# PV88M

## VCSEL Array Module (Lextar)

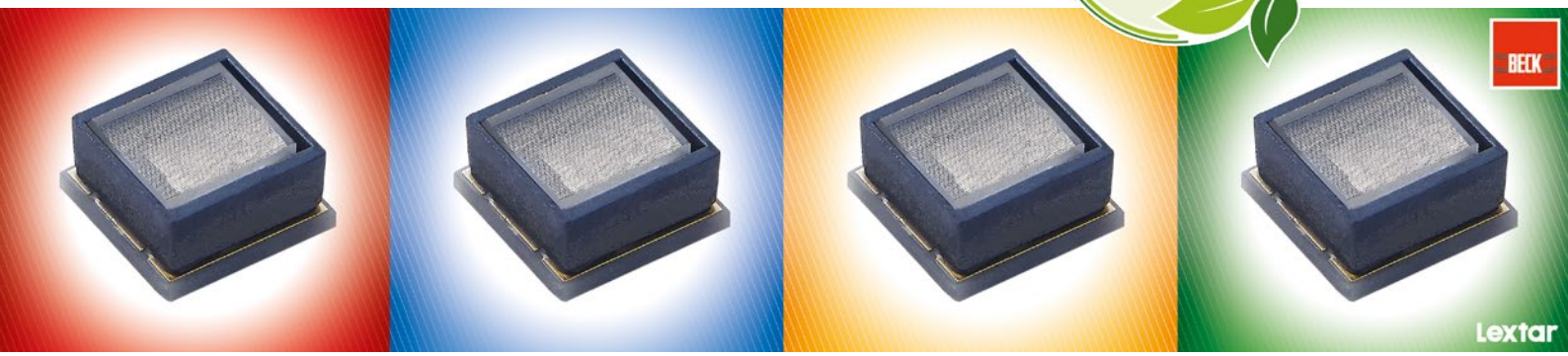



Photo with kind approval by Lextar

**Beck Elektronik extends its product portfolio with the new VCSELs (Vertical Cavity Surface Emitting Lasers) from Lextar which are predestined for 3D vision systems using Time-of-Flight (ToF) cameras as well as for ToF distance sensors.**

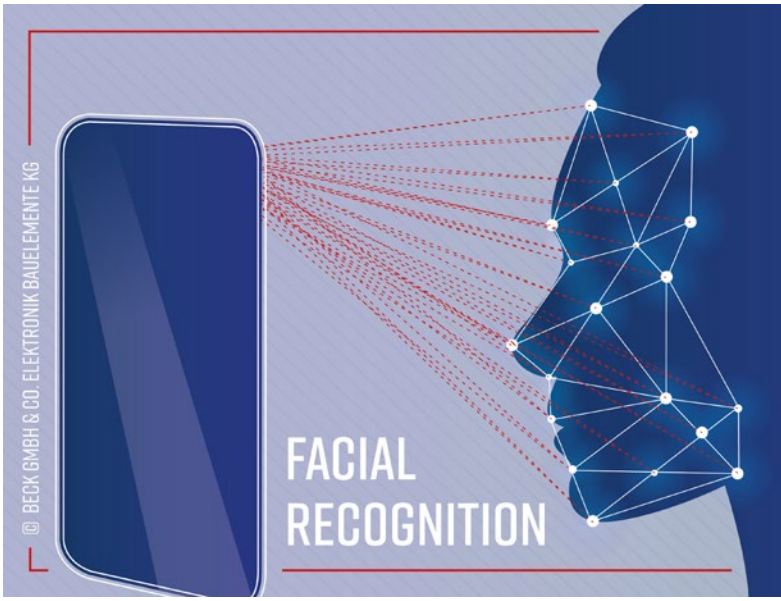
In contrast to conventional IR LEDs, VCSELs have a very narrow optical spectrum of typically less than 1nm. This allows the usage of narrow band optical filters at the ToF sensor, which enhances the optical noise suppression (e.g. sunlight). Furthermore, the extremely fast rise and fall times of less than 1ns make them suitable for much higher modulation frequencies than conventional IR LEDs, which results in improved depth resolution and short distance detection. Because VCSELs can be driven with peak currents of several amperes, the thermal design of the package is crucial. Lextar uses ceramic substrates and advanced die attach pastes with high silver content to keep the thermal resistance as low as possible.

