



BRIGHT LED ELECTRONICS CORP.

● COMMODITY : RECEIVER MODULE

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● DEVICE NUMBER : BRM-1022

VERSION : 1.1/2001.05.08

● DESCRIPTION :

- The module is a small type infrared remote control system receiver which has been developed and designed by utilizing the latest hybrid technology.
- It is a single unit type module which incorporates a pin aide and a receiving preamplifier IC.
- It can be used for TVs, VTRs, audio equipment air conditioners ,car stereo radio, toys ,home computers and all other equipment requiring remote control.
- Suitable transmission code: NEC code, RC5 code.

● ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

Parameter	Symbol	Ratings	Unit	Notice
Supply Voltage	Vcc	2.4~ 5.5	V	
Operating Temperature	Topr	-30 ~ +65	℃	
Storage Temperature	Tstg	-40 ~ +85	℃	
Soldering Temperature	Tsol	260	℃	4mm from mold body less than 5 sec.

● ELECTRICAL AND OPTICAL CHARACTERISTICS (Ta=25℃)

Parameter	Symbol	Condition	Ratings			Unit
			MIN.	TYP.	MAX.	
Supply Voltage	Vcc	DC voltage	2.4	3	5.5	V
Supply Current	Icc	No signal input	---	---	1.5	mA
Reception Distance	L	At the ray axis (At V _{CC} =2.4V)	8	---	---	m
		In the range of 45° cone (At V _{CC} =2.4V)	4	---	---	
B.P.F Center Frequency	fo		---	38	---	KHz
Peak Wavelength	λ _p		---	940	---	nm
Half Angle	θ		---	45	---	deg
High Level Pulse Width	T _H	Specified by the output T _H period within a range from 10cm to the arrival distance (average value of 50 pulses)	400	---	800	μs
Low Level Pulse Width	T _L	Specified by the output T _L period within a range from 10cm to the arrival distance (average value of 50 pulses)	400	---	800	μs
High Level Output Voltage	V _H	10cm over the ray axis	4.5	---	---	V
Low Level Output Voltage	V _L	10cm over the ray axis	---	---	0.5	V

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● 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 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

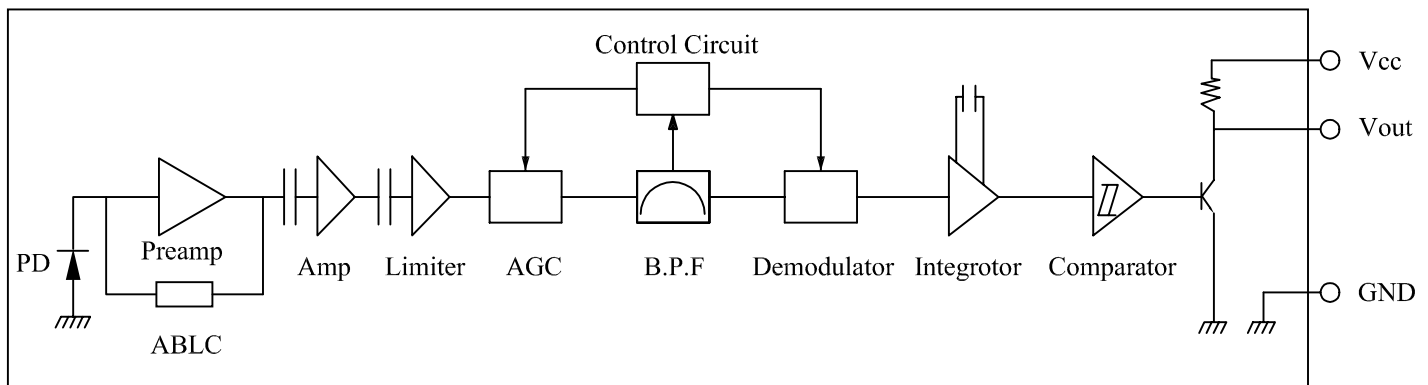
A transmitter whose output is so adjusted as to **$V_o=400\text{mVp-p}$** and the output Wave form shown in Fig.-1. According to the measurement method shown in Fig.-2 the standard transmitter is specified.

However , the infrared photodiode to be used for the transmitter should be $\lambda_p=940\text{nm}$, $\Delta \lambda=50\text{nm}$.

(4) Measuring system

According to the measuring system shown in Fig.-3

● Block Diagram :



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● Application Circuit :

