GP2W0116YPS

IrDA Transceiver Module Compliant with IrDA1.2 Low Power

■ Features

1. Compliant with IrDA1.2 low power
2. Integrated package of transmitter/receiver.
   (7.2×2.75×height 1.85mm)
3. General purpose
4. Low dissipation current due to shut-down function
   (Dissipation current at shut-down mode:Max. 0.1μA)
5. Soldering reflow type
6. Shield type

■ Applications

1. Cellular phones, PHS
2. Personal information tools

■ Absolute Maximum Ratings

(T_a=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	0 to 6.0	V
LED Supply voltage	V_{LEDA}	0 to 7.0	V
*1 Peak forward current	I_{FM}	60	mA
Operating temperature	T_{opr}	–40 to +85	°C
Storage temperature	T_{stg}	–40 to +85	°C
*2 Soldering temperature	T_{sol}	260	°C

*1 Pulse width 78.1μs, Duty ratio:3/16
*2 For MAX. 10s

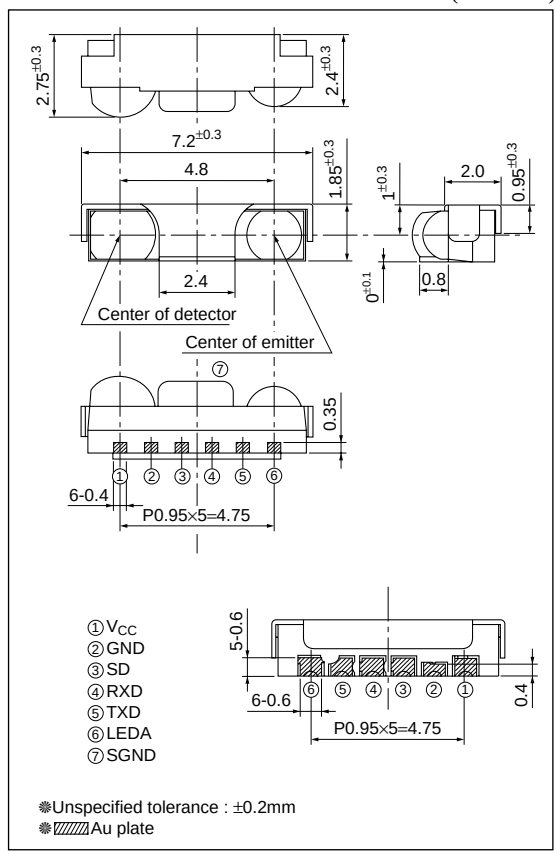
■ Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	2.0 to 3.6	V
LED Supply voltage	V_{LEDA}	2.0 to 6.0	V
Transmission rate	BR	2.4 to 115.2	kb/s
High level input voltage (SD terminal)	V_{IHSD}	V_{CC}×0.67 to V_{CC}	V
Low level input voltage (SD terminal)	V_{ILSD}	0 to V_{CC}×0.1	V
*3 High level input voltage (TXD)	V_{IHTXD}	V_{CC}×0.8 to V_{CC}	V
*3 Low level input voltage (TXD)	V_{ILTXD}	0 to V_{CC}×0.2	V

*3 Refer to Fig.9

■ Outline Dimensions

(Unit : mm)



