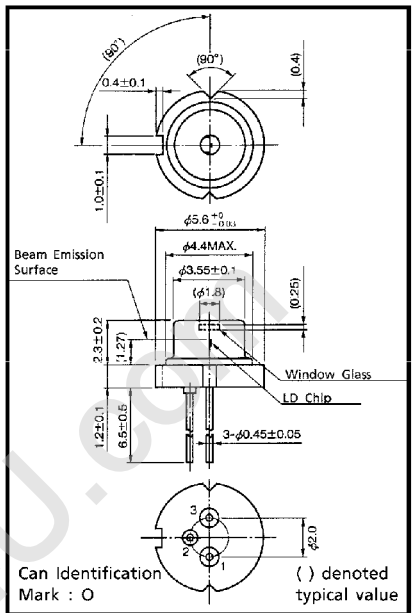
TOSHIBA LASER DAIODE InGaAlP

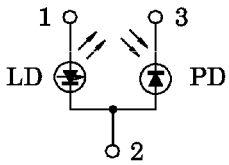
TOLD9441MC

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	15-4A1

- Lasing Wavelength : $\lambda_p = 650$nm (Typ.)
- Optical Output Power : $P_O = 5$mW
- Operation Case Temperature : Tc = −10~70°C
- Pin Connection



1. LASER DIODE ANODE
2. LASER DIODE CATHODE
   PHOTODIODE ANODE
3. PHOTODIODE CATHODE

MAXIMUM RATINGS (Tc = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Optical Output Power (CW)	P_O	7	mW
LD Reverse Voltage	$V_{R\,(LD)}$	2	V
PD Reverse Voltage	$V_{R\,(PD)}$	30	V
Operation Case Temperature	Tc	−10~70	°C
Storage Temperature	T_{stg}	−40~85	°C

OPTICAL-ELECTRICAL CHARACTERISTICS (Tc = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Threshold Current	I_{th}	CW Operation	—	40	70	mA
Operation Current	I_{op}	$P_O = 5$mW	—	50	80	mA
Operation Voltage	V_{op}	$P_O = 5$mW	—	2.2	3.0	V
Lasing Wavelength	λ_p	$P_O = 5$mW	640	650	660	nm
Beam Divergence	$\theta \parallel$	$P_O = 5$mW	5	8	12	°
	$\theta \perp$	$P_O = 5$mW	24	28	35	°
Monitor Current	Im	$P_O = 5$mW	0.07	0.25	0.5	mA
PD Dark Current	$I_{D\,(PD)}$	$V_R = 5$V	—	—	100	nA
PD Total Capacitance	$C_{T\,(PD)}$	$V_R = 5$V, f = 1MHz	—	—	20	pF

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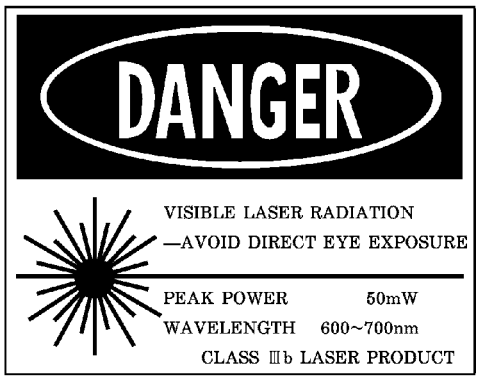
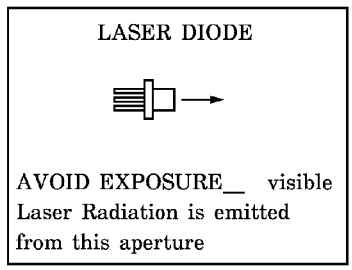
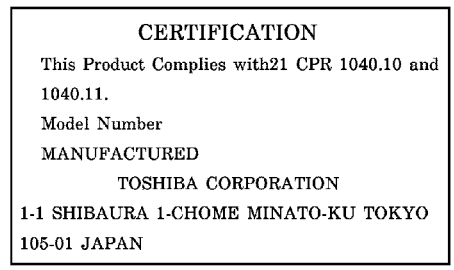
PRECAUTIONS :

