IS1U20

OPIC Light Detector for Infrared Communication (IrDA1.0 Compatible)

■ Features

1. IrDA1.0 compatible OPIC light detector
   (Transmission rate : 2.4 to 115.2kbps)
2. Compact design due to OPIC (Number of parts : 1)
3. Compatible with both 5V and 3V power supplies
   (Operating supply voltage : 2.7 to 5.5V)
4. Visible light cut-off type
5. Recommended use in combination emitter (**GL1F20**)

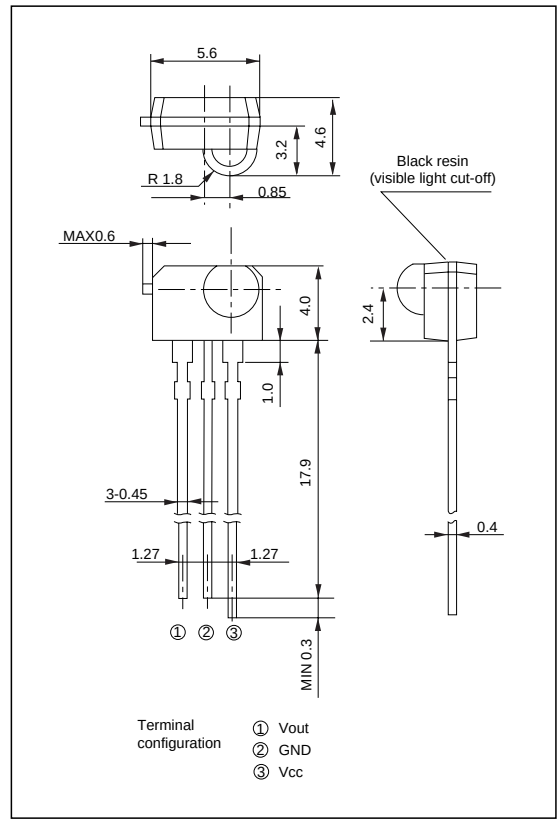
■ Applications

1. Personal computers
2. Portable information terminal equipment
3. Printers
4. Word processors

IrDA : Abbreviation of the Infrared Data Association established for standardization of infrared communication specifications

■ Outline Dimensions

(Unit : mm)



* OPIC (Optional IC) is a trademark of the SHARP Corporation.
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Absolute Maximum Ratings

(Ta=25˚C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{cc}	0to 6.0	V
*1 Operating temperature	T_{opr}	- 10 to +70	˚C
Storage temperature	T_{stg}	- 20 to +85	˚C
*2 Soldering temperature	T_{sol}	260	˚C

*1 No dew condensation is allowed.

*2 For MAX. 3 seconds at the position of 2 mm from the resin edge (1.0 mm thick PWB mounting)

■ Recommended Operating Conditions

(Ta=25˚C)

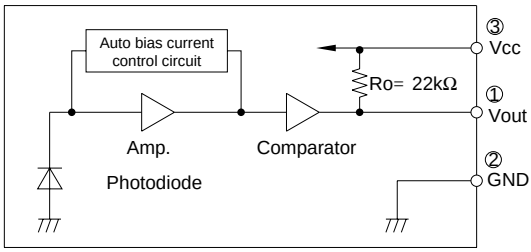
Parameter	Symbol	Rating	Unit
Supply voltage	V_{cc}	2.7 to 5.5	V
Transmission rate	BR	2.4 to 115.2	kbps

■ Electro-optical Characteristics

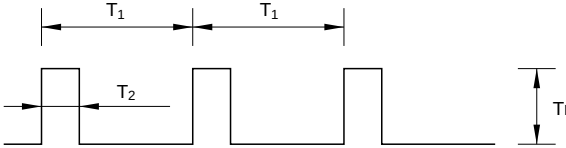
(Ta=25˚C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Dissipation current	I_{CC1}	Vcc=5V, no input light, output terminal OPEN	-	1.0	1.4	mA
	I_{CC2}	Vcc=3V, no input light, output terminal OPEN	-	0.7	1.0	mA
High level output voltage	V_{OH1}	Vcc = 5V	4.5	-	-	V
	V_{OH2}	Vcc = 3V	2.5	-	-	V
Low level output voltage	V_{OL1}	Vcc = 5V, I_{OL}= 400m A, *3,4,5	-	-	0.4	V
	V_{OL2}	Vcc = 3V, I_{OL}= 400m A, *3,4,5	-	-	0.4	V
Low level pulse width	t_{W1}	BR = 2.4kbps, *3,4,5	0.8	-	16.0	µs
	t_{W2}	BR = 115.2kbps, *3,4,5	0.8	-	8.0	µs
Rise time	t_r	BR = 115.2kbps, *3,4,5	-	-	1.2	µs
Fall time	t_f	BR = 115.2kbps, *3,4,5	-	-	0.2	µs
MAX. reception distance	L	V_{OH}, V_{OL}, t_W, t_r and t_f to be met at ϕ<= 15˚. *3, 4, 5.	1	-	-	m

