

# PRELIMINARY

Notice : This is not a final  
Some parametric limits are subject to change.

# MITSUBISHI LASER DIODES ML9XX17 SERIES

InGaAsP MQW-DFB LASER DIODE WITH EA MODULATOR

TYPE  
NAME

## ML9XX17

### DESCRIPTION

ML9XX17 series are DFB (Distributed Feedback) laser diodes with a monolithically integrated EA (Electro-Absorption) modulator emitting light beam at 1550nm.

The laser is suitable to a light source for use in ultra-long-haul transmission over 700km.

### FEATURES

DFB laser diode integrated with EA (Electro-Absorption) modulator

2.5Gb/s long-haul transmission over 700km

High side-mode-suppression-ratio (typical 40dB)

High extinction ratio

Optional wavelength in range of 1545nm to 1560nm is available

### APPLICATION

2.5Gb/s trunk-line systems

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Ratings	Unit
IF	Laser forward current	CW	<b>200</b>	mA
VRL	Laser reverse voltage	-	<b>2</b>	V
VEA	Modulator voltage	-	<b>0 - -3</b>	V
Tc	Case temperature	-	<b>+ 15 - +35</b>	deg.C
Tstg	Storage temperature	-	<b>- 40 -+100</b>	deg.C

### ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25deg.C)

Symbol	Parameter	Test conditions	Min.	Typ.	Max	Unit
I <sub>th</sub>	Threshold current	CW, V <sub>mod</sub> =0V	-	<b>10</b>	<b>30</b>	mA
I <sub>op</sub>	Operation current	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =0V	-	<b>80</b>	<b>150</b>	mA
V <sub>op</sub>	Operating voltage	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =0V	-	<b>1.5</b>	<b>2.0</b>	V
W <sub>p</sub>	Peak wavelength	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =0V	-	<b>1550</b>	-	nm
FFP <sub>h</sub>	Beam divergence angle (parallel)	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =0V	-	<b>30</b>	-	deg.
FFP <sub>v</sub>	Beam divergence angle (perpendicular)	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =0V	-	<b>45</b>	-	deg.
P <sub>m</sub>	Monitoring output	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =0V	-	<b>1.0</b>	-	mW
f <sub>c</sub>	Cutoff frequency (-3dB)	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =-1V	<b>4.0</b>	<b>6.0</b>	-	GHz
Ex	Extinction Ratio	CW, P <sub>o</sub> =5mW, V <sub>mod</sub> =-2.5V	<b>10</b>	<b>15</b>	-	dB
tr,tf	Rise and fall time(10%-90%)	2.48832Gb/s, NRZ, PRBS <sup>23</sup> -1	-	-	<b>120</b>	psec
SMSR	Side mode suppression ratio	I <sub>f</sub> =I <sub>op</sub> V <sub>pp</sub> =0 - 2.5V	<b>35</b>	<b>40</b>	-	dB
dW	Wavelength Excursion		-	<b>0.01</b>	-	nm
P <sub>p</sub>	Power penalty	ditto SMF 700km (D=12000ps/nm) @BER = 10 <sup>-10</sup>	-	<b>1.0</b>	-	dB