1. Be careful never to exceed, even momentarily, the maximum ratings. The laser diode is damaged by spike current which can be generated when switching the power ON or OFF. Before activating laser diodes, check the transient state of the power supply to ensure that it will not cause the laser diode to exceed the maximum ratings.
2. Effective heat sinking should be performed, because temperature rise causes decrease of optical output power. Use a thermal radiator to reduce the temperature rise.
3. Prevent electrostatic discharge and electric spike which may damage the laser diode. The following precautions should be taken when using a laser diode.
   1. Set the electrical potential of the work bench to be the same as that of the power supply ground line.
   2. Soldering irons and the operator's body should be grounded.
   3. Do not operate equipment which may generate high frequency surge energy near the laser diode.
4. Do not apply excessive stress between the package and the leads, because it deteriorates hermeticity. If the leads are formed, soldering should be performed after lead forming.
   Soldering temperature : 260°C MAX Soldering time : 5s MAX
   (soldering portion of leads : up to 2mm from the body of the device)
5. Take care not to touch the window glass. Contamination and scratches on the window glass surface will result in decreased optical output power and distorted far-field patterns.
6. Do not look at the laser beam directly or through lenses when the laser diode is activated. The laser beam emitted by laser diode is harmful if aimed directly into human eye.



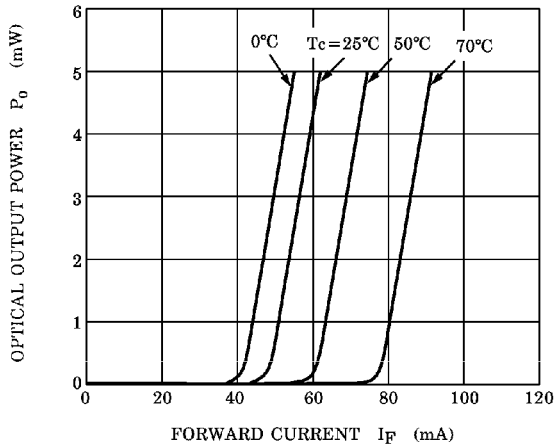




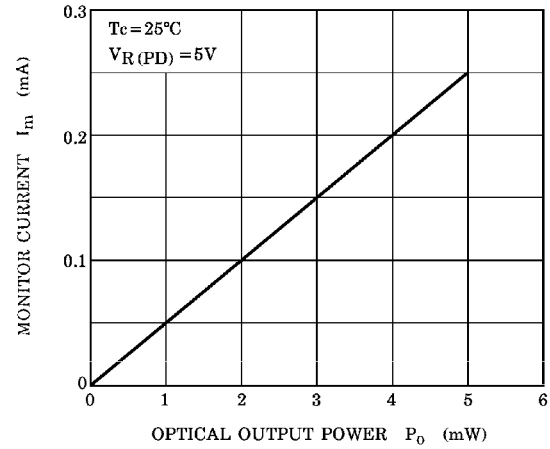
7. Toshiba Visible Laser Diodes are available in two types of carton to which the following warning labels are attached : –
   1. Envelope Package (1 piece) : warning labels are included on the reverse side of the individual envelope
   2. Tray Package (200 pieces) warning labels are attached to the top of the external carton that contains the tray.

   (*) due to the small size of the laser diodes, the warning labels are placed on the laser diode packaging and not on the individual laser diodes.

