

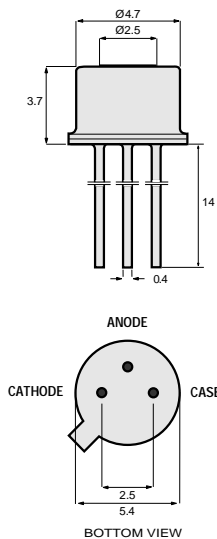
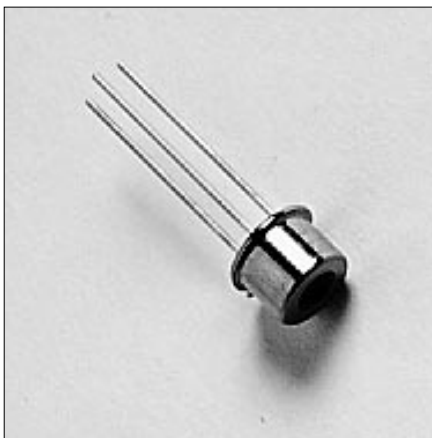
PRODUCT INFORMATION

840nm

1A440
VCSEL Laser Diode

Datacom, General Purpose

This Vertical Cavity Surface-Emitting Laser is designed for Fibre Channel, Gigabit Ethernet, ATM and general applications. It operates in multiple transverse and single longitudinal mode, ensuring stable coupling of power and low noise.



All dimensions in mm

The chip is isolated from the case.

TO-46 Package With Flat Window

WARNING: Laser Radiation, avoid exposure to beam. Class 3B laser product, potential eye hazard. Warning labels in each box.

Optical and Electrical Characteristics (25° C Case Temperature)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Fiber-Coupled Power	P_{fiber}		1.3		mW	$I_F=12\text{mA}$ (Note 1)
Optical Power	P_O	0.9	1.7	3.0	mW	$I_F=12\text{mA}$
Slope Efficiency (dP_O/dI_F)	η		200		mW/A	$I_F=12\text{mA}$
Beam Divergence	θ		15		deg	Full Width at $1/e^2$
Bandwidth (3dB_{e1})	f_C		2		GHz	$I_F=12\text{mA}$
Peak Wavelength	λ_p	830	840	860	nm	$I_F=12\text{mA}$
Spectral Width (FWHM)	$\Delta\lambda$		0.5	1	nm	$I_F=12\text{mA}$
Forward Voltage	V_F		1.9	2.2	V	$I_F=12\text{mA}$
Threshold Current	I_{th}		3.5	6	mA	
Relative Intensity Noise	RIN		-130		dB/Hz	$I_F=12\text{mA}$, $f=1\text{GHz}$

Note 1: Fiber: 50/125 Graded Index, NA=0.2 or 62.5/125 Graded Index, NA=0.275. An external glass ball lens with 2 mm diameter is required.

Absolute Maximum Ratings

PARAMETER	SYMBOL	LIMIT
Storage Temperature	T_{stg}	-55 to +125°C
Operating Temperature	T_{op}	0 to +70°C
Electrical Power Dissipation	P_{tot}	35 mW
Continuous Forward Current ($f \leq 10\text{kHz}$)	I_F	15 mA
Peak Forward Current (duty cycle $\leq 50\%$, $f \geq 1\text{MHz}$)	I_{FRM}	25 mA
Reverse Voltage	V_R	1.5 V
Soldering Temperature (2mm from the case for 10 sec)	T_{sld}	260°C

