

## HOLOGRAM LASER

## LT0H34P

Hologram Laser(3 beam) for MD players/recorders

## ■ Features

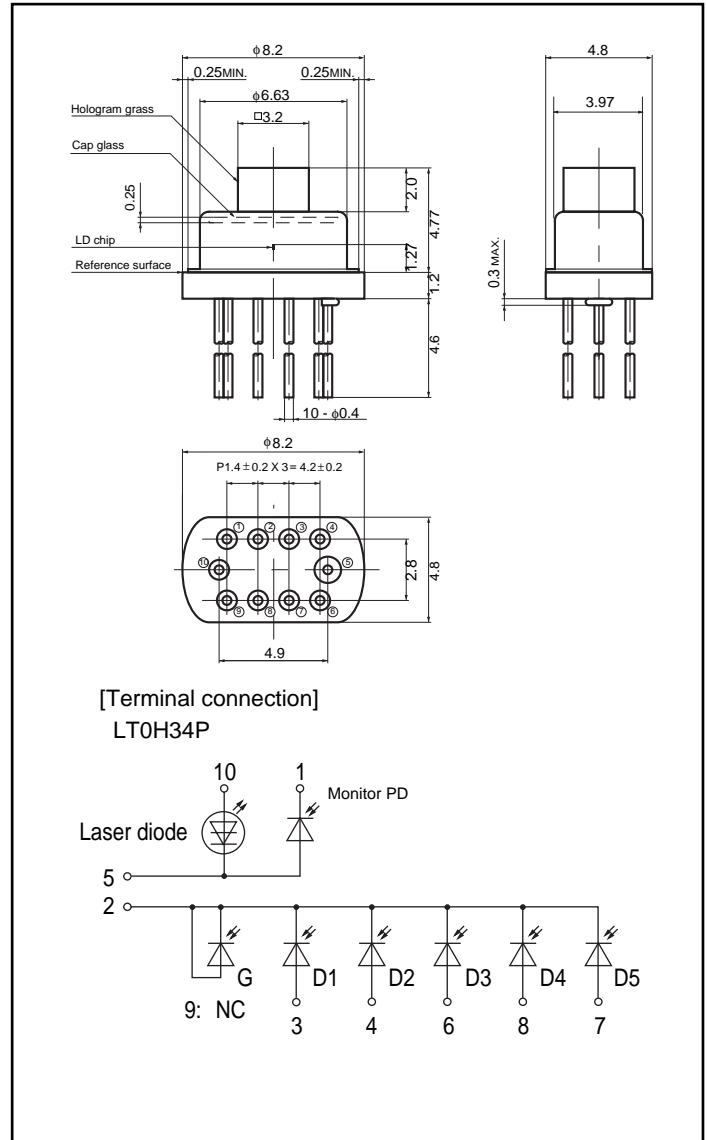
- (1) Compact package with high power output (MAX. 35mW)
- (2) Enables to design compact pick-up thanks to compact package. (Thickness; 4.8mm)
- (3) Since its semiconductor laser, signal detection photocell, and circuit array are assembled in a package, the optical pick is simple in assembling and adjustment
- (4) The adjustment during pickup assembly is eased and can easily be automated.

## ■ Applications

- (1) MD players/recorders

## ■ Outline Dimensions

(Unit: mm)



## ■ Absolute Maximum Ratings

| Parameter                | Symbol                          | Ratings         | Units |
|--------------------------|---------------------------------|-----------------|-------|
| Optical power output *1  | $P_H$                           | 32              | mW    |
| Reverse voltage          | Laser                           | 2               | V     |
|                          | Monitor photodiode              | 30              |       |
|                          | Photodiode for signal detection | 15              |       |
| Operating temperature *2 | $T_{opr}$                       | -10 to +60      | °C    |
| Storage temperature *2   | $T_{stg}$                       | -40 to +85      | °C    |
| Soldering temperature *3 | $T_{sol}$                       | 260(5s or less) | °C    |

- \*1 Output power from hologram laser  
 \*2 Case temperature  
 \*3 At the position of 1.6mm from the bottom face of resin package.

(Notice)

- In the absence of device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

- Specifications are subject to change without notice for improvement.

