

LT0R45M/LT0R45P

Compact Size Hologram Laser for DVD(650nm-Single Mode)

■ Features

- (1) Maximum optical power output : 4.5mW^{*1}
- (2) Wavelength : 650nm band
- (3) With built-in high speed OPIC^{*} (MIN.20MHz)
External noise solution is unnecessary
- (4) Gain switching (writing/reading)
- (5) Compact package (4.8mm thickness)
- (6) 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.

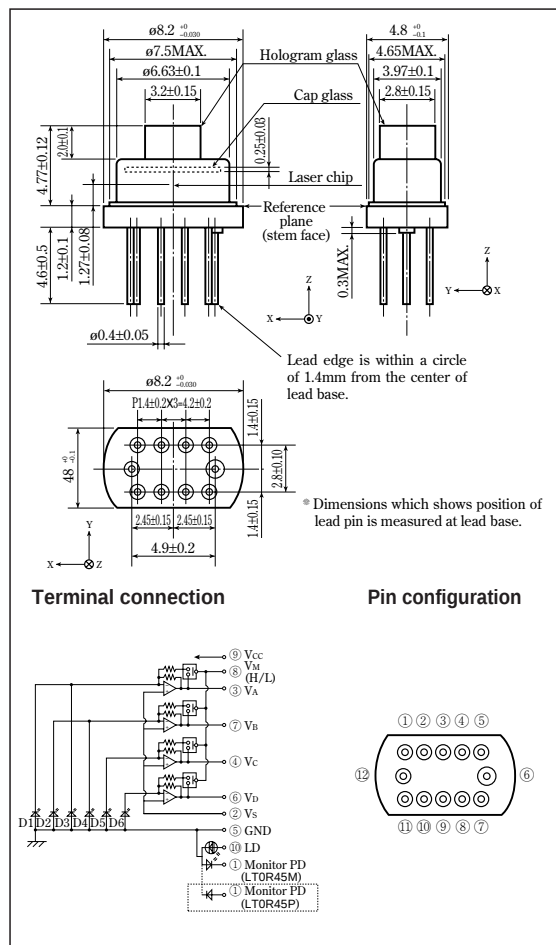
- (1) LT0R45M....Dual power supply
- (2) LT0R45PSingle power supply

■ Applications

- (1) ×2 speed DVD players

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_C=25°C)

Parameter	Symbol	Rating	Unit
^{*1} Optical power output	P _H	4.5	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

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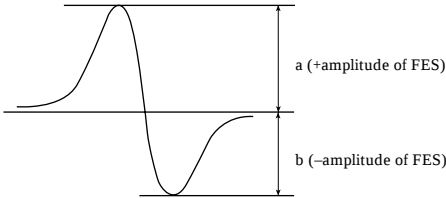
■ Electro-optical Characteristics

(Vcc=5V, Vs=1/2Vcc, Tc=25°C)

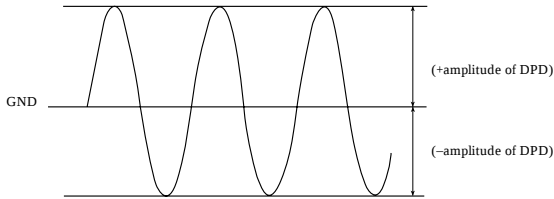
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit		
#1	Focal offset		DEF	V _{RF} =0.34V	-0.7	-	+0.7	μm	
#2	Focal error symmetry		B _{FES}	V _{RF} =0.34V	-25	-	+25	%	
#3	Radial error balance		B _{RES}	P _H =3.0mW	-25	-	+25	%	
#4	RF output amplitude	High gain	V _{RFH}	P _H =3.0mW	0.55	0.75	-	V _{p-p}	
		Low gain	V _{RFL}		0.25	0.34	-	V _{p-p}	
#5	FES output amplitude		V _{FES}	V _{RF} =0.34V	0.12	0.18	0.25	V _{p-p}	
			I _{FES}						
#6	RES (p.p) output amplitude		V _{RES}	V _{RF} =0.34V	t.b.d	t.b.d	t.b.d	V _{p-p}	
			I _{RES}						
Threshold current			I _{th}	—	-	45	75	mA	
Operating current			I _{op}	P _H =2.85mW	-	54	80	mA	
Operating voltage			V _{op}	P _H =2.85mW	-	2.2	3.0	V	
Wavelength			λ _p	P _H =2.85mW	640	654	660	nm	
Polarization mode				P _H =2.85mW	TE				
Monitor current			I _m	P _H =2.85mW, V _R =15V	LT0R45M	0.03	0.08	0.30	mA
					LT0R45P	0.015	0.04	0.15	
Differential efficiency			η	$\frac{1.9\text{mW}}{I(2.85\text{mW})-I(0.95\text{mW})}$	0.13	0.33	0.55	mW / mA	

