

# 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

### ■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>cc</sub>	0 to 6.0	V
*1 Operating temperature	T <sub>opr</sub>	-10 to +70	°C
Storage temperature	T <sub>stg</sub>	-20 to +85	°C
*2 Soldering temperature	T <sub>sol</sub>	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 <sub>cc</sub>	2.7 to 5.5	V
Transmission rate	BR	2.4 to 115.2	kbps

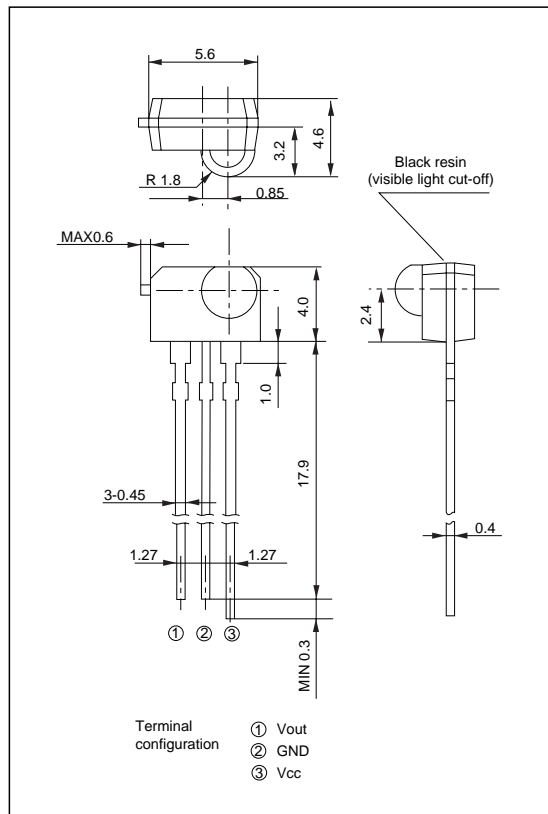
### ■ Electro-optical Characteristics

(Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Dissipation current	I <sub>CC1</sub>	V <sub>cc</sub> =5V, no input light, output terminal OPEN	-	1.0	1.4	mA
	I <sub>CC2</sub>	V <sub>cc</sub> =3V, no input light, output terminal OPEN	-	0.7	1.0	mA
High level output voltage	V <sub>OH1</sub>	V <sub>cc</sub> = 5V	4.5	-	-	V
	V <sub>OH2</sub>	V <sub>cc</sub> = 3V	2.5	-	-	V
Low level output voltage	V <sub>OL1</sub>	V <sub>cc</sub> = 5V, I <sub>OL</sub> = 400m A, *3,4,5	-	-	0.4	V
	V <sub>OL2</sub>	V <sub>cc</sub> = 3V, I <sub>OL</sub> = 400m A, *3,4,5	-	-	0.4	V
Low level pulse width	tw1	BR = 2.4kbps, *3,4,5	0.8	-	16.0	μs
	tw2	BR = 115.2kbps, *3,4,5	0.8	-	8.0	μs
Rise time	t <sub>r</sub>	BR = 115.2kbps, *3,4,5	-	-	1.2	μs
Fall time	t <sub>f</sub>	BR = 115.2kbps, *3,4,5	-	-	0.2	μs
MAX. reception distance	L	V <sub>OH</sub> , V <sub>OL</sub> , t <sub>w</sub> , t <sub>r</sub> and t <sub>f</sub> to be met at φ <= 15°, *3, 4, 5.	1	-	-	m

### ■ Outline Dimensions

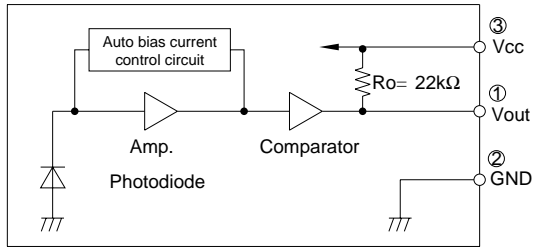
(Unit : mm)