(Internet)

- Data for Sharp's optoelectronic/power devices is provided for internet. ( Address <http://www.sharp.co.jp/ecg/>)

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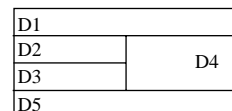
■ Electro-optical Characteristics

(Tc=25°C)

| Parameter                       |                             | Symbol                          | Condition   | MIN   | TYP                       | MAX            | Units |     |    |
|---------------------------------|-----------------------------|---------------------------------|---|---|---------------------------|----------------|-------|-----|----|
| Laser                           | Threshold current           |                                 | I <sub>th</sub>   | -   | 60                        | 80             | mA    |     |    |
|                                 | Operating current           |                                 | I <sub>op</sub>   | P <sub>H</sub> =27.4mW *1                     | -                         | 125            | 150   | mA  |    |
|                                 | Operating voltage           |                                 | V <sub>op</sub>   |   | -                         | 1.8            | 2.2   | V   |    |
|                                 | Wavelength *2               |                                 | λ <sub>p</sub>  |   | 770                       | 785            | 800   | nm  |    |
|                                 | Monitor current             |                                 | I <sub>m</sub>  | P <sub>H</sub> =27.4mW *1, V <sub>R</sub> =5V | -                         | 0.14           | -     | mA  |    |
|                                 | Radiation Characteristics   | Angle                           | Parallel  | θ <sub>//</sub>                               | P <sub>H</sub> =27.4mW *1 | -              | 11    | -   | °  |
|                                 |                             |                                 | Perpendicular   |   |                           | θ <sub>⊥</sub> | -     | 26  | -  |
|                                 | Emission Point accuracy     | Angle                           | Δφ <sub>//</sub>  | -   | -                         | -              | ±1    | °   |    |
|                                 |                             |                                 | Δφ <sub>⊥</sub>   |   | -                         | -              | ±3    | °   |    |
|                                 |                             | Position                        | Δx  |   | -                         | -              | ±30   | μm  |    |
| Δy                              |                             |                                 | -   |   | -                         | ±30            | μm    |     |    |
|                                 |                             | Δz                              | -   | -   | ±80                       | μm             |       |     |    |
| Differential efficiency         |                             | η                               | 18.3mW / (I <sub>op</sub> (27.4mW) - I <sub>op</sub> (9.1mW)) | 0.25  | 0.5                       | 0.85           | mW/mA |     |    |
| Monitor Photodiode              | Dark current                |                                 | I <sub>d</sub>  | V <sub>R</sub> =5V                            |                           | -              | -     | 150 | nA |
|                                 | Terminal capacitance        |                                 | C <sub>t</sub>  | V <sub>R</sub> =5V                            |                           | -              | 20    | -   | pF |
| Photodiode for signal detection | Reverse voltage             |                                 | V <sub>R</sub>  | I <sub>R</sub> =10μA                          | A                         | 15             | -     | -   | V  |
|                                 |                             |                                 |   |   | B                         |                |       |     |    |
|                                 |                             |                                 |   |   | C                         |                |       |     |    |
|                                 | Dark current                |                                 | I <sub>d</sub>  | V <sub>R</sub> =1.5V                          | A                         | -              | -     | 10  | nA |
|                                 |                             |                                 |   |   | B                         |                |       |     |    |
|                                 |                             |                                 |   |   | C                         |                |       |     |    |
|                                 | Terminal capacitance        |                                 | C <sub>t</sub>  | V <sub>R</sub> =1.5V, f=1MHz                  | A                         | 1.0            | -     | 8   | pF |
|                                 |                             |                                 |   |   | B                         |                |       |     |    |
|                                 |                             |                                 |   |   | C                         |                |       |     |    |
|                                 | Short circuit current *3 *4 |                                 | I <sub>sc</sub>   | E <sub>v</sub> =1000Lx                        | A                         | 120            | 210   | -   | nA |
|                                 |                             |                                 |   |   | B                         |                |       |     |    |
|                                 |                             |                                 |   |   | C                         |                |       |     |    |
| Response time *5                |                             | t <sub>r</sub> , t <sub>f</sub> | V <sub>R</sub> =1.5V, R <sub>L</sub> =180Ω                    | A   | -                         | -              | 660   | ns  |    |
|                                 |                             |                                 |   | B   |                           |                |       |     |    |
|                                 |                             |                                 |   | C   |                           |                |       |     |    |

- \*1 Output power form LD chip
- \*2 Oscillation mode: TEM<sub>00</sub>
- \*3 Values in each element. Elements other than subject elements shall be measured while the anode and the cathode are short-circuited to each other
- \*4 Short-circuit currents between segments D1 and D5 or D3 and D4 shall be within ±10% of the average
- \*5 E<sub>v</sub>: Illuminance by CIE standard light source A (tungsten lamp)
- \*6 Measuring method is shown below.

