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# HL1326MF

InGaAsP Laser Diodes

# HITACHI

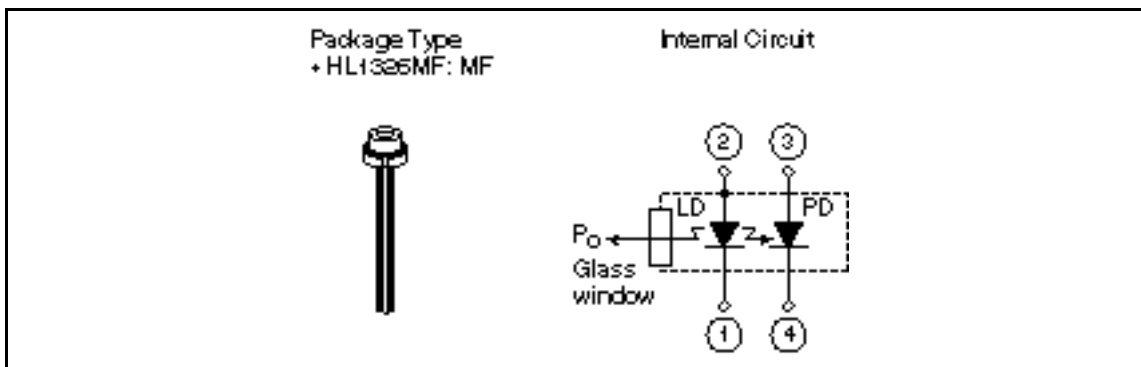
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## Description

The HL1326MF 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 short and medium range fiberoptic communication systems and other applied optical equipment. It has high optical power with low drive current and wide operating temperature range ( $-40$  to  $+85^{\circ}\text{C}$ ). The compact package is suitable for module assembly.

## Features

- Σ Wide operating temperature range:  $T_{opr} = -40$  to  $+85^{\circ}\text{C}$
- Σ High output power: 10 mW (Pulse)  
5 mW (CW)
- Σ Low operating current:  $I_{op} (P_o = 5 \text{ mW}) = 20 \text{ mA}$  (Typ @  $T_C = 25^{\circ}\text{C}$ )  
 $I_{op} (P_o = 5 \text{ mW}) = 40 \text{ mA}$  (Typ @  $T_C = 85^{\circ}\text{C}$ )



## HL1326MF

### Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ )

| Item                  | Symbol      | Rated Value               | Unit             |
|-----------------------|-------------|---------------------------|------------------|
| Optical output power  | $P_O$       | 10 (Pulse) * <sup>1</sup> | mW               |
|                       |             | 5 (CW)                    | mW               |
| LD reverse voltage    | $V_{R(LD)}$ | 2                         | V                |
| PD reverse voltage    | $V_{R(PD)}$ | 15                        | V                |
| PD forward current    | $I_{F(PD)}$ | 1                         | mA               |
| Operating temperature | $T_{opr}$   | -40 to +85                | $^\circ\text{C}$ |
| Storage temperature   | $T_{stg}$   | -40 to +100               | $^\circ\text{C}$ |

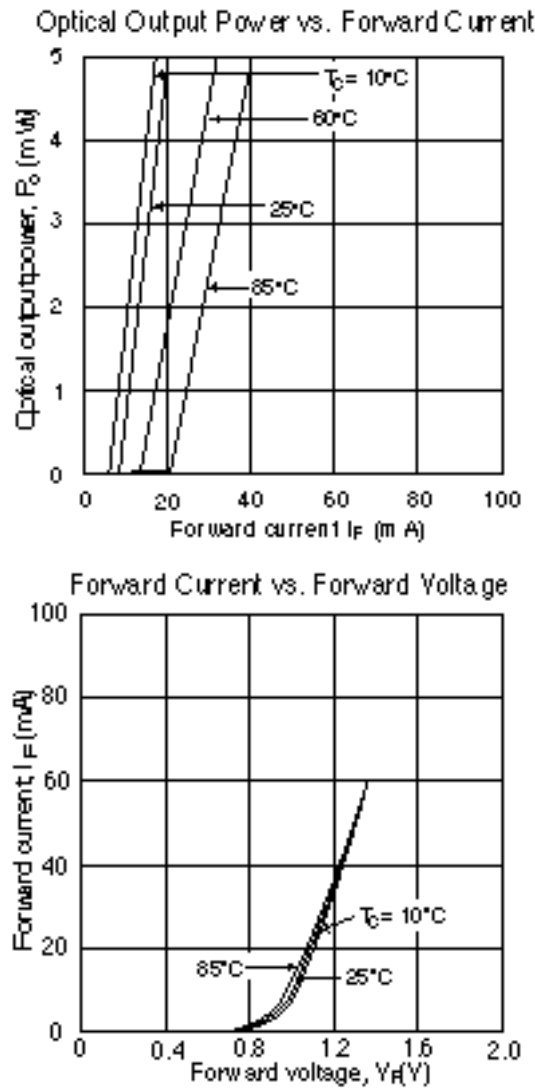
Note: 1. Maximum 50% duty cycle, maximum 1  $\mu\text{s}$  pulse width

