Visible APC Laser Module   **LMAPCD-650-01**

Φ4mm 650nm Laser Module

Features

1. APC (auto power control) IC inside
2. Low current consumption of the APC circuit
3. Much smaller LD module, uses 3.3 mm diode
4. Surge current protection
5. High quality lens for output beam

Part No. Indications:

LMAPC D – 650 – 01– XX – A

Pin connection:

A —Heat sink stand (–)

B —Heat sink stand (+)

Output power: C2 — <1mW

C3 — 2~3mW

XX — power set by user

Absolute maximum ratings

Item	Symbol	Rating	Unit
Power supply voltage	V_{cc}	3.3	V
Laser Module optical output power	P_o	<3mW	mW
Operation temperature	T_{opr}	0~40	^{o}C
Storage temperature	T_{stg}	0~60	^{o}C

Electrical and optical characteristics (T_c=25 ^{o}C)

Item	Symbol		Min.	Typ.	Max	Unit	Condition
Wavelength			645	655	660	nm	P_o=<3mW
Output power	P_{out}	C2	-	0.6	0.9	mW	V_{cc}=3V
		C3	2.2	-	3.0	mW	V_{cc}=3V
Operation current	I_{op}		-	15	25	mA	P_o=3mW V_{cc}=3V
Operation voltage	V_{op}		2.5	-	3.3	Volt	
Laser Beam spot size at 10m	<10mm						
Divergence angle	1.1 mrad						
Mean time to failure (MTTF) 3mW 25°C	>10000 hrs						

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Outline dimensions (Units: mm)
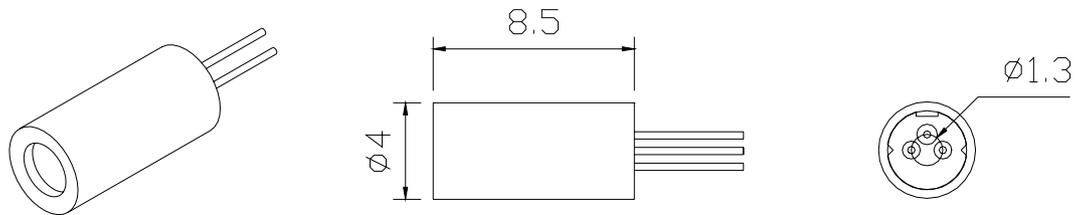
PIN Assignment:
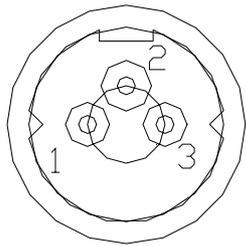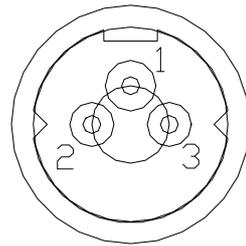
A type : Heat sink stand (–)   **B type** :Heat sink stand (+)

Pin 1 : Vcc

Pin 2 : GND

Pin 3 : (1) PD
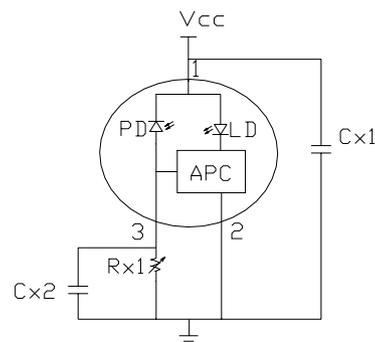
      for LMAPCD-650-01 -XX-A/B

     (2) NC (no external connection)

      for LMAPCD-650-01 -C2/C3-A/B

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Laser power Adjustment Procedure

1. Connect 1 uF capacitor (Cx1) between Pin1 and Pin2.
2. Connect 20~50K ohm variable resistor (Rx1) between Pin2 and Pin3.
3. Set Vcc to the designed value.
4. Adjust Rx1 to obtain the desired output power.
5. Laser Safety Precautions
    (1) Do not increase Vcc value when the laser module is working near the maximum power . That is to protect laser from overdriving condition and make sure power is under 3 mW.
    (2) Do not operate the device above the maximum rating condition, even momentarily.   It may cause unexpected permanent damage to the device.
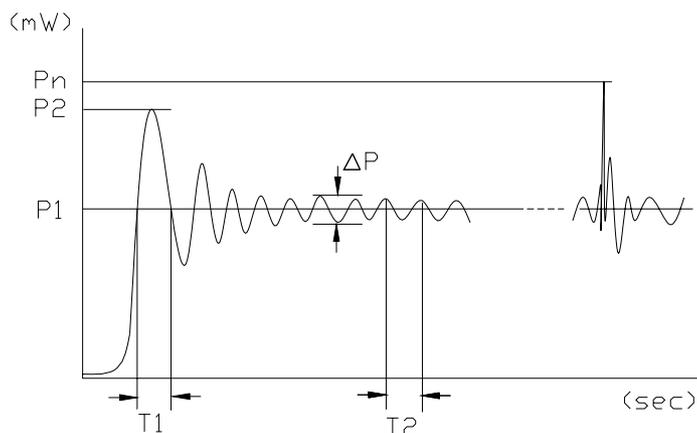
Laser power stability

