

LT0H43M

Hologram Laser for X16 CD-ROM(3-beam)

■ Features

- (1) With built-in high speed OPIC[®] (TYP.28MHz) for ×16 speed CD-ROM drive
- (2) Voltage output type(External noise solution is unnecessary.)
- (3) Maximum optical power output : 4.0mW^{※1}
- (4) Wavelength : 780nm
- (5) High temperature operation (MAX. 70°C)

[※]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.

■ Model No.

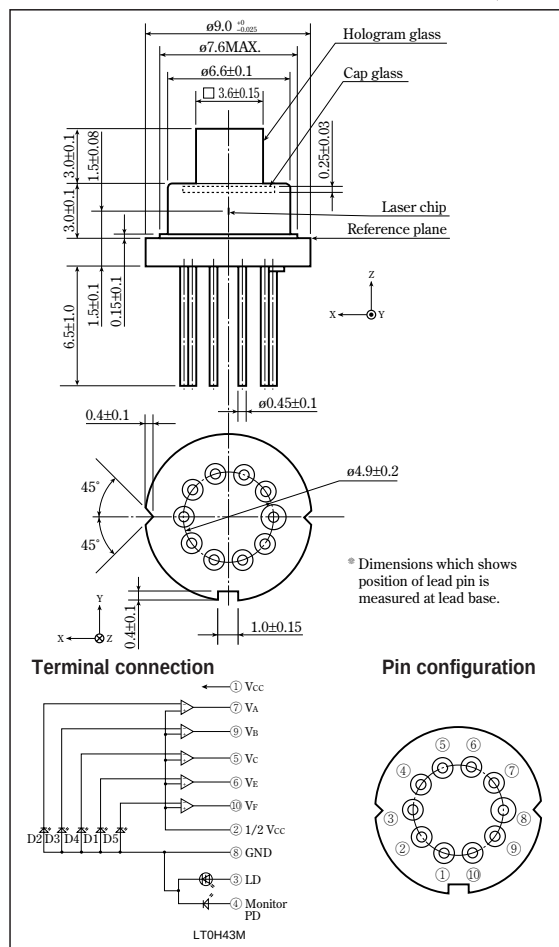
- (1) LT0H43M....Dual power supply

■ Applications

- (1) CD-ROM drives

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_c=25°C)

Parameter	Symbol	Rating	Unit
^{※1} Optical power output	P _H	4.0	mW
Reverse voltage	V _R	2	V
		30	V
OPIC supply voltage	V _{CC}	6	V
^{※2} Operating temperature	T _{opr}	-10 to +70	°C
^{※2} Storage temperature	T _{stg}	-40 to +85	°C
^{※3} Soldering temperature	T _{sold}	260(5s or less)	°C

^{※1} Output power from hologram laser

^{※2} Case temperature

^{※3} At the position of 1.6mm or more from the lead base

SHARP

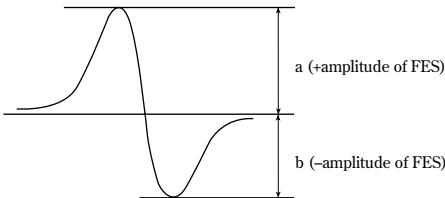
■ Electro-optical Characteristics

(Tc=25°C)

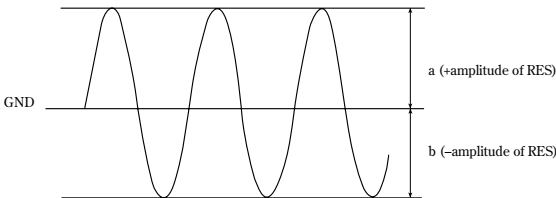
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
① Focal offset	DEF	V _{RF} =0.55V	-0.5	-	+0.5	μm
② Focal error symmetry	B _{FES}	V _{RF} =0.55V	-20	-	+20	%
③ Radial error balance	B _{RES}	P _H =3.0mW	-20	-	+20	%
④ RF output amplitude	V _{RF}	P _H =3.0mW	0.41	0.90	-	V _{pp}
⑤ FES output amplitude	V _{FES}	V _{RF} =0.55V	0.23	0.35	0.47	V _{pp}
	I _{FES}					
⑥ RES output amplitude	V _{RES}	V _{RF} =0.55V	0.08	0.12	0.16	V _{pp}
	I _{RES}					
Threshold current	I _{th}	—	-	45	60	mA
Operating current	I _{op}	P _H =2.5mW	-	55	80	mA
Operating voltage	V _{op}	P _H =2.5mW	-	1.75	2.5	V
Wavelength	λ _p	P _H =2.5mW	770	780	795	nm
Monitor current	I _m	P _H =2.5mW, V _R =15V	0.11	0.40	0.88	mA
Differential efficiency	η	$\frac{1.7\text{mW}}{I(2.5\text{mW})-I(0.8\text{mW})}$	0.12	0.25	0.52	mW/mA

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

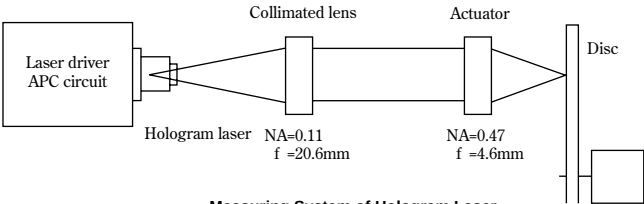
② (a-b) / (a+b)



