

# HL1328DJS

1.3  $\mu\text{m}$  InGaAsP Laser Diode

# HITACHI

ADE-208-673A (Z)  
2nd Edition  
June 2000

## Description

The HL1328DJS is a 1.3  $\mu\text{m}$  InGaAsP Fabry-Perot laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source in 155 Mb/s or 622 Mb/s short haul fiberoptic communication systems and other types of optical equipment. Laser output is delivered from the non-hermetic Mini DIL package through SC optical connector attached at the end of fiber pigtail. A built-in photodiode provides monitor current output.

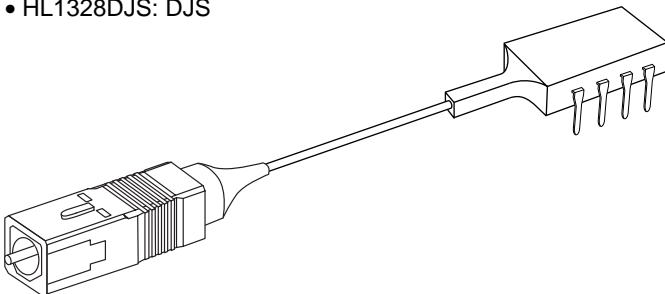
## Features

- Wide operating temperature range:  $T_{opr} = -40$  to  $+85^{\circ}\text{C}$
- Optical output power: 0.2 mW
- Plastic Mini DIL package

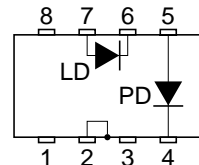
## Fiber Specifications

- Mode field diameter:  $9.5 \pm 1.0 \mu\text{m}$
- Cutoff wavelength: 1.10 to 1.27  $\mu\text{m}$
- Outer diameter: 125  $\mu\text{m}$  nominal
- Jacket diameter: 900  $\mu\text{m}$  nominal
- Fiber minimum bend radius: 30 mm

Package Type  
• HL1328DJS: DJS



Internal Circuit



Absolute Maximum Ratings (Ta = 25°C)

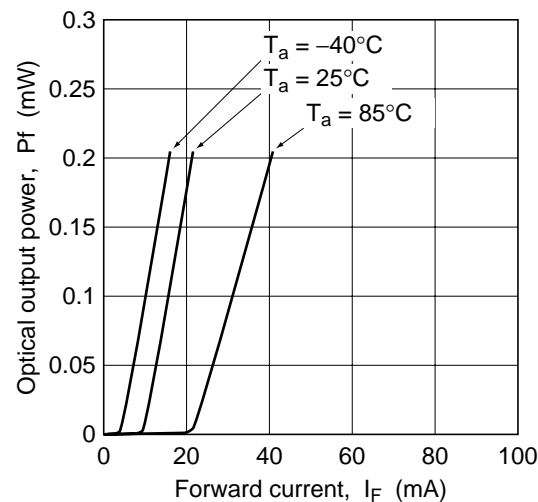
| Item                  | Symbol      | Value          | Unit | Condition           |
|-----------------------|-------------|----------------|------|---------------------|
| LD forward current    | $I_{F(LD)}$ | $I_{th} + 60$  | mA   | at Ta = -40°C, 25°C |
|                       |             | $I_{th} + 100$ |      | at Ta = 85°C        |
| LD reverse voltage    | $V_{R(LD)}$ | 2              | V    |                     |
| PD forward current    | $I_{F(PD)}$ | 5              | mA   |                     |
| PD reverse voltage    | $V_{R(PD)}$ | 20             | V    |                     |
| Operating temperature | Topr        | -40 to +85     | °C   |                     |
| Storage temperature   | Tstg        | -40 to +85     | °C   |                     |

Optical and Electrical Characteristics (Ta = -40°C to 85°C)

