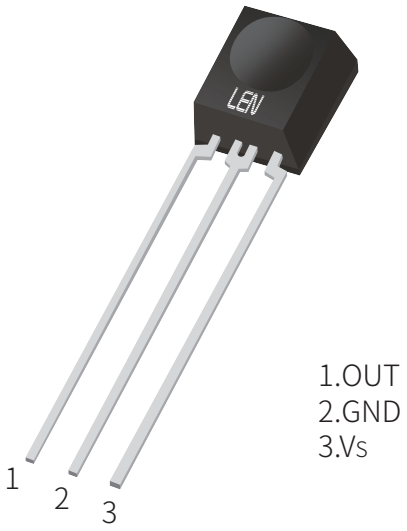
TSOP1838

Infrared Remote Control Receiver Module

Descriptions

TSOP1838 is a device are miniature type infrared remote control system receiver which has been developed and designed by utilizing the most updated IC technology. The PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as an IR filter. The demodulated output signal can directly be decoded by a microprocessor.



DIP-3

Features

- High sensitivity
- Long reception distance
- TTL and CMOS compatibility
- Photodiode with integrated circuit
- High protection ability against EMI
- High immunity against ambient light
- Low voltage and low power consumption
- Line-up for various center carrier frequencies
- Circular lens to improve the receive characteristic

Applications

- AV instruments
- Home appliances
- CATV set top boxes
- Multi-media Equipment
- Light detecting portion of remote control
- Equipments with wireless remote control

Ordering Information

Part Number	Package	Shipping Quantity
TSOP1838	DIP-3	500 pcs / Bag , 2000 pcs / Box

Absolute Maximum Ratings (T_A=25°C)

Parameter	Symbol	Ratings	Unit
Supply Voltage	V_{CC}	6	V
Operating Temperature	T_{OPR}	-25 ~ +85	°C
Storage Temperature	T_{STG}	-40 ~ +85	°C
Soldering Temperature(*1)	T_{SOL}	260	°C

Notes: (*1) 4mm from mold body less than 10 sec.

Electro-Optical Characteristics (T_A=25°C, V_{CC}=3V)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Consumption Current	I_{CC}	No signal input			2	mA
B.P.F Center Frequency	F_O			38		KHz
Peak Wavelength	λ_P			940		nm
Reception Distance	L_0	At the ray axis (*1)	14			m
	L_{45}	At the ray axis (*1)	6			m
Half Angle(Horizontal)	Θ_H	At the ray axis (*1)		45		°
Half Angle(Vertical)	Θ_V	At the ray axis (*1)		45		°
High Level Pulse Width	T_H	At the ray axis (*2)	400		800	μs
Low Level Pulse Width	T_L	At the ray axis (*2)	400		800	μs
High Level Output Voltage	V_H		2.7			V
Low Level Output Voltage	V_L			0.2	0.5	V

Notes: (*1) The ray receiving surface at a vertex and relation to the ray axis in the range of θ=0° and θ=45°.
(*2) A range from 30cm to the arrival distance. Average value of 50 pulses.

