

# 850nm 50Gb/s VCSEL

## 产品规格书

## Product Specification Data

|                        |                                                 |
|------------------------|-------------------------------------------------|
| 产品名称:<br>Product Name  | QM_50G_850nm_VCSEL                              |
| 物料编码:<br>Part Number   | QDV-2C10 (1x1 Singlet)<br>QDV-2C40 (1x4 Array ) |
| 受控编号:<br>Record Number | TS01055                                         |
| 版本:<br>Version         | A3                                              |
| 受控日期:<br>Date          | 2025.02.25                                      |

## 特征 Features

直接调制速率达 50 Gb/s (Direct modulation, data rate up to 50 Gb/s)

850nm多模发射 (850nm multimode emission)

低阈值低串联电阻 (Low threshold, Low resistance)

## 电光特性 Electro-Optical Characteristics

除特殊说明以外，所有的参数均为25°C（基板温度）条件下测试所得。

Unless otherwise specified, all parameters are measured at 25°C (substrate temperature).

| 参数<br>Parameter                              | 符号<br>Symbol             | 最小值<br>Min. | 典型值<br>Typ. | 最大值<br>Max. | 单位<br>Unit | 备注<br>Comments                     |
|----------------------------------------------|--------------------------|-------------|-------------|-------------|------------|------------------------------------|
| 阈值电流<br>Threshold Current                    | $I_{th}$                 | -           | 0.4         | 1.5         | mA         | 0°C-75°C                           |
| 斜效率<br>Slope Efficiency                      | $\eta$                   | 0.3         | 0.54        | -           | W/A        | 0°C-75°C                           |
| 工作电流<br>Operating Current                    | $I_{op}$                 | -           | 7.0         | 8.0         | mA         | 0°C-75°C                           |
| 输出功率<br>Output Power                         | $P_{op}$                 | 3           | 3.5         | -           | mW         | $I_{op}=7mA$                       |
| 工作电压<br>Operation Voltage                    | $V_{op}$                 | -           | 2.1         | 2.5         | V          | $I_{op}=7mA$                       |
| 微分电阻<br>Differential Resistance              | $R_d$                    | -           | 80          | 100         | $\Omega$   | $I_{op}=7mA$                       |
| 中心波长<br>Center Wavelength                    | $\lambda$                | 840         | 850         | 860         | nm         | $I_{op}=7mA, 0^\circ C-75^\circ C$ |
| 均方根谱宽<br>Spectral Width (rms)                | $\Delta\lambda_{rms}$    | -           | -           | 0.6         | nm         | $I_{op}=7mA, 0^\circ C-75^\circ C$ |
| 调制带宽<br>Modulation Bandwidth                 | $f_{-3dB}$               | -           | 19          | -           | GHz        | $I_{op}=7mA$                       |
| 光束发散角<br>Beam Divergence (1/e <sup>2</sup> ) | $\theta$                 | -           | 20          | 30          | deg.       | $I_{op}=7mA$                       |
| 波长温变系数<br>Wavelength Shift Coefficient       | $\Delta\lambda/\Delta T$ | -           | 0.067       | -           | nm/°C      | 0°C-75°C                           |
| 阈值一致性<br>Threshold Uniformity                | $\Delta I_{th}$          | -           | -           | 0.15        | mA         | Across 1x4 array chips             |
| 斜效率一致性<br>Slope Efficiency Uniformity        | $\Delta\eta$             | -           | -           | 0.05        | W/A        | Across 1x4 array chips             |
| 相对强度噪声<br>Relative Intensity Noise           | $RIN$                    | -           | -           | -140        | dB/Hz      | $I_{op}=7mA, 0^\circ C-75^\circ C$ |

