

# ML9XX41 SERIES

InGaAsP DFB-LASER DIODE WITH EA MODULATOR

Notice: Some parametric limits are subject to change.

**TYPE  
NAME**

**ML9SM41**

## DESCRIPTION

ML9XX41 series are DFB (Distributed Feedback) laser diodes with a monolithically integrated EA modulator, suitable light source for 10Gbps application.

ML9SM41 is supplied with the chip-on-carrier type package.

## FEATURES

- Dispersion penalty less than 2dB at 9.95328Gbps, +1600ps/nm
- High extinction ratio (Min. 10dB at 9.95328Gbps)
- High - side mode suppression ratio (Typ. 40dB)
- High speed response (Typ. 30psec)

## APPLICATION

10Gbps transmission system

## ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter                     | Conditions | Ratings     | Unit |
|-----------|-------------------------------|------------|-------------|------|
| $I_F$     | Forward current (Laser diode) | CW         | 150         | mA   |
| $V_{RL}$  | Reverse voltage (Laser diode) | -          | 2           | V    |
| $V_{EA}$  | Reverse voltage (Modulator)   | -          | -3          | V    |
| $T_c$     | Case temperature              | -          | +25 to +40  | degC |
| $T_{stg}$ | Storage temperature           | -          | -40 to +100 | degC |

## ELECTRICAL/OPTICAL CHARACTERISTICS ( $T_c=35\text{degC}$ )

| Symbol           | Parameter                             | Test Conditions                   | Min. | Typ. | Max. | Unit |
|------------------|---------------------------------------|-----------------------------------|------|------|------|------|
| $I_{th}$         | Threshold current                     | CW, $V_{mod}=0V$                  | ---  | 15   | 30   | mA   |
| $I_{op}$         | Operation current                     | CW, $P_o=6.5mW$ , $V_{mod}=0V$    | ---  | 85   | 100  | mA   |
| $V_{op}$         | Operating voltage                     | CW, $P_o=6.5mW$ , $V_{mod}=0V$    | ---  | 1.6  | 1.8  | V    |
| $\lambda_p$      | Peak wavelength                       | CW, $I_f=I_{op}$ , $V_{mod}=0V$   | 1530 | ---  | 1565 | nm   |
| $\theta_{//}$    | Beam divergence angle (parallel)      | CW, $P_o=6.5mW$ , $V_{mod}=0V$    | ---  | 30   | ---  | deg. |
| $\theta_{\perp}$ | Beam divergence angle (perpendicular) | CW, $P_o=6.5mW$ , $V_{mod}=0V$    | ---  | 42   | ---  | deg. |
| $P_m$            | Monitoring output power               | CW, $P_o=6.5mW$ , $V_{mod}=0V$    | ---  | 2.0  | ---  | mW   |
| $f_c$            | Cut off frequency                     | CW, $I_f=I_{op}$ , $V_{mod}=-1V$  | 10   | 14   | ---  | GHz  |
| $t_{r,tf}$       | Rise and fall time (20%-80%)          | 9.95328Gbps, NRZ, PRBS $2^{23}-1$ | ---  | ---  | 30   | psec |
| SMSR             | Side mode suppression ratio           | $I_f=I_{op}$ , $V_{pp}=2V$ ,      | 35   | 40   | ---  | dB   |
| Ex               | Extinction ratio                      | $V_{offset}=0$ to $-1.0V$         | 10   | ---  | ---  | dB   |
| Pp               | Dispersion penalty                    | ditto<br>+1600ps/nm @BER=10-10    | ---  | ---  | 2.0  | dB   |



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## OUTLINE DRAWINGS