P1 : 3mW

P2 : < 3.5mW

Pn : <3.5mW

ΔP : < 0.5mW

T1 : < 0.1us

$f2=(1/T2)$: 3MHz

NOTE:

P1 : Mean power

P2 : Max power from turning on power

Pn : Max power from Vcc noise
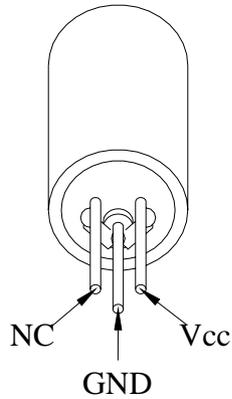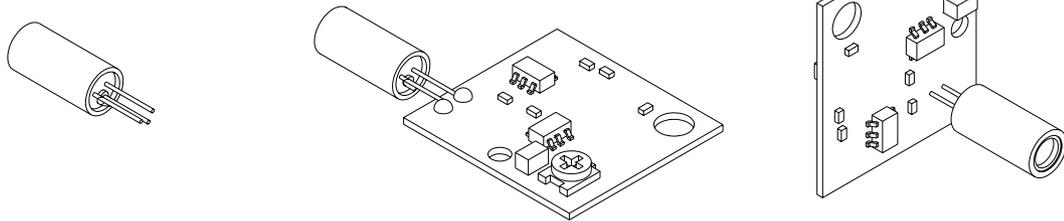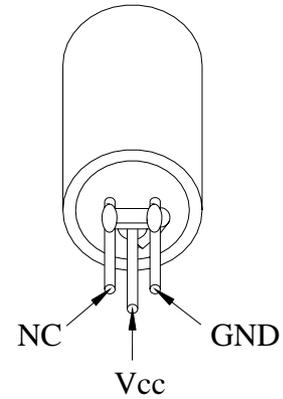
ΔP : Power Amplitude of vibration

T1 : Time between trigger and convergence
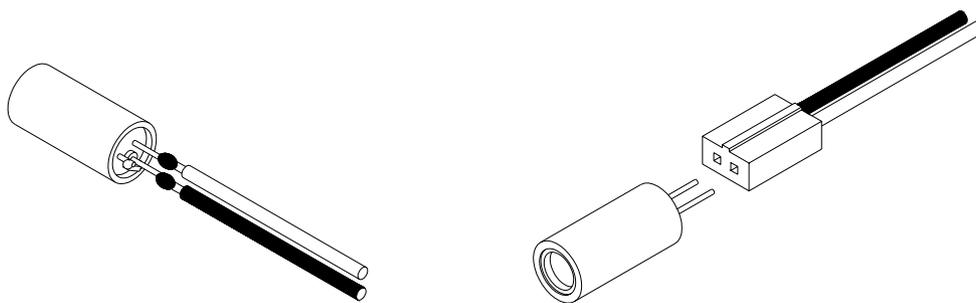
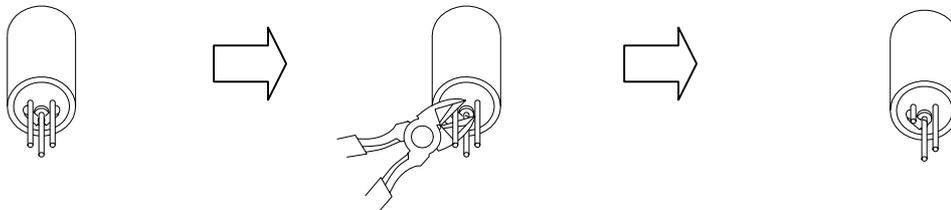$f2=(1/T2)$: Frequency of output power

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Instruction manual

1. DC Power connection mode 1

A type : Heat sink stand (–) **B type** :Heat sink stand (+)

NC Vcc

GND

NC GND

Vcc

2. DC Power connection mode 2

Laser Safety Precautions

1.   Do not look into the laser beam directly by eyes.   The laser beam may cause severe damage to human eyes.

2.   Optical Lens is made of plastic or glass . Do not contaminate lens by soiling, oil or chemical.