#1 Distance between FES=0 and jitter minimum point
At the condition of FES sensitivity = 25%/1μm

#2 (a-b) / (a+b)



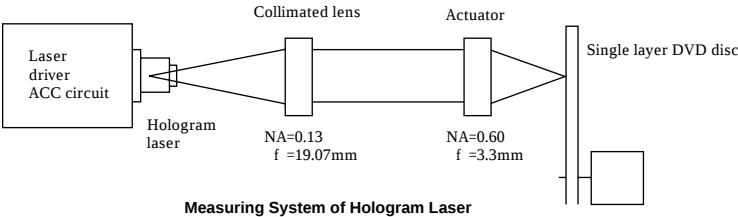
#3 DPD signal $\frac{a-b}{2 \times (a+b)}$



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

#5 V_A-V_B (Focal vibration)

#6 DPD signal amplitude (focal servo ON)

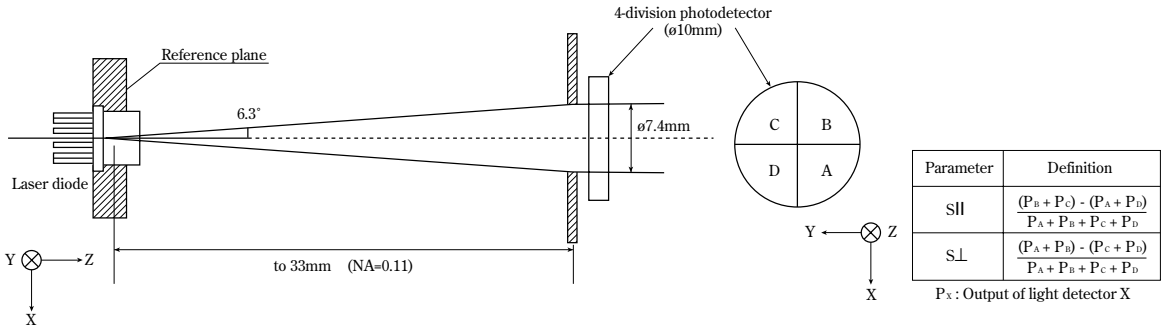


Measuring System of Hologram Laser

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

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Radiation characteristics	※7 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	

※7 Measuring method of radiation symmetry



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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※8 Sensitivity	S	V _R =15V	-	0.028	-	mA/mW
Dark current	I _d	V _R =15V	-	-	150	nA
Terminal capacitance	C _t	V _R =15V	-	9	-	pF

※8 For hologram output power

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	※9 Segment
Supply voltage	V _{CC}	—	4.5	-	5.5	V	-
Supply voltage	V _S	V _S =1/2V _{CC}	2.25	-	2.75	V	-
Supply current	I _{CC}	V _{CC} =5V	3	6	9	mA	-
※10 Output off-set voltage	V _{OD}	V _{CC} =5V	-15	0	+15	mV	V _A ,V _B ,V _C ,V _D
Off-set voltage difference	ΔV _{OD}	No light	-15	0	+15	mV	V _A -V _B ,V _C -V _D
Response frequency	f _{CF}	※11 V _{CC} =5V, -3dB	20	-	-	MHz	V _A ,V _B ,V _C ,V _D

※9 Applicable divisions correspond to pattern segment No.

D6	Segment No.	Output
D4	D1+D2	V _A
D3	D3+D4	V _B
D2	D5	V _C
D1	D6	V _D
D5		

※10 Difference from V_{CC}/2

※11 Output amplitude=0dB (input signal 100kHz)
6μW/segment when input light is 650nm.
Load resistance R_L=10kΩ, load capacitance C_L=10pF

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