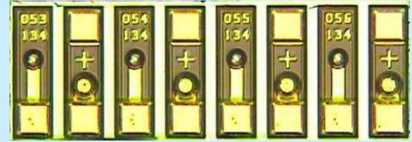
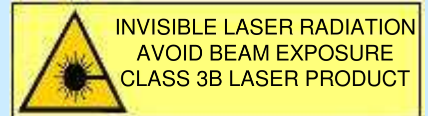
5 Gbps VCSEL 850 nm
1x1/1x4/12 chip



- For flip chip (stud bump) and wire bond
- Unsealed 85% r.H./85°C certified
- 1, 4, or 12 channel array configuration



Preliminary

ELECTRO-OPTICAL CHARACTERISTICS

Chip Temperature = 25°C unless otherwise stated.

PARAMETER	SYMBOL	UNITS	MIN	TYP	MAX	TEST CONDITIONS
Emission wavelength	λ_R	nm	840	850	860	I_{op} = 6 mA
Threshold current	I_{th}	mA	0.4	0.9	1.4	
Threshold voltage	U_{th}	V	1.4	1.5	1.7	
Slope Efficiency	η_s	W/A	0.45		0.7	
Variation of η_s over temp.	$\Delta\eta_s/\eta_s/\Delta T$	%/K	-0.6	-0.4		T_{chip} = 25°C ... 75°C
Optical output power	P_{opt}	mW	2.0		3.8	I_{op} = 6 mA
Differential series resistance	R_{S_25}	Ω	30	50	65	
3dB modulation bandwidth	ν_{3dB}	GHz	3.5			
Relative intensity noise	RIN	dB/Hz		-130	-120	
Wavelength tuning over current		nm/mA		0.3		
Wavelength tuning over temp.		nm/K		0.07		
Thermal resistance	$R_{Thermal}$	K/mW		2.0		
Beam divergence	θ	deg		25		1/exp²
Spectral bandwidth	$\Delta\lambda_1$	nm			0.65	I_{op} = 6mA

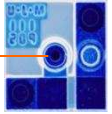
ABSOLUTE MAXIMUM RATINGS

Storage temperature	- 40 .. 125°C
Operating temperature	-40 .. 90°C
Electrical power dissipation	30 mW
Continous forward current	12 mA
Reverse voltage	8V
Soldering Temperature	330°C / 10sec

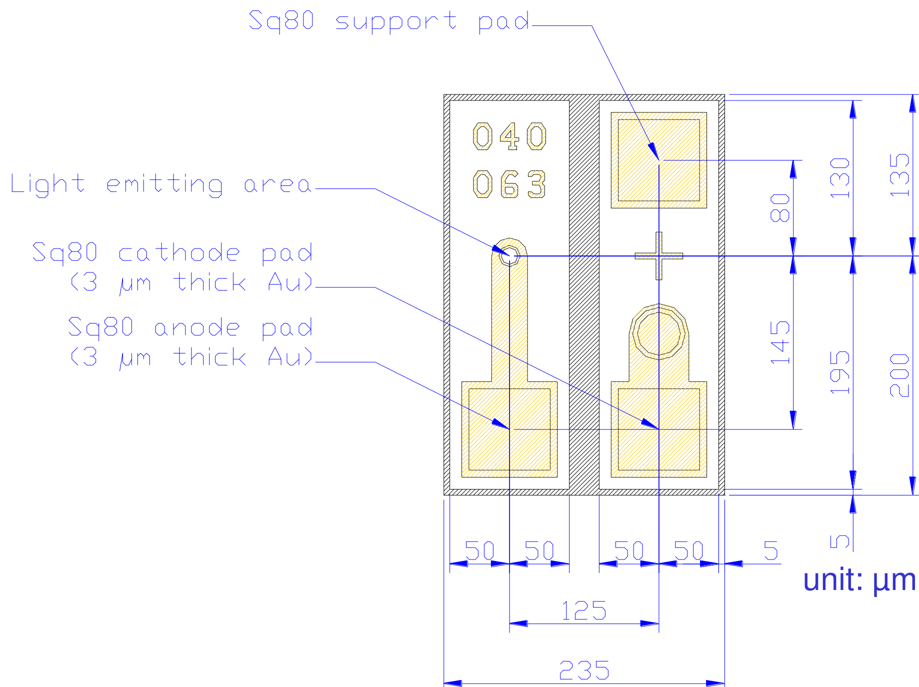
NOTICE: Stresses greater than those listed under „Absolute Maximum Ratings“ may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated for extended periods of time may effect device reliability.

ATTENTION: Electrostatic Sensitive Devices
Observe Precautions for Handling

PHILIPS
sense and simplicity



ULM850-05-TT-C0101D (5 Gbps, anode and cathode bond pad, 1x4 array) Size 235x335x150
ULM850-05-TT-C0104D (5 Gbps, anode and cathode bond pad, 1x4 array) Size 985x335x150
ULM850-05-TT-C0112D (5 Gbps, anode and cathode bond pad, 1x12 array) Size 2985x335x150



Anode	Sq 80 µm bond pad
Cathode	Sq 80 µm bond pad
Substrate	150 µm thick conductive GaAs

The chip is suitable for stud bumping and will be delivered unbumped.

Philips Technologie GmbH U-L-M Photonics
Phone (fax) +49 731 550194-011 (-026)
sales@ulm-photonics.de www.ulm-photonics.de