Thermal Characteristics

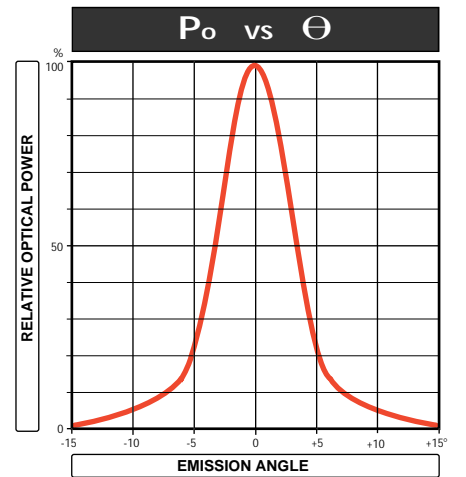
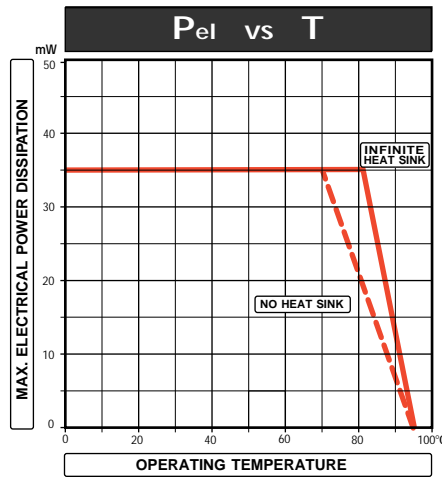
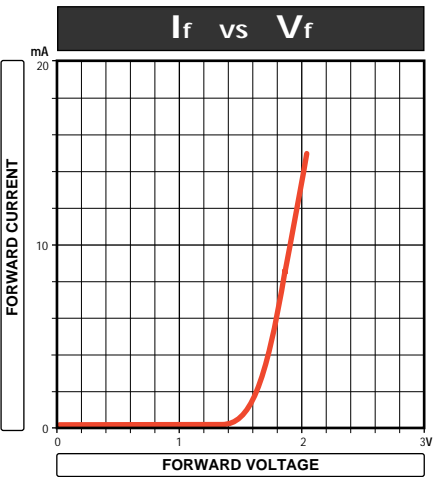
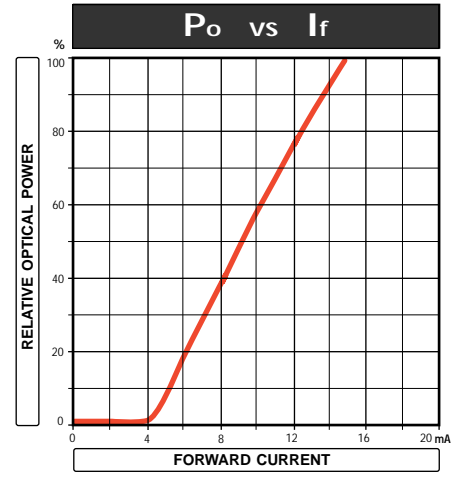
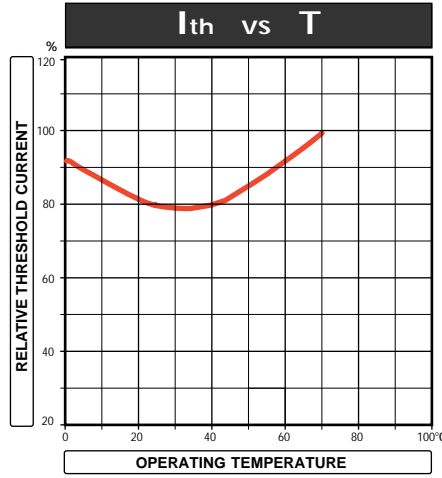
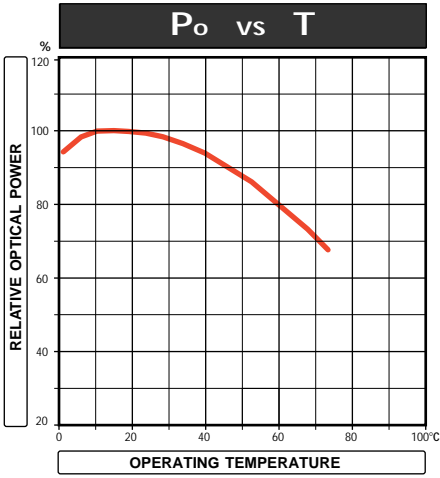
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Thermal Resistance - Infinite Heat Sink	R_{thjc}		400		°C/W
Thermal Resistance - No Heat Sink	R_{thja}		700		°C/W
Temp. Coefficient - Wavelength	$d\lambda/dT_j$		0.06		nm/°C
Optical Power - Variation 0 to 70°C	ΔP		± 0.7		dB
Threshold Current - Variation 0 to 70°C	ΔI_{th}		± 0.6		mA

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Europe: Tel (46) 8 58 02 45 00 Fax (46) 8 58 02 01 10
Tel (44) 1291 436180 Fax (44) 1291 436771

America: Tel 1-800-96MITEL Fax (613) 592-6909
Asia: Tel (65) 293 5312 Fax (65) 293 8527





<http://www.mitelsemi.com>

World Headquarters - Canada

Tel: +1 (613) 592 2122
Fax: +1 (613) 592 6909

North America

Tel: +1 (770) 486 0194
Fax: +1 (770) 631 8213

Asia/Pacific

Tel: +65 333 6193
Fax: +65 333 6192

**Europe, Middle East,
and Africa (EMEA)**

Tel: +44 (0) 1793 518528
Fax: +44 (0) 1793 518581

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