

DATA SHEET



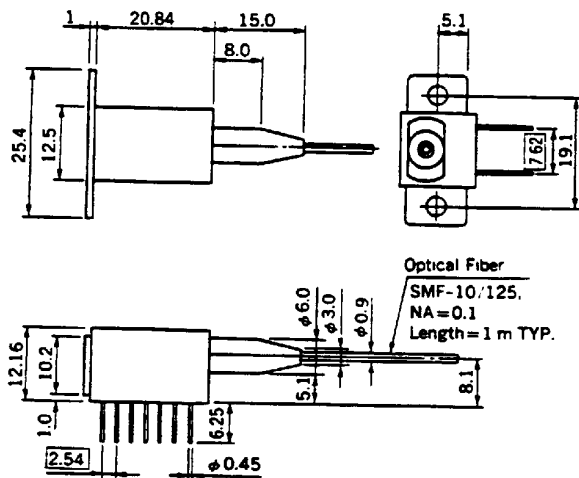
LASER DIODE MODULE  
**NDL5772P**

1 550 nm OPTICAL FIBER COMMUNICATIONS  
InGaAsP DC-PBH PULSED LASER DIODE MODULE

DESCRIPTION

NDL5772P is a 1 550 nm pulsed laser diode DIP module with singlemode fiber and internal thermo-electric cooler. It is designed for a light source of optical measurement equipment (OTDR) and optical transmission systems. In addition, it incorporates a lens for optical coupling between laser chip and optical fiber and YAG laser welding technique is utilized. Therefore, this lens coupling system can achieve stable optical output power as well as high coupling efficiency in wide operating temperature range.

PACKAGE DIMENSIONS  
in millimeters



FEATURES

- High output power.  $P_f = 15 \text{ mW} @ I_{FP} = 400 \text{ mA}^*1$
- Long wavelength  $\lambda_0 = 1 550 \text{ nm}$
- Internal thermo-electric cooler.
- Hermetically sealed 14 pin Dual-In-Line Package.
- Singlemode fiber pigtail.
- High reliability.

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

|                            |            |            |                  |
|----------------------------|------------|------------|------------------|
| Pulsed Forward Current *1  | $I_{FP}$   | 600        | mA               |
| Reverse Voltage            | $V_R$      | 2.0        | V                |
| Operating Case Temperature | $T_c$      | -20 to +65 | $^\circ\text{C}$ |
| Storage Temperature        | $T_{stg}$  | -40 to +70 | $^\circ\text{C}$ |
| Lead Soldering Temperature | $T_{slid}$ | 260        | $^\circ\text{C}$ |

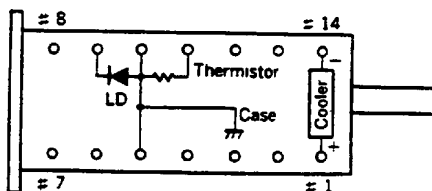
(10 s)

\*1 Pulse Condition: Pulse Width = 1  $\mu\text{s}$ , Duty = 1 %

PIN CONNECTIONS

| PIN No. | FUNCTION       | PIN No. | FUNCTION       |
|---------|----------------|---------|----------------|
| 1       | COOLER ANODE   | 8       | NC             |
| 2       | NC             | 9       | LASER CATHODE  |
| 3       | NC             | 10      | LASER ANODE,   |
| 4       | NC             |         | CASE GROUND,   |
| 5       | LASER ANODE,   |         | and THERMISTOR |
|         | CASE GROUND    | 11      | THERMISTOR     |
|         | and THERMISTOR | 12      | NC             |
| 6       | NC             | 13      | NC             |
| 7       | NC             | 14      | COOLER CATHODE |

BOTTOM VIEW



NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

**ELECTRO-OPTICAL CHARACTERISTICS ( $T_{LD} = 25\text{ }^\circ\text{C}$ ,  $T_c = -20$  to  $+65\text{ }^\circ\text{C}$ )**

| CHARACTERISTIC                    | SYMBOL          | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS   |
|-----------------------------------|-----------------|------|------|------|------|---|
| DC Forward Voltage                | $V_F$           |      |      | 1.5  | V    | $I_F = 30\text{ mA}$  |
| DC Threshold Current              | $I_{th}$        |      | 40   | 60   | mA   |   |
| Optical Output Power from Fiber   | $P_f$           | 10   | 15   |      | mW   | $I_{FP} = 400\text{ mA}$ , $PW = 1\text{ }\mu\text{s}$ , Duty = 1 % |
| Stability of Optical Output Power | $\Delta P_f$    |      |      | 0.5  | dB   | $I_{FP} = 400\text{ mA}$ , $PW = 1\text{ }\mu\text{s}$ , Duty = 1 % |
| Center Wavelength                 | $\lambda_0$     | 1520 | 1550 | 1580 | nm   | $I_{FP} = 400\text{ mA}$ , $PW = 1\text{ }\mu\text{s}$ , Duty = 1 % |
| Spectral Width                    | $\Delta\lambda$ |      |      | 20   | nm   | $I_{FP} = 400\text{ mA}$ , $PW = 1\text{ }\mu\text{s}$ , Duty = 1 % |
| $P_f$ Rise Time                   | $t_r$           |      | 0.5  | 1.0  | ns   | 10 - 90 %   |
| $P_f$ Fall Time                   | $t_f$           |      | 0.7  | 1.0  | ns   | 90 - 10 %   |

