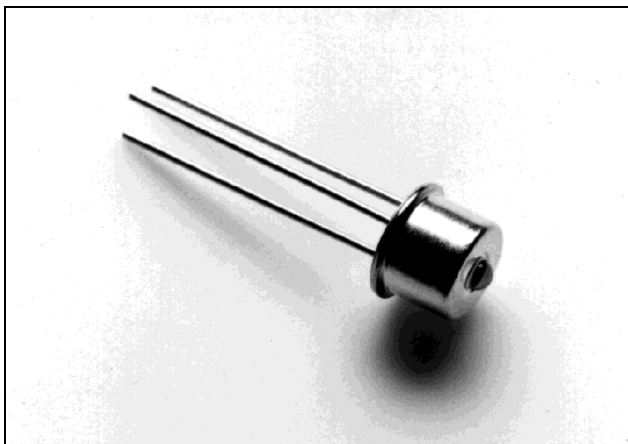


April 2004



Features

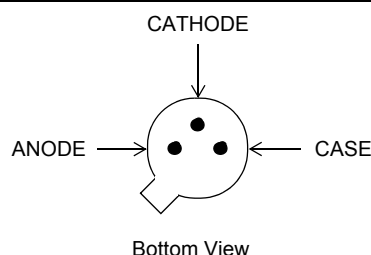
- 850 nm oxide confined VCSEL
- Data rate up to 3.1 Gbps
- High fiber coupling efficiency
- Optical field stable over temperature and current

Applications

- High speed Data Communication and Telecommunication
- Gigabit Ethernet / InfiniBand / FiberChannel / ATM

Ordering Information

ZL60001/TBD TO-46 with lens

-0°C to +70°C

The cathode is in electrical contact with the case.

Figure 1 - Pin Diagram

Description

The ZL60001 is a high speed TO-46 assembled 850 nm VCSEL (Vertical Cavity Surface-Emitting Laser).

The product converts electrical current into optical power to be used for fibre optic communications.

The ZL60001 has a narrow beam divergence which is stable over temperature and current. This gives rise to high and stable fibre coupling efficiency without any additional lenses.



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

Optical and Electrical Characteristics – Case Temperature 25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Fiber-Coupled Power (50/125 μm fibre)	P_{fibre}	0.7			mW	$I_F = 7 \text{ mA}$
Optical Power	P_O			3.5	mW	$I_F = 7 \text{ mA}$
Threshold Current (0 – 70°C)	I_{th}	1		4.5	mA	
Forward Voltage	V_F	1.6		2.2	V	$I_F = 7 \text{ mA}$
Centre wavelength	λ_C	830	850	860	nm	$I_F = 7 \text{ mA}$
RMS Spectral Width	$\Delta\lambda$			0.85	nm	$I_F = 7 \text{ mA}$
Differential resistance	R_{diff}			50	Ω	$I_F = 7 \text{ mA}$
Relative Intensity Noise	RIN			-120	dB/Hz	$I_F = 7 \text{ mA}$, Note 1
Optical Rise Time (20%-80%)	t_r		80	130	ps	Note 2
Optical Fall Time (20%-80%)	t_f		100	140	ps	Note 2
Beam divergence ($1/e^2$)	θ	5		15	$^\circ$	Note 3

Note 1: ANSI X3.230-1994

Note 2: InfiniBand sec. 8.5.3.2

Note 3: Over operating current and bias over threshold

Absolute Maximum Ratings

Parameter	Symbol	Limit
Storage Temperature	T_S	-40 to +100°C
Operating Temperature (case)	T_O	0 to +70°C
Electrical Power Dissipation	P_{diss}	35 mW
Continuous Forward Current ($f < 10 \text{ kHz}$)	I_F	15 mA
Reverse Voltage	V_R	5 V
Soldering Temperature (2 mm from case for 10 sec)	T_{sld}	260°C

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance – Infinite Heat Sink	R_{thjc}		1300		$^\circ\text{C/W}$
Thermal Resistance – No Heat Sink	R_{thja}		1600		$^\circ\text{C/W}$
Temp. Coefficient - Wavelength	$d\lambda/dT_j$		0.06		nm/ $^\circ\text{C}$
Optical Power – Variation (0 – 70°C)	ΔP_O		± 0.3		%/ $^\circ\text{C}$
Threshold Current – Variation (0 – 70°C)	ΔI_{th}		± 0.6		mA