Basic Characteristics

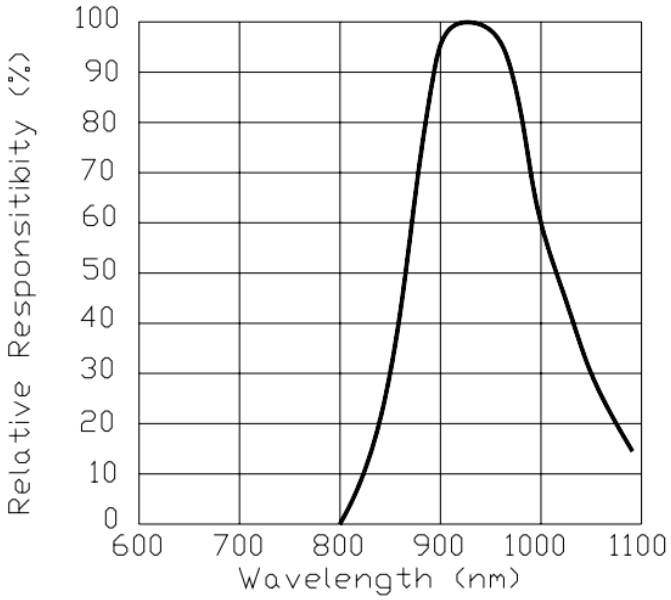


Fig.1 Relative Spectral Sensitivity vs. Wavelength

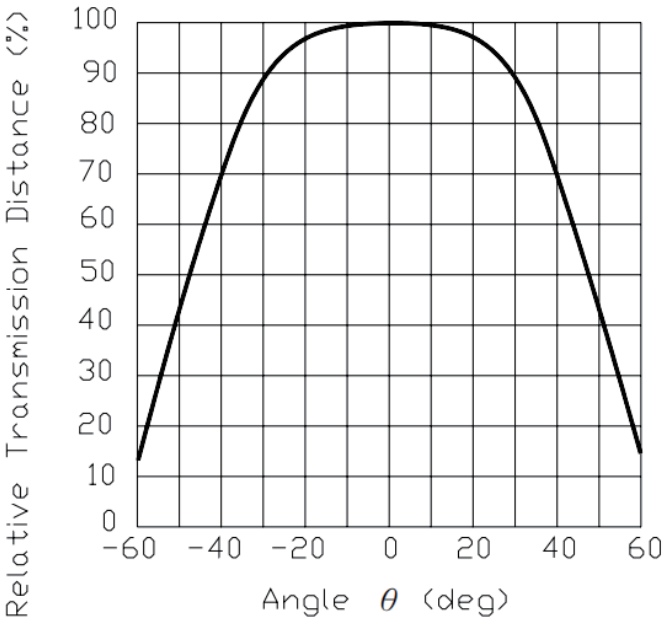


Fig.2 Relative Transmission Distance vs. Direction

