

MITSUBISHI LASER DIODES

ML9XX11 SERIES

InGaAsP DFB LASER DIODES

**TYPE
NAME**

ML925B11F/ML920J11S/ML925J11F

DESCRIPTION

ML9XX11 series are DFB (Distributed Feedback) laser diodes emitting light beam around 1550nm. They are well suited for light source in long distance digital transmission systems. ML925B11F / ML920J11S are hermetically sealed devices with the photo diode for optical output monitoring.

FEATURES

- Low threshold current (typical 10mA)
- Wide temperature range operation
- High - side mode suppression ratio (typical 40dB)
- High speed response (typical 0.2nsec)
- MQW* active layer
- FSBH** structure fabricated by MOCVD process
 - * Multiple Quantum Well
 - ** Facet Selective - growth Buried Hetero structure

APPLICATION

Long - distance digital transmission system

***Specification Note

Type	Operation Temperature Range
ML9XX11-01	Tc=-40 to 85°C
ML9XX11-02	Tc=-20 to 85°C
ML9XX11-03	Tc= 0 to 85°C

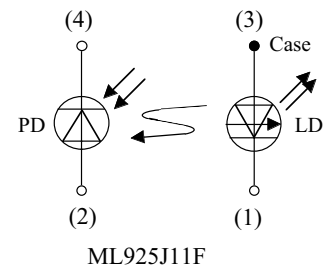
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Ratings		Unit
Po	Light output power	CW	6		mW
VRL	Reverse voltage (Laser diode)	-	2		V
VRD	Reverse voltage (Photo diode)	-	20		V
IFD	Forward current (Photo diode)	-	2		mA
Tc	Case temperature	-	-01	-40 to +85	°C
			-02	-20 to +85	
			-03	0 to +85	
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	30	mA
Iop	Operation current	CW,Po=5mW	-	20	60	mA
Vop	Operating voltage	CW,Po=5mW	-	1.2	1.8	V
η	Slope efficiency	CW,Po=5mW	0.15	0.25	-	mW/mA
λ_p	Peak wavelength	CW,Po=5mW ***)Note	1530	1550	1570	nm
$\theta_{//}$	Beam divergence angle (parallel)	CW,Po=5mW	-	25	35	deg.
$\theta_{\perp}$	Beam divergence angle (perpendicular)	CW,Po=5mW	-	35	45	deg.
SMSR	Side mode suppression ratio	CW,Po=5mW ***)Note	30	40	-	dB
Im	Monitoring output current	CW,Po=5mW	-	0.2	-	mA
tr,tf	Rise and Fall time	If=Ith,Po=5mW,10 - 90%	-	0.2	0.4	ns

