

850nm Polarization Locked Single Mode VCSEL Chip

Specification

Features

- Single transverse and longitudinal mode
- Polarization stable emission
- Low power consumption
- High reliability
- Gaussian beam profile

Ordering Information

| Part Number | Description |
|---------------|---|
| APA8501010001 | 850nm Polarization Locked SM VCSEL Chip |

Electro-Optical Characteristics

Operating conditions: $T_{op} = 5^\circ - 45^\circ\text{C}$; $I_{op} = \text{const.}$, set at 25°C so that $P_{op} = 0.55\text{mW}$

| PARAMETERS | SYMBOL CONDITIONS | MIN | TYP | MAX | UNIT | CONDITION |
|--|----------------------|------|------|------|---------------|---|
| Threshold Current | I_{th} | 1 | 3 | 5 | mA | $T = 25^\circ\text{C}$ |
| Slope Efficiency | η | 0.20 | 0.40 | 0.65 | mW/mA | $T = 25^\circ\text{C}$, $I = I_{th} + 1\text{mA}$ |
| Operating Current | I_{op} | 2.3 | | 6 | mA | $T = 25^\circ\text{C}$, $P_{op} = 0.55\text{mW}$ |
| Operating Voltage | U_{op} | | | 2.3 | V | operating conditions |
| Differential Resistance | R_d | 20 | | 90 | Ω | $T = 25^\circ\text{C}$, $P_{op} = 0.55\text{mW}$ |
| SM Optical Output Power | P_{SM} | 0.9 | | | mW | $T = 25^\circ\text{C}$ |
| Side Mode Suppression Ratio | SMSR | 10 | | | dB | $T = 25^\circ\text{C}$, $P_{op} = 0.9\text{mW}$ |
| Accuracy of Polarization Direction * | δ_{pol} | -15 | | +15 | deg | $T = 25^\circ\text{C}$, $P_{op} = 0.2 \dots 0.9\text{mW}$ |
| Emission Wavelength | λ_{peak} | 840 | 850 | 860 | nm | operating conditions |
| Beam Divergence | $\theta_{FW1/e2}$ | 13 | 17 | 21 | deg | $T = 25^\circ\text{C}$, $P_{op} = 0.5\text{mW}$ |
| Optical power variation over temperature | $P(T) - P_{op}$ | -200 | | +120 | μW | I_{op} , $T = 5 \dots 45^\circ\text{C}$ |

SM= single mode; $FW1/e2$ = full width $1/e^2$

* Polarization direction relative to the chip: see chip layout in section "Chip Dimensions"

Polarization

- Laser operates with stable linear polarization.
- No polarization flips in the single mode operating range.

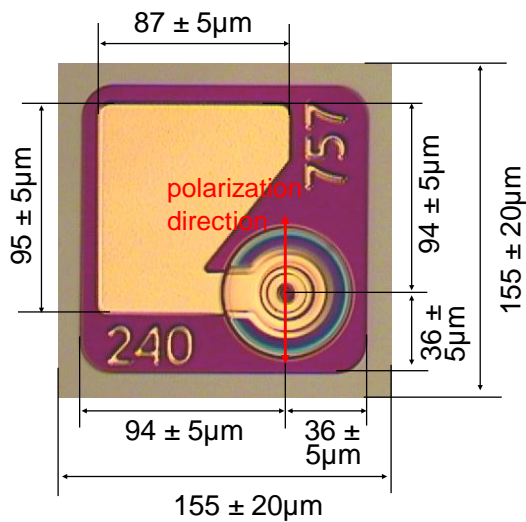
Absolute Maximum Ratings

| PARAMETERS | MIN | MAX | UNIT | CONDITION |
|----------------------------------|-----|-----|------|----------------|
| Continuous Operating Current | | 8 | mA | |
| Continuous Reverse Voltage | | 8 | V | |
| PCB solder or reflow temperature | | 260 | °C | max 10 seconds |

Packaging and Supply

- Sawn wafer on adhesive tape
- Wafer map files describing positions of good dice

Chip Dimensions



Chip thickness: $150 \pm 15 \mu\text{m}$