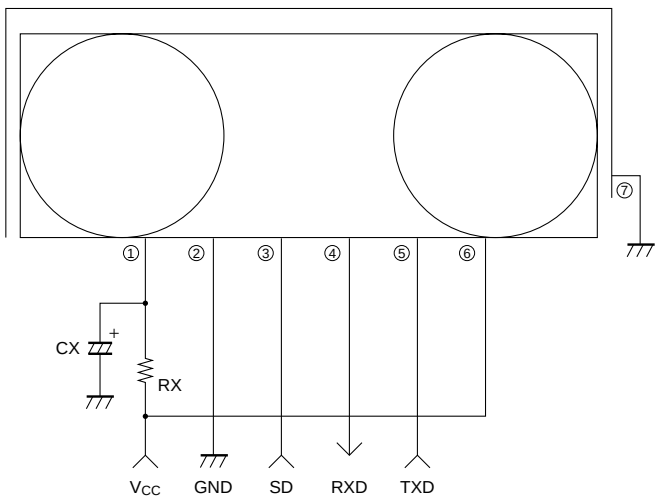
■ Electro-optical Characteristics

(T_a=25°C, V_{CC}=3.3V)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Receiver side	Dissipation current at no input signal	I_{CC}	No input light, output terminal open, V_{IHSD}=0V	–	90	120	μA
	S/D dissipation current	I_{CC-S}	No input light, output terminal open, V_{IHSD}=V_{CC}	–	0.001	0.1	μA
	High level output voltage	V_{OH}	I_{OH}=−200μA, V_{CC}=2.0 to 3.6V *4	V_{CC}−0.4	–	–	V
	Low level output voltage	V_{OL}	I_{OL}=200μA, V_{CC}=2.0 to 3.6V *4	–	–	0.45	V
	Low level pules width	t_w	BR=115.2kb/s, ϕ≤15°, C_L=10pF *4	1.28	–	6.0	μs
	Rise time	t_r	BR=115.2kb/s, ϕ≤15°, C_L=10pF *4	–	–	0.06	μs
	Fall time	t_f	BR=115.2kb/s, ϕ≤15°, C_L=10pF *4	–	–	0.06	μs
	Maximum communication distance	L	BR=115.2kb/s, ϕ≤15° *4	21	–	–	cm
Transmitter side	Radiant intensity	I_E	BR=115.2kb/s, ϕ≤15°, V_{IHTXD}=2.8V *5	4.0	–	25	mW/sr
	Peak emission wavelength	λ_p		850	870	900	nm

*4 Refer to Fig.4, 5, 6
*5 Refer to Fig.7, 8, 9

Fig.1 Recommended External Circuit



① V_{CC}
② GND
③ SD
④ RXD
⑤ TXD
⑥ LEDA
⑦ SGND

Components	Recommended values
CX	1μF/6.3V
RX	1 to 15Ω

(Note) Please choose the most suitable CX according to the noise level and noise frequency of power supply.
Depend on noise level and noise frequency of power supply, CX does not work well.
There are cases that some pulse noises from RXD other than signal will occur in certain communication area. Please check by finish product that there are no problem at all communication area and data rate.
If there are any problem, please check by inserting RX (1 to 15Ω) in the circuit drawing.

∗I/O Logic table

SD	TXD	LED	Receiver	TR1	TR2	RXD
Low	High	ON	Don't care	–	–	Not valid
	Low	OFF	IrDA signal	OFF	ON	Low
			No signal	ON	OFF	High
High	Don't care	OFF	Don't care	OFF	OFF	Pull-up

