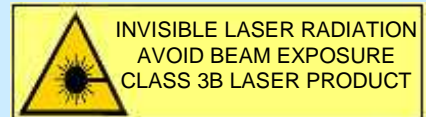


# 852 $\pm$ 1/ $\pm$ 10 nm Single Mode VCSEL TO46 & TEC

- ◆ Vertical Cavity Surface-Emitting Laser
- ◆ internal TEC, Thermistor, ESD protection diode
- ◆ Narrow linewidth
- ◆ 2nm tunability with TEC
- ◆ High performance and reliability



## ELECTRO-OPTICAL CHARACTERISTICS

Preliminary

PARAMETER	SYMBOL	UNITS	MIN	TYP	MAX	TEST CONDITIONS
Emission wavelength	$\lambda_R$	nm	851	852	853	T=20°C, I <sub>TEC</sub> =0, P <sub>OP</sub> =0.5mW
Threshold current	I <sub>TH</sub>	mA		0.5		T=20°C
Output power	P <sub>opt</sub>	mW	0.5			T=0 .. 50°C
Threshold voltage	U <sub>TH</sub>	V		1.8		
Laser current	I <sub>OP</sub>	mA			2.0	P <sub>opt</sub> =0.5 mW
Laser voltage	U <sub>OP</sub>	V		2.0		P <sub>opt</sub> =0.5 mW
Wallplug efficiency	$\eta_{WP}$	%		12		P <sub>opt</sub> =0.5 mW
Slope efficiency	$\eta_S$	W/A		0.3		T= 20°C
Differential series resistance	R <sub>S</sub>	$\Omega$		250		P <sub>opt</sub> =0.5 mW
3dB modulation bandwidth	V <sub>3dB</sub>	GHz	1 0.1			P <sub>opt</sub> =0.5 mW (due to ESD protection diode)
Relative intensity noise	RIN	dB/Hz		-130.0	-120.0	P <sub>opt</sub> = 0.3 mW @ 1 GHz
Wavelength tuning over current		nm/mA		0.60		
Wavelength tuning over temperature		nm/K		0.06		
Thermal resistance (VCSEL chip)	R <sub>thermal</sub>	K/mW	3		5	
Side mode supression		dB	30			
Beam divergence	$\theta$	°	10		25	P <sub>opt</sub> =0.5 mW, full width 1/e <sup>2</sup>
Spectral bandwidth	$\Delta\lambda$	MHZ		100.0		P <sub>opt</sub> =0.5 mW
TEC current		mA			500.0	appropriate heatsink required
NTC Thermistor Resistance		K $\Omega$	9.5	10.0	10.5	T=25°C
NTC Temperature Dependence		K $\Omega$	10/exp[3892*(1/298K-1/T <sub>op</sub> )]			
Wavelength tuning over TEC current		nm/mA		0.008		TEC current < 200 mA

## ABSOLUTE MAXIMUM RATINGS

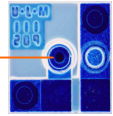
Storage temperature	-40 .. 125°C
Operating temperature	-20 .. 80°C
Electrical power dissipation	5 mW
Continous forward laser current	2 mA
Laser reverse voltage	8V
Soldering temperature*:	270°C

(\*TEC temperature must be below 150°C)

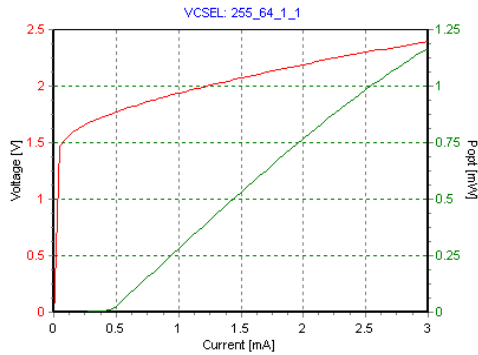
**NOTICE:** Stresses greater than those listed under „Absolute Maximum Ratings“ may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated for extended periods of time may effect device reliability.



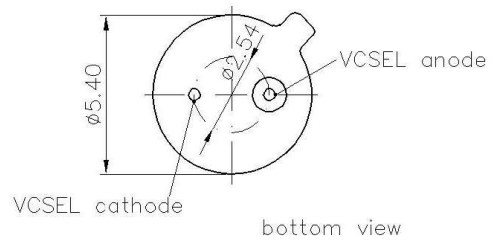
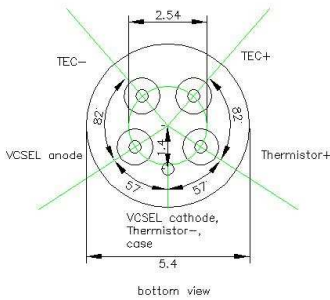
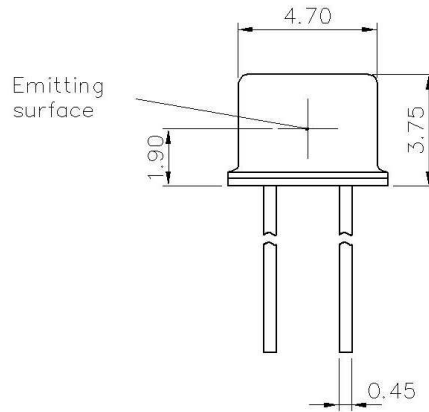
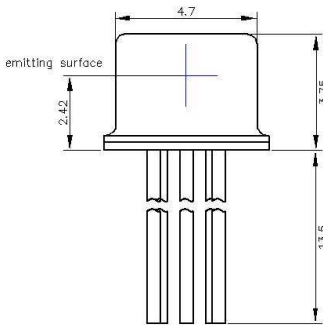
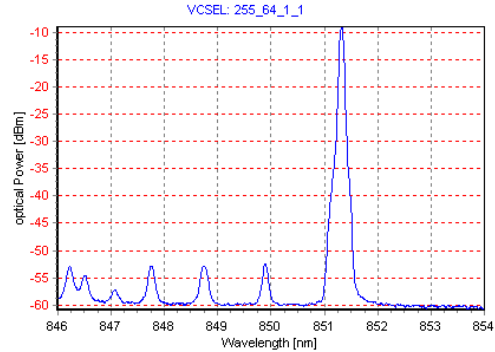
**ATTENTION:** Electrostatic Sensitive Devices  
Observe Precautions for Handling



**LIV**



**Spectral Characteristics**



For order please use:

	±1nm	±10nm
with TEC/Thermistor:	ULM852-01-TN-S46FTT	ULM852-10-TN-S46FTT
without TEC/Thermistor:	ULM852-01-TN-S46FZP	ULM852-10-TN-S46FZP

**OPTION: Wide range of TO headers & caps (flat, tilted, ball)  
Customer specific wavelength selection on request  
Without ESD protection diode on request**