

GH5R41MA3C

High Power Output Hologram Laser for MAX. X48 Speed CD-R Drive

Features

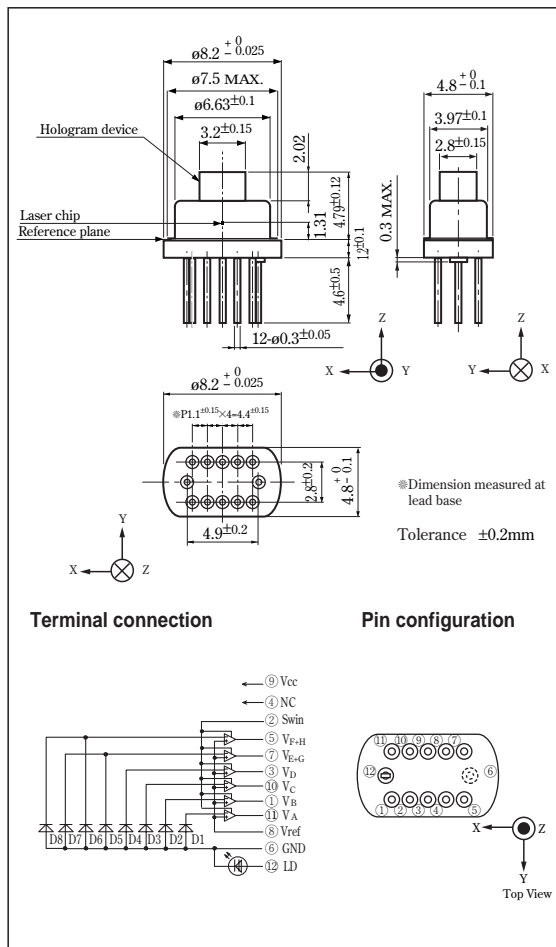
- (1) High power output (pulse MAX. 180mW)
- (2) For MAX. X48 speed CD-R, X40 speed CD-ROM (With built-in MIN. 45MHz OPIC[®])
- (3) High coupling efficiency
The ellipticity ($\theta_L/\theta_{//}$) is close to 1.
- (4) $\phi 4.8$ mm thickness package
- (5) With built-in beam splitter and diffraction grating

Applications

- (1) CD-R drives
- (2) CD-RW drives

Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

(T_c=25°C)

Parameter	Symbol	Rating	Unit
※1 Optical power output	P _{HC}	108	mW
※2 Optical power output (pulse)	P _{HP}	180	mW
Reverse voltage	V _R	2	V
OPIC supply voltage	V _{CC}	6	V
※3,4 Operating temperature	T _{opr}	0 to +70	°C
※3 Storage temperature	T _{stg}	-40 to +85	°C
※5 Soldering temperature	T _{sold}	260	°C

※1 Output power from hologram laser Equivalent to 120mW (CW) from cap

※2 Output power from hologram laser Equivalent to 200mW (pulse) from cap (Pulse width : 0.5 μ s, Duty : 50%)

※3 Case temperature ※4 Pulse operation, CW operation ※5 At the position of 1.6mm from the lead base (Within 5s)

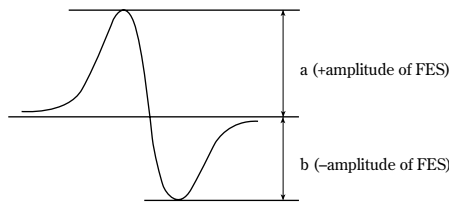
■ Electro-optical Characteristics

(T_c=25°C)

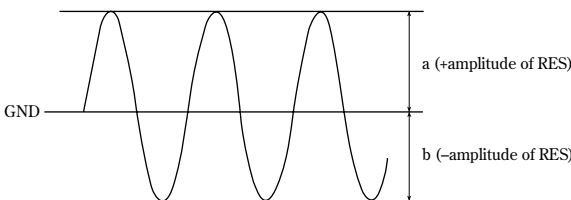
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
#1 Focal offset	DEF	Collimated lens output power 1.5mW, High gain	-0.7	-	+0.7	μm
#2 Focal error symmetry	B _{FES}	Collimated lens output power 1.5mW, High gain	-25	-	+25	%
#3 Radial error balance	B _{RES}	Collimated lens output power 1.5mW, High gain	-25	-	+25	%
#4 RF output amplitude	V _{RFH}	Collimated lens output power 1.5mW, High gain	0.65	1.00	1.6	V
#5 FES output amplitude	V _{FES}	Collimated lens output power 1.5mW, High gain	0.3	0.59	0.94	V
#6 RES output amplitude	V _{RES}	Collimated lens output power 1.5mW, High gain	0.09	0.19	0.3	V
#7 Main spot balance	MSB	Collimated lens output power 1.5mW, High gain	80	(100)	120	%
#8 Sub spot balance	SSB	Collimated lens output power 1.5mW, High gain	80	(100)	120	%
Jitter	JIT	Collimated lens output power 1.5mW, High gain	-	-	23	ns
#9 Strain of RF signal shape	RF _h	Collimated lens output power 1.5mW, High gain	-	-	300	%

