

# GP2W0004YP

## IrDA Transceiver Module Compliant with IrDA1.0

### ■ Features

1. Compliant with IrDA1.0
2. Integrated package of transmitter/receiver.  
(9.21×3.76×height 2.71mm)
3. General purpose
4. Low dissipation current due to shut-down function  
(Dissipation current at shut-down mode:Max. 1.0μA)
5. Soldering reflow type
6. Shield type

### ■ Applications

1. Cellular phones, PHS
2. Personal information tools

### ■ Absolute Maximum Ratings (T<sub>a</sub>=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	0 to 6.0	V
LED Supply voltage	V <sub>LEDA</sub>	0 to 7.0	V
Forward current	I <sub>F</sub>	50	mA
*1 Peak forward current	I <sub>FM</sub>	600	mA
Operating temperature	T <sub>opr</sub>	-25 to +85	°C
Storage temperature	T <sub>stg</sub>	-25 to +85	°C
*2 Soldering temperature	T <sub>sol</sub>	240	°C

\*1 Pulse width 115.2kb/s, Duty ratio :3/16

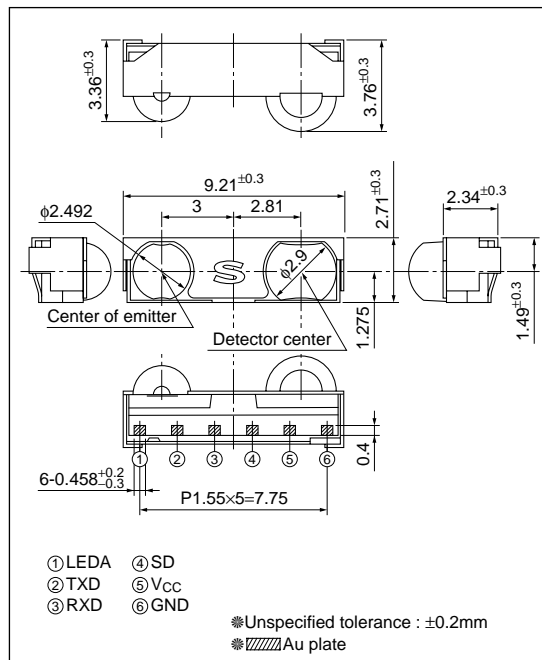
\*2 For MAX. 10s

### ■ Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	2.4 to 5.5	V
Transmission rate	BR	2.4 to 115.2	kb/s
LED Supply Voltage	V <sub>LEDA</sub>	2.4 to 7.0	V
Operating temperature	T <sub>opr</sub>	-25 to +85	°C

### ■ Outline Dimensions

(Unit : mm)



## ■ Electrical Characteristics

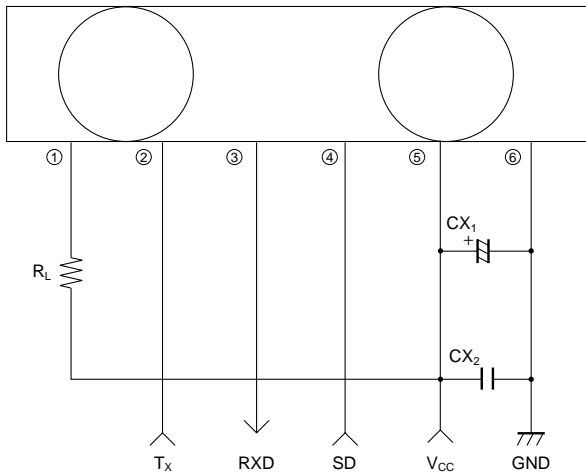
(T<sub>a</sub>=25°C, V<sub>CC</sub>=3.3V)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Receiver side	Dissipation current at no input signal	I <sub>CC</sub>	No input light, output terminal open, V <sub>ILSD</sub> =0V	–	110	130	μA
	S/D dissipation current	I <sub>CC,S</sub>	No input light, output terminal open, V <sub>IHSD</sub> =V <sub>CC</sub>	–	0.01	1.0	μA
	High level output voltage	V <sub>OH1</sub>	V <sub>CC</sub> =5V, I <sub>OH</sub> =500μA	4.3	4.6	–	V
		V <sub>OH2</sub>	V <sub>CC</sub> =2.4V, I <sub>OH</sub> =500μA	1.5	1.7	–	V
	Low level output voltage	V <sub>OL1</sub>	V <sub>CC</sub> =5V, I <sub>OL</sub> =500μA <sup>*3</sup>	–	0.22	0.4	V
		V <sub>OL2</sub>	V <sub>CC</sub> =2.4V, I <sub>OL</sub> =300μA <sup>*3</sup>	–	0.17	0.3	V
	Pulses width	t <sub>w</sub>	BR=9.6kb/s, 115.2kb/s <sup>*3</sup>	1.0	2.4	3.6	μs
	Rise time	t <sub>r</sub>	V <sub>CC</sub> =5.0V, C <sub>L</sub> =15pF	–	18	27	ns
Fall time	t <sub>f</sub>	V <sub>CC</sub> =5.0V, C <sub>L</sub> =15pF	–	18	27	ns	
	Maximum communication distance	L	V <sub>OH</sub> , V <sub>OL</sub> , t <sub>w</sub> , t <sub>r</sub> , t <sub>f</sub> <sup>*3</sup> shall be satisfied at φ≤15°	1	–	–	m
Transmitter side	Radiant intensity	I <sub>E</sub>	BR=115.2kb/s, φ≤15°, V <sub>LEDA</sub> =3.3V <sup>*4</sup>	40	–	–	mW/sr
	Peak emission wavelength	λ <sub>p</sub>		850	870	900	nm

