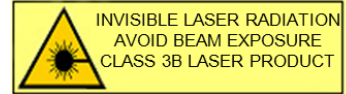


## 14 Gbps VCSEL 850 nm

### 1x1/4/12 chip

- Vertical Cavity Surface-Emitting Laser
- Cathode on top side
- Unsealed 85% r.H./85°C certified
- 1x1, 1x4, 1x12 chips



## Preliminary

### Electro-Optical Characteristics

Chip Temperature = 25°C unless otherwise stated.

| PARAMETER                        | SYMBOL                         | UNITS    | MIN  | TYP   | MAX  | TEST CONDITIONS               |
|----------------------------------|--------------------------------|----------|------|-------|------|-------------------------------|
| Emission wavelength              | $\lambda_R$                    | nm       | 840  | 850   | 860  | I = 6 mA                      |
| Threshold current                | $I_{th}$                       | mA       | 0.30 | 0.60  | 0.80 |                               |
| Voltage drop                     | $U_{th}$                       | V        | 1.70 | 1.85  | 2.20 | I = 6 mA                      |
| Slope Efficiency                 | $\eta_s$                       | W/A      | 0.32 | 0.40  | 0.55 |                               |
| Variation of $\eta_s$ over temp. | $\Delta\eta_s/\eta_s/\Delta T$ | %/°C     |      | -0.45 |      | T <sub>chip</sub> = 0..85°C   |
| Differential series resistance   | $R_{S_{25}}$                   | $\Omega$ | 50   | 65    | 80   | I = 6 mA                      |
| 3dB modulation bandwidth         | $\nu_{3dB}$                    | GHz      | 10   |       |      | I = 6 mA                      |
| Beam divergence                  | $\theta$                       | °        | 20   |       | 32   | I/exp <sup>2</sup> , I = 6 mA |
| Spectral bandwidth               | $\Delta\lambda_1$              | nm       | 0.20 | 0.60  | 0.65 | I = 6 mA                      |
| Wavelength tuning over current   |                                | nm/mA    |      | 0.30  |      |                               |
| Wavelength tuning over temp.     |                                | nm/K     |      | 0.07  |      |                               |
| Thermal resistance               | $R_{thermal}$                  | K/mW     |      | 2.50  |      |                               |

**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

### Absolute Maximum Ratings

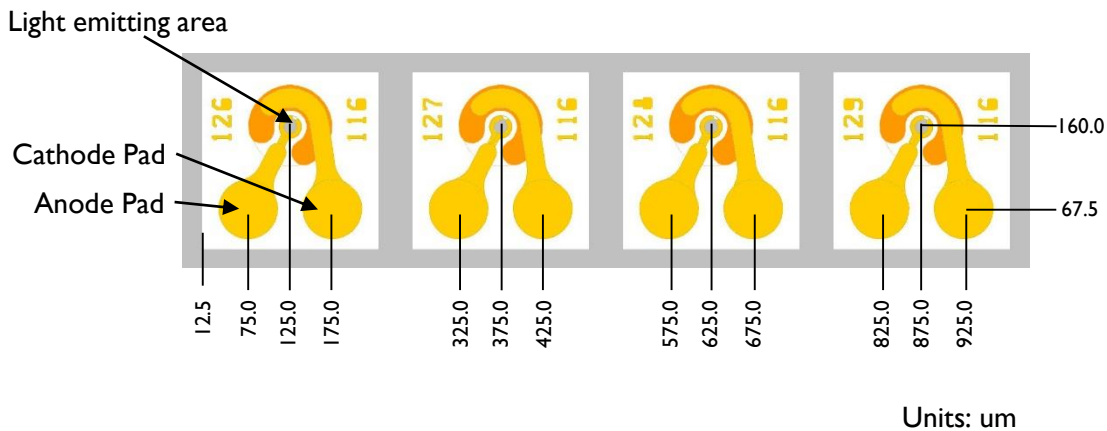
|                            |               |
|----------------------------|---------------|
| Storage temperature        | - 40 .. 125°C |
| Operating temperature      | 0 .. 85°C     |
| Continuous forward current | 10 mA         |
| Reverse voltage            | 8V            |
| Optical output power       | 6mW           |
| Soldering temperature      | 10 s @ 330°C  |

## Single VCSEL chip:

|                  |  |
|------------------|--|
| Description      | VCSEL chip, single channel                   |
| Type             | ULM850-14-TT-F0101U                          |
| Mounting         | anode and cathode wire bonding on front side |
| Bondpad diameter | 70 $\mu$ m                                   |
| Length           | 235 $\pm$ 5 $\mu$ m                          |
| Width            | 235 $\pm$ 5 $\mu$ m                          |
| Thickness        | 150 $\pm$ 15 $\mu$ m                         |

## VCSEL line arrays

|             |                                 |                                 |
|-------------|---------------------------------|---------------------------------|
| Description | 1 $\times$ 4 VCSEL line array   | 1 $\times$ 12 VCSEL line array  |
| Type        | ULM850-14-TT-F0104U             | ULM850-14-TT-F0112U             |
| Wiring      | electrically separated channels | electrically separated channels |
| Length      | 985 $\pm$ 5 $\mu$ m             | 2985 $\pm$ 5 $\mu$ m            |
| Width       | 235 $\pm$ 5 $\mu$ m             | 235 $\pm$ 5 $\mu$ m             |
| Thickness   | 150 $\pm$ 15 $\mu$ m            | 150 $\pm$ 15 $\mu$ m            |



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