#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)

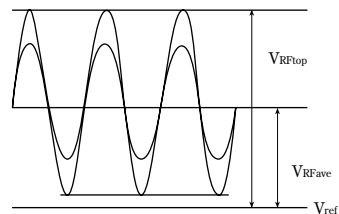
#5 V_B-V_A (Focal vibration)

#6 Amplitude of $(V_C-V_D)-k_1(V_E+G-V_F+H)$. $k_1=(V_C+V_D)/(V_E+G+V_F+H)=1$
When tracking servo is ON, $(V_C-V_D)-k_1(V_E+G-V_F+H)+\alpha$ should be 0.

#7 $(V_A+V_B) / (V_C+V_D)$

#8 V_C/V_D

#9 V_{RFTop}/V_{RFave}



■ Electro-optical Characteristics of Laser Diode

(T_C=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Threshold current		I _{th}	-	-	30	41	mA	
Operating current		I _{op}	Po=100mW	-	141	167	mA	
Operating voltage		V _{op}	Po=100mW	-	2.2	2.5	V	
Wavelength		λ _p	Po=100mW	773	784	797	nm	
Differential efficiency		η _d	$\frac{90\text{mW}}{I(100\text{mW})-I(10\text{mW})}$	0.7	0.85	1.2	mW/mA	
Stability of differential efficiency		Δη _d	Po=10 to 180mW	-	-	50	%	
Half intensity angle		Parallel	Po=100mW	7.5	9	10.5	°	
		Perpendicular		θ _⊥	14.5	17	19.5	°
Emission characteristics		Parallel		θ//	-2	-	+2	°
		Perpendicular		θ _⊥	-3	-	+3	°
Beam shift		Δθ//		θ//(100mW)-θ//(3mW)	-1	-	+1	°
Kink		K-LI1		Po=10 to 200mW	0.988	-	-	%
		K-LI2	P1=40mW, P2=120mW, P3=200mW	-	-	15	%	

■ Electro-optical Characteristics of OPIC for Signal Detection^{*10}

(T_C=25°C, V_{CC}=5V, V_{ref}=2.1V)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	#11 Segment
Supply current		I _{CC1}	High gain, Gain switching SW=H	-	25	32	mA	
		I _{CC2}	Low gain, Gain switching SW=L	-	30	35	mA	
*12 Output offset voltage		V _{od}	Common to high/low gain, No light	-25	2	+25	mV	A, B
Offset voltage difference, Gain switching		ΔV _{od}	Common to high/low gain	-30	-	+30	mV	A, B

*9 0.1μF or more capacitor should be added between OPIC power supply terminal and GND, V_{ref} terminal and GND. (at the position of 5mm or less from the lead base)

*10 Applicable divisions correspond to output terminals .

A : V_A, V_B, V_C, V_D

B : V_{E+G}, V_{F+H}

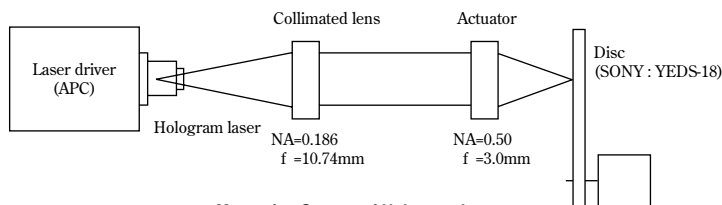
*11 Difference from V_{ref}

■ Electro-optical Characteristics of Hologram Laser (Design Standard*)^{*1}

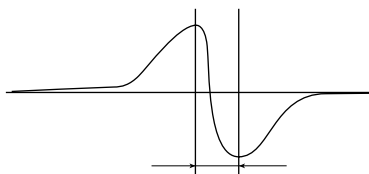
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Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*2 Focal error signal capture range	-	-	-	14	-	μm
Focal error signal sensitivity	-	-	-	13	-	%/μm

*1



*2



* These parameters are not guaranteed performance, but general specifications of each optical element which makes up a hologram laser.

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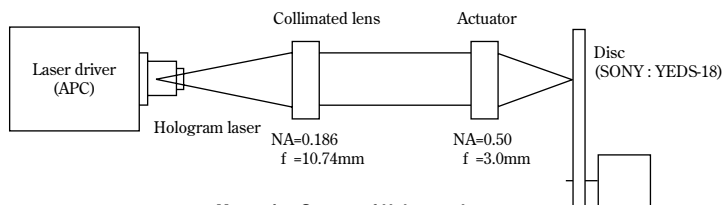
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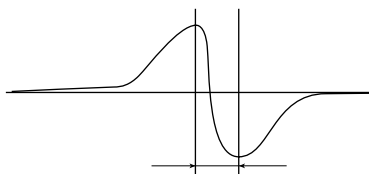
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^{*1}



^{*2}



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