



DATA SHEET

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O K I O P T I C A L C O M P O N E N T S

OL5150M  
EA Modulator Integrated DFB Laser  
10-Gbps (1550 nm)

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June 2002

**Oki Optical Components**

**OKI**

Document Reference: Rev 3

# Oki Optical Components

## OL5150M

1550-nm 10 Gbps EA Modulator with Integrated DFB Laser

### DESCRIPTION

Oki's OL5150M is a 1550-nm DFB laser diode monolithically integrated with an electro-absorption (EA) modulator. The 10-Gbps (OC-192) OL5150M is available in a 7-pin package with a K-connector RF input.

### FEATURES

- Low dispersion penalty over 40 km (800 ps/nm/km) for 10-Gbps operation
- Low modulation voltage : < 2.5 Vpp
- Large dynamic extinction ratio : > 10 dB
- Fiber output power : > 3 dBm (CW)
- 7-pin package with a K-connector RF input

### APPLICATIONS

- 10 Gbps (OC-192) intermediate reach transmission
- High-speed data communication

### OPTICAL AND ELECTRICAL CHARACTERISTICS

(TLD = 25°C, Tc = 0 to 65°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Fiber Output Power	Po	CW, Vm = 0V	3	---	---	dBm
Operation Current	Iop	Po = 3dBm, CW, Vm = 0V	---	---	100	mA
Threshold Current	Ith	-----	---	---	35	mA
Peak Wavelength	$\lambda_p$	Po = 3dBm	1530	---	1565	nm
Side Mode Suppression Ratio	SMSR	Po = 3dBm	30	---	---	dB
LD Forward Voltage	Vf	Po = 3dBm, CW, Vm = 0V	---	---	2.0	V
Monitor Current	Im	Po = 3dBm, CW	50	---	1000	$\mu$ A
Bandwidth	fc	- 3dB(electrical), Vm = -1V	10	---	---	GHz
Dynamic Extinction Ratio	DER	2 to 2.5 Vpp, 10 Gbps	10	---	---	dB
RF Return Loss (0 to 5 GHz)	S11	Po = 3dBm, Vm = -1V	8	---	---	dB
RF Return Loss (5 to 10 GHz)	S11	Po = 3dBm, Vm = -1V	5	---	---	dB
Dispersion Penalty	DP	800 ps/nm, BER=10 <sup>-10</sup>	---	---	2	dB
TEC Current	Ipe	$\Delta$ T = 40°C, Po = 3dBm	---	---	1.2	A
TEC Voltage	Vpe	$\Delta$ T = 40°C, Po = 3dBm	---	---	3	V
Thermistor Resistance	Rth	-----	9.5	---	10.5	k $\Omega$
Thermistor B Value	Bth	25°C/50°C	---	3450	---	K

**ABSOLUTE MAXIMUM RATING**

(Tc = 25 °C, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Case Temperature	Tc	0 to +65	°C
Storage Temperature	Tstg	-40 to +85	°C
LD Forward Current	ILDF	150	mA
LD Reverse Voltage	VLDR	2	V
Modulator Voltage	V <sub>m</sub>	-3.5 to +0.5	V
TEC Voltage	V <sub>c</sub>	3.2	V
TEC Current	I <sub>c</sub>	1.5	A