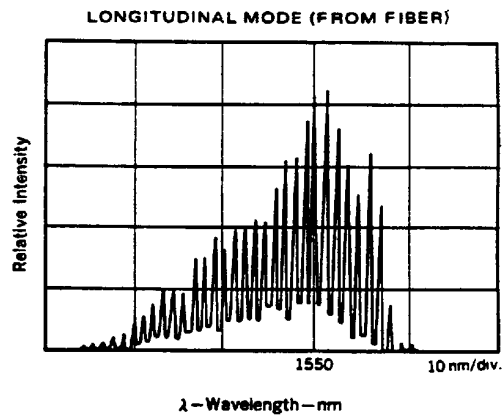
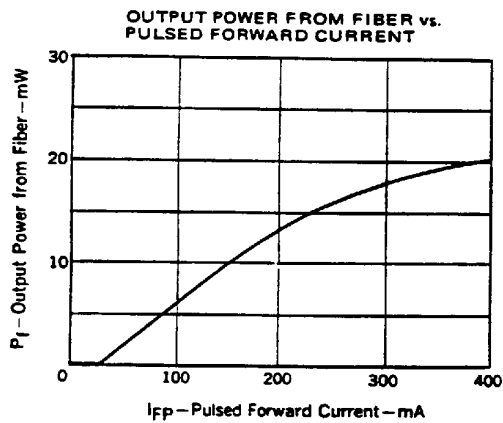
**ELECTRO-OPTICAL CHARACTERISTICS (Applicable to Thermistor and TE Cooler:  $T_{LD} = 25\text{ }^\circ\text{C}$ ,  $T_c = -20$  to  $+65\text{ }^\circ\text{C}$ )**

| CHARACTERISTIC        | SYMBOL          | MIN. | TYP. | MAX. | UNIT      | TEST CONDITIONS                     |
|-----------------------|-----------------|------|------|------|-----------|-------------------------------------|
| Thermistor Resistance | $R^{*2}$        | 9.5  | 10   | 10.5 | $k\Omega$ | $T_{LD} = 25\text{ }^\circ\text{C}$ |
| Cooler Current        | $I_c$           |      | 0.6  | 1.0  | A         | $\Delta T = 40\text{ K}$            |
| Cooler Voltage        | $V_c$           |      | 1.1  | 1.5  | V         | $\Delta T = 40\text{ K}$            |
| Cooling Capacity      | $\Delta T^{*3}$ | 40   |      |      | K         | $I_C = 1.0\text{ A}$                |

\*2 B Constant (= 3 400±100 K)

\*3  $\Delta T = |T_c - T_{LD}|$

**TYPICAL CHARACTERISTICS ( $T_a = 25\text{ }^\circ\text{C}$ )**



**NEC**

**NDL5772P**

**HIGH POWER PULSED LASER DIODE FAMILY**

| PACKAGES  | FEATURES        | WAVELENGTH         |                    | REMARKS  |  |
|---|-----------------|--------------------|--------------------|--|--|
|   |                 | 1.3 $\mu\text{m}$  | 1.55 $\mu\text{m}$ |  |  |
| CAN WITH BALL LENS                                |                 | NDL5060<br>NDL5061 | NDL5070<br>NDL5071 | $I_{FP} = 250 \text{ mA}$<br>$I_{FP} = 400 \text{ mA}$ |  |
| 14 PIN DIP MODULE WITH SMF                        |                 | NDL5762P           | NDL5772P           | WITH TEC, THERMISTOR                                   |  |
| 14 PIN DIP MODULE WITH MMF                        |                 | (NDL5764P)         |                    | (UNDER DEVELOPMENT)<br>WITH TEC, THERMISTOR            |  |
| MAIN CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ ) |                 |                    |                    | UNIT   | CONDITIONS   |
| OPTICAL OUTPUT POWER                              | $P_O$           | 50 MIN.<br>90 MIN. | 30 MIN.<br>50 MIN. | mW   | $I_{FP} = 250 \text{ mA}$<br>$I_{FP} = 400 \text{ mA}$ |
|   | $P_f$           | 30                 | 15                 | mW   | $I_{FP} = 400 \text{ mA}$ ,<br>DIP WITH SMF            |
| CENTER WAVELENGTH                                 | $\lambda_0$     | 1310 $\pm$ 20      | 1550 $\pm$ 30      | nm   |  |
| SPECTRAL WIDTH                                    | $\Delta\lambda$ | 10 MAX.            | 20 MAX.            | nm   | CAN<br>DIP WITH SMF                                    |
|   |                 | 20 MAX.            | 40 MAX.            | nm   |  |