\*3 Refer to Fig.3, 4, 5

\*4 Refer to Fig.6, 7, 8

Fig.1 Recommended External Circuit



Components circuit	Recommend values
CX <sub>1</sub>	*22μF
CX <sub>2</sub>	*0.1μF
R <sub>L</sub>	(Table1)

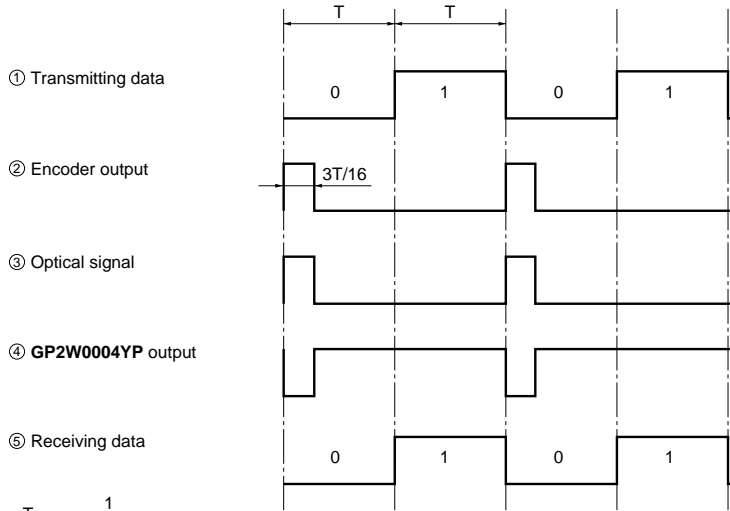
\* Please choose the most suitable CX<sub>1</sub> and CX<sub>2</sub> according to the noise level and noise frequency of power supply.

Table1

V <sub>LED</sub>	R <sub>L</sub>
2.4 ≤ V <sub>LED</sub> ≤ 3.6V	0Ω ± 5%, 0.5W
3.5 ≤ V <sub>LED</sub> ≤ 4.8V	1.3Ω ± 5%, 0.5W
4.5 ≤ V <sub>LED</sub> ≤ 5.5V	2.7Ω ± 5%, 0.5W

- ① LEDA
- ② TXD
- ③ RXD
- ④ SD
- ⑤ V<sub>CC</sub>
- ⑥ GND

Fig.2 Example of Signal Waveform



$$T = \frac{1}{\text{Transfer rate}}$$

Transfer rate ; 2.4kb/s, 9.6kb/s, 19.2kb/s, 38.4kb/s, 57.6kb/s, 115.2kb/s

Fig.3 Input Signal Waveform(Receiver side)

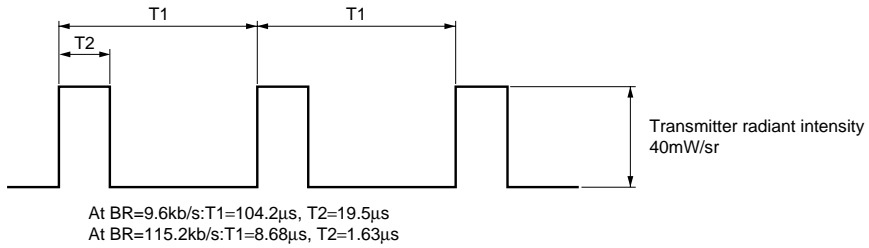


Fig.4 Output Waveform Specification (Receiver side)

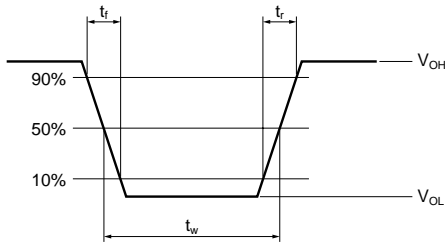
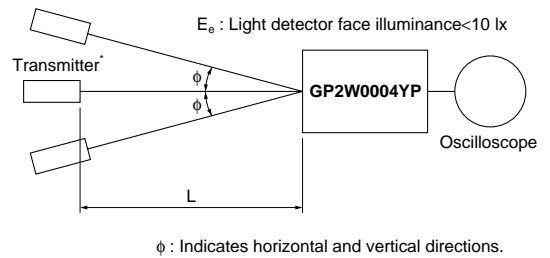