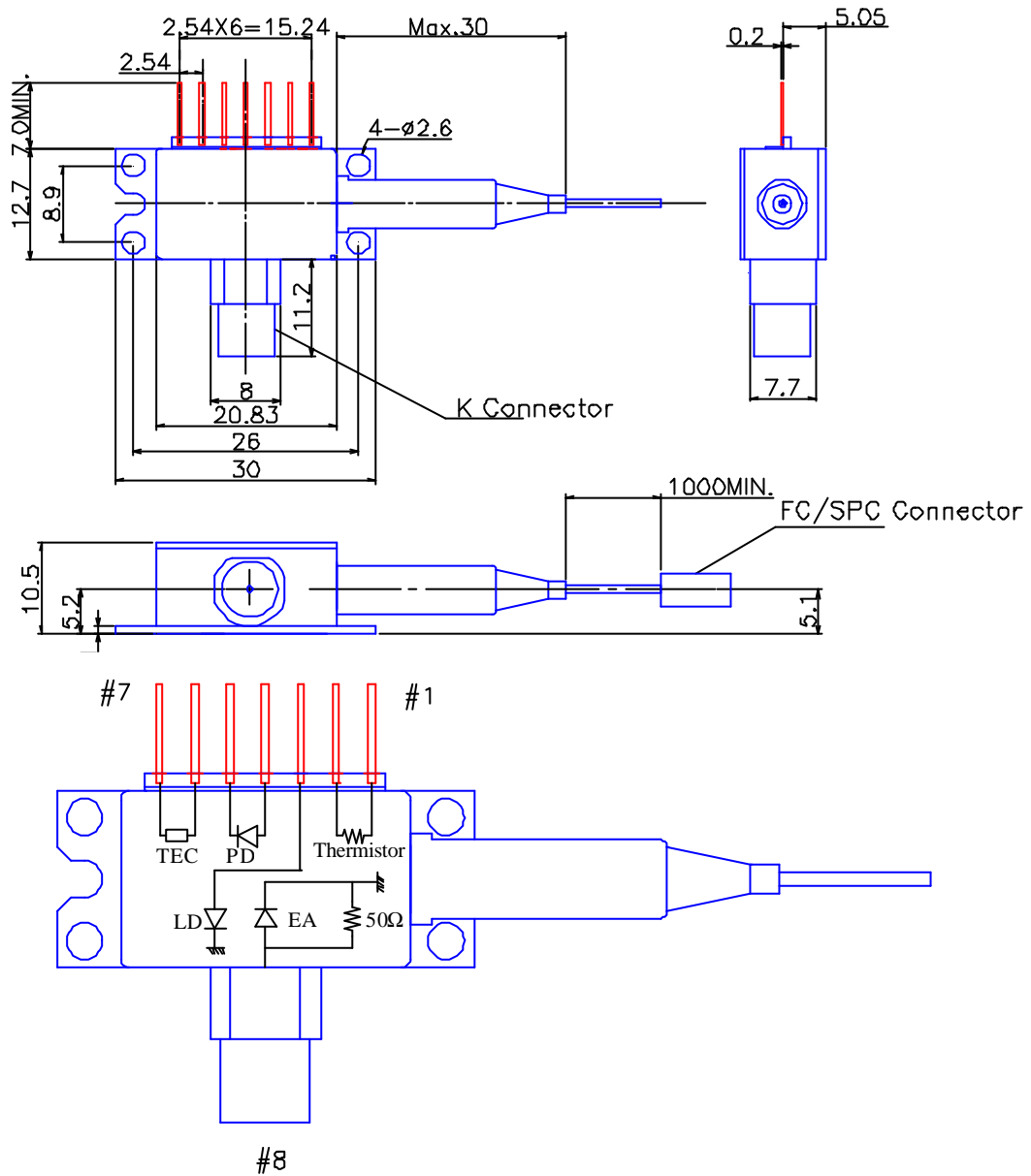
**CONNECTOR AND FIBER SPECIFICATIONS**

Parameter	Specifications	Unit
Type	SMF	---
Mode Field Diameter	10.5+/-1	um
Cladding Diameter	125+/- 2	um
Jacket Diameter	0.9	mm
Length	1 (min.)	m
Connector	FC/SPC	---

**OUTLINE DRAWING**

All dimensions in millimeters, Package No. 150

Tolerances Unless Noted +/-0.5

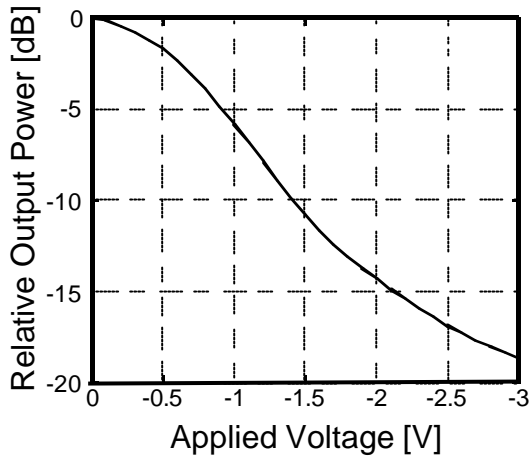


**Package Pinout**

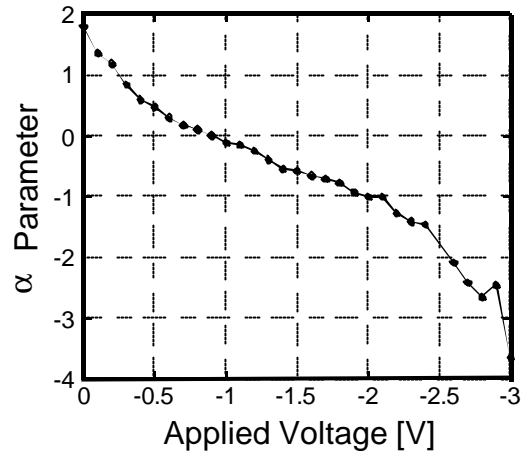
Pin No.		Pin No.	
1	Thermistor	5	Monitor Cathode
2	Thermistor	6	TEC+
3	LD Anode	7	TEC-
4	Monitor Anode	8	RF