### Optical and Electrical Characteristics ( $T_C = 25^\circ\text{C}$ )

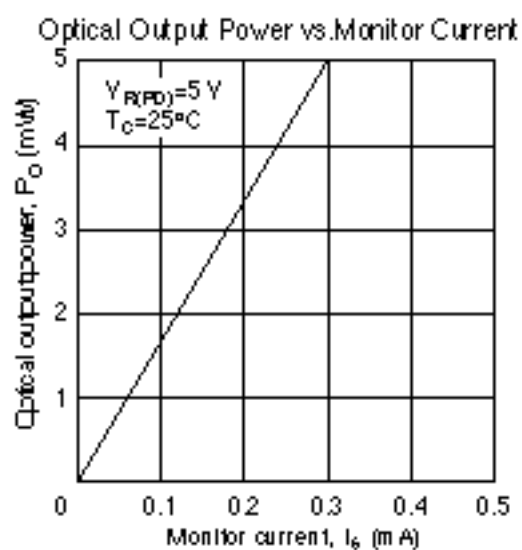
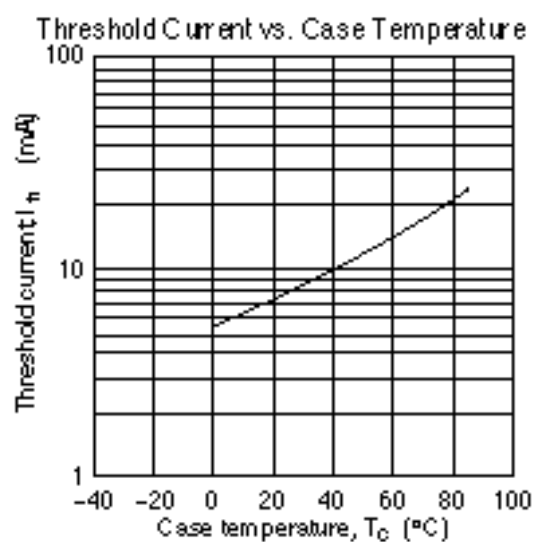
| Item                                | Symbol       | Min  | Typ  | Max  | Unit          | Test Conditions                                  |
|-------------------------------------|--------------|------|------|------|---------------|--------------------------------------------------|
| Threshold current                   | $I_{th}$     | —    | 8    | 20   | mA            |                                                  |
| Optical output power                | $P_O$        | 5    | —    | —    | mW            | Kink free* <sup>1</sup>                          |
| Slope efficiency                    | $hs$         | 0.3  | 0.4  | —    | mW/mA         | $T_C = 25^\circ\text{C}$                         |
|                                     |              | 0.15 | 0.25 | —    |               | $T_C = 85^\circ\text{C}$                         |
| Lasing wavelength                   | $\lambda_c$  | 1280 | 1310 | 1340 | nm            | $P_O = 5 \text{ mW}$ , RMS                       |
| Spectral width                      | $s$          | —    | 2    | —    | nm            | $P_O = 5 \text{ mW}$ , RMS                       |
| Beam divergence (parallel)          | $q_{//}$     | —    | 30   | —    | deg.          | $P_O = 5 \text{ mW}$ , FWHM                      |
| Beam divergence (perpendicular)     | $q^\perp$    | —    | 40   | —    | deg.          | $P_O = 5 \text{ mW}$ , FWHM                      |
| Rise time                           | $t_r$        | —    | —    | 0.5  | ns            | 10 to 90%                                        |
| Fall time                           | $t_f$        | —    | —    | 0.5  | ns            | 90 to 10%                                        |
| Monitor current                     | $I_s$        | 100  | —    | —    | $\mu\text{A}$ | $P_O = 5 \text{ mW}$ , $V_{R(PD)} = 5 \text{ V}$ |
| PD dark current                     | $I_{(DARK)}$ | —    | —    | 350  | nA            | $V_{R(PD)} = 5 \text{ V}$                        |
| PD capacitance                      | $C_t$        | —    | 15   | 20   | pF            | $V_{R(PD)} = 5 \text{ V}$ , $f = 1 \text{ MHz}$  |
| Photosensitivity saturation voltage | $V_{R(S)}$   | —    | —    | 2    | V             |                                                  |

Note: 1. Kink free up to 5mW is confirmed at the temperatures of 10  $^\circ\text{C}$ , 25 $^\circ\text{C}$  and 85 $^\circ\text{C}$ .