■ Circuit Block Diagram

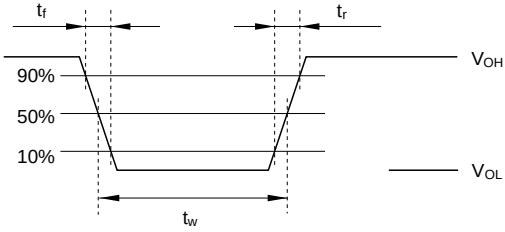


***3 Input signal waveform**

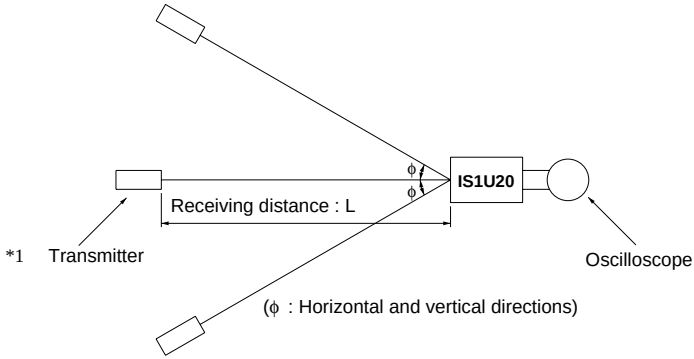


T_1=416.7µs and T_2=78.1µs at BR=2.4kbps
T_1=8.68µs and T_2=1.63µs at BR=115.2kbps

***4 Output waveform regulation**

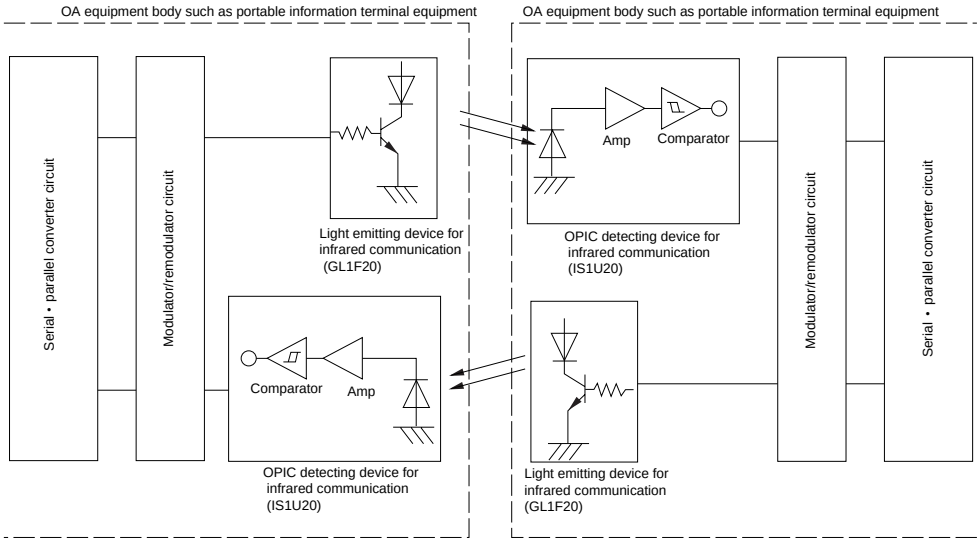


***5 Optical system**



*1 Transmitter shall use the light emitting diode **GL550** (λp=850 to 900 nm) and be adjusted to the radiant intensity of 40mW/sr.

■ Infrared Communication Terminal System Configuration Using GL1F20/IS1U20



■ General Descriptions of Standard Specifications (IrDA1.0)

Transmission rate : 2.4k to 115.2kbps
Modulation system : SIR
Receiving distance : 1 m
Transmitting wavelength : 850 to 900 nm
Receiving waveform : As shown in the right drawing
Output waveform : As shown in the right drawing