

ML9XX11/ML9XX22 SERIES

Notice: Some parametric limits are subject to change.

2.5Gbps DWDM InGaAsP DFB-LASER DIODE

**TYPE
NAME**

ML9SM11/ML9SM22

DESCRIPTION

ML9XX11 and ML9XX22 series are DWDM 2.5Gbps directly modulated DFB (Distributed Feedback) laser diodes. ML9XX11 and ML9XX22 are suitable light sources for 2.5Gbps DWDM transmission in C-band and L-band wavelength ranges respectively. Wavelength can be chosen with 0.8nm spacing according to ITU-T grid. Maximum 175km transmission distance can be achievable. ML9XX11 and ML9XX22 are supplied with the chip-on-carrier type package.

FEATURES

- Available distance: 175km (Max)
- High power operation: 10mW
- High - side mode suppression ratio: 45dB (typ)
- High speed response (tr/ff): 120psec (typ)

APPLICATION

2.5Gbps DWDM transmission system

*1) Specification Note

Type	Transmission Distance
ML9SM11-02/ML9SM22-02	100km
ML9SM22-03	150km
ML9SM11-03	175km

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Ratings	Unit
Po	Optical output power	CW	20	mW
If	Operating current	-	150	mA
V _{RL}	Reverse voltage	-	2	V
Tsld	Soldering temperature	1 minute	320	°C
Tc	Case temperature	-	+15 to +35	°C
Tstg	Storage temperature	-	-40 to +100	°C

ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25°C)

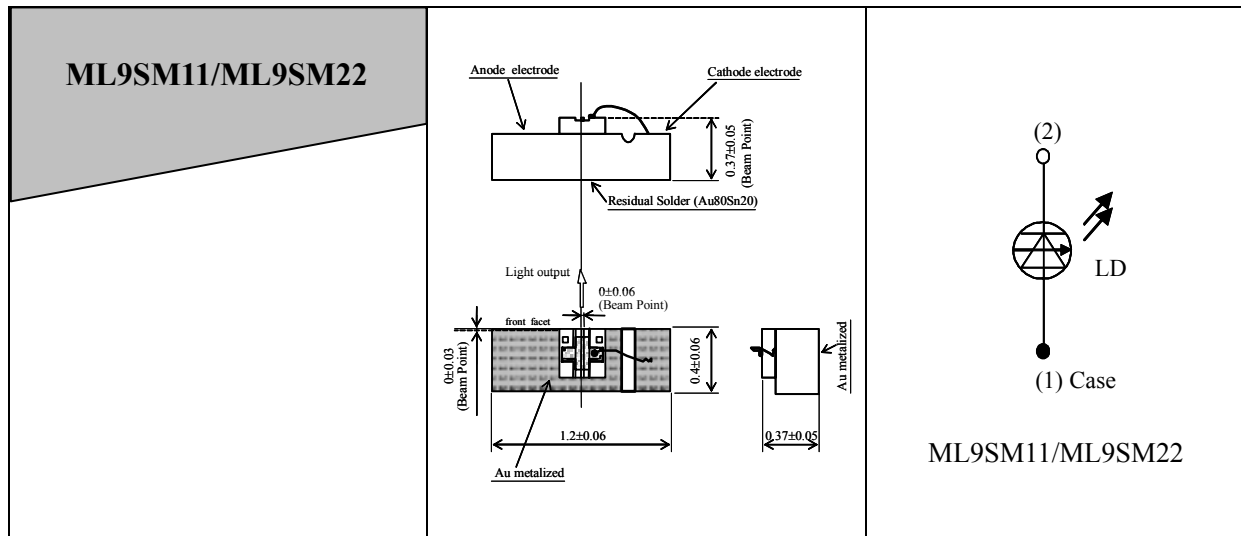
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Ith	Threshold current	CW	-	10	35	mA
Iop	Operation current	CW, Po=10mW	-	45	85	mA
Vop	Operating voltage	CW, Po=10mW	-	1.2	1.8	V
η	Slope efficiency	CW, Po=10mW	0.15	0.3	-	mW/mA
λp	Peak wavelength	CW, Po=10mW	-0.5	code list	+0.3	nm
θ//	Beam divergence angle (parallel)	CW, Po=10mW	-	28	35	deg.
θ⊥	Beam divergence angle (perpendicular)	CW, Po=10mW	-	30	45	deg.
tr,tf	Rise and fall time (10%-90%)	2.5Gbps, NRZ, PRBS 2 ²³ -1	-	120	200	psec
SMSR	Side mode suppression ratio	I _{mod} =40mApp, Ex=10dB	35	45	-	dB
Pp	Dispersion penalty	ditto SMF @BER=10 ⁻¹⁰ Transmission Distance: *1	-	-	2.0	dB

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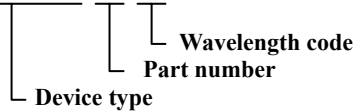
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OUTLINE DRAWINGS



Ordering information

ML9SM11-02-01



* Notification for a submount product (Products including a 'SM' type name)

The submount product may show the change of the optical and electrical characteristics due to the influences of an assembly substrate (strain, thermal conductivity, etc.) prepared by the customer. Therefore, the supplier is not obliged to guarantee that all optical and electrical characteristics meet specification after the shipment.

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ML9SM11 (C-band) wavelength code list

Code	Wavelength (nm)	Code	Wavelength (nm)
01	1527.22	25	1546.12
02	1527.99	26	1546.92
03	1528.77	27	1547.72
04	1529.55	28	1548.51
05	1530.33	29	1549.32
06	1531.12	30	1550.12
07	1531.90	31	1550.92
08	1532.68	32	1551.72
09	1533.47	33	1552.52
10	1534.25	34	1553.33
11	1535.04	35	1554.13
12	1535.82	36	1554.94
13	1536.61	37	1555.75
14	1537.40	38	1556.55
15	1538.19	39	1557.36
16	1538.98	40	1558.17
17	1539.77	41	1558.98
18	1540.56	42	1559.79
19	1541.35	43	1560.61
20	1542.14	44	1561.42
21	1542.94	45	1562.23
22	1543.73	46	1563.05
23	1544.53	47	1563.86
24	1545.32	-	-

ML9SM22 (L-band) wavelength code list

Code	Wavelength (nm)	Code	Wavelength (nm)
01	1564.68	30	1588.73
02	1565.50	31	1589.57
03	1566.31	32	1590.41
04	1567.13	33	1591.26
05	1567.95	34	1592.10
06	1568.77	35	1592.95
07	1569.59	36	1593.79
08	1570.42	37	1594.64
09	1571.24	38	1595.49
10	1572.06	39	1596.34
11	1572.89	40	1597.19
12	1573.71	41	1598.04
13	1574.54	42	1598.89
14	1575.37	43	1599.75
15	1576.20	44	1600.60
16	1577.03	45	1601.46
17	1577.86	46	1602.31
18	1578.69	47	1603.17
19	1579.52	48	1604.03
20	1580.35	49	1604.88
21	1581.18	50	1605.74
22	1582.02	51	1606.60
23	1582.85	52	1607.47
24	1583.69	53	1608.33
25	1584.53	54	1609.19
26	1585.36	55	1610.06
27	1586.20	56	1610.92
28	1587.04	57	1611.79
29	1587.88	58	1612.65