GH7C605B3A/GH7C605B3B

4.8mm Thickness Resin type Hologram Laser for CD-ROM Drive(Equivalent to ×40 Speed)

■ Features

(1) With built-in high speed response OPIC※ (MIN. 40MHz)
(2) For CD-ROM drives (equivalent to ×40 speed)
(3) Built-in RF amp enables high speed reading of low reflective discs (CD-R/RW media).
(4) Insert frame structure enables easy mounting compared to conventional pin structure.
(5) Thin package (4.8mm thickness)
(6) With built-in beam splitter and diffraction grating

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

■ Model No.

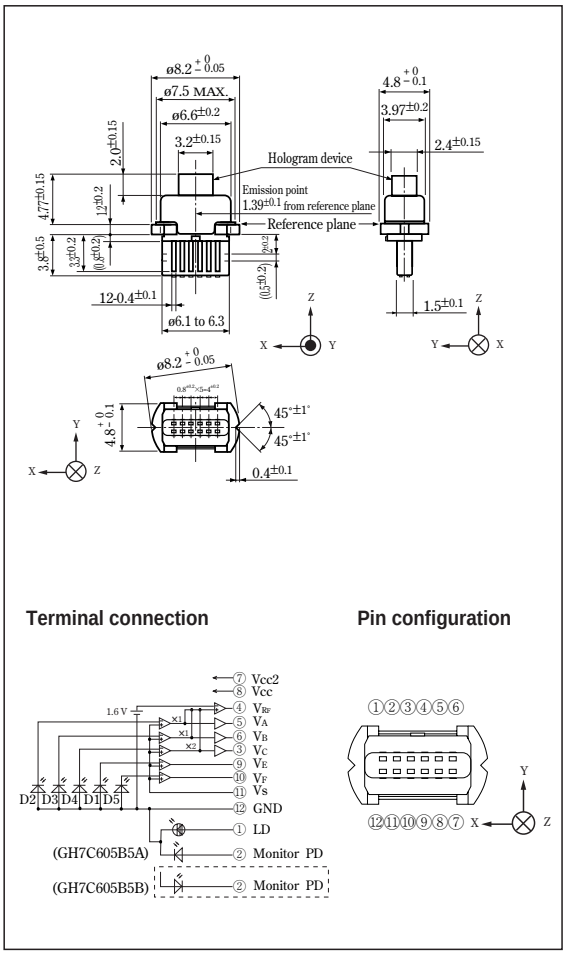
(1) GH7C605B3A....Dual power supply
(2) GH7C605B3B....Single power supply

■ Applications

(1) DVD-ROM drives
(2) CD-ROM drives for notebook PCs

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Tc=25°C)

Parameter		Symbol	Rating	Unit
※1 Optical power output		PH	4.3	mW
Reverse voltage	Laser	VR	2	V
	Monitor photodiode		30	V
OPIC supply voltage		VCC	6	V
※2 Operating temperature		Topr	-10 to +70	°C
※2 Storage temperature		Tstg	-40 to +85	°C
※3 Soldering temperature		Tsold	260	°C

※1 Output power from hologram laser, CW (Continuous Wave) drive
※2 Case temperature
※3 At the position of 1.6mm from the lead base (Within 5s)

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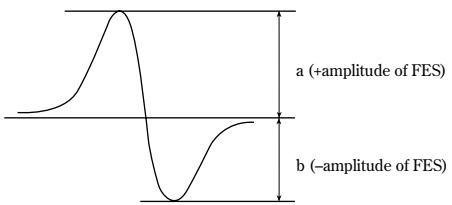
■ Electro-optical Characteristics

(V_{CC}=5V, V_S=2.1V, T_C=25°C)

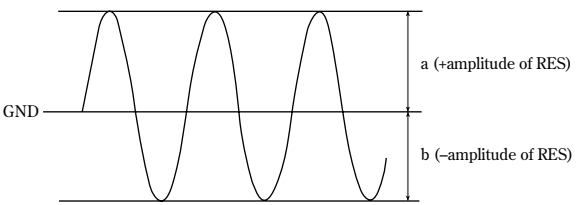
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※1 Focal offset		DEF	V_{RF}=1.1V	-0.7	-	+0.7	µm
※2 Focal error symmetry		B_{FES}	V_{RF}=1.1V	-25	-	+25	%
※3 Radial error balance		B_{RES}	P_H=3.0mW	-25	-	+25	%
※4 RF output amplitude		V_{RF}	P_H=3.0mW	0.67	1.60	-	V
※5 FES output amplitude		V_{FES}	V_{RF}=1.1V	0.28	0.43	0.59	V
※6 RES output amplitude		V_{RES}	V_{RF}=1.1V	0.08	0.15	0.20	V
Threshold current		I_{th}	–	-	25	39	mA
Operating current		I_{op}	P_H=3.0mW	-	36	50	mA
Operating voltage		V_{op}	P_H=3.0mW	-	1.85	2.2	V
Wavelength		λ_p	P_H=3.0mW	770	780	795	nm
Output current	GH7C605B3A	I_m	P_H=3.0mW, V_R=15V	0.06	0.32	0.60	mA
	GH7C605B3B			0.05	0.2	0.60	mA
Differential efficiency		η_d	$\frac{2.0mW}{I(3.0mW)-I(1.0mW)}$	-	0.27	-	mW/mA

