10 GB/s Laser Module

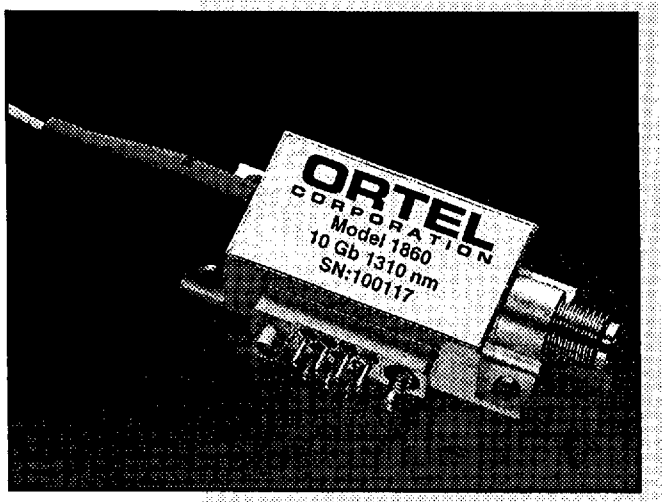
1310 nm Direct Modulation
Model 1860A

DATA SHEET

The Model is a 1860A Directly Modulated 10 Gb/s DFB laser module with the high bandwidth and damping suitable for 10 Gb/s transmission over distances exceeding 50 km. This laser can be used for low cost bandwidth upgrades over traditional intra-city fiber optic links. The 1310 nm wavelength reduces concern about dispersion control and mapping for conventional single-mode fiber. The module includes a thermoelectric cooler, optical isolator, and monitor photodiode.

Features:

- **High Extinction Ratio**
- **Large Laser Distance x Bandwidth Product**
- **High Efficiency, High Power**
- **Works with Modular Drivers**
- **OC-192/STM-64 Applications**
- **ISO 9001 Certified**



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10 GB/s Laser Module

PRELIMINARY

Specifications (0°C to 65°C)						
Optical Parameter	**Sym**	**Condition**	**Min**	**Typ**	**Max**	**Units**
Optical Output Power	P_o	I-I_{th} = 40 mA	-	4	-	mW
Wavelength	λ	-	1290	-	1330	nm
External Efficiency	η	-	0.08	0.1	-	W/A
Spectral Width	λ	FWHM	-	-	10	Mhz
Side Mode Suppression	SMSR	-	30	-	-	dB
Chromatic Dispersion Penalty 40 km SMF	-	10 GB/s, NRZ, Er = 10 dB BER = 10-9	-	-	0.5	dB
Optical Isolation	-	-	30	-	-	dB
Electrical Parameter						
High Frequency	F_h	-	10	12	-	GHz
Low Frequency Cutoff	F_l	-	-	-	500	kHz
Input Return Loss, 50Ω	S_{11}	500 kHz - 10 GHz	10	-	-	dB
Rise Time, 20% - 80%	τ_r	10 GB/s, NRZ, Er = 10 dB, 1-Ith = 40 mA avg	-	-	35	pS
Fall Time, 80% - 20%	τ_f	10 GB/s, NRZ Er = 10 dB, 1-Ith = 40 mA avg	-	-	40xz	pS
Threshold Current	I_{th}	-	-	15	35	mA
Thermo-Electric Cooler Current	I_{tec}	T = 65°C T = -20 °C	- -	- -	1 .8	A A
Thermistor Resistance	R_{th}	25 °C	-	10	-	KΩ
Thermistor Coefficient	-	-	-	-4.4	-	%/ °C
Monitor Photodiode Current	I_{MPD}	I-I_{th} = 40 mA	100	-	-	µA
Input Impedance	Zin	-	-	50	-	Ω
Maximum Ratings						
Input Signal	V_{max}	Laser Biased Laser Un-Biased	- -	- -	4 2	Vp-p Vp-p
Laser Forward Bias	-	TEC on, 60 sec	-	-	120	mA
Storage/Operating Temperatures	-	-	-20	-	85	°C
Reverse Voltage (Laser)	-	-	-	-	2	V
Reverse Voltage (Photodiode)	-	-	-	-	10	V
TEC Current	-	-	-	-	1.2	A

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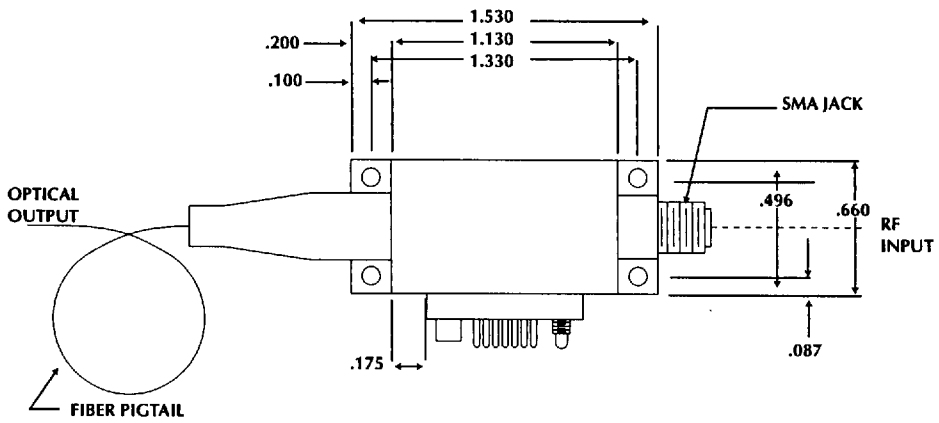
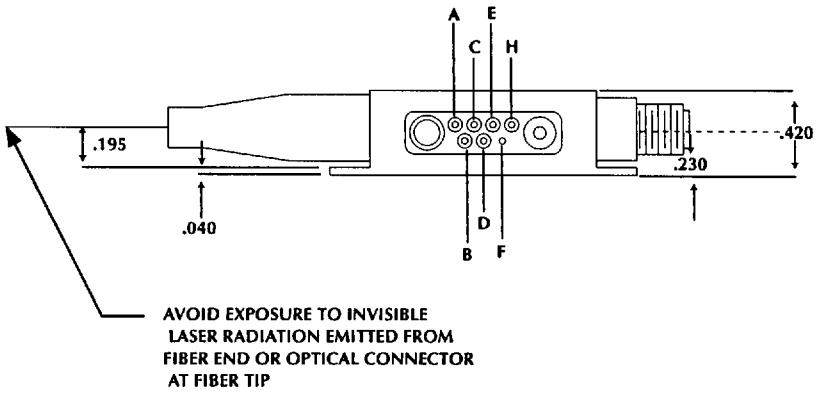


Pin	Function
A	Themistor
B	T/E Cooler (-)
C	Themistor
D	T/E Cooler (+)
E	Laser Bias
F	Ground
H	Monitor Photodiode



Safety Considerations – The light emitted from this laser diode is invisible and may be harmful to the human eye. Avoid looking directly into the fiber pigtail or into the collimated beam along its axis when the device is in operation. Operating the laser diode outside of its maximum ratings may cause device failure or a safety hazard.

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