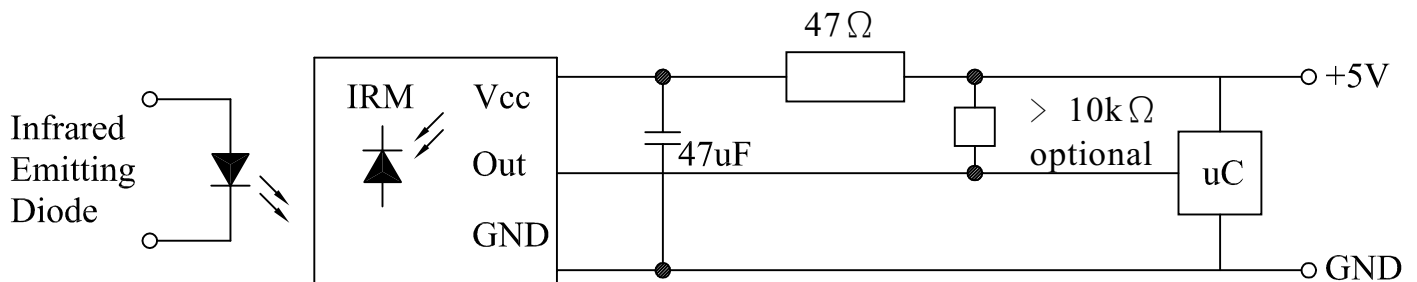


Fig.-1 Transmitter Wave Form

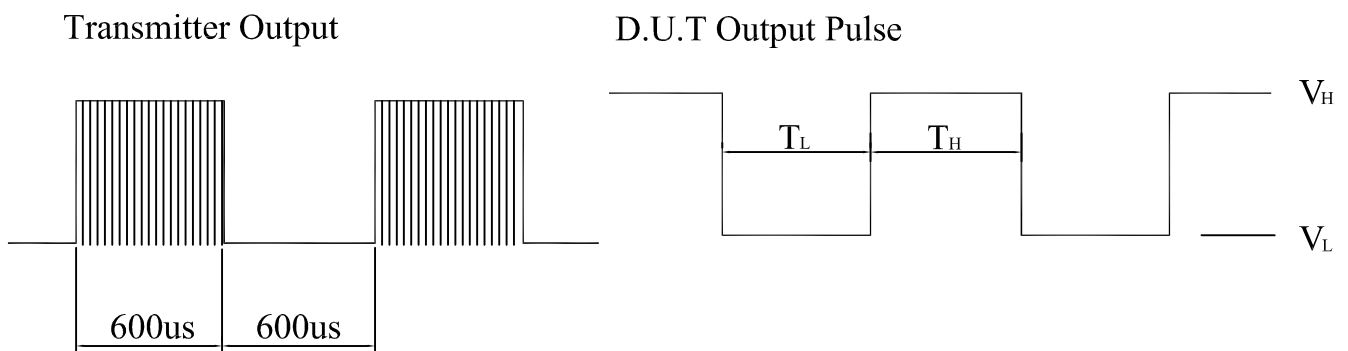


Fig.-2 Measuring Method

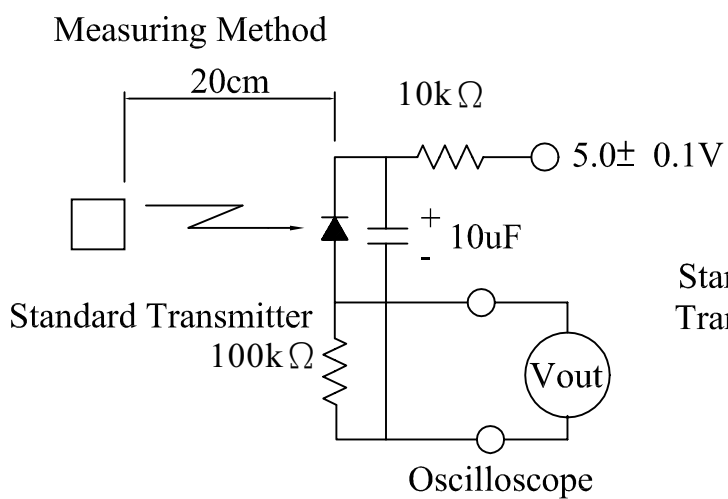
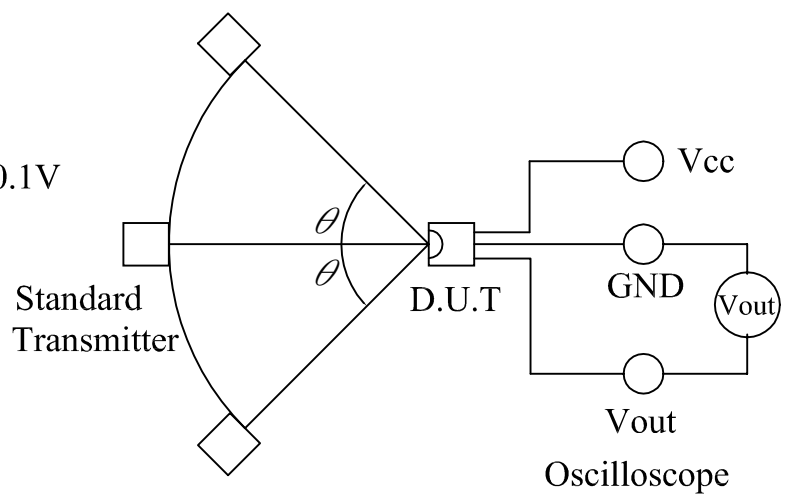