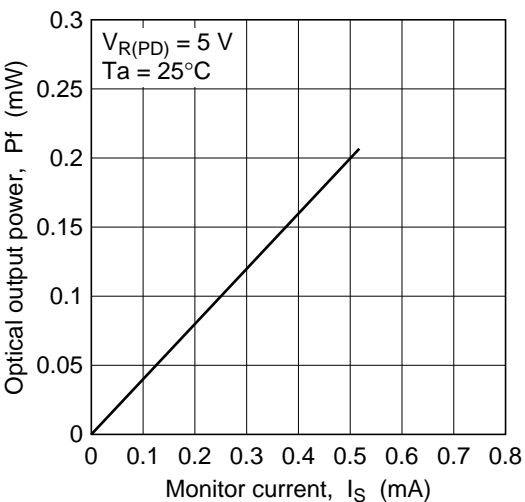
| Item   | Symbol       | Min   | Typ  | Max   | Unit  | Test Conditions   |
|--|--------------|-------|------|-------|-------|---|
| Optical output power                               | Pf           | 0.2   | —    | —     | mW    | Kink free   |
| Threshold current                                  | $I_{th}$     | —     | —    | 20    | mA    | Ta = 25°C   |
|  |              | —     | —    | 40    |       | Ta = 85°C   |
| Operating voltage                                  | $V_{OP}$     | —     | —    | 1.6   | V     | Pf = 0.2 mW   |
| Slope efficiency                                   | $\eta_s$     | 0.008 | —    | 0.025 | mW/mA | Ta = 25°C   |
|  |              | 0.004 | —    | —     |       | Ta = 85°C   |
| Lasing wavelength                                  | $\lambda_c$  | 1260  | 1310 | 1360  | nm    | Pf = 0.2 mW, RMS  |
| Spectral width                                     | $\delta$     | —     | —    | 2.5   | nm    | Pf = 0.2 mW, RMS  |
| Rise time  | $t_r$        | —     | —    | 0.5   | ns    | Pf = 0.2 mW, Ib = $I_{th}$ , 10 to 90 %                                   |
| Fall time  | $t_f$        | —     | —    | 0.5   | ns    | Pf = 0.2 mW, Ib = $I_{th}$ , 90 to 10 %                                   |
| Monitor current                                    | $I_s$        | 200   | —    | —     | μA    | Pf = 0.2 mW, $V_{R(PD)} = 5\text{ V}$<br>Ta = 25°C                        |
| Temp dependency of tracking error relative to 25°C | $\Delta Pf$  | -1    | —    | 1     | dB    | $I_s = \text{const.}$ (Pf = 0.2 mW, Ta = 25°C, $V_{R(PD)} = 5\text{ V}$ ) |
| PD dark current                                    | $I_{(DARK)}$ | —     | —    | 200   | nA    | $V_{R(PD)} = 5\text{ V}$  |

Typical Characteristic Curves

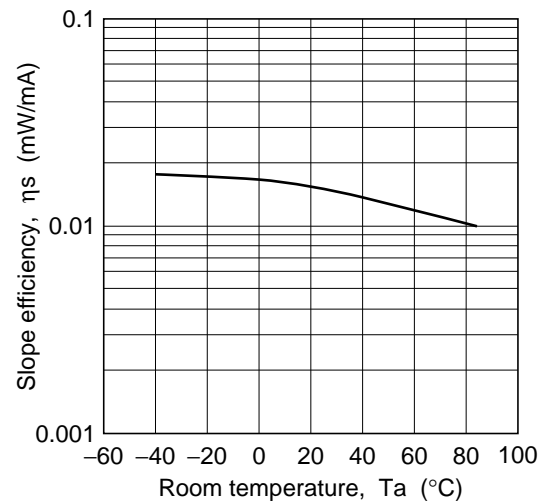
Optical Output Power vs. Forward Current



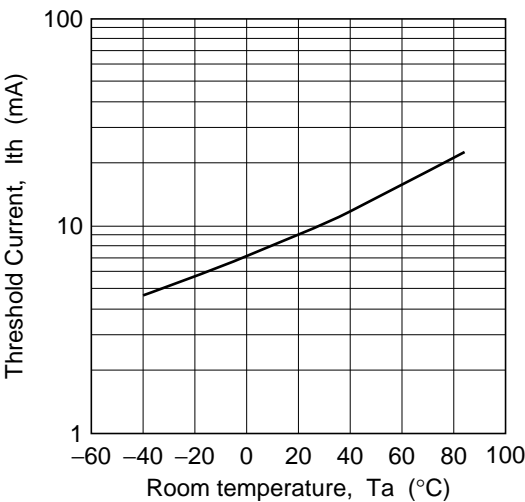
Optical Output Power vs. Monitor Current