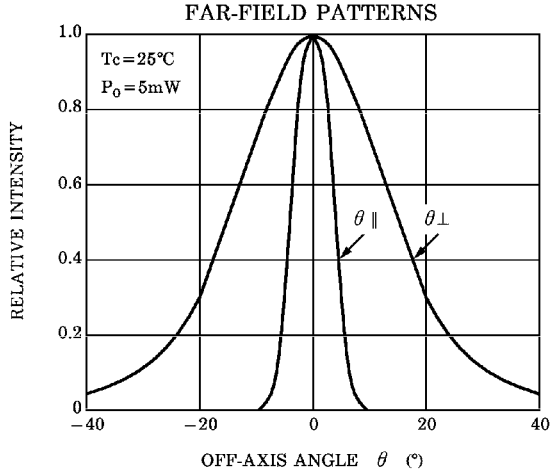
OPTICAL OUTPUT POWER – FORWARD CURRENT



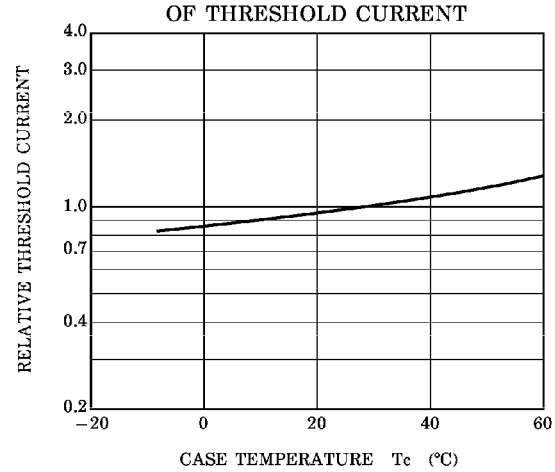
MONITOR CURRENT – OPTICAL OUTPUT POWER



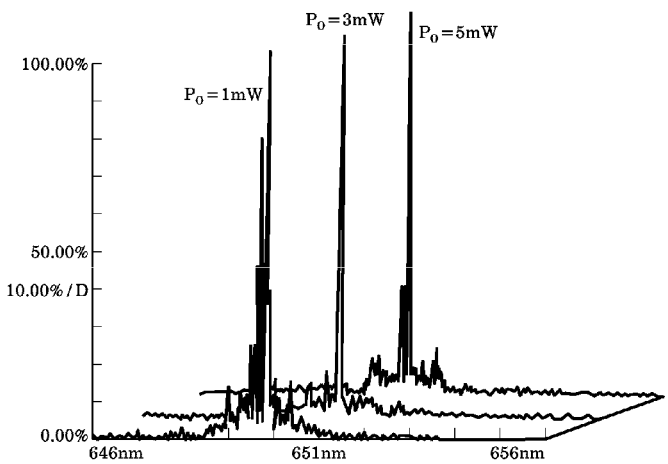
FAR-FIELD PATTERNS



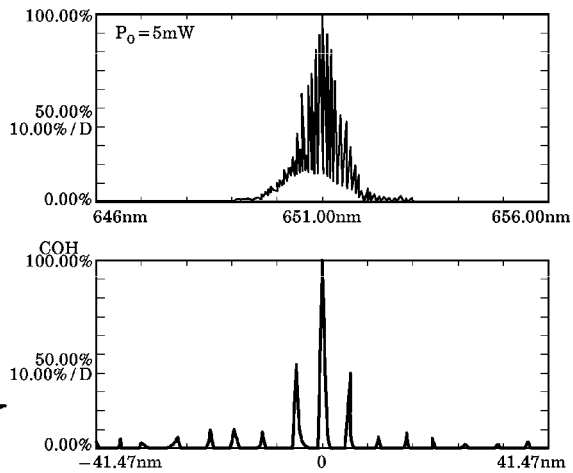
CASE TEMPERATURE DEPENDENCE OF THRESHOLD CURRENT



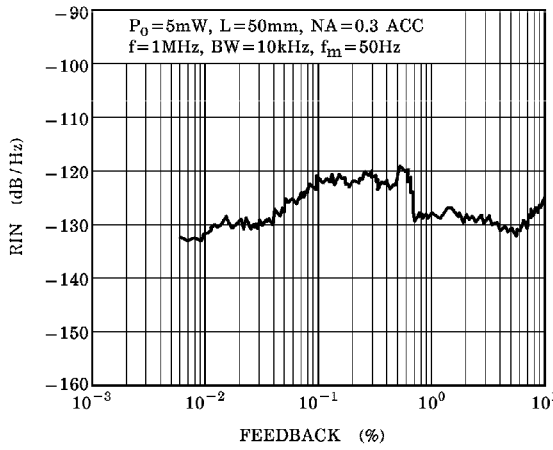
LASING SPECTRUM



LASING SPECTRUM AND VISIBILITY UNDER HIGH FREQUENCY MODULATION



RELATIVE INTENSITY NOISE



RELATIVE INTENSITY NOISE
WITH HIGH FREQUENCY MODULATION
(f=500MHz)