LT0H60I/LT0H60I9

High Power Hologram Laser for CD-R/CD-RW

■ Features

(1) High power (Maximum optical power output : Max. 53mW※1)
(×4 CD-R writable, ×2 CD-RW rewritable)
(2) Enables to design compact pick-up thanks to compact package (Thickness: 4.8mm)
(3) Gain switching (writing/reading)
(4) Wavelength : 770nm to 795nm
(5) Built-in Opic light detector (response frequency MIN. 22MHz)

※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.

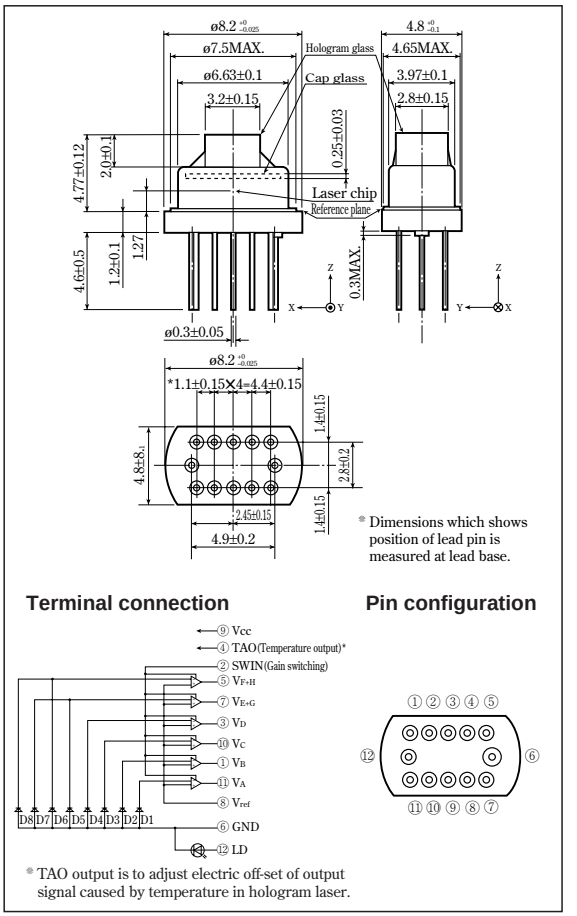
(1) LT0H60I .....773nm to 797nm
(2) LT0H60I9 .....770nm to 790nm

■ Applications

(1) CD-R / CD-RW equipment

■ Outline Dimensions

(Unit : mm)



Terminal connection

Pin configuration

※ TAO output is to adjust electric off-set of output signal caused by temperature in hologram laser.

■ Absolute Maximum Ratings

(Tc=25˚C)

Parameter		Symbol	Rating	Unit
※1 Optical power output	※4 CW	PH	53	mW
	※5 Pulse		71	mW
Laser reverse voltage		VR	2	V
OPIC supply voltage		VCC	8	V
※2 Operating temperature		Topr	-0 to +60	˚C
※2 Storage temperature		Tstg	-40 to +85	˚C
※3 Soldering temperature		Tsold	260(5 s 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
※4 CW (Continuous Wave) drive
※5 Pulse width : 0.4μs, duty : 0.1%

■ Electro-optical Characteristics

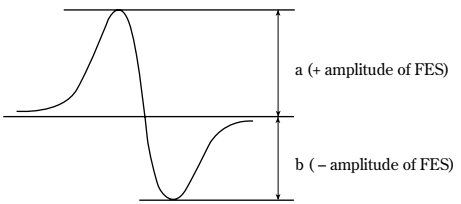
(Vcc=5V, Tc=25°C)

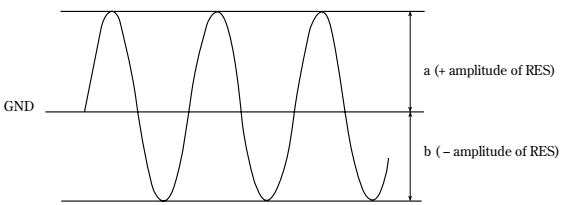
Parameter	Symbol	Conditions		MIN.	TYP.	MAX.	Unit
※1 Focal offset	DEF	Collimated lens output power 1.5mW High gain		-0.7	-	+0.7	μm
※2 Focal error symmetry	B_{FES}	Collimated lens output power 1.5mW High gain		-25	-	+25	%
※3 Radial error balance	B_{RES}	Collimated lens output power 1.5mW High gain		-25	-	+25	%
※4 RF output amplitude High gain	V_{RFH}	Collimated lens output power 1.5mW		0.21	0.55	1.0	V_{p-p}
※5 FES output amplitude	V_{FES}	Collimated lens output power 1.5mW High gain		0.26	0.64	1.0	V_{p-p}
	I_{FES}						
※6 RES output amplitude	V_{RES}	Collimated lens output power 1.5mW High gain		0.09	0.26	0.44	V_{p-p}
	I_{RES}						
Threshold current	I_{th}	-		20	33	45	mA
Operating current	I_{op}	Optical power output from cap 1.5mW	T_C=25℃	-	90	120	mA
	I_{oph}	Optical power output from cap 1.5mW	T_C=60℃	-	-	170	mA
Operating voltage	V_{op}	Optical power output from cap 1.5mW		1.7	-	2.5	V
Wavelength	λ_p	Optical power output from cap 1.5mW	LT0H60I	773	793	797	nm
			LT0H60I9	770	-	790	nm
Differential efficiency	η	$\frac{40mW}{I(40mW)-I(6.5mW)}$		0.55	0.7	0.84	mW/mA