③ $\frac{a-b}{2 \times (a+b)}$ including offset of hologram laser



- ④ Amplitude of V_A+V_B+2V_C (focal servo ON, radial servo ON)
- ⑤ V_B-V_A (Focal vibration)
- ⑥ V_E-V_F (focal servo ON, radial servo OFF)



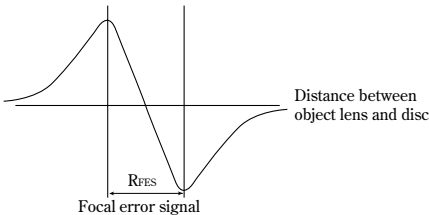
Measuring System of Hologram Laser

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
① Focal dynamic range	R _{FES}	—	-	12	-	μm
② FES sensitivity	S _{FES}	—	-	20	-	%/μm

①

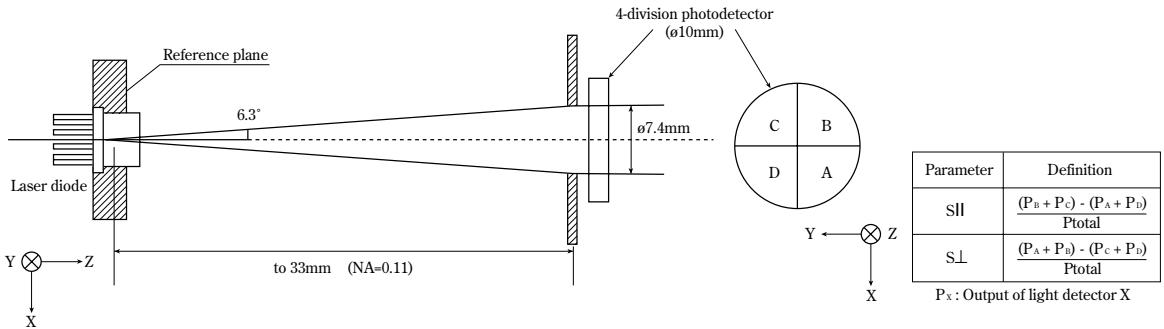
② FES amplitude: 100%. Practical value



■ Electro-optical Characteristics of Laser Diode (Design Standard) (Tc=25°C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Radiation characteristics	※1 Symmetry	Parallel	S	Po=3mW, into NA=0.11	-25	-	+25	%
		Perpendicular	S _⊥		-15	-	+15	%
Emission point accuracy		Position	Δx	—	-80	-	+80	μm
			Δy	—	-80	-	+80	μm
			Δz	—	-80	-	+80	μm

※1 Measuring method of radiation symmetry



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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※1 Sensitivity	S	V _R =15V	-	0.16	-	mA/mW
Dark current	I _d	V _R =15V	-	-	150	nA
Terminal capacitance	C _t	V _R =15V	-	3.5	-	pF

※1 For hologram output power

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	※1 Segment
Supply voltage	V _{CC}		4.5	-	5.5	V	
Supply current	I _{CC}	V _{CC} =5V	2.0	4.5	9.0	mA	
※2 Output off-set voltage	V _{OD}	V _{CC} =5V, No light	-15	0	+15	mV	V _A to V _F
Off-set voltage difference	ΔV _{OD}		-15	0	+15	mV	V _A , V _B , V _E -V _F
※3 Response frequency	f _{CF}	※4 -3dB	24	28	-	MHz	V _A , V _B , V _C
	f _{CR}	-3dB	1.0	2.0	-	MHz	V _E , V _F
※3 Peaking level	V _{PK1}	f=0.1 to 17MHz	-1	0	+1	dB	V _A , V _B , V _C
	V _{PK2}	f=0.1MHz to	-	-	+2	dB	V _A , V _B , V _C

※1 Applicable divisions correspond to pattern segment No.

※2 Difference from V_{CC}/2

※3 Output amplitude=0dB(input signal 100kHz)

※4 f_{CF}=(f_C(V_A)-f_C(V_B)+2f_C(V_C)) / 4

※5 BW=10KHz

Segment No.		output
D1	D4	V _E
D2		V _A
D3		V _B
D4		V _C
D5		V _F

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:
 - (i) The devices in this publication are designed for use in general electronic equipment designs such as:
 - Personal computers
 - Office automation equipment
 - Telecommunication equipment [terminal]
 - Test and measurement equipment
 - Industrial control
 - Audio visual equipment
 - Consumer electronics
 - (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
 - Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
 - Traffic signals
 - Gas leakage sensor breakers
 - Alarm equipment
 - Various safety devices, etc.
 - (iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
 - Space applications
 - Telecommunication equipment [trunk lines]
 - Nuclear power control equipment
 - Medical and other life support equipment (e.g., scuba).
- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
- This publication is the proprietary product of SHARP and is copyrighted, with all rights reserved. Under the copyright laws, no part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, in whole or in part, without the express written permission of SHARP. Express written permission is also required before any use of this publication may be made by a third party.
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.