

# GH6CD05B3A

## 4.8mm Thickness Resin Type Hologram Laser for CD Audio/Video CD Drive

### ■ Features

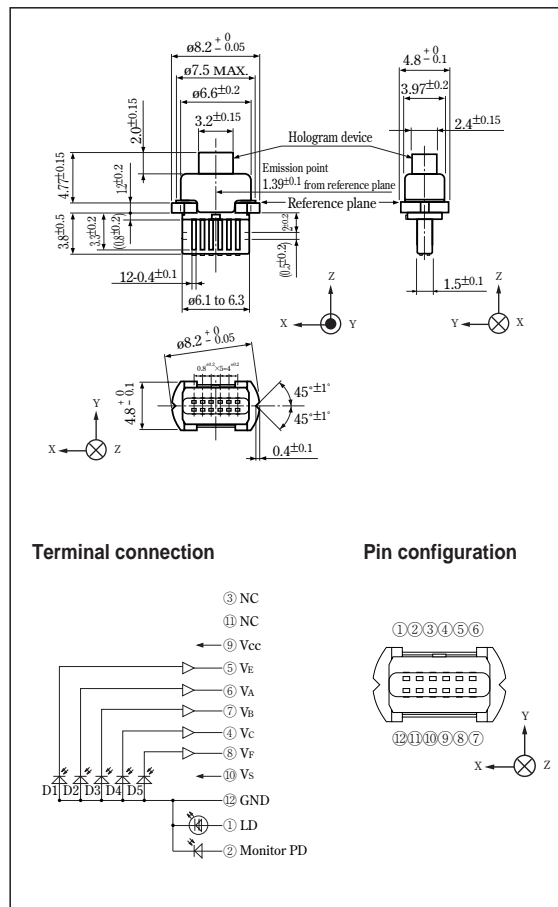
- (1) With built-in 3V operation (3 to 5V),  $\times 8$  speed playback OPIC\*
  - (2) Reducing variety of offset voltage (40% reduction) enables easy compatibility with CD-RW media.
  - (3) Insert frame structure enables easy mounting compared to conventional pin structure.
  - (4) Thin (4.8mm thickness) and compact package enables thin and compact pick-up design.
  - (5) 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.

### ■ Applications

- (1) CD audio players
- (2) Video CD players

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

(T<sub>c</sub>=25°C)

Parameter	Symbol	Rating	Unit
*1 Optical power output	P <sub>H</sub>	4.3	mW
Reverse voltage	V <sub>R</sub>	2	V
		30	V
OPIC supply voltage	V <sub>CC</sub>	6	V
*2 Operating temperature	T <sub>opr</sub>	-10 to +70	°C
*2 Storage temperature	T <sub>stg</sub>	-40 to +85	°C
*3 Soldering temperature	T <sub>sold</sub>	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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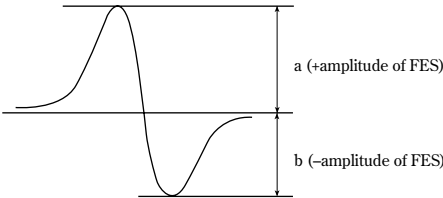
Electro-optical Characteristics

(V<sub>CC</sub>=3V,V<sub>S</sub>=1/2 V<sub>CC</sub>, T<sub>C</sub>=25°C)

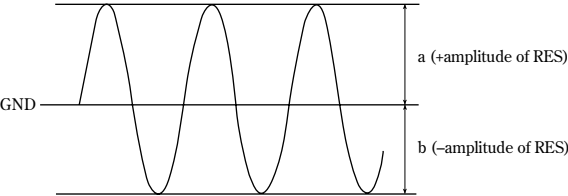
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
① Focal offset	DEF	V <sub>RF</sub> =1.1V	-0.7	-	+0.7	μm
② Focal error symmetry	B <sub>FES</sub>	V <sub>RF</sub> =1.1V	-25	-	+25	%
③ Radial error balance	B <sub>RES</sub>	P <sub>H</sub> =3.0mW	-25	-	+25	%
④ RF output amplitude	V <sub>RF</sub>	P <sub>H</sub> =3.0mW	0.9	2.00	-	V
⑤ FES output amplitude	V <sub>FES</sub>	V <sub>RF</sub> =1.1V	0.46	0.70	0.94	V
⑥ RES output amplitude	V <sub>RES</sub>	V <sub>RF</sub> =1.1V	0.25	0.36	0.49	V
Threshold current	I <sub>th</sub>	—	-	25	39	mA
Operating current	I <sub>op</sub>	P <sub>H</sub> =3.0mW	-	36	50	mA
Operating voltage	V <sub>op</sub>	P <sub>H</sub> =3.0mW	-	1.85	2.2	V
Wavelength	λ <sub>p</sub>	P <sub>H</sub> =3.0mW	770	780	795	nm
Output current	I <sub>m</sub>	P <sub>H</sub> =3.0mW, V <sub>R</sub> =15V	0.06	0.32	0.60	mA
Differential efficiency	η <sub>d</sub>	$\frac{2.0\text{mW}}{I(3.0\text{mW})-I(1.0\text{mW})}$	0.17	0.27	0.55	mW/mA

