

# 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

( $T_a=25^\circ\text{C}$ )

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

\*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

( $T_a=25^\circ\text{C}$ )

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

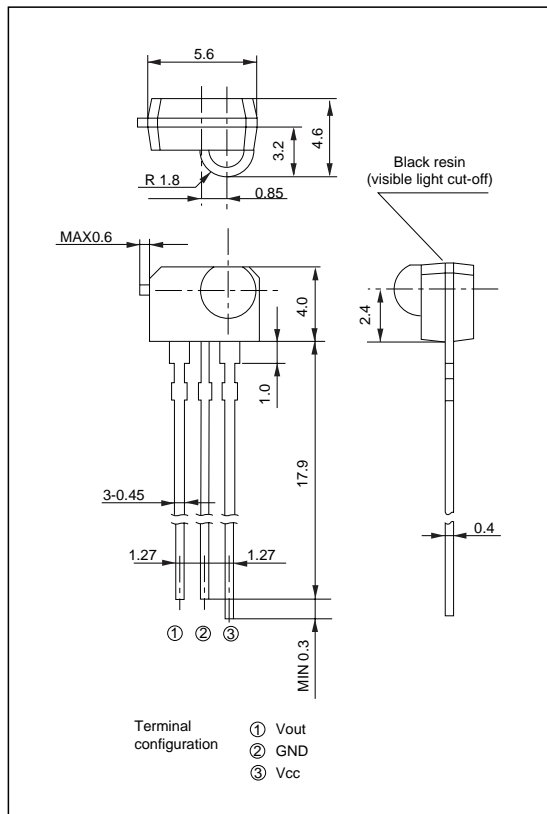
### ■ Electro-optical Characteristics

( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Dissipation current	$I_{CC1}$	$V_{cc}=5\text{V}$ , no input light, output terminal OPEN	-	1.0	1.4	mA
	$I_{CC2}$	$V_{cc}=3\text{V}$ , no input light, output terminal OPEN	-	0.7	1.0	mA
High level output voltage	$V_{OH1}$	$V_{cc}=5\text{V}$	4.5	-	-	V
	$V_{OH2}$	$V_{cc}=3\text{V}$	2.5	-	-	V
Low level output voltage	$V_{OL1}$	$V_{cc}=5\text{V}$ , $I_{OL}=400\text{mA}$ , *3,4,5	-	-	0.4	V
	$V_{OL2}$	$V_{cc}=3\text{V}$ , $I_{OL}=400\text{mA}$ , *3,4,5	-	-	0.4	V
Low level pulse width	$tw_1$	BR = 2.4kbps, *3,4,5	0.8	-	16.0	$\mu\text{s}$
	$tw_2$	BR = 115.2kbps, *3,4,5	0.8	-	8.0	$\mu\text{s}$
Rise time	$t_r$	BR = 115.2kbps, *3,4,5	-	-	1.2	$\mu\text{s}$
Fall time	$t_f$	BR = 115.2kbps, *3,4,5	-	-	0.2	$\mu\text{s}$
MAX. reception distance	L	$V_{OH}$ , $V_{OL}$ , $t_w$ , $t_r$ and $t_f$ to be met at $\phi < 15^\circ$ , *3, 4, 5.	1	-	-	m

### ■ Outline Dimensions

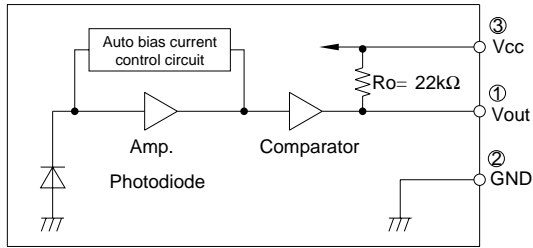
(Unit : mm)



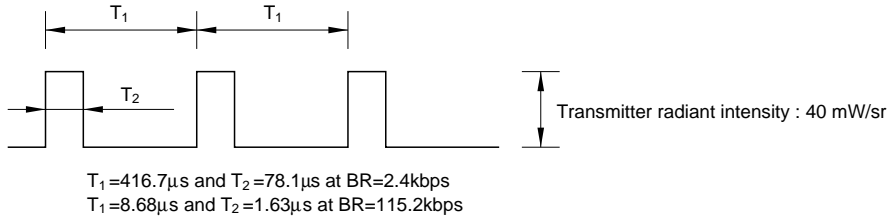
\* OPIC (Optional IC) is a trademark of the SHARP Corporation.

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

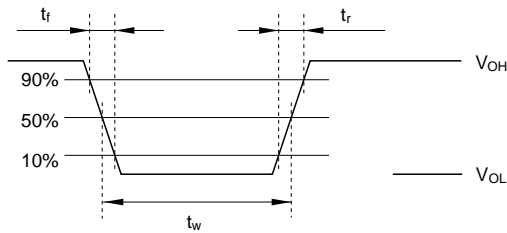
■ Circuit Block Diagram



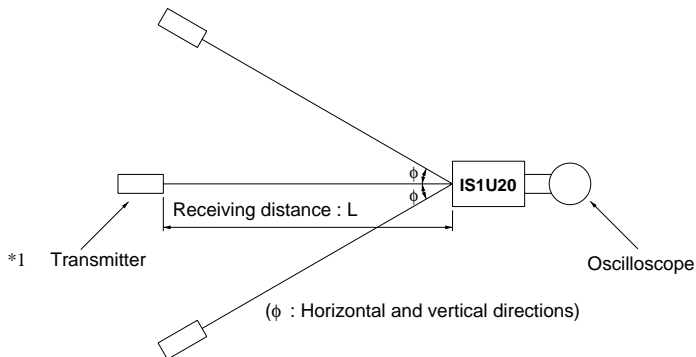
\*3 Input signal waveform



\*4 Output waveform regulation

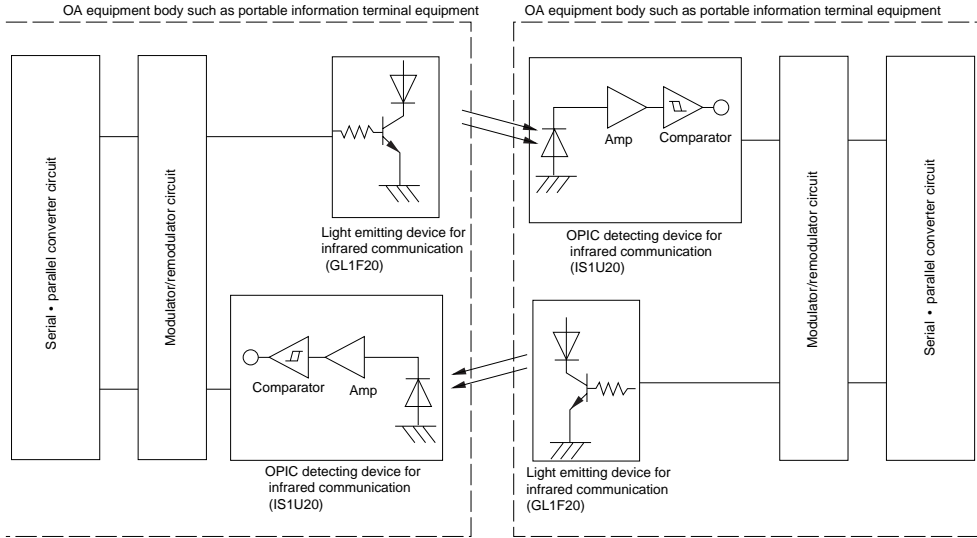


\*5 Optical system



\*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