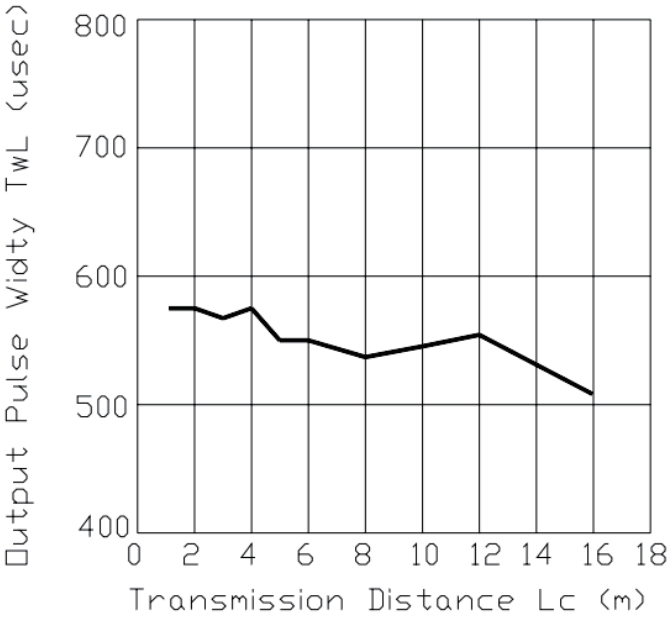


Fig.3 Output Pulse Length vs. Arrival Distance

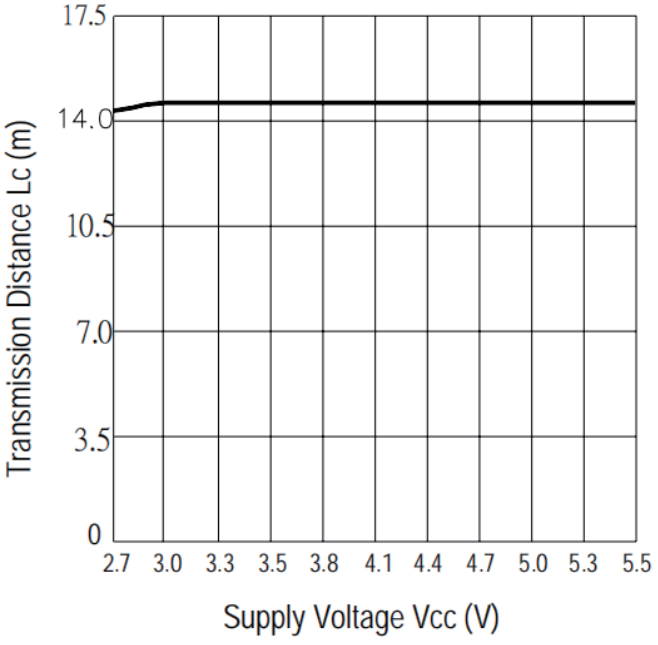


Fig.4 Arrival Distance vs. Supply Voltage

Basic Characteristics

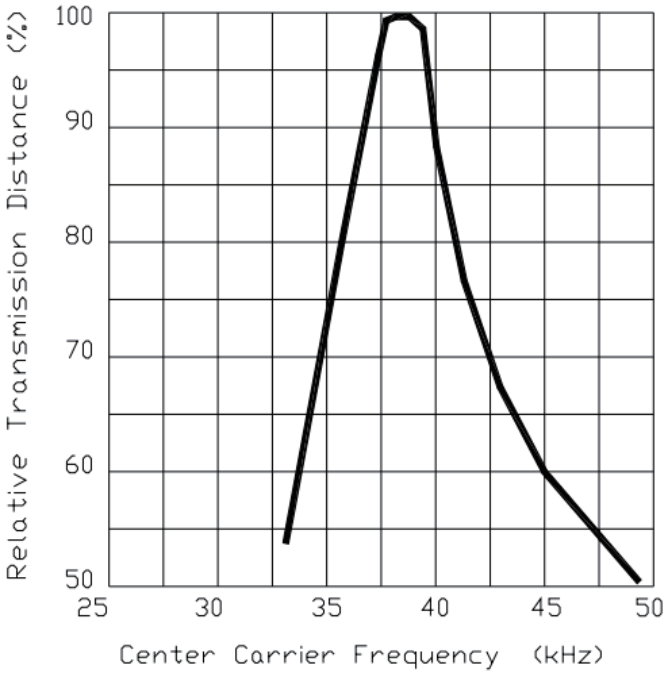