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

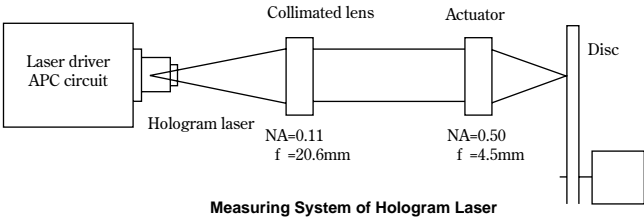
② (a-b) / (a+b)



③  $\frac{a-b}{2 \times (a+b)}$



- ④ Amplitude of V<sub>A</sub>+V<sub>B</sub>+2V<sub>C</sub> (focal servo ON, radial servo ON)
- ⑤ V<sub>A</sub>-V<sub>B</sub> (focal vibration)
- ⑥ V<sub>E</sub>-V<sub>F</sub> (focal servo ON, radial servo OFF)

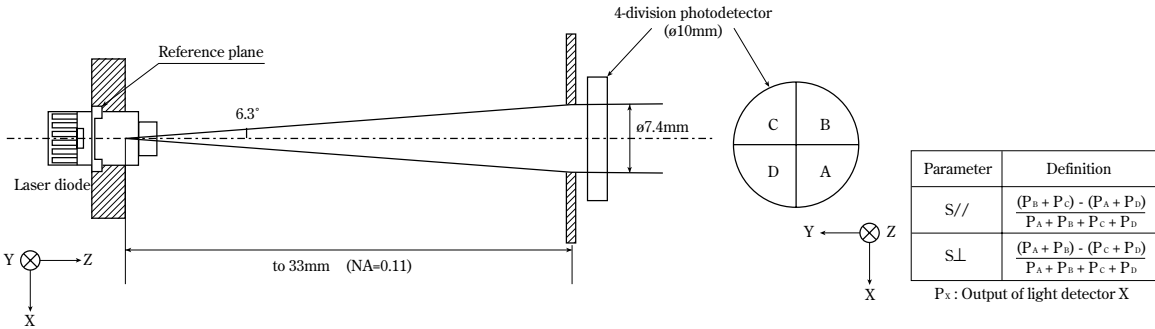


Measuring System of Hologram Laser

■ 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	
Z - position of emission point			z	—	-	1.39	-	mm	
Interference pattern intensity			α	Po=3mW	-	-	0.99	-	

\*1 Measuring method of radiation symmetry



■ Electrical Characteristics of Monitor Photodiode (Design Standard\*) (Tc=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*2 Sensitivity	S	V <sub>R</sub> =15V	-	0.11	-	mA/mW
Dark current	I <sub>D</sub>		-	-	150	nA
Terminal capacitance	C <sub>t</sub>		-	4.2	-	pF

\*2 For hologram output power

■ Electro-optical Characteristics of OPIC for Signal Detection (Design Standard\*) (Tc=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	*3 Segment
Supply voltage	V <sub>CC</sub>	-	2.8	-	5.5	V	
Supply current	I <sub>CC</sub>	V <sub>CC</sub> =3V	1.8	4.2	6.7	mA	
*4 Output offset voltage	V <sub>OD</sub>	V <sub>CC</sub> =3V No light	-11	0	+11	mV	V <sub>A</sub> , V <sub>B</sub> , V <sub>C</sub>
			-13	0	+13	mV	V <sub>E</sub> , V <sub>F</sub>
Offset voltage difference	ΔV <sub>OD</sub>		-11	0	+11	mV	V <sub>A</sub> -V <sub>B</sub>
			-13	0	+13	mV	V <sub>E</sub> -V <sub>F</sub>
Response frequency	f <sub>CF</sub>	*5 V <sub>CC</sub> =3V, -3dB R <sub>L</sub> =10kΩ, C <sub>L</sub> =10pF	12	18	-	MHz	V <sub>A</sub> , V <sub>B</sub> , V <sub>C</sub>
	f <sub>CR</sub>		1.2	1.8	-	MHz	V <sub>E</sub> , V <sub>F</sub>

\*3 Applicable divisions correspond to output terminals.

\*4 Difference from V<sub>S</sub>

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

D1	D4
D2	
D3	
D5	

Segment No.	Output
D 1 .....	V <sub>E</sub>
D 2 .....	V <sub>A</sub>
D 3 .....	V <sub>B</sub>
D 4 .....	V <sub>C</sub>
D 5 .....	V <sub>F</sub>

\* 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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