SHARP

GL1F20/GL1F201 IrDA1.0 Compliant Infrared Emitting Diode

■ Features

1. Compliant with IrDA1.0
    (Date rate : 2.4k to 115.2kbps)
2. Built-in infrared emitting diode circuit
3. Pair use with **IS1U20** is recommended.

■ Applications

1. Personal computers
2. Personal information tools (PDA)
3. Printers
4. Word processors

IrDA : Abbreviation of the Infrared Data Association established for standardization of infrared communication specifications
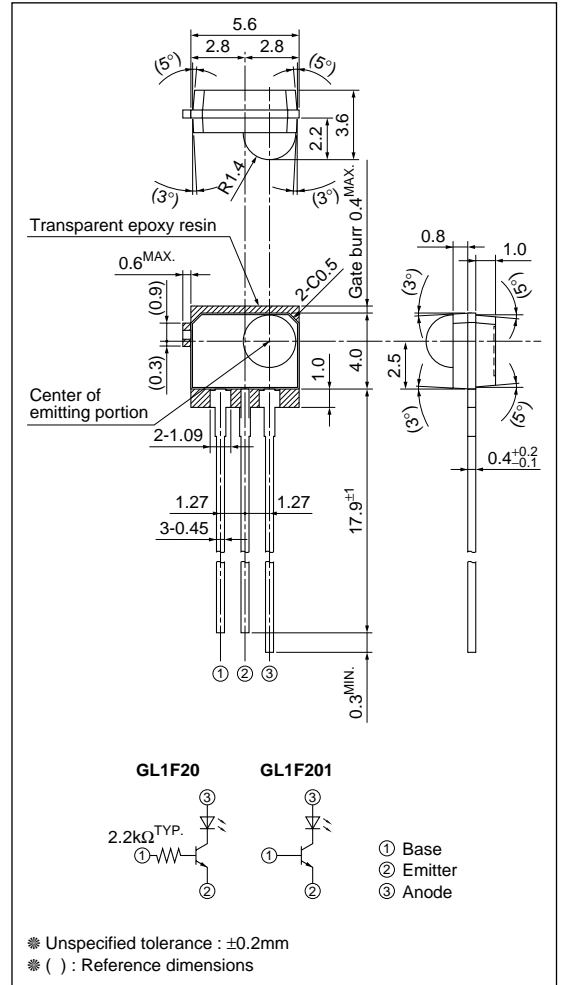
■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Forward current	I_F	50	mA
[*1] Peak forward current	I_{FM}	400	mA
Operating temperature	T_{opr}	−10 to +70	°C
Storage temperature	T_{stg}	−20 to +85	°C
[*2] Soldering temperature	T_{sol}	260	°C

*1 Pulse width 78.1μs, Duty ratio=3/16
*2 For MAX. 3s at the position of 2 mm from the resin edge

■ Outline Dimensions

(Unit : mm)

GL1F20   GL1F201

2.2kΩ TYP.

① Base
② Emitter
③ Anode

❋ Unspecified tolerance : ±0.2mm
❋ ( ) : Reference dimensions

■ Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions		MIN.	TYP.	MAX.	Unit
			GL1F20	GL1F201				
Operating voltage	GL1F20	V_{CC}	−		4.75	−	5.25	V
	GL1F201				2.7		3.3	
High level input voltage	GL1F20	V_{IH}	Vcc=4.75 to 5.25V	Vcc=2.7 to 3.3V	4.5	−	Vcc	V
	GL1F201				2.4			
Low level input voltage		V_{IL}	Vcc=4.75 to 5.25V	Vcc=2.7 to 3.3V	−	−	0.4	V
Peak emission wavelength		λp	IF=20mA		850	870	900	nm
Radiant intensity		I_E			40	−	350	mW/sr
Pulse width	GL1F20	tw	Vcc=5V, RL=7.5Ω *3VIN=4.5V twIN=1.63µs, DR=3/16 φ<=15°, *4	Vcc=3V, RL=2.2Ω *3VIN=2.7V, RB=1kΩ±5% CB=1500pF, twIN=1.63µs DR=3/16, *4φ<=15°	1.41	1.6	2.71	µs
	GL1F201					1.7		
Rise time	GL1F20	tr			−	0.23	0.6	µs
	GL1F201					0.09		
Fall time	GL1F20	tf			−	0.17	0.6	µs
	GL1F201					0.21		
Input current	GL1F20	I_{IH}	*3VIN=4.5V	*3VIN=2.4V	1.0	−	3.0	mA
	GL1F201				1.2		2.3	
Spectrum radiation bandwidth		Δλ	IF=20mA		−	40	−	nm
Half intensity angle		Δθ	IF=20mA		−	±20	−	°