Fig.5 Relative Transmission Distance vs. Center Carrier Frequency

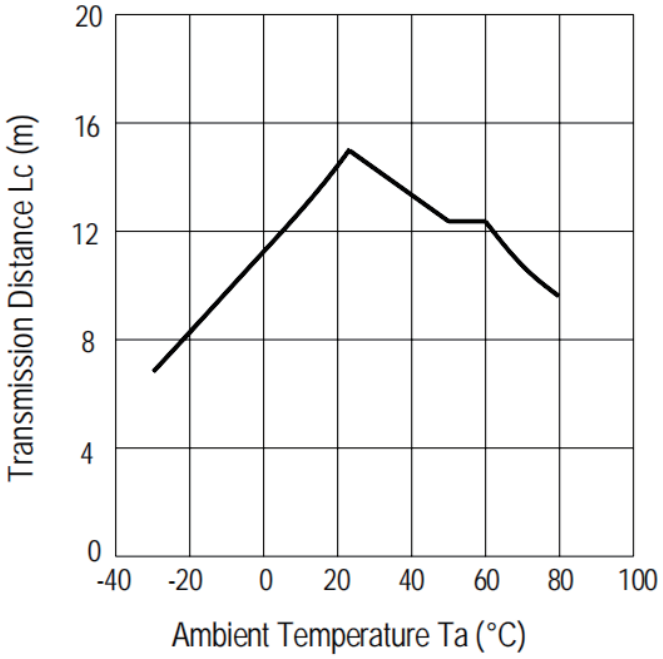
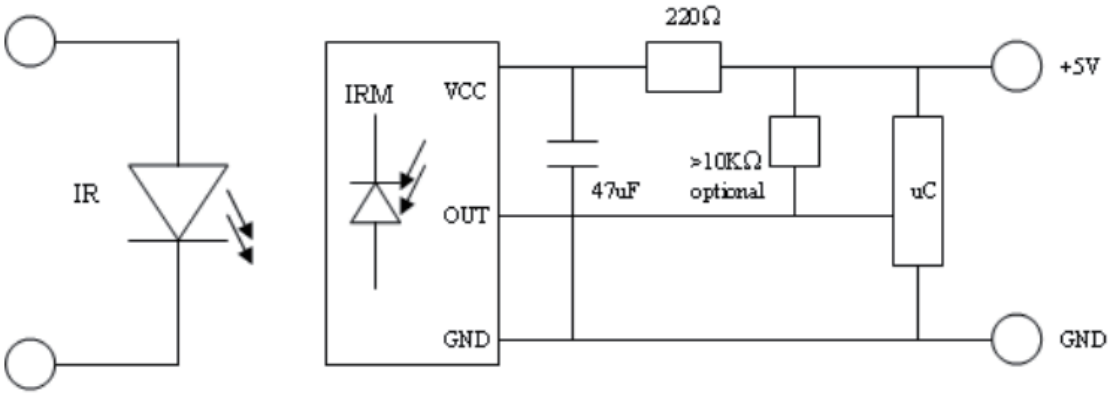


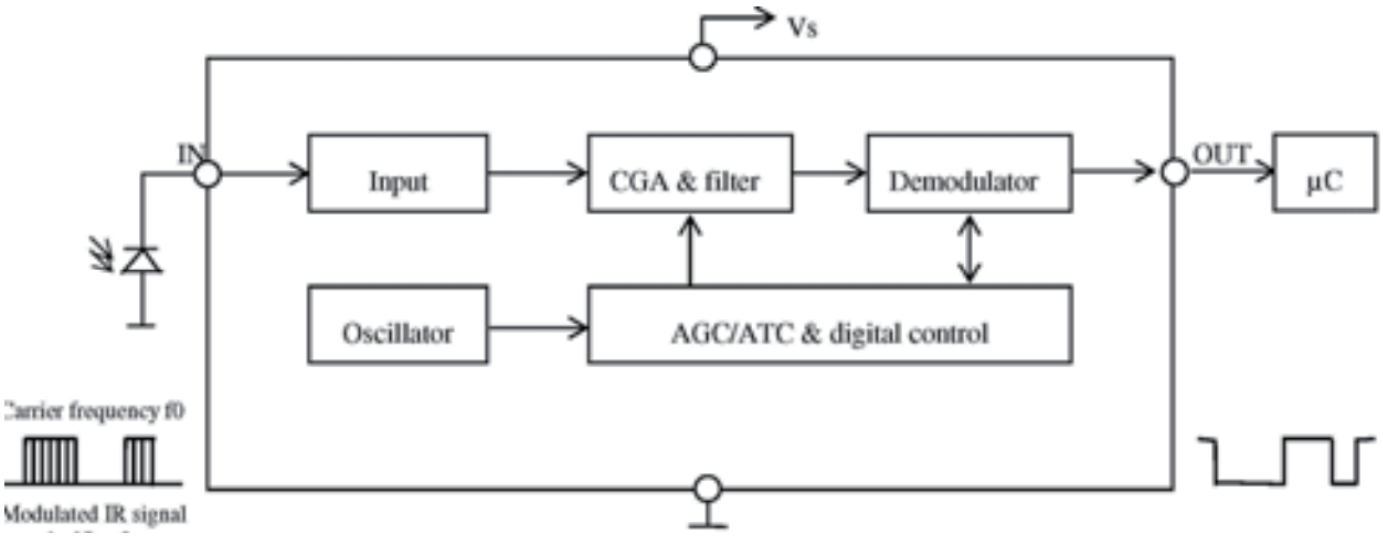
Fig.6 Arrival Distance vs. Ambient Temperature

