

VCSELs for Advanced Consumer and Automotive Applications

Changing how we interact with technology





VCSEL Illuminators for Time-of-Flight (ToF) Solutions



Latest trend in illuminator requirements for ToF solutions includes higher power for longer sensing range and better power conversion efficiency (PCE).


Lumentum multi-junction VCSEL arrays achieve better PCE to enable higher power density (which is optics-design friendly) and to enhance working range.

Power level [W]	Die size [μm]	Junction type	Sensing range [m]	Part number
2.4	780 x 680	1J	3	22201238
2.9	980 x 880	1J		22201225
3.2	950 x 850	1J		22169709
5.1	1175 x 963	1J		22184897
5.5	770 x 690	2J	5	22101089
10	980 x 880	3J	10	22184910

Applications:

- AR/MR
- Machine vision
- Occupancy sensing

Module power level [W]	Package size [mm]	Junction type	Sensing range [m]	Field of illumination [degree]	Part number
10	3.5 x 3.2 x 1.3	3J	10	74 x 58	32491001-001
10	3.5 x 3.2 x 1.3	3J	10	103 x 84	32491002-001
10	3.5 x 3.2 x 1.3	3J	10	60 x 50	32491003-001



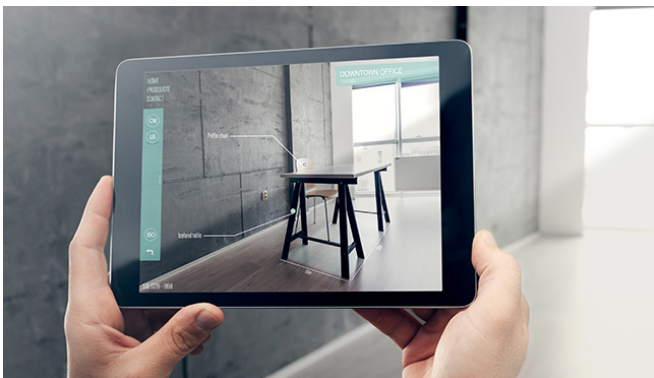
VCSEL Illuminators for Structured Light Solutions

Lumentum VCSELs enable high depth accuracy in short-range applications and can support a wide range of emerging contactless security applications.

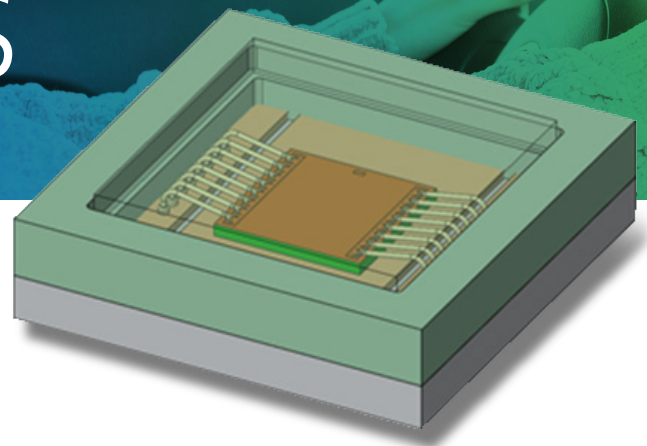
Power level	Operating current	Die size [μm]	Part number
1 W	1.1 A	539 x 584	22201229
1.85 W	2.5 A	710 x 771	22169698

Applications:

- Biometric security
- Access control
- Smart locks
- Retail payment kiosks



VCSEL Illuminators for Automotive Applications



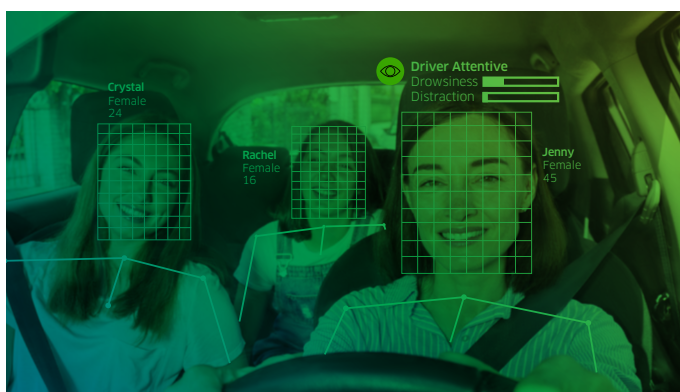
In-Cabin Solutions

Power level	Operating current range	Bond pad type	Part number
2.4 W	2.7-4 A	Single	22201222
4.6 W	4.5-6 A	Dual	22101106

Applications:

- Driver monitoring
- Occupancy monitoring
- Gesture recognition

Completed AEC-Q102 qualification for automotive in-cabin applications - qualified in a packaged solution.





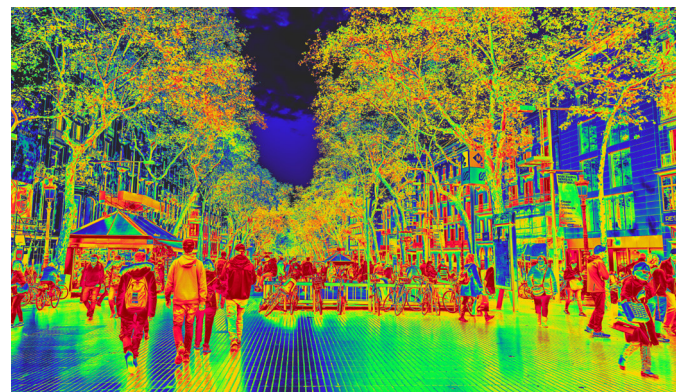
LiDAR Solutions

The Lumentum M Series multi-junction VCSEL arrays offer extremely high peak power and are optimized for short- to long-range automotive and industrial LiDAR applications. Automotive-qualified, M Series provides innovative, high-volume, reliable and high-quality VCSELs—with scalable manufacturing.

Power Level	Multi-junction	Die size [mm]	Wavelength
70 W	Yes	0.50 x 0.38	905 nm
100 W	Yes	1.58 x 0.40	905 nm
400 W	Yes	1.66 x 0.65	905 and 940 nm
Matrix addressable	Yes	Variable	905 and 940 nm

Applications:

- Short-, medium-, and long-range LiDAR
- Advanced robotics
- Mechanical LiDAR
- Solid-state electronic-scanning LiDAR
- ToF line-scanning LiDAR
- ToF flash LiDAR



For more information on VCSELs or other Lumentum products and their availability, please contact your local Lumentum account manager or Lumentum directly at customer.service@lumentum.com.



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