

## 1.25 Gbps 850 nm VCSEL

**Part Number: VG1A-7000**

**Applications: 1.0625 / 1.25 Gbps Gigabit Ethernet and Fiber Channels**

### Absolute Maximum Ratings (T = 25°C):

| Parameter             | Symbol     | Unit | Min. |  | Max. | Test Condition | Note |
|-----------------------|------------|------|------|--|------|----------------|------|
| Forward Current       | $I_{\max}$ | mA   |      |  | 15   |                |      |
| Reverse Voltage       | $V_r$      | V    |      |  | 5    |                |      |
| Operating Temperature | $T_{op}$   | °C   | 0    |  | 85   |                |      |
| Storage Temperature   | $T_{stg}$  | °C   | - 40 |  | 100  |                |      |
| Maximum Die Exposure  | $T_{\max}$ | °C   |      |  | 260  | For 10 seconds |      |

### Electro-optical Characteristics (T = 25°C, unless noted otherwise):

| Parameter                     | Symbol                | Unit     | Min.  | Typ. | Max. | Test Condition               | Note |
|-------------------------------|-----------------------|----------|-------|------|------|------------------------------|------|
| Threshold Current             | $I_{th}$              | mA       |       | 3.5  | 6.0  |                              |      |
| Ith Temperature Variation     | $\Delta I_{th}$       | mA       | -1.5  |      | 1.5  | 25°C to 95°C                 |      |
| Forward Voltage               | $V_f$                 | V        |       | 2.0  | 2.2  | @ 10 mA                      |      |
| Differential Resistance       | $R_s$                 | $\Omega$ |       | 30   | 50   | @ 10 mA                      |      |
| Reverse Voltage               | $V_r$                 | V        | 5     |      |      | @ -10 $\mu$ A                |      |
| Slope Efficiency              | $\eta$                | mW/mA    | 0.15  | 0.30 | 0.5  | @ 10 mA                      |      |
| Optical Power                 | $P_o$                 | mW       | 0.8   | 2    |      | @ 10 mA                      |      |
| Slope Efficiency temp- coeff. | $\Delta\eta/\Delta T$ | %/°C     | -0.55 |      |      | 25°C -90°C<br>@ 10 mA        |      |
| Peak Wavelength               | $\lambda$             | nm       | 830   | 845  | 860  | @ 2 mW                       |      |
| Beam Divergence               | $\theta$              | deg      |       |      | 30   | Full width, 1/e <sup>2</sup> |      |
| Rise Time                     | $\tau_r$              | ps       |       | 120  |      | 20-80%@10mA                  |      |
| Fall Time                     | $\tau_f$              | ps       |       | 140  |      | 20-80%@10mA                  |      |

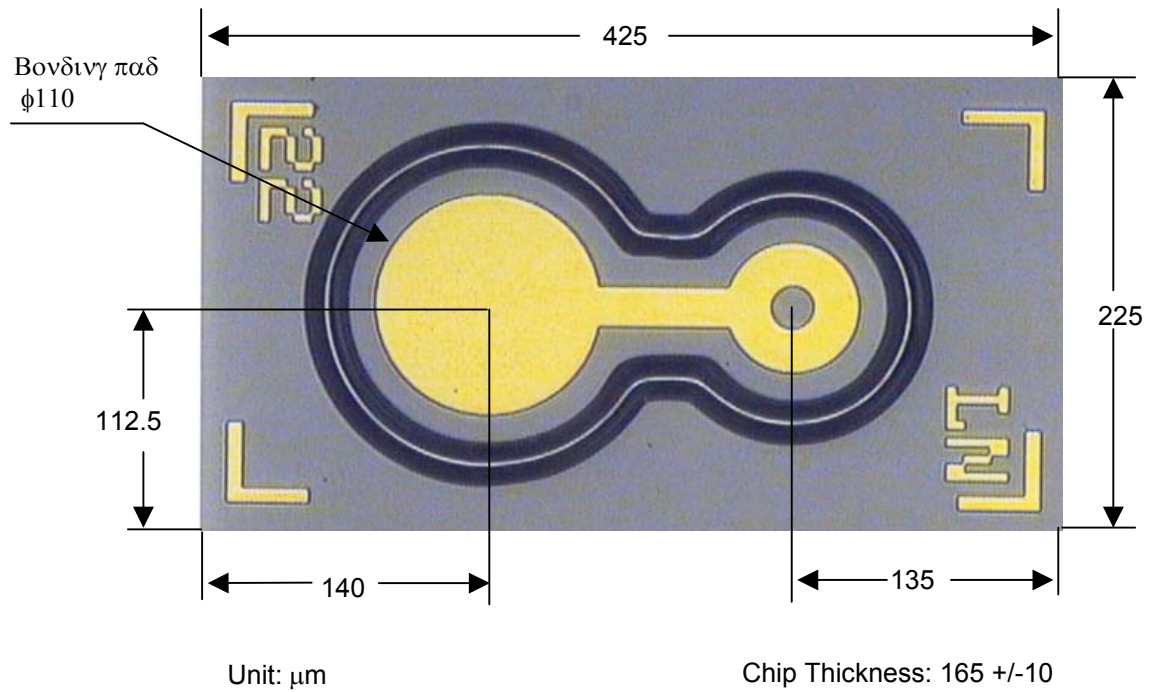
Chip configuration:

1. Top contact: Anode; Bottom contact: Cathode.
2. Dimension: 225  $\mu$ m (Wide) x 425  $\mu$ m (Long) x 165  $\mu$ m (Thick)

\* Specifications are subject to change without notice.

\* Screening per customer-specified reject limits is available.

June, 2002



VCSEL Chip Top View