Application Circuit



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

Block Diagram



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.($E_E \leqslant 10Lux$)

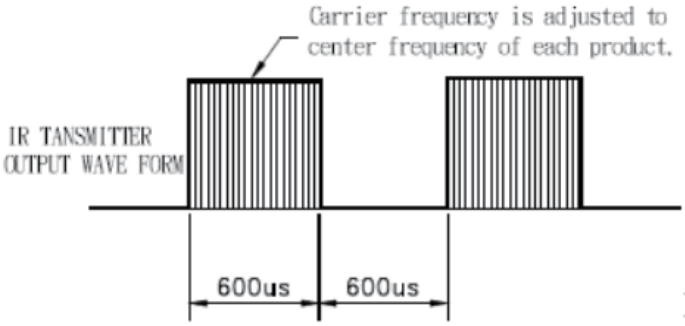
3. Standard transmitter

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 $\lambda p=940nm, \Delta\lambda=50nm$.(Standard light / Light source temperature 2856°K).

4. Measuring system According to the measuring system shown in Fig.3

Test Method

Fig.1 Transmitter Wave Form



Duty=0.5

D.U.T output Pulse

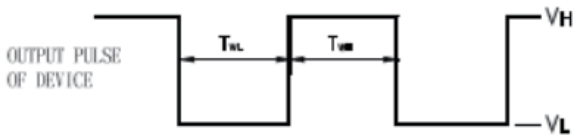


Fig.2 Measuring Method

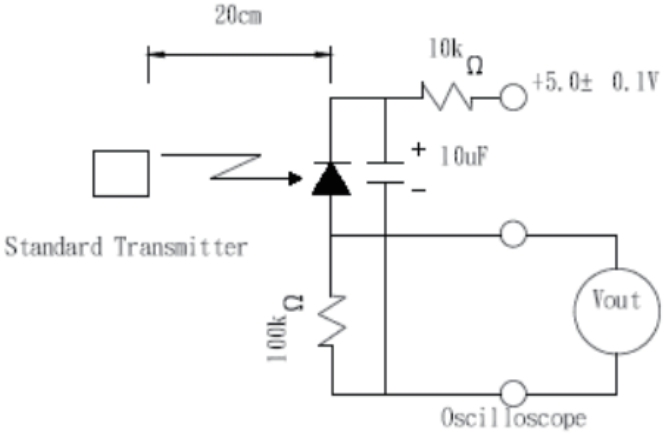
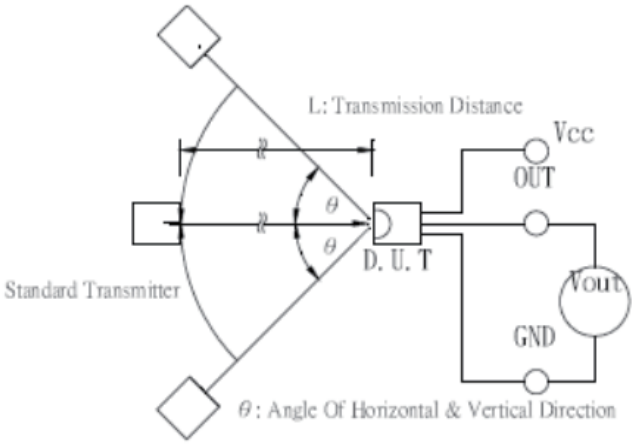
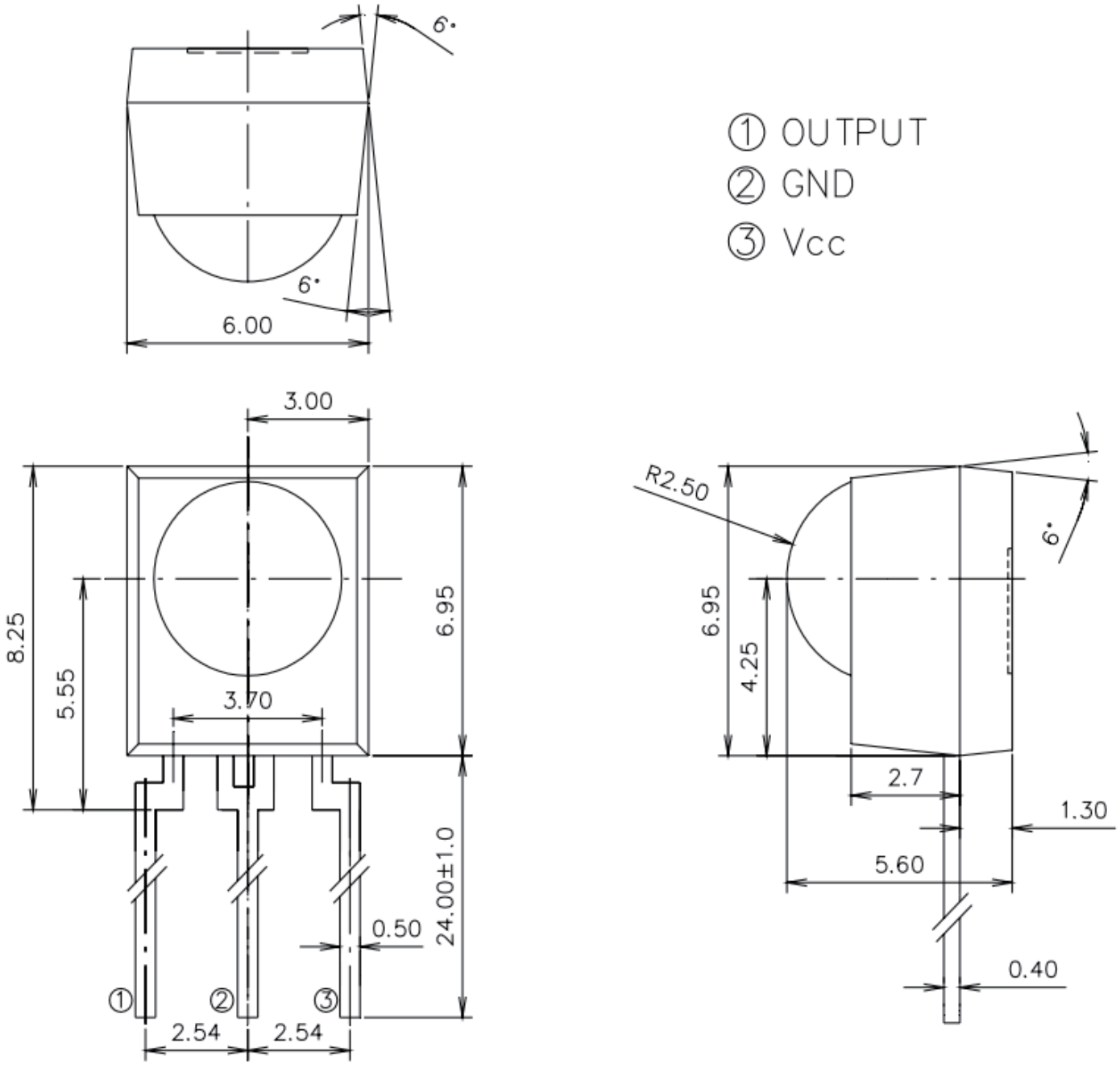


Fig.3 Measuring System



Package Dimensions

DIP-3



Notes: Tolerances unless dimensions ±0.3mm

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