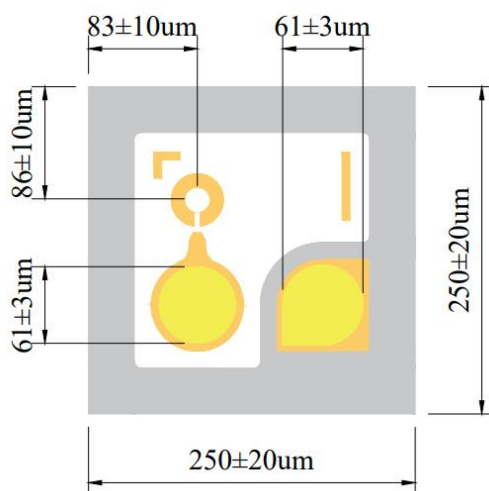
## 额定参数 Absolute Maximum Ratings

| 参数<br>Parameter                               | 符号<br>Symbol    | 最小值<br>Min. | 最大值<br>Max. | 单位<br>Unit |
|-----------------------------------------------|-----------------|-------------|-------------|------------|
| 最大正向电流<br>Peak Forward Current<br>(Max 10sec) | $I_{\max}$      | -           | 11          | mA         |
| 反向电压<br>Reverse Voltage                       | $V_r$           | -           | 5           | V          |
| 工作温度<br>Operating Temperature                 | $T_{\text{op}}$ | 0           | 75          | °C         |
| 存储温度<br>Storage Temperature                   | $T_s$           | -40         | 100         | °C         |
| 存储湿度<br>Storage Humidity                      | $H_s$           | -           | 95          | %          |
| 贴片温度<br>Die Attach Temperature                | -               | -           | 260         | °C         |

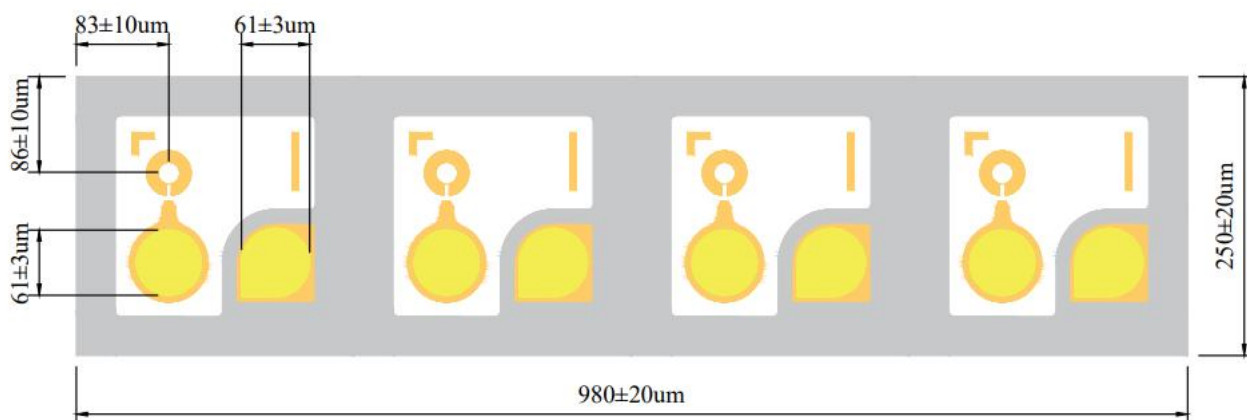
## 芯片尺寸 Chip Dimensions

| 参数<br>Parameter                       | 符号<br>Symbol | 最小值<br>Min. | 典型值<br>Typ. | 最大值<br>Max. | 单位<br>Unit |
|---------------------------------------|--------------|-------------|-------------|-------------|------------|
| 芯片尺寸<br>Chip size (1x1 Singlet)       | $L \times W$ | -           | 230 × 230   | -           | um         |
| 芯片尺寸<br>Chip size (1x4 Array)         | $L \times W$ | -           | 980 × 230   | -           | um         |
| 芯片厚度<br>Chip Thickness                | -            | 135         | 150         | 165         | um         |
| 焊盘尺寸 (P)<br>Bond Pad Diameter (P)     | -            | -           | 61          | -           | um         |
| 焊盘尺寸 (N)<br>Bond Pad Diameter (N)     | -            | -           | 61          | -           | um         |
| NP 电极高度差<br>P/N Pad Height Difference | -            | 14.5        | 15.5        | 16.5        | um         |

## 机械图纸 Mechanical Drawing



PN: QDV-2C10 (1x1 Singlet)



PN: QDV-2C40 (1x4 Array)