Fig.5 Standard Optical System (Receiver side)



\* Transmitter shall use GP2W0004YP ( $\lambda_p=870\text{nm}$  TYP.) which is adjusted the radiation intensity at 40mW/sr

Fig.6 Output Waveform Specification(Transmitter side)

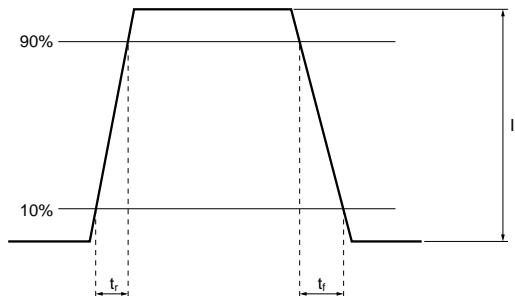


Fig.7 Standard Optical System(Transmitter side)

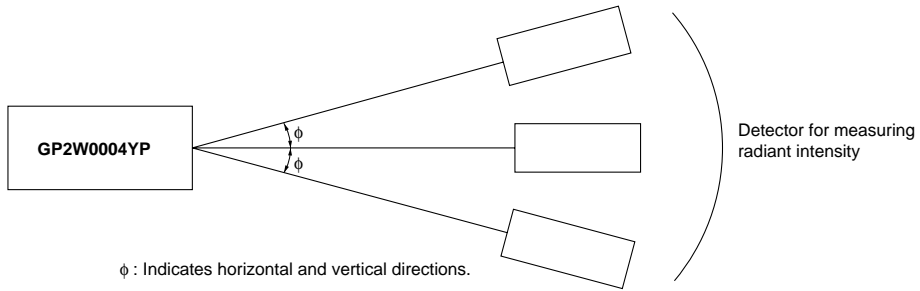


Fig.8 Recommended Circuit of Transmitter side

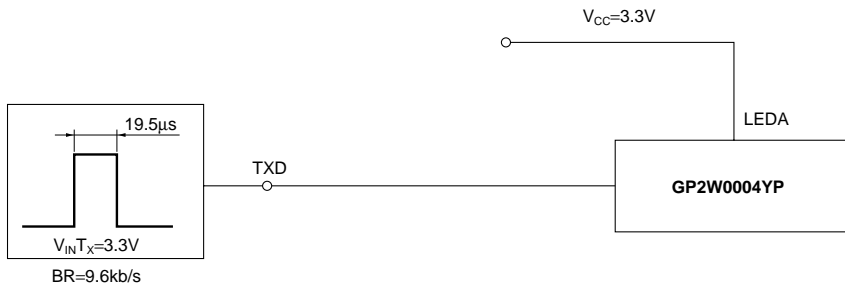
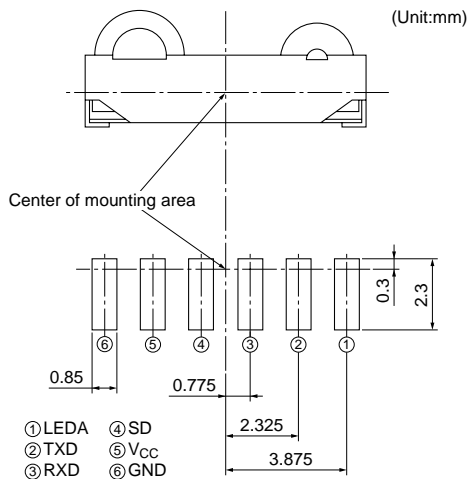


Fig.9 Recommended PCB Foot Pattern

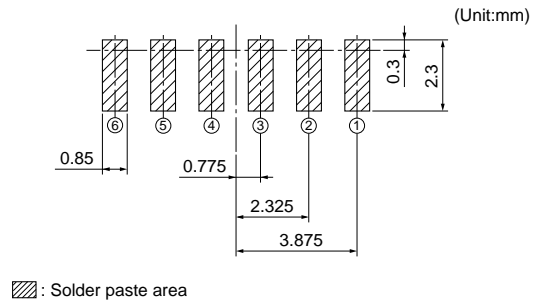
Dimensions are shown for reference



Terminal	Symbol
① LED anode	LEDA
② Transmitter data input	TXD
③ Receiver data output	RXD
④ Shutdown	SD
⑤ Supply voltage	V <sub>CC</sub>
⑥ Ground	GND

**Fig.10 Recommended Size of Solder Creamed Paste (Reference)**

Please open the solder mask as below so that the size of solder creamed paste for this device before reflow soldering must be as large as one of the foot pattern land indicated Fig.9



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