**Typical Characteristics**

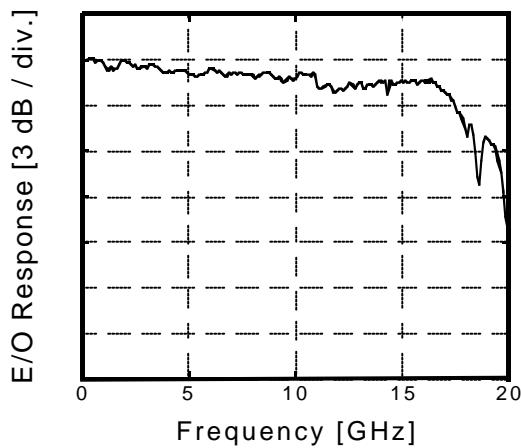
Extinction Ratio



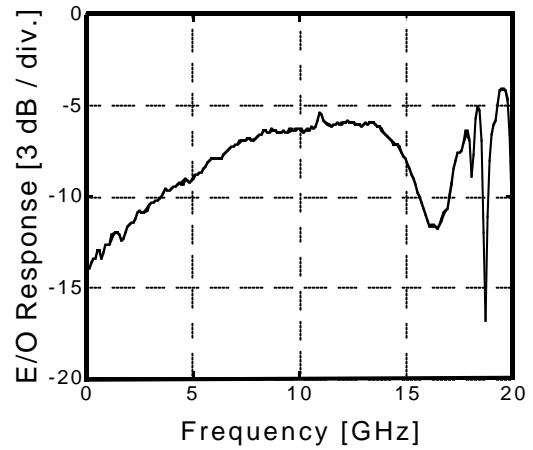
$\alpha$  Parameter



E/O Response

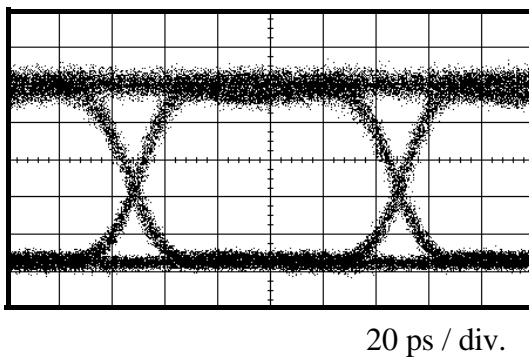


Electrical Return Loss

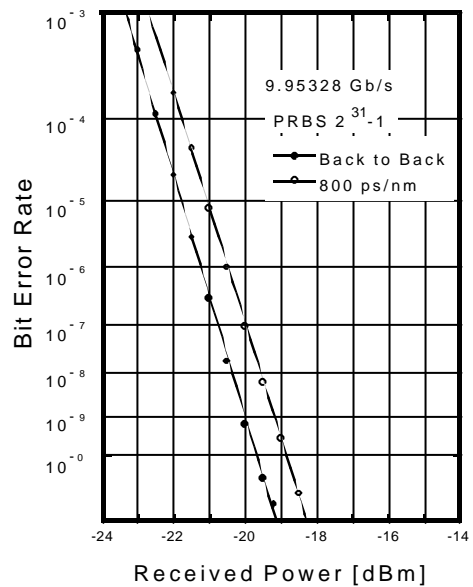


Eye Pattern

10 Gb/s, 2 Vp-p, Vc = -1.5 V, B-B



Bit Error Rate



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### **Corporate Headquarters**

785 N. Mary Avenue  
Sunnyvale, CA 94085  
Tel: 408/720-1900  
Fax: 408/720-1921

**Oki Web Site:**

***[www.okioptical.com](http://www.okioptical.com)***

**Stock No: 320335-001**

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Tel: 408/720-1900  
Fax: 408/720-1921