

GH6C405B5AM

3mm Thickness Resin Stem Hologram Laser for Automotive CD-ROM Drive

■ Features

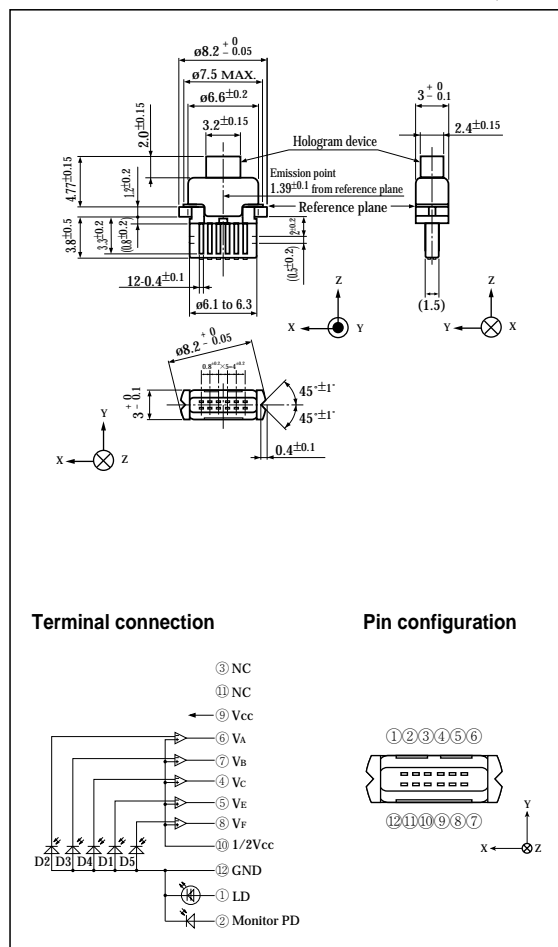
- (1) Wide operating temperature for use in automotive equipment
- (2) With built-in OPIC* (response speed : MIN. 24MHz) for $\times 16$ speed CD-ROM drives
(Both for CD car navigation systems and CD players)
- (3) Easy mounting due to insert frame structure compared to conventional pin structure
- (4) Super-thin (Thickness : 3.0mm) and compact package which enables to design thin and compact pick-up
- (5) With built-in beam splitter and diffraction grating
*OPIC : (Optical 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.

■ Applications

- (1) CD players for automotive use
- (2) CD car navigation systems

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_C=25°C)

Parameter	Symbol	Rating	Unit
① Optical power output	P _H	4.3	mW
Reverse voltage	V _R	2	V
		30	V
OPIC supply voltage	V _{CC}	6	V
② Operating temperature	T _{opr}	-10 to +80	°C
② Storage temperature	T _{stg}	-40 to +85	°C
③ Soldering temperature	T _{sold}	260	°C

① Output power from hologram laser

② Case temperature

③ At the position of 1.6mm or more from the lead base (Within 5s)

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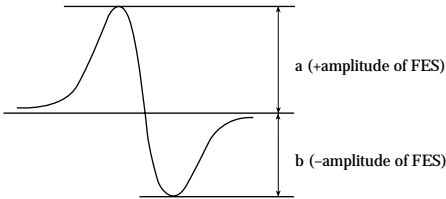
■ Electro-optical Characteristics

(V_{CC}=5V, T_C=25°C)

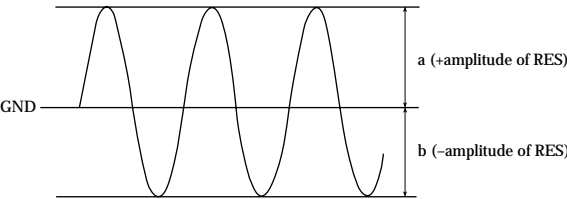
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※1 Focal offset	DEF	V _{RF} =0.55V	-0.7	-	+0.7	μm
※2 Focal error symmetry	B _{FES}	V _{RF} =0.55V	-25	-	+25	%
※3 Radial error balance	B _{RES}	P _H =3.0mW	-25	-	+25	%
※4 RF output amplitude	V _{RF}	P _H =3.0mW	0.42	1.00	-	V
※5 FES output amplitude	V _{FES}	V _{RF} =0.55V	0.23	0.35	0.47	V
※6 RES output amplitude	V _{RES}	V _{RF} =0.55V	0.08	0.12	0.16	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	-	1.75	2.2	V
Wavelength	λ _p	P _H =3.0mW	770	780	795	nm
Output current	I _m	P _H =3.0mW, V _R =15V	0.06	0.32	0.60	mA
Differential efficiency	η _d	$\frac{2.0\text{mW}}{I(3\text{mW})-I(1\text{mW})}$	0.17	0.27	0.55	mW/mA