*3 Refer to the recommended circuit.
*4 Direction of mechanical axis of the lens portion of the element : φ=0°

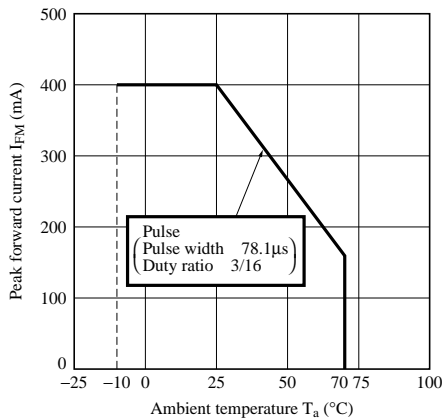### Fig.1 Peak Forward Current vs. Ambient Temperature
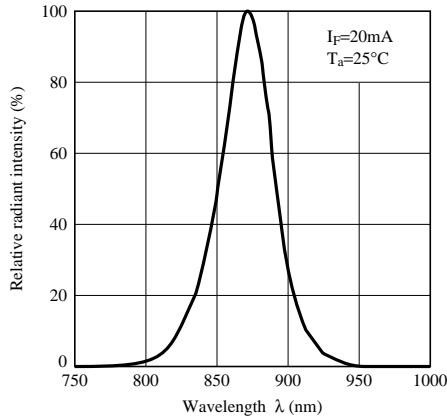
Fig.2 Spectral Distribution

I_F=20mA
T_a=25°C

Relative radiant intensity (%)

Wavelength λ (nm)

Fig.3 Peak Emission Wavelength vs. Ambient Temperature

I_F=const.

Peak emission wavelength λ_p (nm)

Ambient temperature T_a (°C)
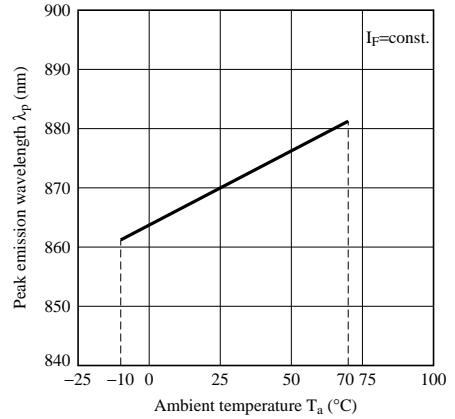
Fig.4 Relative Radiant Intensity vs. Ambient Temperature

I_{FM}=160mA
t_{WIN}=1.63μs

Relative radiant intensity (%)

Ambient temperature T_a (°C)
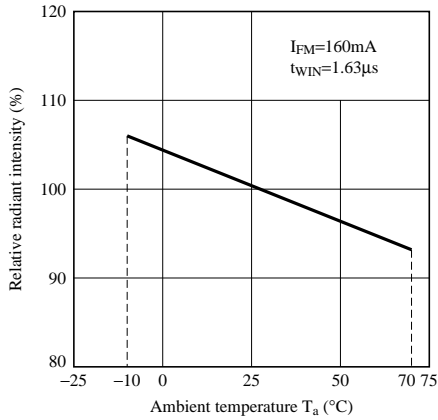
Fig.5 Radiant Intensity vs. Peak Forward Current

Radiant intensity I_E (mW/sr)

Pulse
Pulse width   1.63μs
Duty ratio   3/16

Peak forward current I_{FM} (mA)