∗RXD Equipment circuit

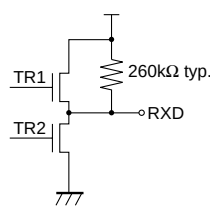
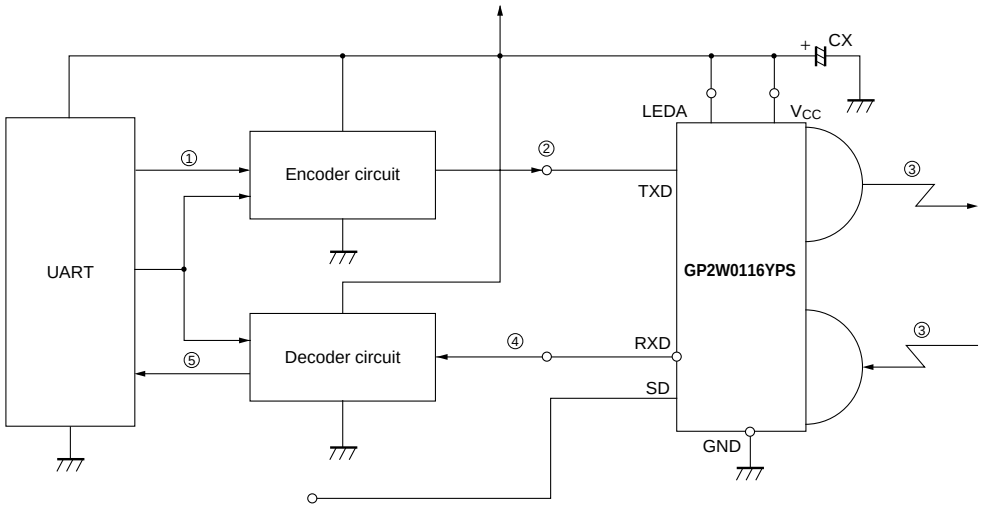
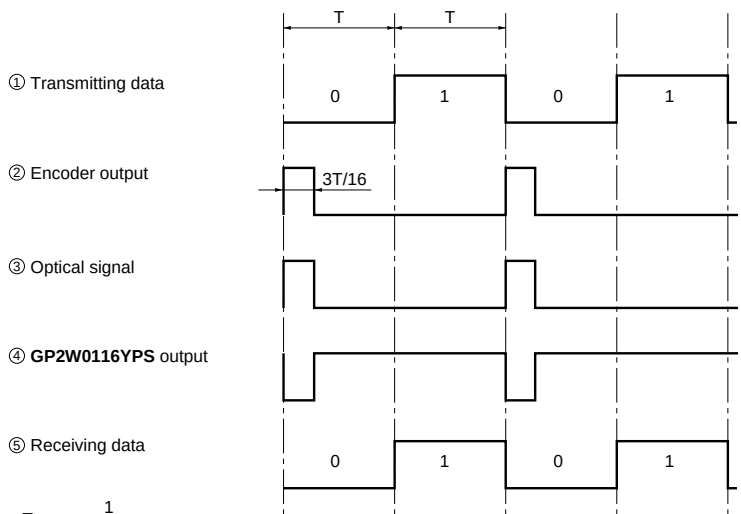


Fig.2 System Configuration



SD input	Performance
Low	Normal mode
High	Shut down mode

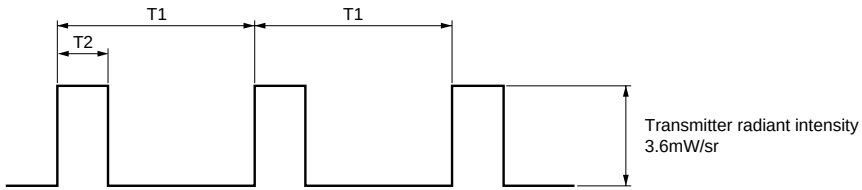
Fig.3 Example of Signal Waveform



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

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

Fig.4 Input Signal Waveforrm (Receiver side)



At BR=115.2kb/s:T1=8.68µs, T2=1.63µs

Fig.5 Output Waveform Specification (Receiver side)

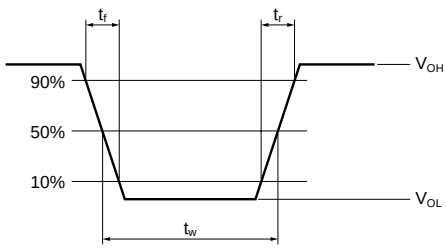
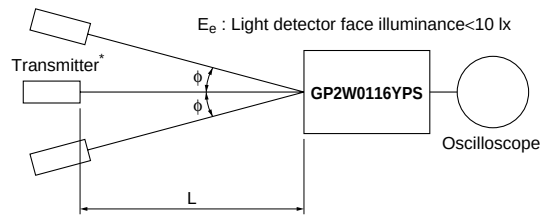


Fig.6 Standard Optical System (Receiver side)



ϕ : Indicates horizontal and vertical directions.

