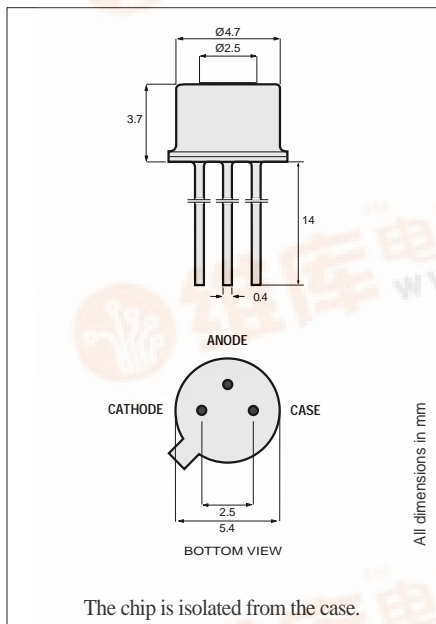


# PRODUCT INFORMATION

840nm	<b>1A440</b> VCSEL Laser Diode	<b>Datacom, General Purpose</b>
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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.



**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	$P_{\text{fiber}}$		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 ( $dP_o/dI_F$ )	$\eta$		200		mW/A	$I_F=12\text{mA}$
Beam Divergence	$\theta$		15		deg	Full Width at 1/e <sup>2</sup>
Bandwidth (3dB <sub>e1</sub> )	$f_c$		2		GHz	$I_F=12\text{mA}$
Peak Wavelength	$\lambda_p$	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 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

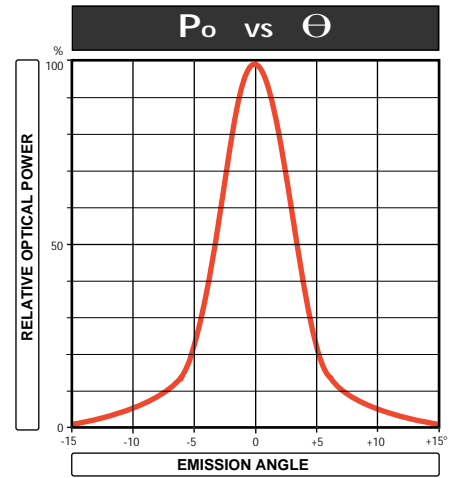
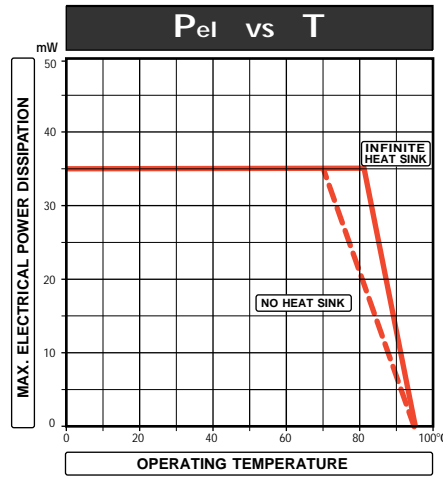
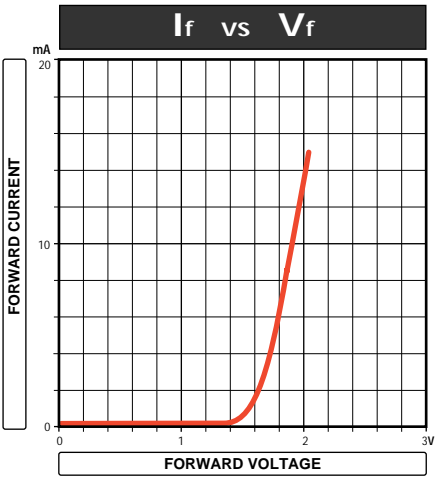
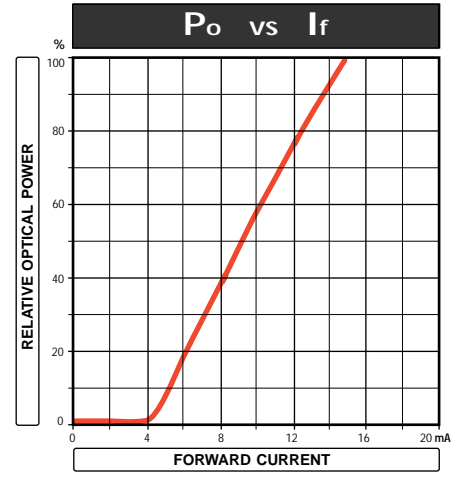
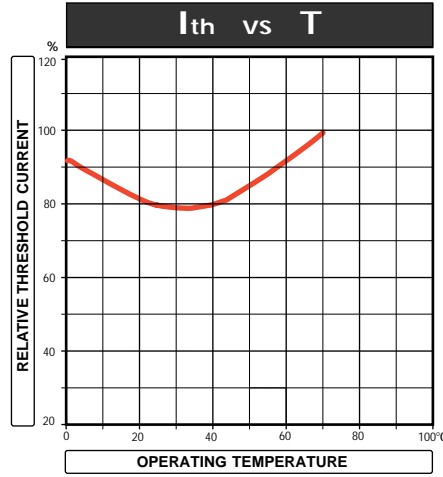
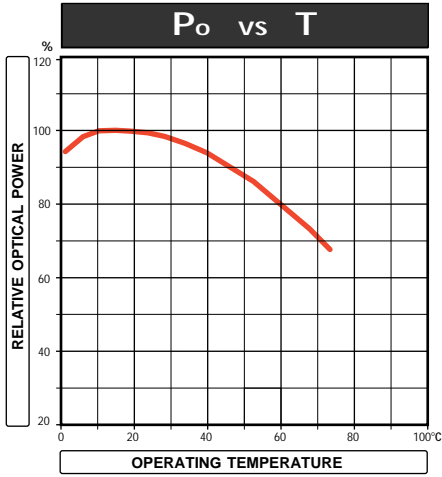
PARAMETER	SYMBOL	LIMIT
Storage Temperature	$T_{\text{stg}}$	-55 to +125° C
Operating Temperature	$T_{\text{op}}$	0 to +70° C
Electrical Power Dissipation	$P_{\text{tot}}$	35 mW
Continuous Forward Current ( $f \leq 10$ kHz)	$I_F$	15 mA
Peak Forward Current (duty cycle $\leq 50\%$ , $f \geq 1$ MHz)	$I_{\text{FRM}}$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

## Thermal Characteristics

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



**1A440**  
VCSEL Laser Diode 840nm





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