GH6D305T5A

(Under development)

Self-pulsation Type, 3mm Thickness Resin Type Red Hologram Laser for DVD-Video

■ Features

(1) Employing a self-pulsation laser chip enables a compact and low cost pick-up.
It eliminates the need for radio frequency modulation circuit and related resistors/shields.
(2) Insert frame structure enables super-thin package (3.0mm thickness)
(3) With built-in high speed response OPIC※ (MIN. 40MHz)
(4) With built-in beam splitter and diffraction grating

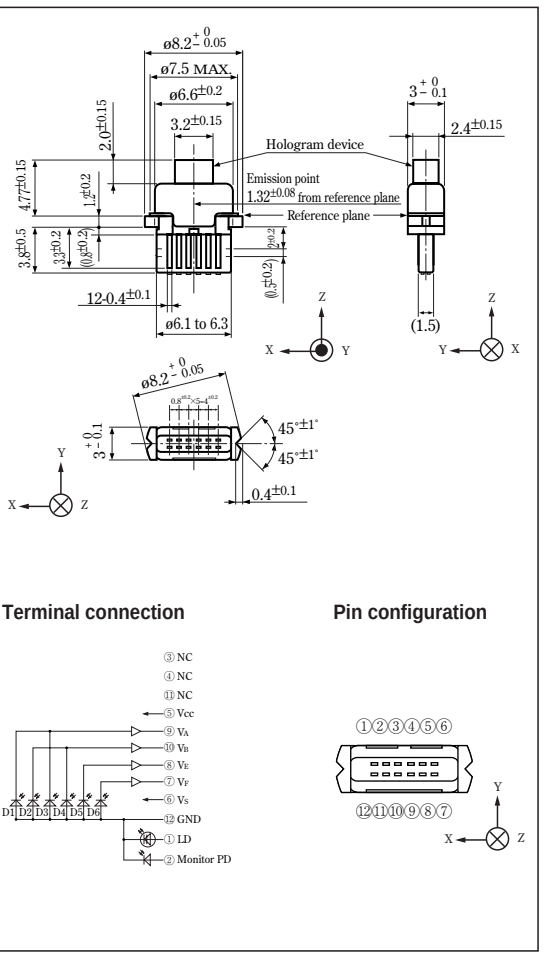
※OPIC : (Optical IC) is a trademark of SHARP Corporation.
An OPIC consists of a light-detecting element and a signal-processing circuit integrated onto a single chip.

■ Applications

(1) DVD video players

■ Outline Dimensions

(Unit : mm)



Terminal connection

Pin configuration

■ Absolute Maximum Ratings

(Tc=25°C)

Parameter		Symbol	Rating	Unit
※1 Optical power output		PH	4.5	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)

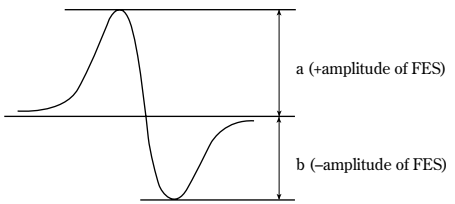
■ Electro-optical Characteristics

(V_{CC}=5V, Vs=1/2 V_{CC}, T_C=25°C)

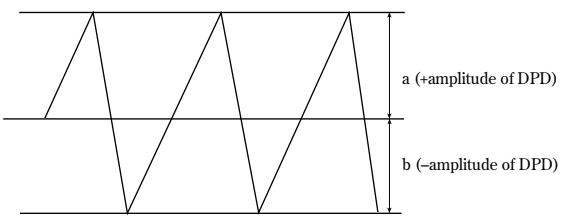
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※1 Focal offset	DEF	V_{RF}=0.83V	-0.5	-	+0.5	µm
※2 Focal error symmetry	B_{FES}	V_{RF}=0.83V	-25	-	+25	%
※3 Radial error balance	B_{RES}	P_H=3.0mW	-25	-	+25	%
※4 RF output amplitude	V_{RF}	P_H=3.0mW	0.55	0.83	1.11	V
※5 FES output amplitude	V_{FES}	V_{RF}=0.83V	0.38	0.58	0.8	V
Threshold current	I_{th}	–	-	45	-	mA
Operating current	I_{op}	P_H=2.85mW	-	55	-	mA
Operating voltage	V_{op}	P_H=2.85mW	-	2.5	-	V
Wavelength	λ_p	P_H=2.85mW	-	654	-	nm
Output current	I_m	P_H=2.85mW, V_R=15V	-	0.18	-	mA
Differential efficiency	η_d	$\frac{1.9mW}{I(2.85mW)-I(0.95mW)}$	-	0.5	-	mW/mA
※6 Main spot balance	MSB	P_H=3.0mW	75	100	125	%
※7 Radial spot balance	RSB	P_H=3.0mW	75	100	125	%

