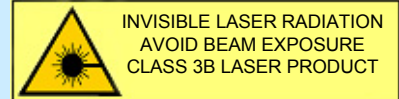


Single Mode VCSEL 780±1 nm TO46 & TEC

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



ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	UNITS	MIN	TYP	MAX	TEST CONDITIONS
Emission wavelength	λ_R	nm	779	780	781	T=20°C, I _{TEC} =0, P _{opt} =0.3mW
Threshold current	I _{TH}	mA		0.5		T=20°C
Output power	P _{opt}	mW	0.25			T=0 .. 50°C
Threshold voltage	U _{TH}	V		1.8		
Laser current	I _{OP}	mA			2.0	P _{opt} =0.3 mW
Laser voltage	U _{OP}	V		2.3		P _{opt} =0.3 mW
Wallplug efficiency	η_{WP}	%		12		P _{opt} =0.3 mW
Slope efficiency	η_S	W/A		0.4		T= 20°C
Differential series resistance	R _S	Ω		250		P _{opt} =0.3 mW
3dB modulation bandwidth	V _{3dB}	GHz	1			P _{opt} =0.3 mW
Relative intensity noise	RIN	dB/Hz		-130.0	-120.0	P _{opt} = 0.3 mW @ 1 GHz
Wavelength tuning over current		nm/mA		0.60		
Wavelength tuning over temperature		nm/K		0.06		
Thermal resistance	R _{thermal}	K/mW	3		5	
Side mode supression		dB	30			
Beam divergence	θ	°	10		25	P _{opt} =0.3 mW, full width 1/e ²
Spectral bandwidth	$\Delta\lambda$	MHz		100.0		P _{opt} =0.3 mW
TEC current		mA			500.0	appropriate heatsink required
NTC Thermistor Resistance		K Ω	9.5	10	11	T=25°C
NTC Temperature Dependence		K Ω	10/exp[3892*(1/298K-1/T _{op})]			
Wavelength tuning over TEC current		nm/mA		0.008		TEC current < 200 mA

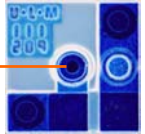
ABSOLUTE MAXIMUM RATINGS

Storage temperature	-40 .. 125°C
Operating temperature	-20 .. 80°C
Electrical power dissipation	5 mW
Continuous 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.

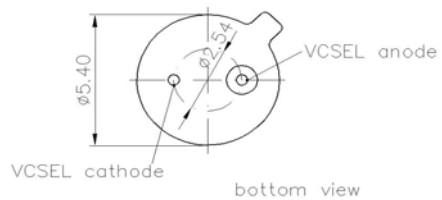
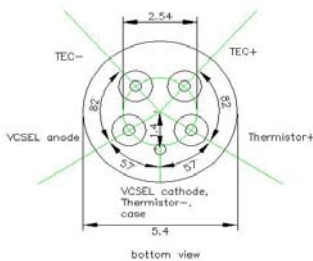
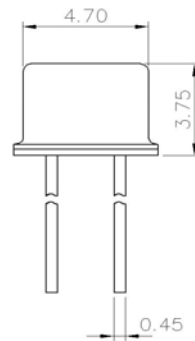
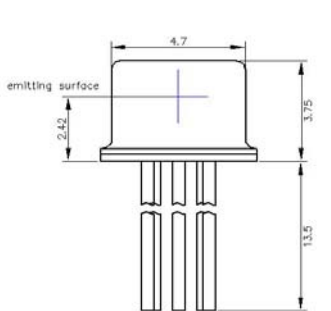
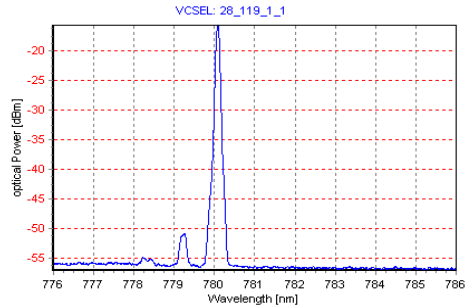