For applications where the ToF camera is directed towards human, like face recognition, Lextar offers a package option with patented eye safety function. In this package, the lens is coated with a transparent, electrically conductive layer, which allows monitoring of the lens condition. Excessive mechanical stress can cause a broken lens, which would result in hazardous radiation for the human eye. With the safety feature, the resistance change of the lens coating can be detected and the VCSEL turned off immediately.

Applications of the VCSELs in ToF cameras are face recognition, gesture control, driver monitoring in cars, robotics, and 3D mapping for drones and VR/AR as well as autonomous driving.

VCSELs can also be used for ToF distance sensors for distance measuring like autofocus or proximity sensing in mobile phone cameras, or collision detection in cleaning robots.

The VCSELs are available with 850nm and 940nm, with an optical output power of up to 2.1W and viewing angles from 25 degrees (without lens) and 60x45 degrees up to 100x80 (with diffusor lens) degrees respectively.

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## MODELS

| PART NUMBER | WAVELENGTH(NM) | OPTICAL POWER (W) | OPERATING CURRENT(A) | PCE (%) | FOV (°) |
|---|---|---|---|---|---|
| PV88M65 V0 | 850 | 0,5 | 0,6 | 40 | 60x45 |
| PV88M64 V0 | 940 | 0,5 | 0,8 | 30 | |
| PV88M65 V1 | 850 | 1,0 | 1,2 | 40 | |
| PV88M64 V1 | 940 | 0,8 | 1,2 | 30 | |
| PV88M65 V2 | 850 | 2,1 | 2,7 | 37 | |
| PV88M64 V3 | 940 | 2,1 | 3 | 35 | |
| PV88M75 V0 | 850 | 0,5 | 0,6 | 40 | 72x58 |
| PV88M74 V0 | 940 | 0,5 | 0,8 | 30 | |
| PV88M75 V1 | 850 | 1,0 | 1,2 | 40 | |
| PV88M74 V1 | 940 | 0,8 | 1,2 | 30 | |
| PV88M75 V2 | 850 | 2,1 | 2,7 | 37 | |
| PV88M74 V3 | 940 | 2,1 | 3 | 35 | |
| PV88M95 V0 | 850 | 0,5 | 0,6 | 40 | 86x68 |
| PV88M94 V0 | 940 | 0,5 | 0,8 | 30 | |
| PV88M95 V1 | 850 | 1,0 | 1,2 | 40 | |
| PV88M94 V1 | 940 | 0,8 | 1,2 | 30 | |
| PV88M95 V2 | 850 | 2,1 | 2,7 | 37 | |
| PV88M94 V3 | 940 | 2,1 | 3 | 35 | |
| PV88MB5 V0 | 850 | 0,5 | 0,6 | 40 | 110x85 |
| PV88MB4 V0 | 940 | 0,5 | 0,8 | 30 | |
| PV88MB5 V1 | 850 | 1,0 | 1,2 | 40 | |
| PV88MB4 V1 | 940 | 0,8 | 1,2 | 30 | |
| PV88MB5 V2 | 850 | 2,1 | 2,7 | 37 | |
| PV88MB4 V3 | 940 | 2,1 | 3 | 35 | |

## FEATURES

- Compact dimensions: 3.5 mm × 3.5 mm × 1.77 mm
- Peak wavelength:λp = 850 and 940 nm
- Radiant power 0.5W to 2.1W
- Narrow spectral bandwidth (< 1nm typ.)
- FOV 60°x45°, 72°x55°, 80°x65° and 100°x80°
- Environmental friendly ; RoHS compliance

## APPLICATIONS

- 3D mapping (ToF) for drones and VR/AR
- Gesture control
- Face recognition
- Driver Monitoring
- Robotics
- Autonomous driving

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