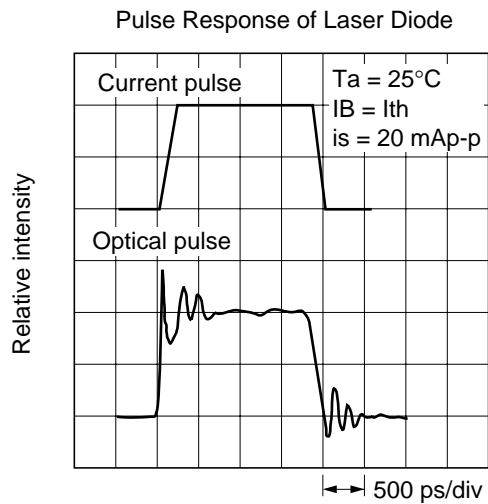
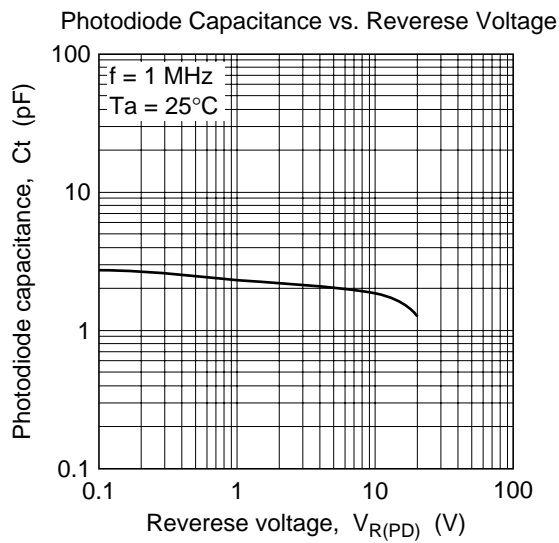
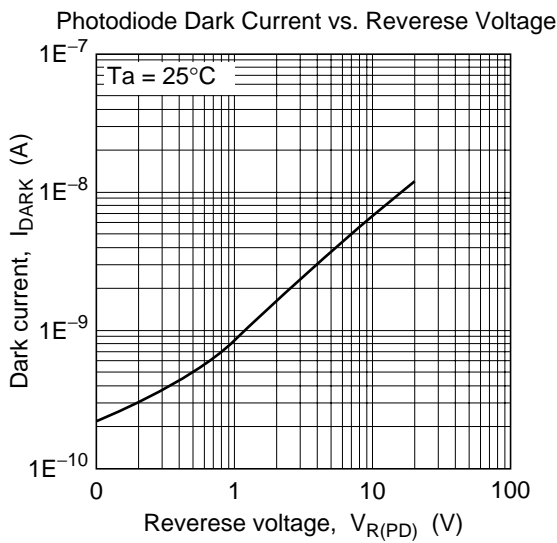
Slope Efficiency vs. Room Temperature



Threshold Current vs. Room Temperature



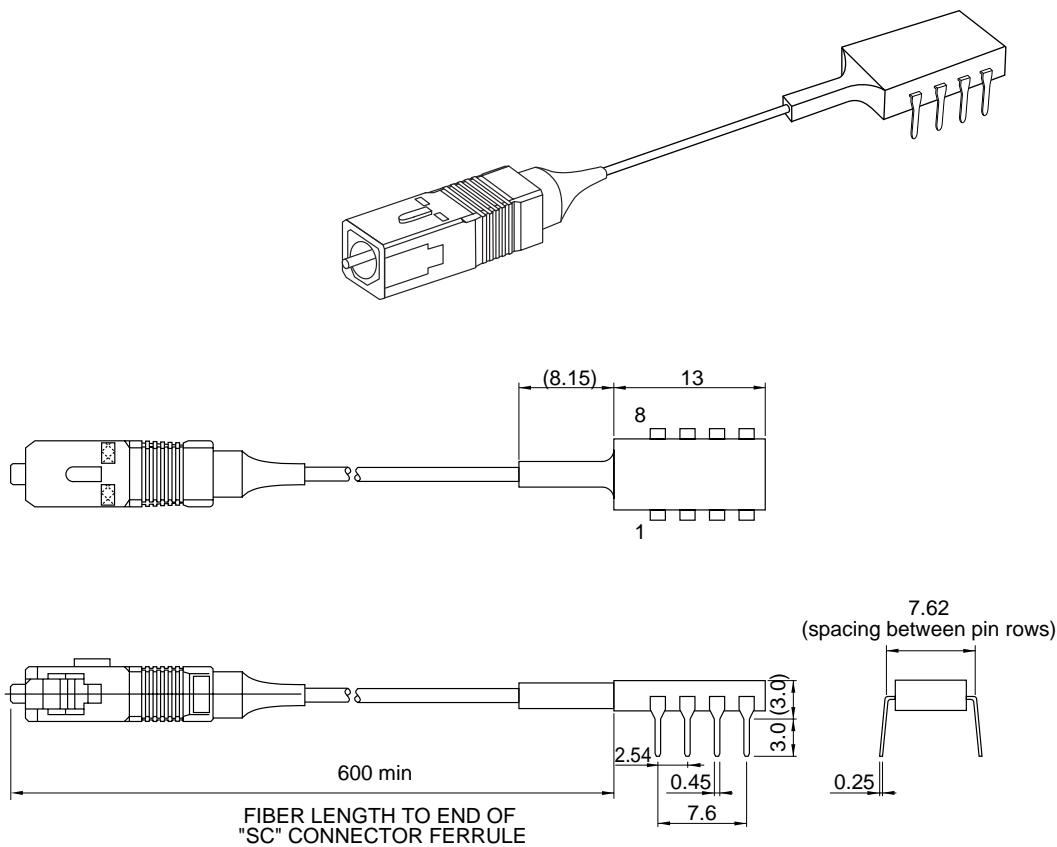
Typical Characteristic Curves (cont)



Package Dimensions

Preliminary

Unit: mm



|                        |        |
|------------------------|--------|
| Hitachi Code           | LD/DJS |
| JEDEC                  |        |
| EIAJ                   |        |
| Mass (reference value) |        |

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