ATTENTION: Electrostatic Sensitive Devices
Observe Precautions for Handling



LIV

Spectral Characteristics



For order please use:

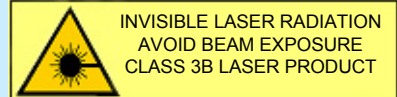
with TEC/Thermistor: ULM780-01-TN-S46FTT

without TEC/Thermistor: ULM780-01-TN-S46FOP

OPTION: Wide range of TO headers & caps (flat, tilted, ball)

Single Mode VCSEL 852±1 nm TO46 & TEC

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



ELECTRO-OPTICAL CHARACTERISTICS

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

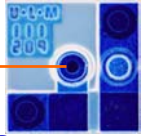
ABSOLUTE MAXIMUM RATINGS

Storage temperature	-40 .. 125°C
Operating temperature	-20 .. 80°C
Electrical power dissipation	5 mW
Continuous forward laser current	2 mA
Laser reverse voltage	8V
Soldering temperature*:	270°C
(*TEC temperature must be below 150°C)	

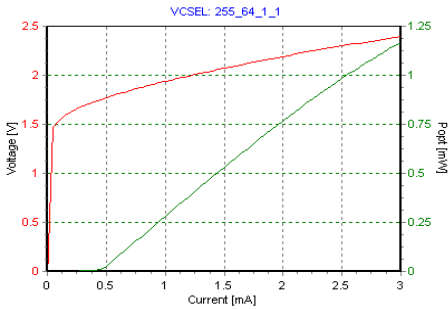
NOTICE: Stresses greater than those listed under „Absolute Maximum Ratings“ may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated for extended periods of time may effect device reliability.



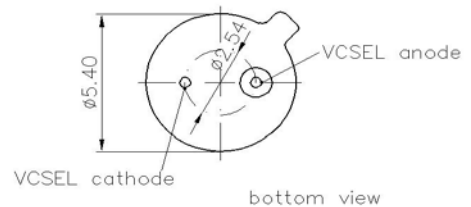
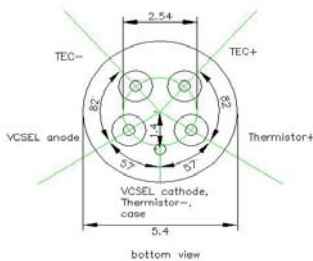
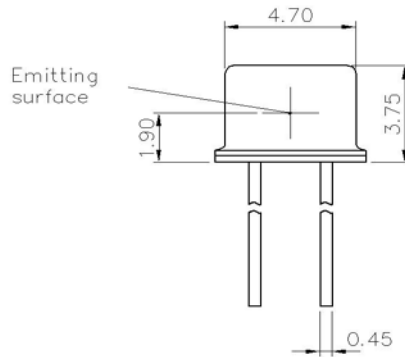
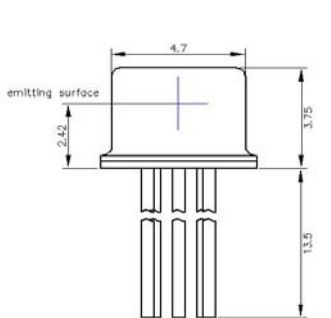
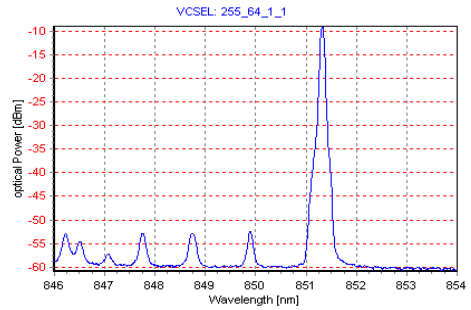
ATTENTION: Electrostatic Sensitive Devices
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LIV



