

PRELIMINARY

Notice: Some parametric limits are subject to change

MITSUBISHI LASER DIODES

ML9XX31 SERIES

In GaAsP DFB-LASER DIODE WITH EA MODULATOR

TYPE
NAME

ML9SM31

DESCRIPTION

ML9XX31 series are 10Gbps DFB (Distributed Feedback) laser diodes with a monolithically integrated EA modulator. ML9xx31 is a suitable light source for 10Gbps DWDM transmission, which is applicable to various distances from short reach (SR) to intermediate reach (IR). Available wavelengths are from 1530nm to 1565nm with 0.8nm spacing. ML9SM31 is supplied with the chip-on-carrier type package.

FEATURES

- Available distance : 50km (Max)
- High extinction ratio (Typ. 11dB)
- High - side mode suppression ratio (Typ. 40dB)
- High speed response (Typ. 30psec)

APPLICATION

10Gbps DWDM transmission system

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Ratings	Unit
IF	Forward current (Laser diode)	CW	200	mA
VRL	Reverse voltage (Laser diode)	-	2	V
VEA	Reverse voltage (Modulator)	-	-3	V
Tc	Case temperature	-	+15 to +35	degC
Tstg	Storage temperature	-	-40 to +100	degC

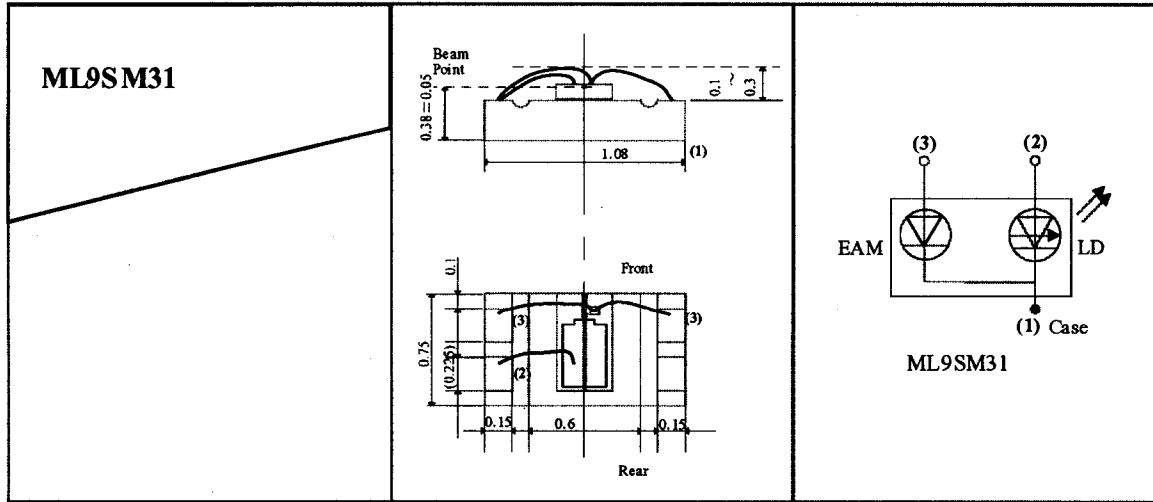
ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25degC)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
Ith	Threshold current	CW, Vmod=0V	-	10	30	mA
Iop	Operation current	CW, Po=5mW, Vmod=0V	-	60	90	mA
Vop	Operating voltage	CW, Po=5mW, Vmod=0V	-	1.2	1.8	V
λ_p	Peak wavelength	CW, Po=5mW, Vmod=0V	-0.4	code list	+0.4	nm
$\theta_{//}$	Beam divergence angle (parallel)	CW, Po=5mW, Vmod=0V	-	30	-	deg.
θ_{\perp}	Beam divergence angle (perpendicular)	CW, Po=5mW, Vmod=0V	-	45	-	deg.
Pm	Monitoring output power	CW, Po=5mW, Vmod=0V	-	1.0	-	mW
f _c	Cut off frequency	CW, Po=5mW, Vmod=-1V	10	14	-	GHz
tr,tf	Rise and Fall time (10%-90%)	9.95328Gbps, NRZ, PRBS2 ²³ -1	-	30	40	psec
SMSR	Side mode suppression ratio	If > Iop, Vpp=2.5V, Vmod(offset)=0 to -1.0V	35	40	-	dB
Ex	Extinction Ratio	Vmod(offset)=0 to -1.0V	10	11	-	dB
Pp	Dispersion Penalty	ditto SMF 50km@BER=10 ⁻¹⁰	-	-	2.0	dB

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OUTLINE DRAWINGS



Wavelength code list

Code	Wavelength(nm)	Code	Wavelength(nm)
1	1529.55	24	1547.72
2	1530.33	25	1548.51
3	1531.12	26	1549.32
4	1531.90	27	1550.12
5	1532.68	28	1550.92
6	1533.47	29	1551.72
7	1534.25	30	1552.52
8	1535.04	31	1553.33
9	1535.82	32	1554.13
10	1536.61	33	1554.94
11	1537.40	34	1555.75
12	1538.19	35	1556.55
13	1538.98	36	1557.36
14	1539.77	37	1558.17
15	1540.56	38	1558.98
16	1541.35	39	1559.79
17	1542.14	40	1560.61
18	1542.94	41	1561.42
19	1543.73	42	1562.23
20	1544.53	43	1563.05
21	1545.32	44	1563.86
22	1546.12	45	1564.68
23	1546.92	46	1565.50