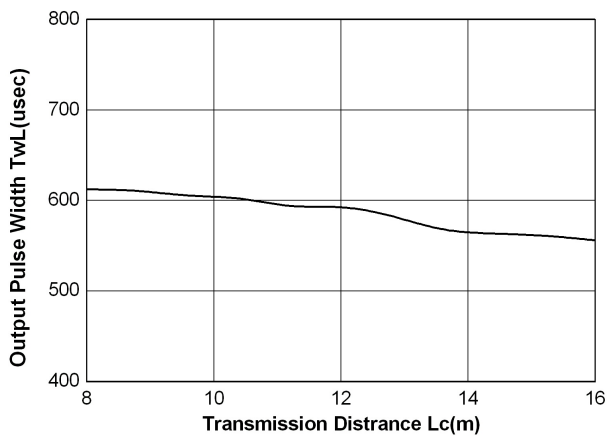


Fig.-7 Relative Transmission Distance vs. Supply Voltage

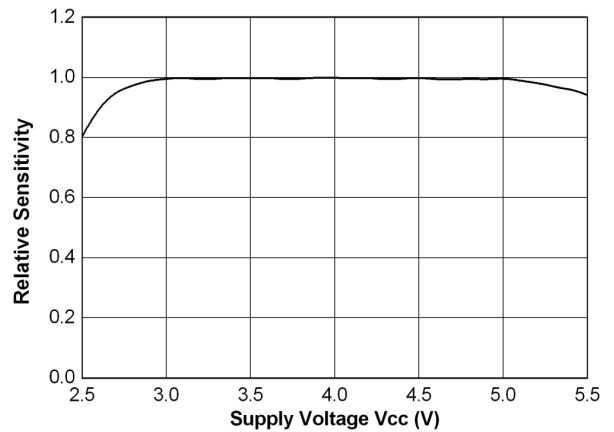
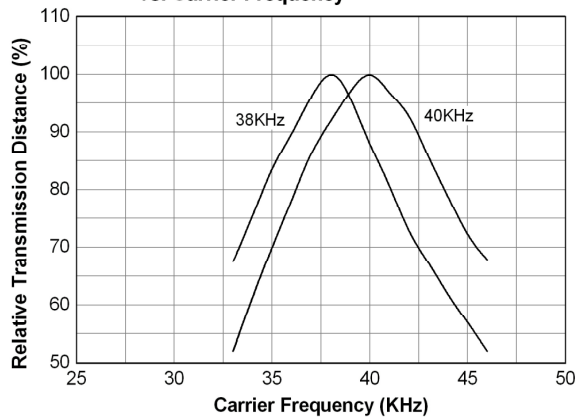


Fig.-8 Relative Transmission Distance vs. Carrier Frequency



### Code information

Protocol	Suitable	Protocol	Suitable
JVC	Yes	RCA	No
Matsushita	No	Sharp	No
Mitsubishi	No	Sony 12 Bit	Yes
NEC	Yes	Sony 15 Bit	Yes
RC5	Yes	Sony 20Bit	No
RC6	Yes	Toshiba	Yes
RCMM	No	Zenith	Yes
RCS-80	No	Continuous Code	No

### Packing Quantity

1500 pcs / Box

10 Boxes / Carton

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