Spectral Characteristics



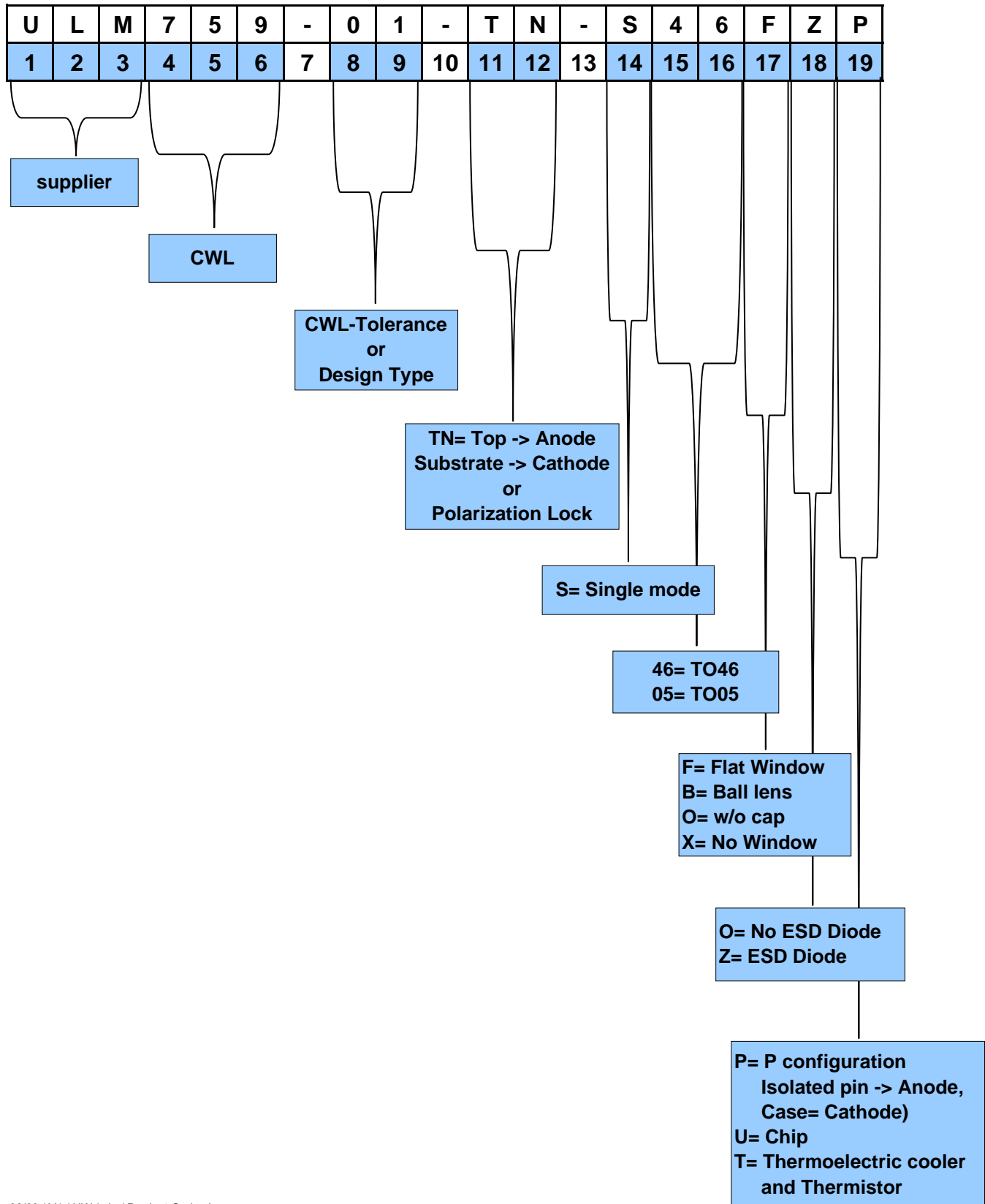
For order please use:

with TEC/Thermistor: ULM852-01-TN-S46FTT

without TEC/Thermistor: ULM852-01-TN-S46FOP

**OPTION: Wide range of TO headers & caps (flat, tilted, ball)
Customer specific wavelength selection on request**

Basic Product Code ULM Photonics



08/09 / V1 / HW / ulm/ Product-Code.xls