

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. Wavelengths can be chosen with 0.8nm spacing according to ITU-T grid. Maximum 175km transmission distance can be achievable.

ML9SM11 and ML9SM22 are supplied with the chip-on-carrier type package.

APPLICATION

2.5Gbps DWDM transmission system

FEATURES

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

***1) Specification Note**

Type	Available Distance
ML9SM11/ML9SM22-02	100km
ML9SM11/ML9SM22-03	175km
ML9SM11/ML9SM22-04	300km*

ABSOLUTE MAXIMUM RATINGS

* under development

Symbol	Parameter	Conditions	Ratings	Unit
P _o	Optical output power	CW	20	mW
IF	Operating current	-	150	mA
V _{RL}	Reverse voltage	-	2	V
T _{sld}	Soldering temperature	1 minute	320	°C
T _c	Case temperature	-	+15 to +35	°C
T _{stg}	Storage temperature	-	-40 to +100	°C

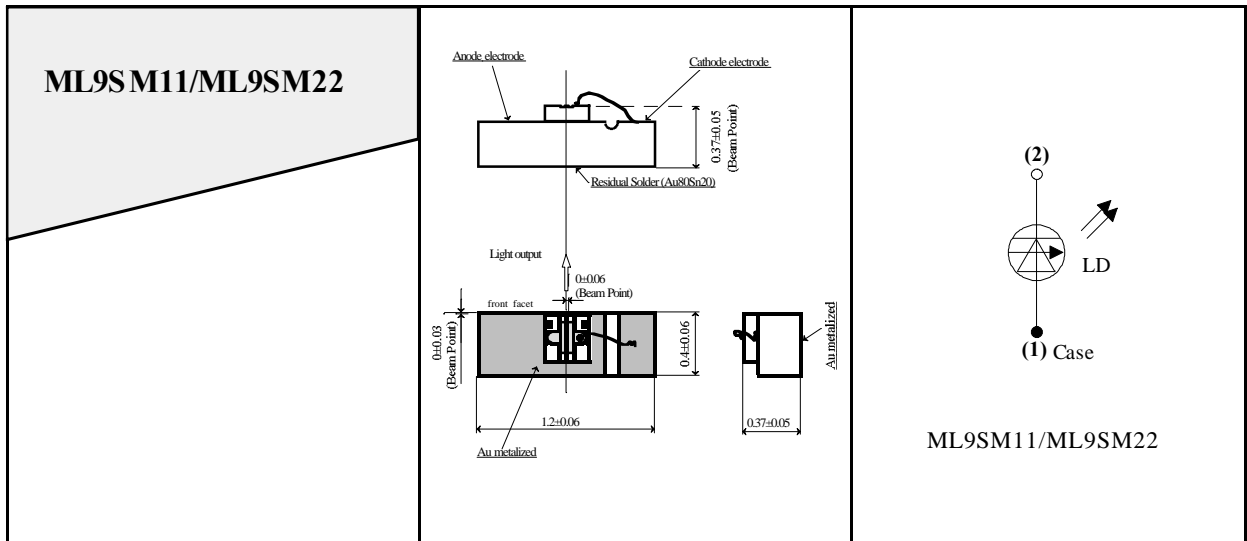
ELECTRICAL/OPTICAL CHARACTERISTICS (T_c=25°C)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	
I _{th}	Threshold current	CW	-	10	35	mA	
I _{op}	Operation current	CW,P _o =10mW	-	45	85	mA	
V _{op}	Operating voltage	CW,P _o =10mW	-	1.2	1.8	V	
η	Slope efficiency	CW,P _o =10mW	0.15	0.3	-	mW/mA	
λ _p	Peak wavelength	CW,P _o =10mW	-0.5	code list	+0.3	nm	
θ _{//}	Beam divergence angle (parallel)	CW,P _o =10mW	-	28	35	deg.	
θ _⊥	Beam divergence angle (perpendicular)	CW,P _o =10mW	-	30	45	deg.	
tr,tf	Rise and Fall time (10%-90%)	2.5Gbps,NRZ,PRBS2 ²³ -1	-	130	150	psec	
SMSR	Side mode suppression ratio	I _{mod} =40mA _{pp} , E _x =10dB	35	40	-	dB	
P _p	Dispersion Penalty	ditto	-02	100km	-	2.0	dB
		SMF @BER=10 ⁻¹⁰	-03	175km	-	2.0	
		*1)Specification Note	-04	300km	-	2.0	

MITSUBISHI LASER DIODES
ML9XX11/ML9XX22 SERIES

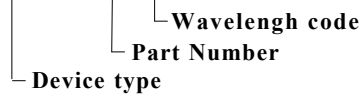
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OUTLINE DRAWINGS



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 specifications after the shipment.

MITSUBISHI LASER DIODES
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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