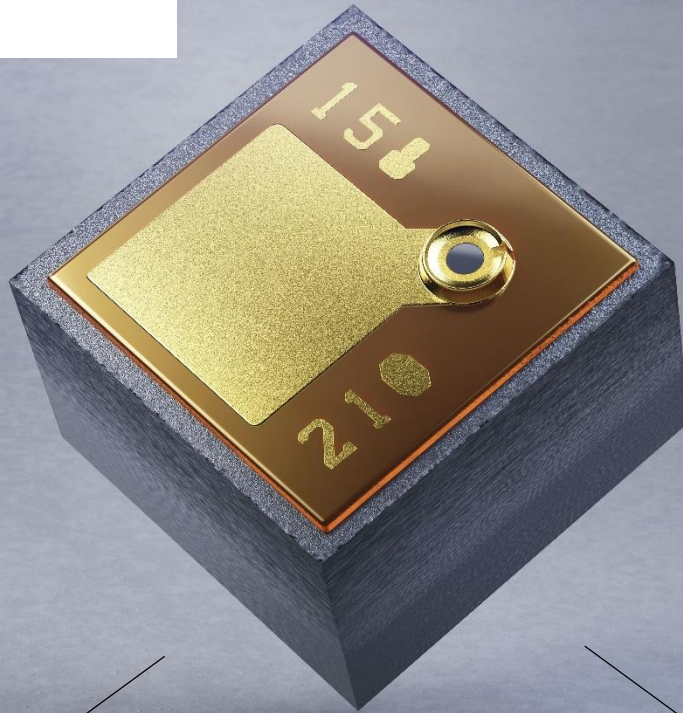


5 Gbps 850 nm  
VCSEL Chip



> Unsealed 85% r.H. / 85°C  
certified

> High speed up  
to 5 Gbps

> Top side emission

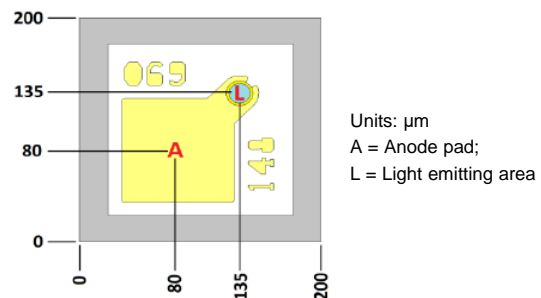
> Vertical Cavity  
Surface-Emitting  
Laser

# Electro-optical characteristics

Chip temperature 25°C unless otherwise stated						
Parameter	Symbol	Units	Min	Typ	Max	Test conditions
Emission wavelength	$\lambda$	nm	830	850	860	$I_F = 6 \text{ mA}$
Threshold current	$I_{TH}$	mA	0.40 0.40	0.90	1.40 2.50	$T = -40^\circ\text{C to } 90^\circ\text{C}$
Optical output power	$P_{opt}$	mW		2		$I_F = 6 \text{ mA}$
Slope efficiency	$\eta_S$	W/A	0.27		0.55	
Variation of $\eta_S$ over temp.	$\Delta\eta_S/\eta_S/\Delta T$	%/K		0.45	0.60	$T = -40 \text{ to } 25^\circ\text{C} \ \& \ T = 25^\circ\text{C to } 90^\circ\text{C}$
Differential series resistance	$R_S$	$\Omega$	25	50	65	$I_F = 6 \text{ mA}$
3 dB modulation bandwidth	$f_{3 \text{ dB}}$	GHz	3			$I_F = 6 \text{ mA}$
Rise and fall time	$t_r, t_f$	ps		70	80	20% to 80%; ER = 5 dB; $I_F = 6 \text{ mA}$
Relative intensity noise	RIN	dB/Hz		-130	-120	$I_F = 6 \text{ mA}$
Spectral bandwidth	$\Delta\lambda$	nm		0.30	0.65	$I_F = 6 \text{ mA, RMS}$
Beam divergence	$\Theta$	$^\circ$		25	30	$I_F = 6 \text{ mA, full width } 1/e^2$

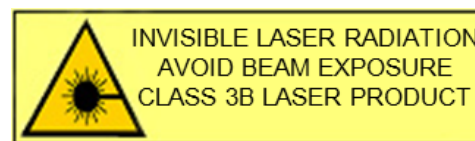
Single VCSEL chip	
Description	VCSEL chip, single channel
Product Number	ULM850-05-TN-N0101L
Anode	Sq 100 $\mu\text{m}$ bond pad
Cathode	Backside metallization
Dimensions	200 $\mu\text{m}$ x 200 $\mu\text{m}$
Thickness	150 $\mu\text{m}$

## Dimensions



## Absolute Maximum Ratings

<b>Storage temperature</b>	-40 to 125°C
<b>Operating temperature</b>	-40 to 90°C
<b>Electrical power dissipation</b>	30 mW
<b>Continuous forward current</b>	12 mA
<b>Reverse voltage</b>	8 V
<b>Soldering temperature</b>	330°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