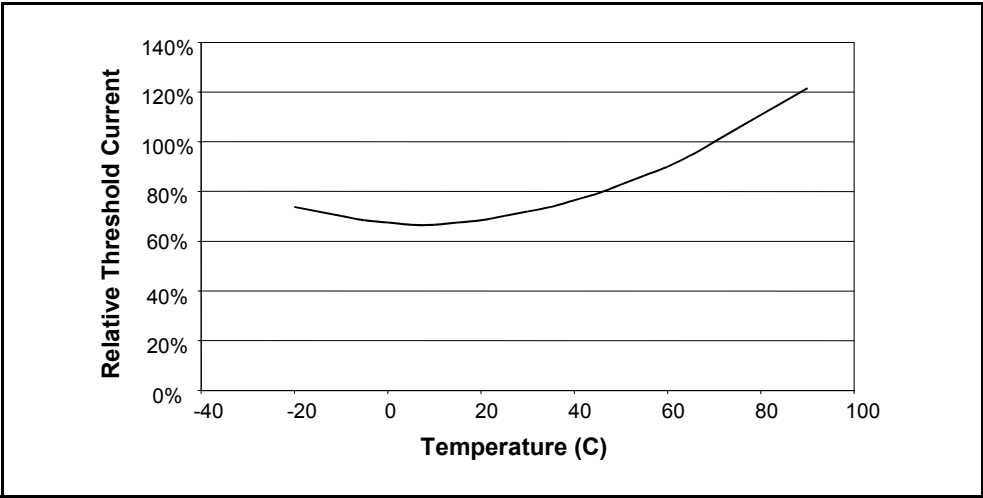


Figure 2 - Threshold Current over Temperature

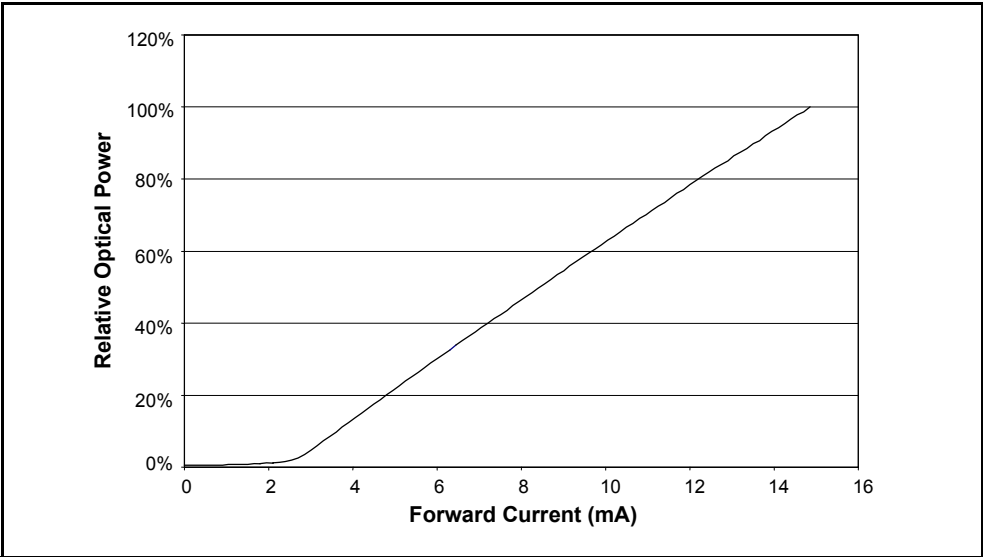
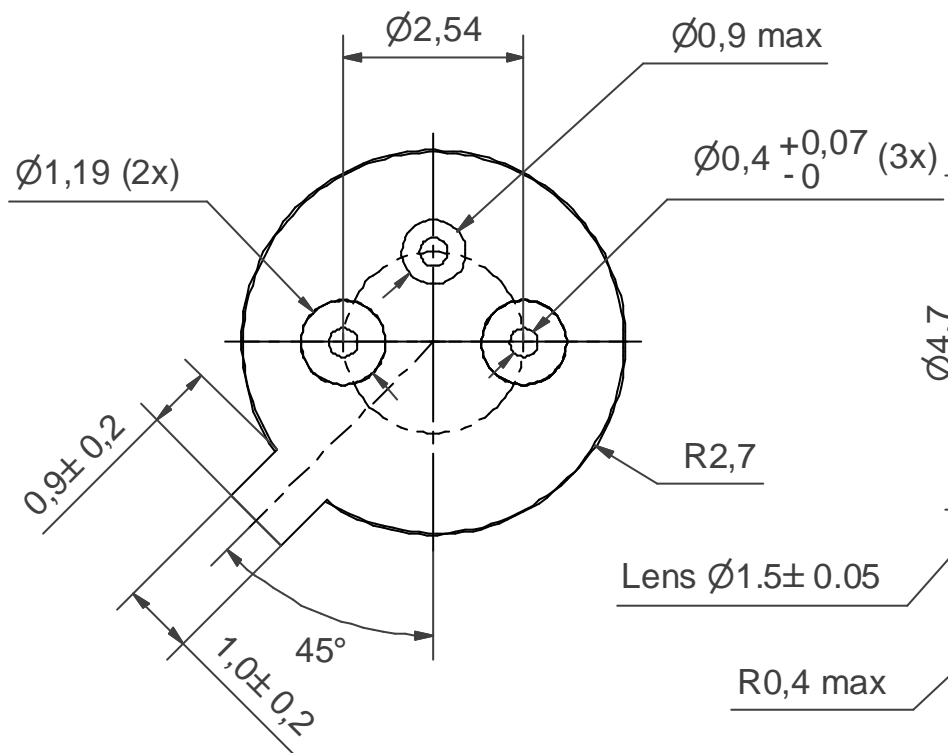
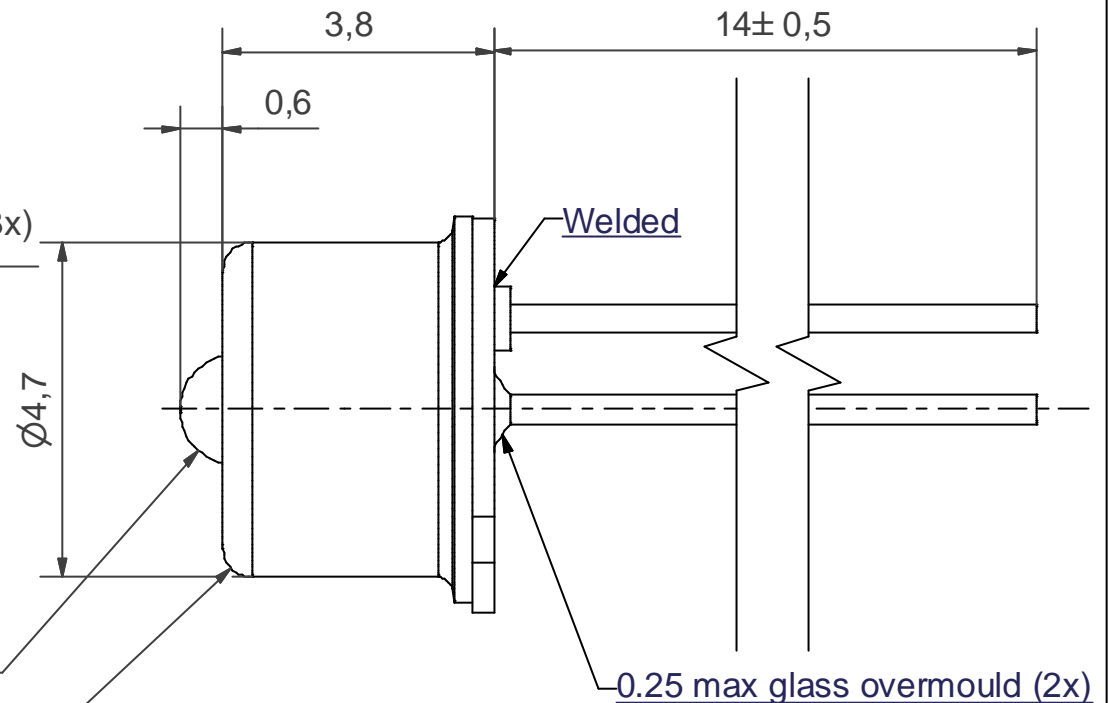


Figure 3 - Optical Power vs Forward Current

BOTTOM VIEW (10 : 1)



SIDE VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.
3. Coating: Case: Ni 1,5-2,5 μm .
Header: Ni min 0,5 μm / Au min 1,5 μm .

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Previous package codes

Package code **TB**

Drawing type
Package drawing, TO-46 with lens

Title **JS004077**



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