InGaAsP DFB-LASER DIODES



TYPICAL CHARACTERISTICS

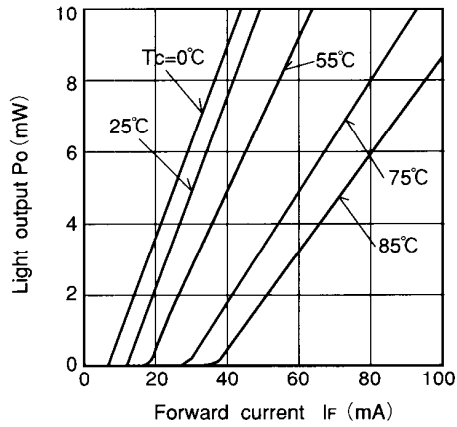


Fig.1 Light output vs. forward current

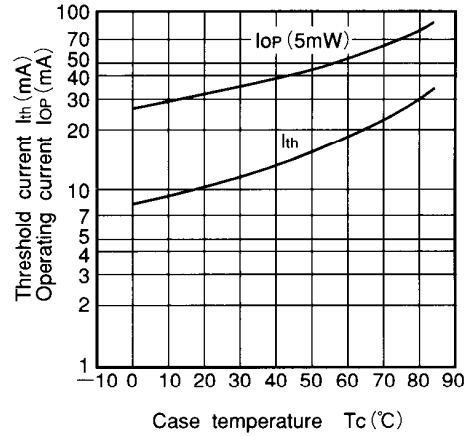


Fig.2 Temperature dependence of l_{th} and l_{op}

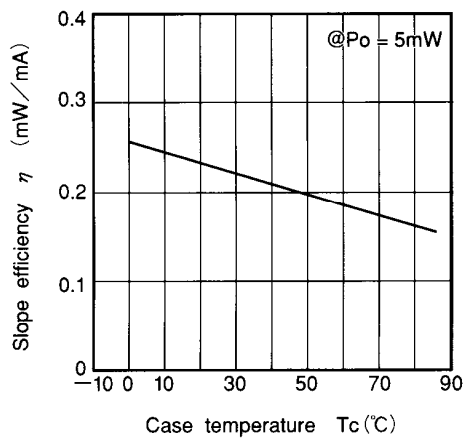


Fig.3 Temperature dependence of slope efficiency

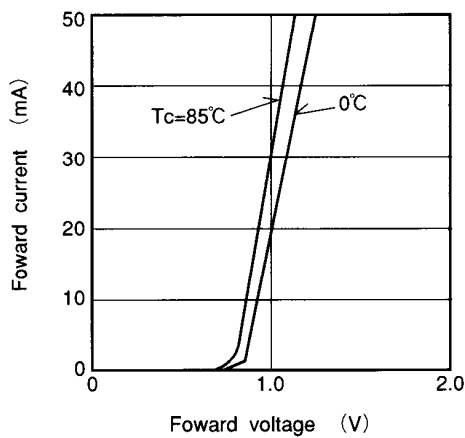


Fig.4 Forward current vs. voltage

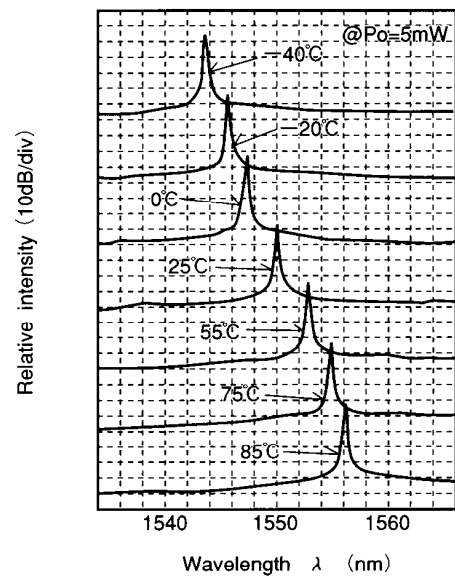


Fig.5 Spectrum

TYPICAL CHARACTERISTICS

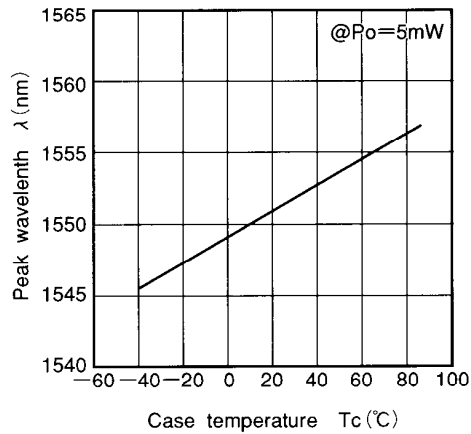


Fig.6 Temperature dependence of peak wavelength

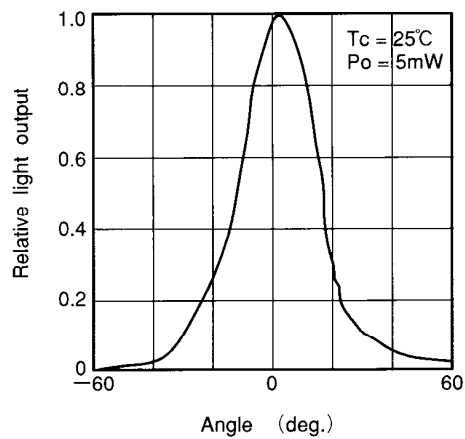


Fig.7-1 Far field pattern $\theta //$

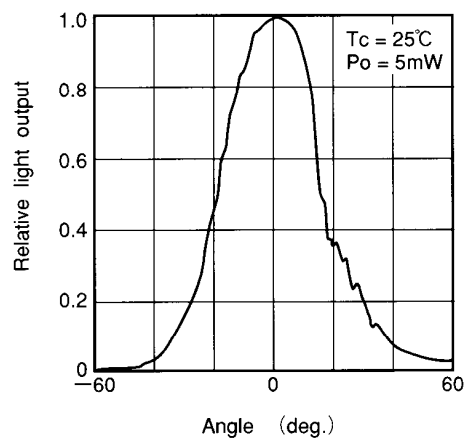


Fig.7-2 Far field pattern $\theta \perp$

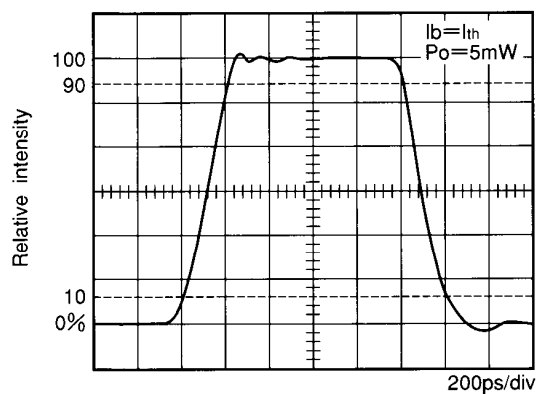


Fig.8 Pulse response waveform

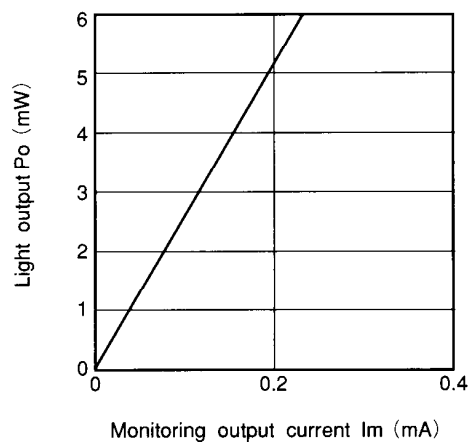


Fig.9 Light output vs. monitoring output current