# GH6M035A5B

## 3mm Thickness Resin type Hologram Laser for Recording MD Player

### ■ Features

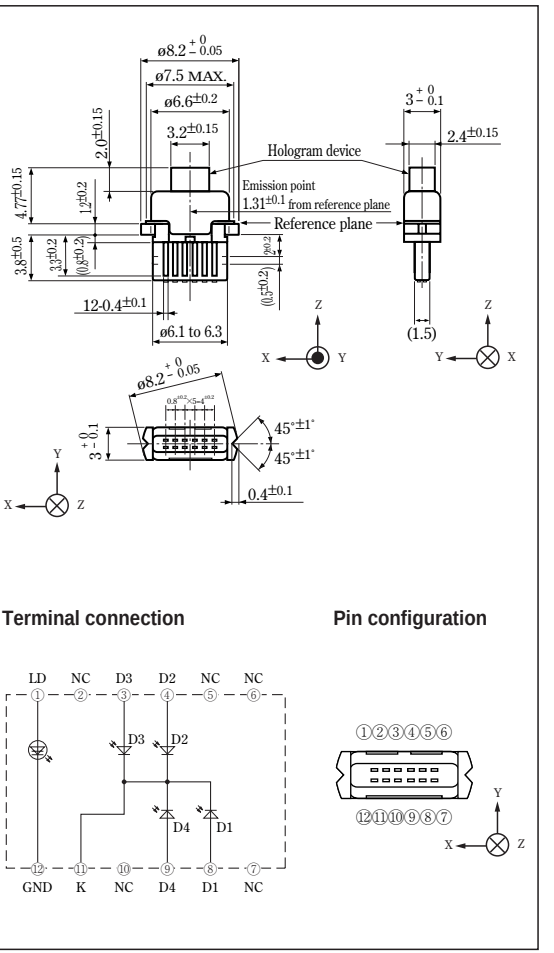
(1) Super-thin package (3mm thickness) due to insert frame structure
(2) Low current drive type
Iop : TYP. 50mA

### ■ Applications

(1) Recording MD players

### ■ Outline Dimensions

(Unit : mm)




### ■ Absolute Maximum Ratings

(Tc=25°C)

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| ※1 Optical power output | | PH | 31.5 | mW |
| Reverse voltage | Laser | VR | 2 | V |
| | Monitor photodiode | | 15 | V |
| ※2 Operating temperature | | Topr | -10 to +60 | °C |
| ※2 Storage temperature | | Tstg | -40 to +85 | °C |
| ※3 Soldering temperature | | Tsold | 260 | °C |

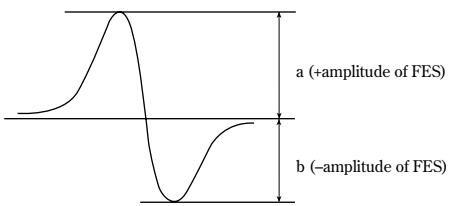
※1 Output power from hologram laser, CW (Continuous Wave) drive
※2 Case temperature
※3 At the position of 1.6mm from the lead base (Within 5s)

## ■ Electro-optical Characteristics

($T_C$=25°C)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|
| Focal offset | DEF | Collimated lens output power $P_{CL}$=1.1mW | -0.5 | - | +0.5 | µm |
| ※1 Focal error symmetry | $B_{FES}$ | | -15 | - | +15 | % |
| ※2 Radial offset | – | | 53 | - | 148 | % |
| ※3 FES output amplitude | $I_{FES}$ | | 2.0 | 4.6 | 6.1 | µA |
| ※4 Main spot balance | MSB | | 70 | 100 | 130 | % |
| ※5 Stray light | – | $P_H$=4mW | - | - | 0.1 | µA |
| Threshold current | $I_{th}$ | – | 1 | 15 | 50 | mA |
| Operating current | $I_{op}$ | $P_H$=27mW | 5 | 50 | 70 | mA |
| Operating voltage | $V_{op}$ | | - | 1.9 | 2.2 | V |
| Wavelength | $\lambda_p$ | | 770 | 785 | 800 | nm |
| Differential efficiency | $\eta_d$ | $\frac{18mw}{I(27mW)-I(9mW)}$ | 0.54 | 0.77 | 1.1 | mW/mA |