※1 Distance between FES=0 and jitter minimum point

※2 (a-b) / (a+b)



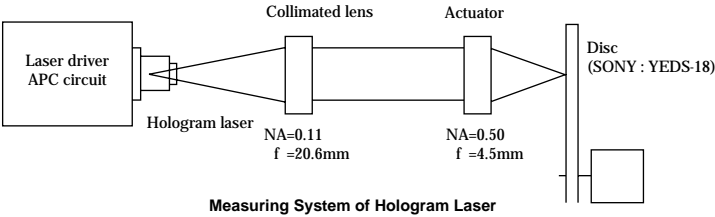
※3 $\frac{a-b}{2 \times (a+b)}$



※4 Amplitude of V_A+V_B+2V_C (focal servo ON, radial servo ON)

※5 V_A-V_B (Focal vibration)

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

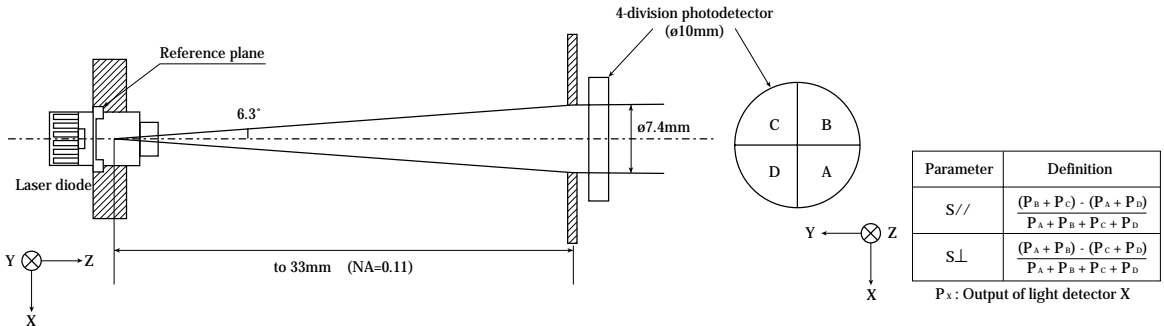


■ Electro-optical Characteristics of Laser Diode (Design Standard)

(T_C=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



■ Electrical Characteristics of Monitor Photodiode (Design Standard)

(T_C=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※2 Sensitivity	S	V _R =15V	-	0.11	-	mA/mW
Dark current	I _D		-	-	150	nA
Terminal capacitance	C _t		-	4.2	-	pF

※2 For hologram output power

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

(T_C=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	※3 Segment
Supply voltage	V _{CC}		4.5	5	5.5	V	
Supply current	I _{CC}	V _{CC} =5V	2.0	4.5	9.0	mA	
※4 Output off-set voltage	V _{OD}	V _{CC} =5V No light	-15	0	+15	mV	V _{A-F}
Off-set voltage difference	ΔV _{OD}		-15	0	+15	mV	V _A -V _B , V _E -V _F
Response frequency	f _{CF}	※5 V _{CC} =5V, -3dB R _L =10kΩ, C _L =10pF	24	30	-	MHz	V _A , V _B , V _C
	f _{CR}		1.0	2.0	-	MHz	V _E , V _F

※3 Applicable divisions correspond to output terminals

※4 Difference from V_{CC}/2

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

D1	D4
D2	
D3	
D5	

Segment No.	Output
D 1	V _E
D 2	V _A
D 3	V _B
D 4	V _C
D 5	V _F

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