

Quantum 



# MM 980nm 25Gbps VCSEL (Bottom Emission)

QZV25MM0980B101

QZV25MM0980B102

QZV25MM0980B103

*fight the world*



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## Description

The QuantumZ - **QZV25MM0980BX0X** is multimode 25Gbps VCSEL with wavelength 980nm device has low electrical parasitics and proven high reliability. That has bottom side ohmic contacts with Signal-Ground (SG) configurations. The device is available in singlet (1x1) or array configurations (1x4) and are compatible with wire-bonding and flip-chip bonding.

## Features

- 980nm multimode emission
- High reliability & data rates from DC to 25Gbps
- High humidity robustness compliant with GR-468
- Low threshold, operating voltage & electrical parasitic
- Available as single chip & 4 channel array
- Available application for COB & flip chip processes
- Dual top contact configuration with common cathode electrodes
- Halogen & RoHS compliant

## Applications

- Smart cables & consumer applications & Automotive
- Single channel & parallel fiber optical communication links

## Absolute Maximum Ratings

| Parameter                         | Rating     | Unit |
|-----------------------------------|------------|------|
| Max. operating power              | 6          | mW   |
| Max. operating current            | 12         | mA   |
| VCSEL reverse voltage             | 5          | V    |
| Operating temperature             | 0 to 105   | °C   |
| Storage temperature               | -40 to 125 | °C   |
| Mounting temperature (max. 10sec) | 260        | °C   |

## Recommended Operating Conditions

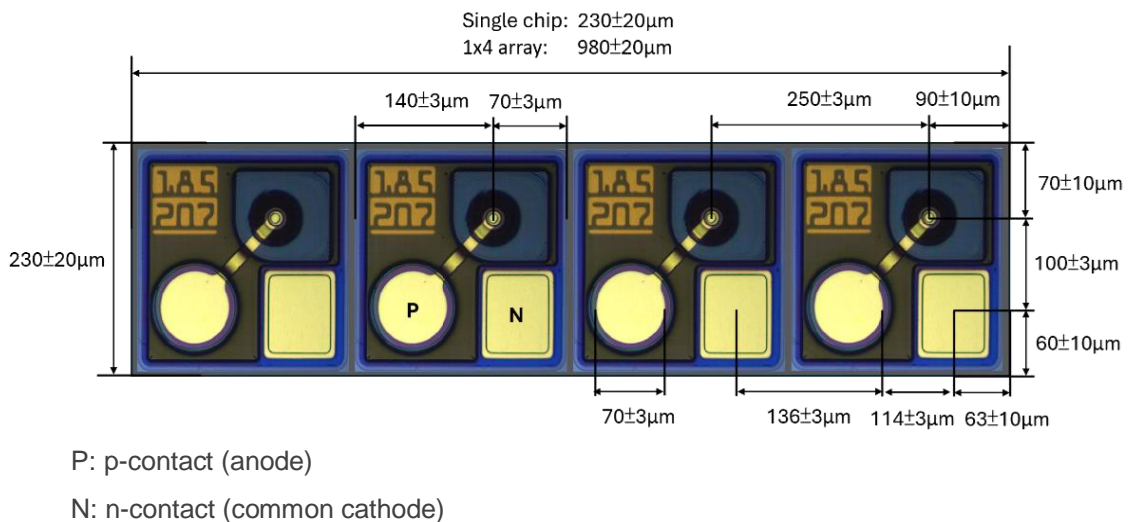
### & Electro-Optic Characteristics

| Parameter               | Symbol           | Conditions   | Ratings |      |      | Unit  |
|-------------------------|------------------|--|---------|------|------|-------|
|                         |                  |  | Min.    | Typ. | Max. |       |
| Threshold current       | $I_{th}$         | T=25°C   |         | 0.5  | 0.7  | mA    |
|                         |                  | T=105°C  |         | 0.8  | 1.0  |       |
| Slope efficiency        | $\eta$           | I <sub>op</sub> = 6.0mA, T=25°C                      |         | 0.5  |      | W/A   |
| Optical output power    | P <sub>out</sub> | I <sub>op</sub> = 6.0mA, T=25°C                      | 2.5     | 3.0  |      | mW    |
|                         |                  | I <sub>op</sub> = 6.0mA, T=105°C                     | 2.0     | 2.5  |      |       |
| Forward voltage         | V <sub>f</sub>   | I <sub>op</sub> =6.0mA, T=25°C                       | 1.8     | 1.9  | 2.1  | V     |
| Differential resistance | R <sub>d</sub>   | I <sub>op</sub> =6mA, T=25°C~105°C                   |         | 80   | 90   | Ω     |
| Emission wavelength     | $\lambda$        | I <sub>op</sub> = 6.0mA, T=25°C~105°C                | 970     | 980  | 990  | nm    |
| Spectral width, RMS     | $\Delta\lambda$  | I <sub>op</sub> =6mA, T=25°C~105°C                   |         | 0.8  |      | nm    |
| Wavelength Shift        | dλ/dT            | T = 25 °C~105 °C                                     |         | 0.07 |      | nm/°C |
| Modulation bandwidth    | f <sub>3dB</sub> | I <sub>op</sub> =6mA, T=25°C                         | 15      | 18   |      | GHz   |
|                         |                  | I <sub>op</sub> =9mA, T=105°C                        | 14      | 16   |      |       |
| Beam divergence         | Θ                | I <sub>op</sub> = 6.0mA, Full width 1/e <sup>2</sup> |         | 25   | 30   | Deg   |

## Chip Outer Dimensions

| Parameter  | Min. | Typ. | Max. |
|------------|------|------|------|
| Die length | 225  | 250  | 275  |
| Die width  | 225  | 250  | 275  |
| Die height | 125  | 150  | 175  |

## Chip Layout



## RoHS Compliance

QuantumZ insists, via continuous improvement in technology and experiences, to utilize non-hazardous materials for manufacturing green products that are in compliance with the regulation as well as customers' GP demands. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products.

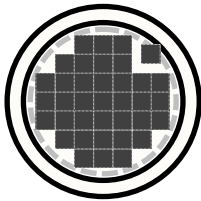
## Ordering Information

| Product code    | Data Rate | Description       | Shipment Package                       |
|-----------------|-----------|-------------------|--|
| QZV25MM0980B101 | 25Gbps    | Single VCSEL chip | Diced wafer on metal lead frame<br>(1) |
| QZV25MM0980B401 | 25Gbps    | 1x4 VCSEL array   | Diced wafer on metal lead frame<br>(1) |
| QZV25MM0980B102 | 25Gbps    | Single VCSEL chip | Grip ring (2)                          |
| QZV25MM0980B402 | 25Gbps    | 1x4 VCSEL array   | Grip ring (2)                          |
| QZV25MM0980B103 | 25Gbps    | Single VCSEL chip | Gel-Pak (3)                            |
| QZV25MM0980B403 | 25Gbps    | 1x4 VCSEL array   | Gel-Pak (3)                            |

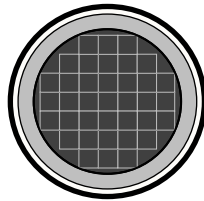
(1) Full diced 4" wafer on UV tape on metal lead frame Ø 230mm, electronic wafer map provided (standard high volume)

(2) Known Good Dies on UV tape on grip ring Ø 150mm (medium volume)

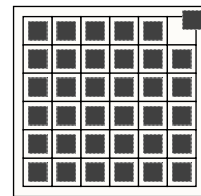
(3) Known Good Dies in 2" Gel-Pak (low volume)



Diced wafer on UV  
tape on metal lead



Grip ring



Gel-Pak