※1 Distance between FES=0 and jitter minimum point
At the condition of FES sensitivity = 20%/1µm

※2 (a–b) / (a+b)



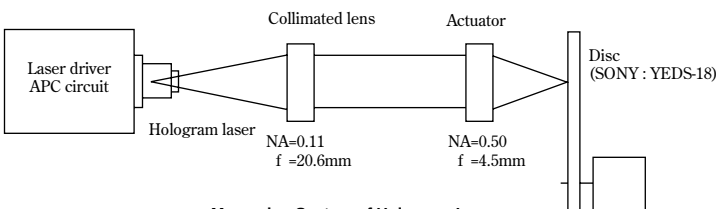
※3 $\frac{a-b}{2\times(a+b)}$



※4 Amplitude of V_{RF} (focal servo ON, radial servo ON)

※5 V_A–V_B (Focal vibration)

※6 V_E–V_F (focal servo ON, radial servo OFF)



Measuring System of Hologram Laser

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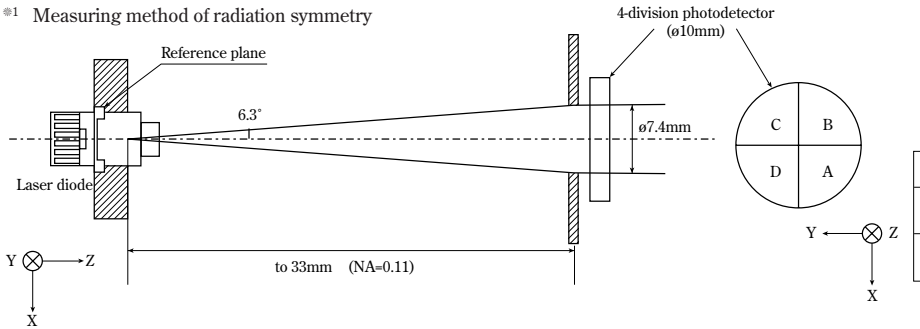
■ Electro-optical Characteristics of Laser Diode (Design Standard*)

(Tc=25°C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Emission characteristics	※1 Symmetry	Parallel	S//	Po=3mW, Into NA=0.11	-25	-	+25	%
		Perpendicular	S⊥		-15	-	+15	%
Misalignment position			Δx	–	-80	-	+80	μm
			Δy		-80	-	+80	μm
			Δz		-80	-	+80	μm
Interference pattern intensity			α	Po=3mW	-	-	0.99	-

※1 Measuring method of radiation symmetry



Parameter	Definition
S//	$\frac{(P_B + P_C) - (P_A + P_D)}{P_A + P_B + P_C + P_D}$
S⊥	$\frac{(P_A + P_B) - (P_C + P_D)}{P_A + P_B + P_C + P_D}$

P_X : Output of light detector X

■ Electrical Characteristics of Monitor Photodiode (Design Standard*)

(GH7C605B3A)

(Tc=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※2 Sensitivity	S	VR=15V	-	0.11	-	mA/mW
Dark current	ID		-	-	150	nA
Terminal capacitance	Ct		-	4.2	-	pF

(GH7C605B3B)

(Tc=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※2 Sensitivity	S	VR=15V	-	0.07	-	mA/mW
Dark current	ID		-	-	150	nA
Terminal capacitance	Ct		-	7.7	-	pF

※2 For hologram output power

■ Electro-optical Characteristics of OPIC for Signal Detection (Design Standard*)

(VCC=5V, Vs=2.1V±5%, Tc=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	※3 Segment
Supply voltage	VCC		4.5	5	5.5	V	
Supply current	ICC		7	10	13	mA	
Vs working voltage range	VS		2.0	2.1	2.2	V	
※4 Output offset voltage	VOD	No light	-25	0	25	mV	VA, VB, VC
			-15	0	15	mV	VE, VF
Offset voltage difference	ΔVOD		-25	0	25	mV	VA-VB
			-15	0	15	mV	VE-VF
Response frequency	fCRF	※5 -3dB RL=10k, CL=10pF	40	70	-	MHz	VRF
	fCF		10	20	-	MHz	VA, VB, VC
	fCR		2	4	-	MHz	VE, VF
RF reference voltage	VRFO	PH=0mW No light	1.40	1.60	1.80	V	VRF

※3 Applicable divisions correspond to output terminals.

D1	
D2	D4
D3	
D5	

Segment No.	Output
D 1	VE
D 2	VA
D 3	VB
D 4	VC
D 5	VF

※4 Difference from Vs

※5 Output amplitude=0dB (input signal 100kHz) BW=10kHz

* These parameters are not guaranteed performance, but general specifications of each optical element which makes up a hologram laser.

• Please refer to the chapter "Handling Precautions"

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  - Telecommunication equipment [terminal]
  - Test and measurement equipment
  - Industrial control
  - Audio visual equipment
  - Consumer electronics

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