※1 Distance between FES=0 and jitter minimum point

※2 (a–b) / (a+b)

※3 $\frac{(a-b)}{2\times(a+b)}$



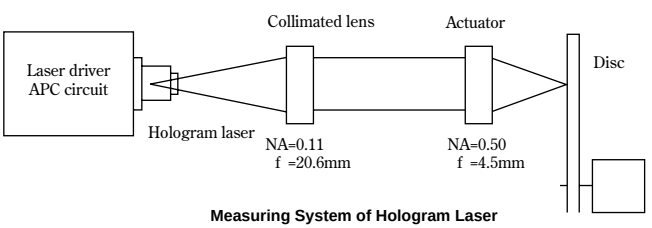


※4 Amplitude of $V_A+V_B+V_C+V_D$ (focal servo ON, radial servo ON)

※5 $V_B–V_A$ (Focal vibration)

※6 $(V_C–V_D)$-k1$(V_{E+G}–V_{F+H})$ (focal servo ON, radial servo OFF)
k1=(V_C+V_B) / $(V_{E+G}+V_{F+H})$

※7 (V_A+V_B) / (V_C+V_D)

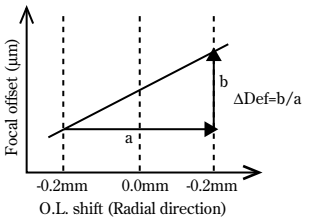


Measuring System of Hologram Laser

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※8 Shift defocus	ΔD_{ef}	O.L. shift=0.0mm RF output amplitude=0.47$V_{P\text{-}P}$	-0.4	-	+0.4	µm/mm

※8 Defocal offset when object lens is shifted -0.2mm to +0.2mm.



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

(Tc=25˚C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Radiation characteristics	θ∥	Optical power output from cap= 40mW	8.0	10.0	12.0	˚
	θ⊥	Optical power output from cap= 40mW	17.1	23.0	25.5	˚
	θ∥	Optical power output from cap= 40mW	-2.0	-	2.0	˚
	θ⊥	Optical power output from cap= 40mW	-3.0	-	3.0	˚
Emission point accuracy	Δx	-	-80	-	+80	µm
	Δy	-	-80	-	+80	µm
	Δz	-	-80	-	+80	µm
※9 SCOOP	-	P_H=1.3mW	-	-	200	%

※9 SCOOP=P1/P2
P1 : LD power witout feed-back light (without hologram, C.L.output power)
P2 : LD power with feed-back light (without hologram, C.L.output power)
Feed-back light is 15% of emitting light.

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

(Tc=25˚C, V_{CC}=5V, Vref=2.1)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	※10 Segment
Supply voltage	V_{CC}	-	4.5	5.0	5.5	V	-
Refrence voltage	V_{ref}	-	2.00	2.1	2.21	V	-
Supply current	$I_{CC}1$	High gain, Gain switching SW=H	-	20	25	mA	-
	$I_{CC}2$	Low gain, Gain switching SW=L	-	30	35	mA	-
Output terminal current	I_O	Common to high/low gain	-0.03	0.01	+0.3	mA	A,B
Reference voltage terminal current	I_{ref}	Common to high/low gain , No light	-0.5	1.0	+2.0	mA	
※11 Output off-set voltage	V_{od}	Common to high/low gain , No light	-25	2.0	+25	mV	A,B
Off-set voltage difference	ΔV_{od}	Common to high/low gain	-30	-	+30	mV	A,B
Output terminal voltage of temperature sensor	T_{ao}	Common to high/low gain	1.8	2.2	2.6	V	
※12 Response frequency	f_{cm}	Common to high/low gain , -3dB	22	26	-	MHz	A
	f_{cs}	Common to high/low gain , -3dB	1.0	2.0	-	MHz	B
Peaking level	V_{pk1}	Common to high/low gain f=0.1 to 17MHz	-1.0	0	+1.0	dB	A
	V_{pk2}	Common to high/low gain f=0.1 to 30MHz	-	-	2.0	dB	B
Noise level	f_{nm}	High gain 50Ω end BW=30kHz, f=17.3MHz	-	-74	-70	dBm	A

※10 Applicable divisions correspond to pattern segment No.
A : V_A, V_B, V_C, V_D
B : V_{E+G}, V_{F+H}

※11 Difference from Vref

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

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