* Transmitter shall use **GP2W0116YPS** (λp=870nm TYP.) which is adjusted the radiation intensity at 3.6mW/sr

Fig.7 Output Waveform Specification (Transmitter side)

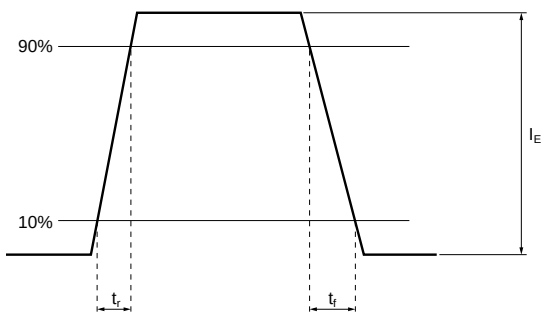


Fig.8 Standard Optical System (Transmitter side)

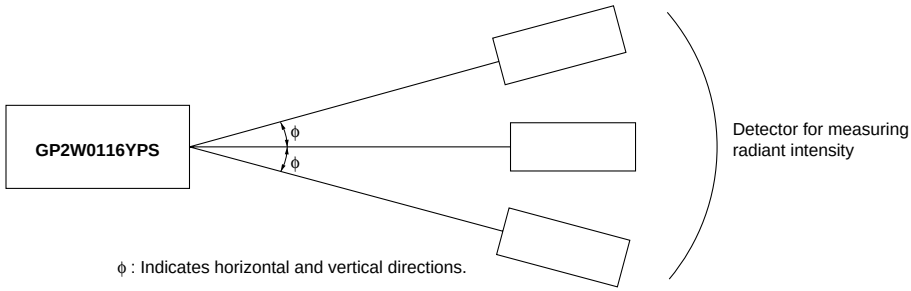


Fig.9 Recommended Circuit of Transmitter side

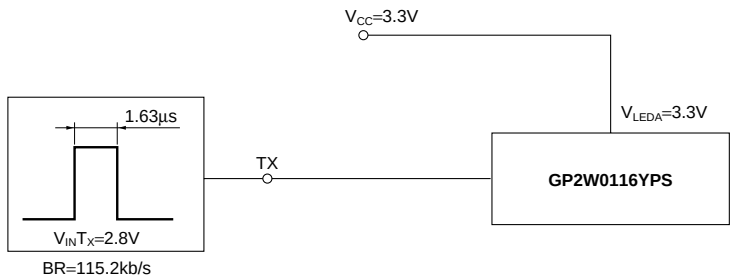
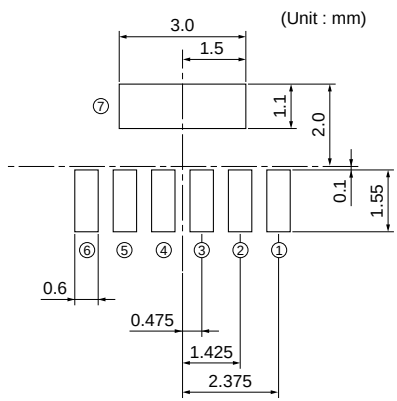


Fig.10 Recommended PCB Foot Pattern

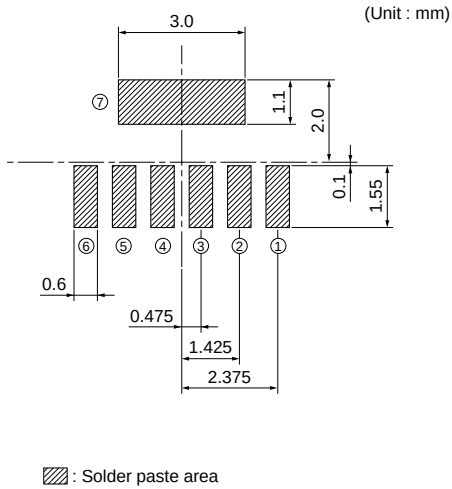
Dimensions are shown for reference



	Terminal	Symbol
①	Supply voltage	V_{CC}
②	Ground	GND
③	Shutdown	SD
④	Receiver data output	RXD
⑤	Transmitter data input	TXD
⑥	LED anode	LEDA
⑦	Shield ground	SGND

Fig.11 Recommended Size of Solder Paste (Reference)

Please open the solder mask as below so that the size of solder paste for this device before reflow soldering must be as large as one of the foot pattern land indicated Fig.10



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