※1 Distance between FES=0 and jitter minimum point

※2 (a–b) / (a+b)



※3 DPD signal $\frac{a-b}{2\times(a+b)}$

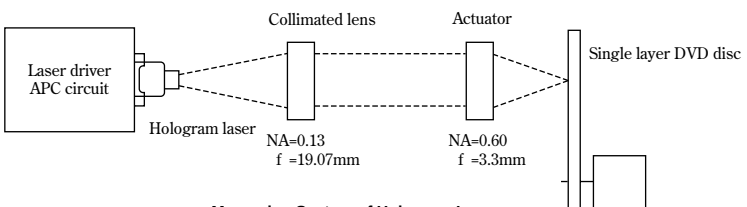


※4 Amplitude of $V_A+V_B+V_E+V_F$ (focal servo ON, radial servo ON)

※5 $V_A–V_B$ (Focal vibration)

※6 $(V_A+V_B) / (V_E+V_F)$ (focal servo ON, radial servo OFF)

※7 V_E / V_F



Measuring System of Hologram Laser

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

(T_C=25°C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Half intensity angle		Parallel	θ//	Po=3mW	-	8.5	-	°
		Perpendicular	θ⊥		-	35	-	°
Emission characteristics	Deviation angle	Parallel	ø//		-2.1	-	+2.1	°
		Perpendicular	ø⊥		-3	-	+3	°
Misalignment position			Δx	–	-80	-	+80	μm
			Δy		-80	-	+80	μm
			Δz		-80	-	+80	μm
Interference pattern intensity			α	Po=3mW	-	-	0.97	-

■ Electrical Characteristics of Monitor Photodiode (Design Standard*)

(T_C=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※1 Sensitivity	S	V_R=15V	-	0.02	-	mA/mW
Dark current	I_D		-	-	150	nA
Terminal capacitance	C_t		-	3.5	-	pF

※1 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	※2 Segment
Supply voltage	V_{CC}	–	4.5	5.0	5.5	V	-
Reference voltage	Vs	Vs=1/2Vcc	2.25	2.5	2.75	V	-
Supply current	I_{CC}	V_{CC}=5V	6	-	16	mA	-
※3 Output offset voltage	V_{OD}	V_{CC}=5V, No light	-30	0	+30	mV	V_A, V_B, V_E, V_F
Offset voltage difference	ΔV_{OD}		-30	0	+30	mV	V_A-V_B, V_E-V_F
※4 Response frequency	f_{CF}	V_{CC}=5V, -3dB	40	-	-	MHz	V_A, V_B, V_E, V_F
※5 Peaking level	V_{PK}	f=0.1 to 20MHz, BW=10kHz	-2	-	+2	dB	V_A, V_B, V_E, V_F

※2 Applicable divisions correspond to output terminals.

D5
D1
D2
D3
D4
D6

Segment No. Output
D 1 + D 3 ..... V_A
D 2 + D 4 ..... V_B
D 5 ..... V_E
D 6 ..... V_F

※3 Difference from Vs
※4 Output amplitude=0dB (input signal 100kHz)
※5 Output amplitude=0dB (input signal 100kHz), peaking characteristics from 100kHz to 20MHz.

* 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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  - Industrial control
  - Audio visual equipment
  - Consumer electronics

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