\*7  Applicable divisions correspond to pattern segment No.



Segment No.  
 D1, D5 ..... A  
 D2, D3 ..... B  
 D4 ..... C

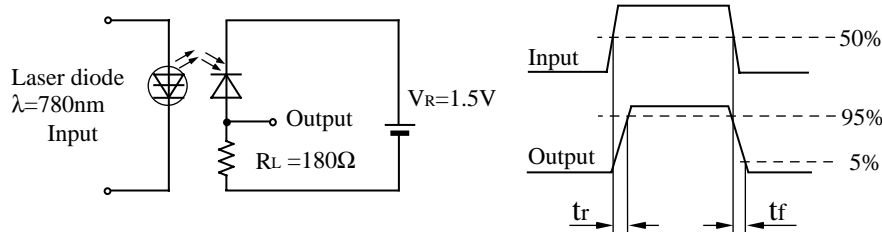


Fig.1

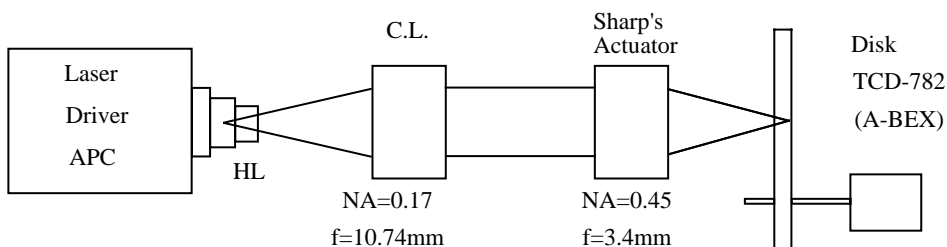
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■ Electro-optical Characteristics \*1 (Tc=25°C)

| Parameter                         | Condition                                   | MIN  | TYP  | MAX  | Units  |
|-----------------------------------|---|------|------|------|--------|
| Focus error signal offsetting *2  | Values at<br>FES output amplitude<br>5μAp-p | -0.4 | 0    | +0.4 | μm     |
| Lead-in for focus error signal *3 |   | 10   | 19   | 30   | μm     |
| RF Output amplitude (D2+D3+D4)*4  |   | 5    | 10   | -    | μA p-p |
| RES Output amplitude (D1-D5) *5   |   | 0.3  | 0.55 | 1.0  | μA p-p |
| Radial error balance *6           |   | -20  | -    | 20   | %      |

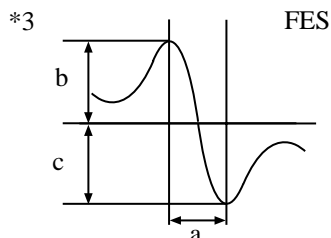
D1,D2,D3,D4,D5: Refer to pattern segment No. (Fig.1)

\*1 Measuring method is shown below.



Measuring method of electro-optical characteristics

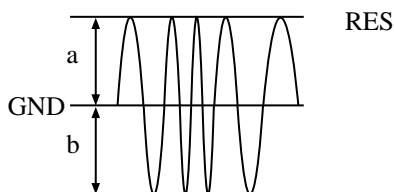
\*2 Distance between FES=0 and jitter Min. point



\*4 Focus/radial servo is ON-state

\*5 RES output amplitude: under the condition that only focus servo is effected

\*6 
$$\frac{(a - b) / 2}{a + b}$$



Factors \*2 to \*6 are measured with high-reflection disk (TCD782 made by A-BEX) at 3μAp-p of FES output amplitude  
3μAp-p of the FES output amplitude is set through focusing oscillation