※1 (a–b) / (a+b)

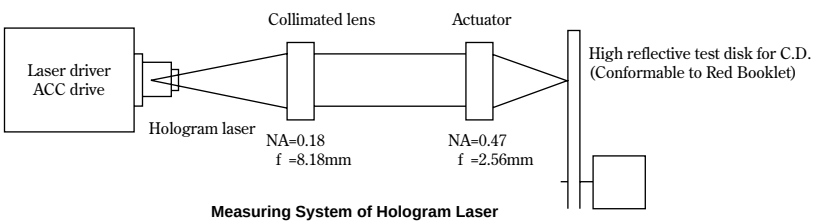



※2 D1 / D4 (focal servo ON)

※3 D2–D3 (Focal vibration)

※4 (D1+D4) / (D2+D3)

※5 Output of D2, D3 when hologram output is 4mW and outside light is cut off.




**Measuring System of Hologram Laser**

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

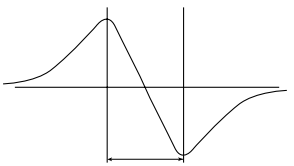
(Tc=25°C)

| Parameter | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|
| ※1 RF output amplitude | $P_{CL}$=1.1mW | 6 | 10.5 | - | μA |
| ※2 RES output amplitude | | 1 | 2 | 3.5 | μA |
| ※3 Focal error signal capture range | | - | 19 | - | μm |
| ※4 Focal error noise | | -7 | - | +7 | % |
| Space between main and sub beam | Disc surface | - | 19.7 | - | μm |

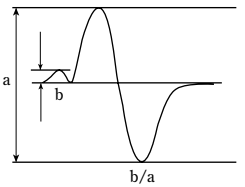
※1 Amplitude of D1+D2+D3+D4 (focal servo ON, radial servo ON)

※2 Amplitude of D1–D4 (focal servo ON)

※3



※4




## ■ Optical Characteristics of Hologram Device (Design Standard*)

(Tc=25°C)

| Parameter | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|
| Transmissive wave aberration | – | - | - | λ/8 | - |
| Surface parallelism | – | - | - | 5 | min. |
| Hologram diffraction efficiency (0 : 1) | $\lambda_p$=780nm | - | 80 : 8 | - | % |
| Grating diffraction intensity ratio (0 : 1) | | 9 : 1 | 10.5 : 1 | 12 : 1 | - |
| Grating diffraction intensity ratio (+1 : -1) | | 0.9 | 1 | 1.1 | - |
| Grating rotation angle | to hologram parting line | - | 1.16 | - | ° |

## ■ Electro-optical Characteristics of Laser Diode (Without Hologram Device) (Design Standard*)

(Tc=25°C)

| Parameter | | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|---|
| Half intensity angle | | Parallel | θ// | Po=33mW | 8.5 | - | 13 | ° |
| | | Perpendicular | θ⊥ | | 14 | - | 26 | ° |
| Emission characteristics | Deviation angle | Parallel | ø// | | -2 | - | +2 | ° |
| | | Perpendicular | ø⊥ | | -3 | - | +3 | ° |
| Emission characteristics, Beam shift | | | | Δø// at Po=33/3mW | -0.7 | - | +0.7 | ° |
| Misalignment position | | | ΔX, Y, Z | – | -80 | - | +80 | μm |
| Kink | | | LKink | | -15 | - | +15 | % |
| Polarization ratio (TE/TM) | | | | Po=3mW | 50 | - | - | - |
| Polarization angle (TM deviance) | | | | | -7 | - | +7 | ° |
| Chip thickness | | | – | Active layer to chip edge | - | - | 55 | μm |

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

(Tc=25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|
| Reverse voltage | | $V_R$ | $I_R$=10μA | 12.5 | - | 50 | V |
| Terminal capacitance | D2, D3 | $C_t$ | $V_R$=12.5V, f=1MHz | 1.2 | - | 5 | pF |
| | D1, D4 | | | 1.4 | - | 5.8 | |
| Sensitivity | | S | $\lambda_p$=780nm | 0.4 | 0.5 | 0.65 | A/W |
| Response time | D2, D3 | tr, tf | $V_R$=15V, $R_L$=180Ω | - | 10 | 120 | ns |
| | D1, D4 | | | - | 10 | 200 | |

* 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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