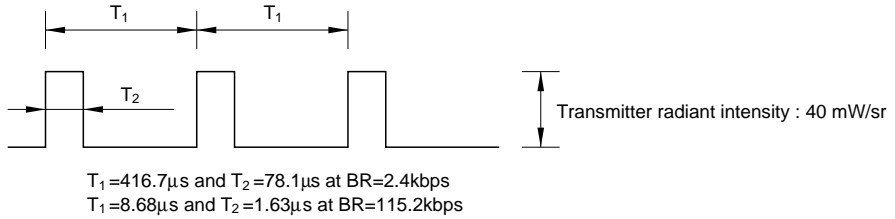
\* OPIC (Optional IC) is a trademark of the SHARP Corporation.

An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

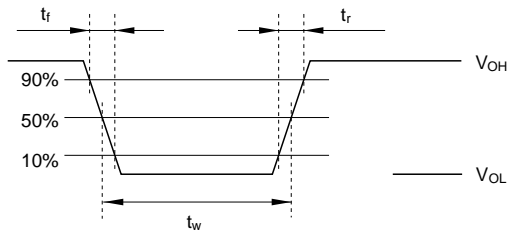
■ Circuit Block Diagram



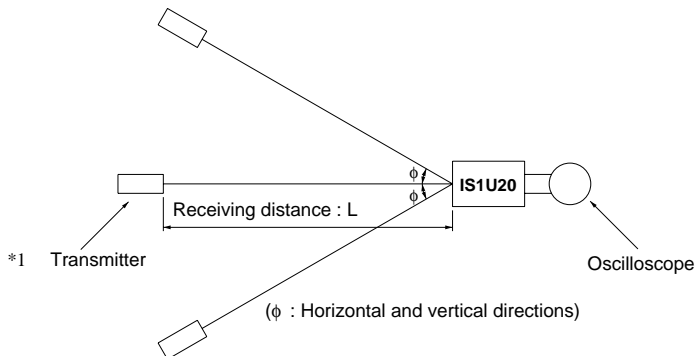
\*3 Input signal waveform



\*4 Output waveform regulation

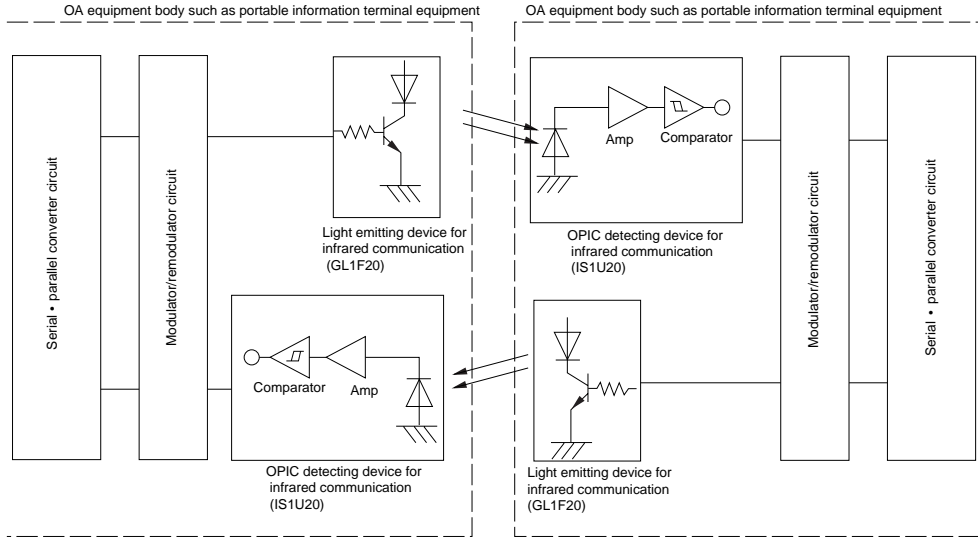


\*5 Optical system



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

■ 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