Fig.-3 Measuring System



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● TYPICAL ELECTRICAL/OPTICAL/CHARACTERISTICS CURVES

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

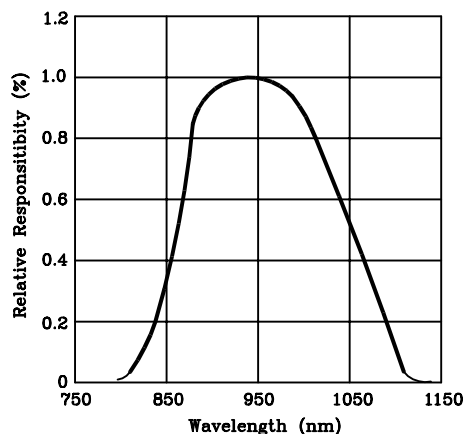


Fig.-5 Relative Transmission Distance vs. Direction

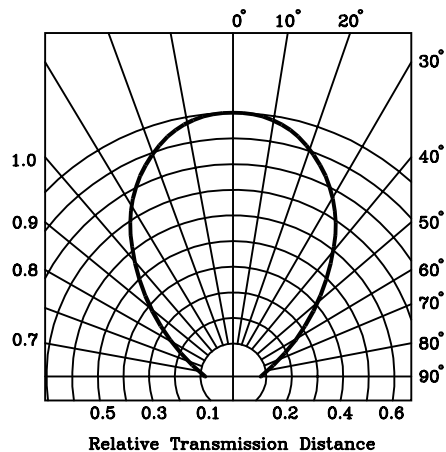


Fig.-6 Output Pulse Diagram

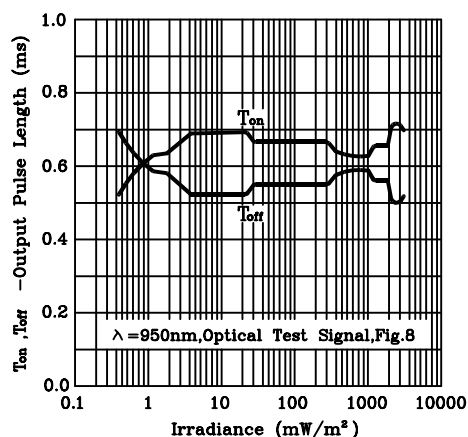


Fig.-7 Supply Voltage vs. Arrival Distance

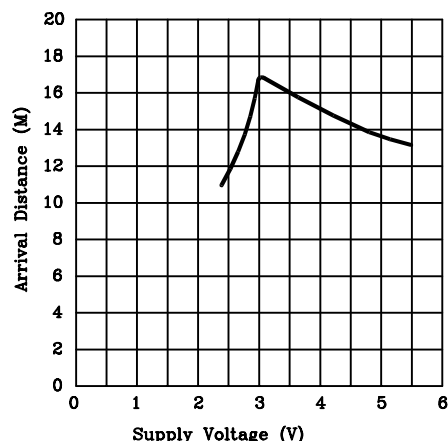


Fig.-8 Frequency Dependence of Responsivity

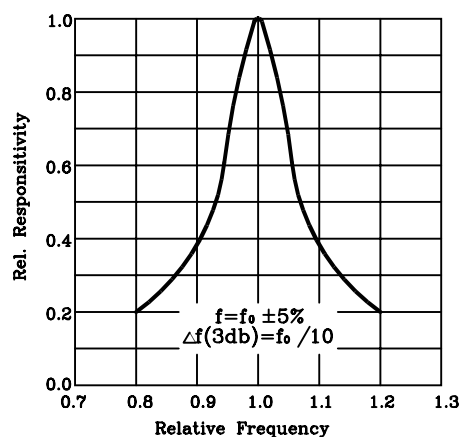
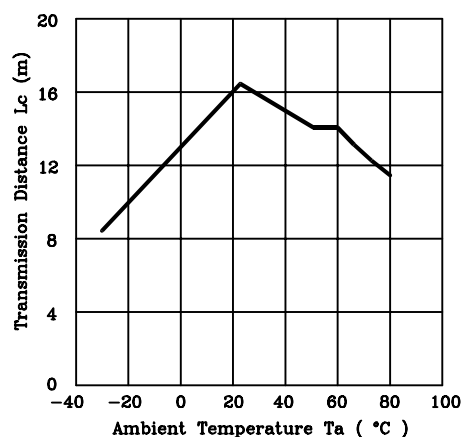


Fig.-9 Arrival Distance vs. Ambient Temperature



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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 Judgment Criteria	<u>Samples (n)</u> Defective (c)
Operation life	V _{CC} =5V,Ta : 25℃ 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℃ +25℃ +85℃ (30min)(5min)(30min) 50 cycle test		N=22,c=0
Thermal shock	-40℃ to +85℃ (20min) (20min) 10 cycle		N=22,c=0
High temperature storage	Temp : +85℃ 1000hrs		N=22,c=0
Low temperature storage	Temp : -40℃ 1000hrs		N=22,c=0
High temperature High humidity	Ta : 85℃,RH : 85% 1000hrs		N=22,c=0
Solder heat	Temp : 260±5℃ 5sec 4mm From the bottom of the package.		N=22,c=0
Solder ability	Temp : 230±5℃ 5sec 4mm From the bottom of the package.	Less than 90% of Lead to be covered by soldering	N=22,c=0