Fig.6 Radiation Diagram

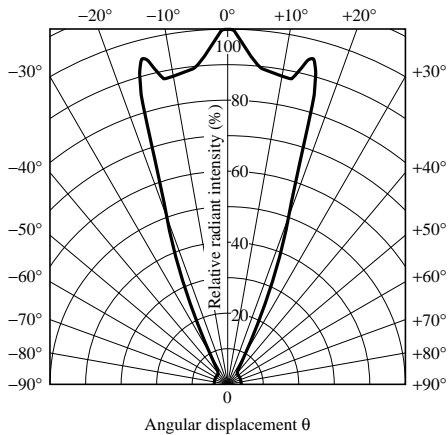Relative radiant intensity (%)

Angular displacement θ
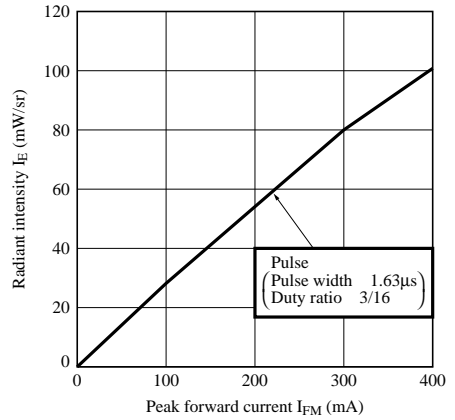
Fig.7 Recommended Circuit(GL1F20)   ## Fig.8 Recommended Circuit(GL1F201)

V_{CC}=5V V_{CC}=3V

R_L=7.5Ω R_L=2.2Ω

C_B=1500pF

V_{IN} V_{IN} R_B=1kΩ
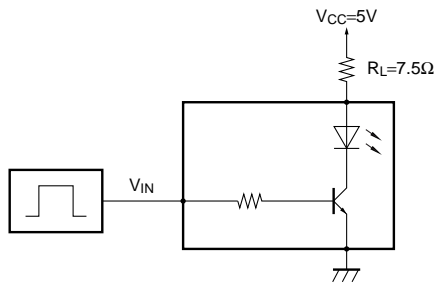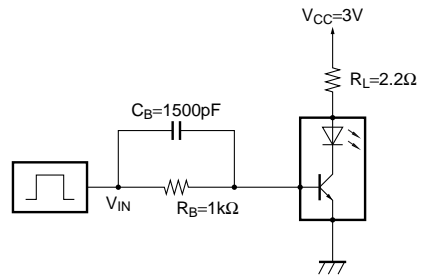
Fig.9 Example of Infrared Data Communication System

V_{CC}

Anode

Encoder circuit   GL1F20/GL1F201

Base

Emitter

R   C [2)]

V_{CC}

UART [1)]

Decoder circuit   * IS1U20

V_{OUT}
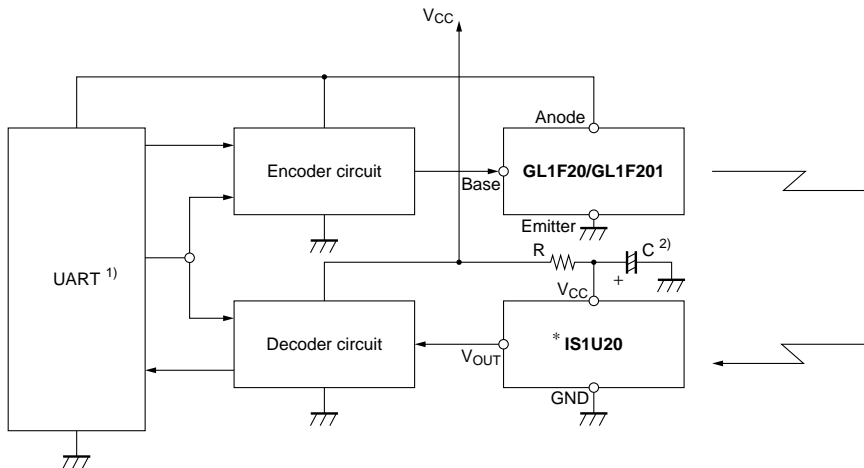
GND

1) UART (Universal Asynchronous Receiver/Transmitter)
2) Please choose the most suitable C and R according to
   the noise level and noise frequency of power supply.
        Example : C=47μF, R=47Ω

∗ We recommended to use **IS1U20** as detecting device.

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