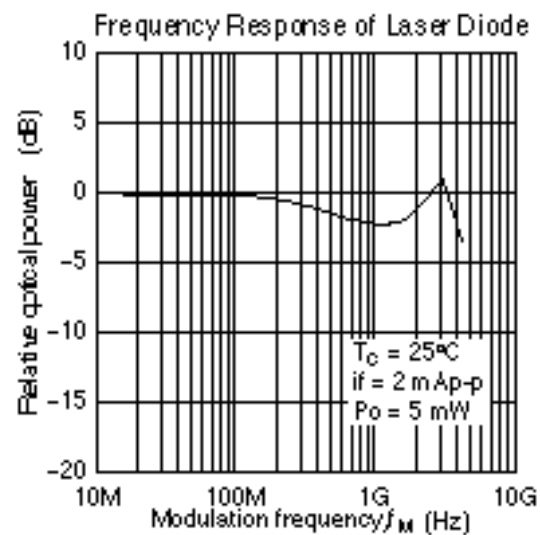
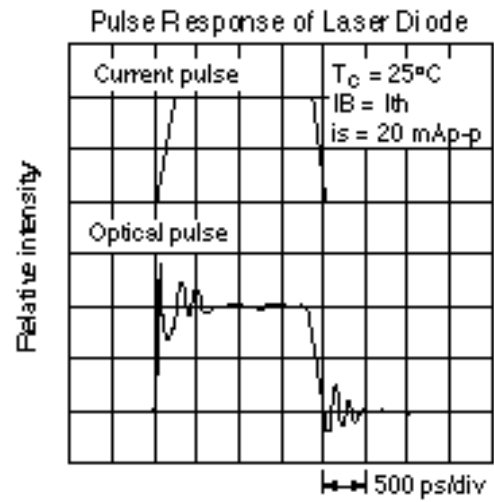
# Typical Characteristic Curves



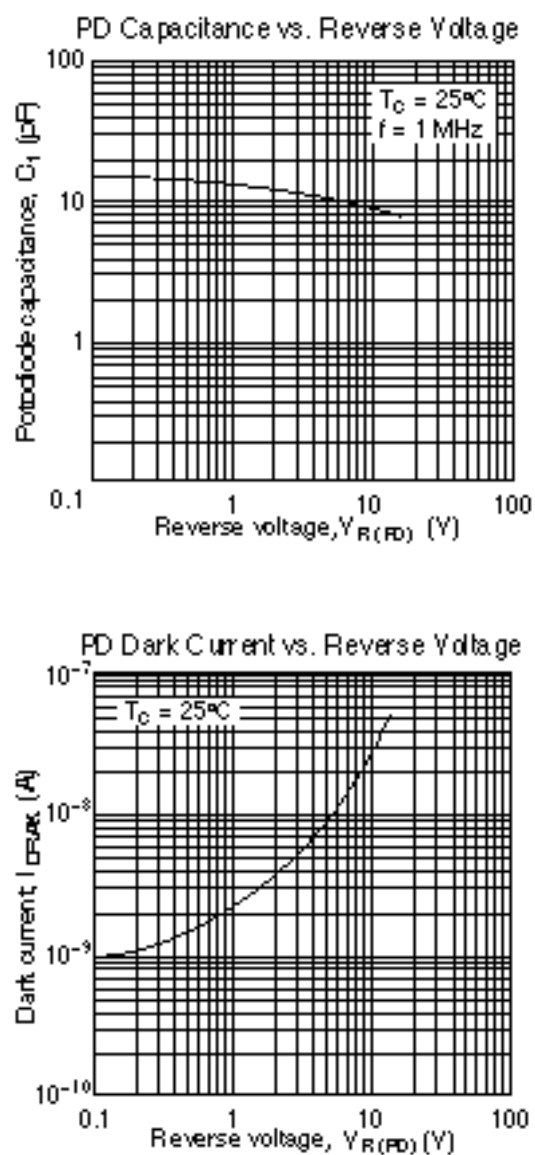
Typical Characteristic Curves (cont)



## Typical Characteristic Curves (cont)



Typical Characteristic Curves (cont)



## Typical Characteristic Curves (cont)

