車室内センシング / 赤外VCSEL
In cabin sensing / IR VCSEL

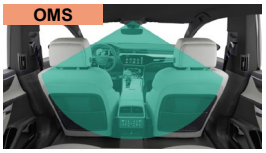
Interior /Safety

AEC-Q102 qualified

自動運転・ADAS向け　安全機能拡充ニーズに対応する赤外センシング
IR sensing technology to ensure safety for autonomous driving and ADAS

マーケット・アプリケーション　Market & Applications

● **DMS/OMS: Driver monitoring system / Occupants monitoring system**
ドライバー・乗員の状態検知による運転安全性向上
車内のDMS取り付け場所に合わせ、最適な製品を選択可能



DMS are emerging to ensure road safety by driver and occupants monitoring.
IR VCSELs are prepared with various Power and angles(FOI) to meet with locations of DMS's camera.

DMS設置場所例
Locations of camera installed


A-pillar

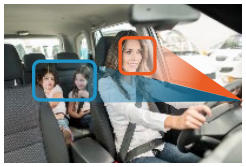

Cluster meter


Center display

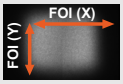
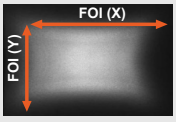
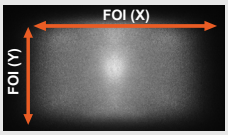
● **ジェスチャーコントロール Gesture control**
運転時に目をそらさず、AVや空調システムを操作可能に。
Gesture sensing systems to allow the control of AV and air conditioning system, etc.

● **個人認証 Face recognition**
パーソナライズによる快適性向上、ロック解除等のセキュリティ機能向上
Personal authentication to customize driving environment, and to improve security functions such as unlocking.

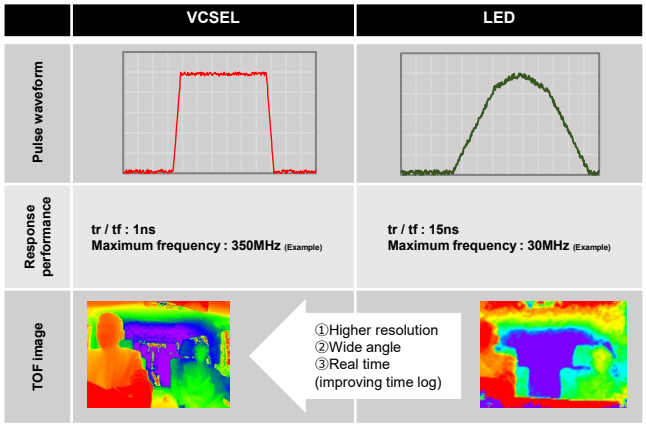
優位性・データ　Advantages & data



用途に合った配光バリエーション
FOI variation to meet with applications

Applications	DMS	OMS	In cabin
FOI	60 × 45°	110 × 85°	140 × 110°
Light distribution			

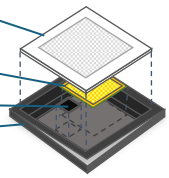
高速応答性 Fast response speed



Comparison of response speed in infrared VCSELs and LEDs. Using an in-frared VCSEL with high response speed as the light source for a ToF sensor will result in clearer ToF images.
Source: Stanley Electric

製品ラインアップ・仕様　Product lineup & Specifications

構造 Structure



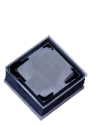
Products	UDN1ZE65	UEN1ZEA9	UGN1ZEEA	RFN1ZEA9
				Under development
Center Wavelength (nm)	940			850
Peak power (W)	2.1	2.8	10.1	3.0
Forward voltage (V)	2.1	2.1	3.8	2.1
FOI	60×45°	110×85°	140×110°	110×85°
Forward current (A)	2.7	4.0	6.0	4.0
Size (mm)	3.5 x 3.5 x 1.2(H)			

開発中 Under development

VCSEL for Dot projector

▼参考値 For reference

- The number of dots 10,000@140X110°, Wavelength 940nm
- The number of dots 3,500@45X45°, Wavelength 940nm



特長 Features

- **狭角～広角の様々な配光バリエーション**
  Various distribution (FOI: 60deg – 140deg)
- **アイセイフティ配慮設計　PD搭載**
  Eye Safety: IEC60825(VCSEL)
- **異常・故障検知用PD搭載**
  PD prepared to detect failure

Contact

- **お問合せ：** https://info.stanley.co.jp/public/application/add/53
- **オートモーティブワールド特設ページ：**
  https://www.stanley-components.com/jp/automotiveworld2024/

ToF performance evaluation kit

STANLEY ELECTRIC CO.,LTD.

collaborated with

Melexis INSPIRED ENGINEERING × LUMENTUM × Sony Semiconductor Solutions Corporation

Responding to the rapid evolution of the automotive industry

- Performance evaluation of 3D sensing with automotive qualified components -

We believe that 3D sensing technologies such as Time of Flight (ToF) will be necessary in the development of higher performance driver monitoring and occupant monitoring systems. This is because it simplifies the huge amount of learning required for high-performance image processing techniques and algorithms, and allows the creation of higher-performance camera systems at a lower cost.

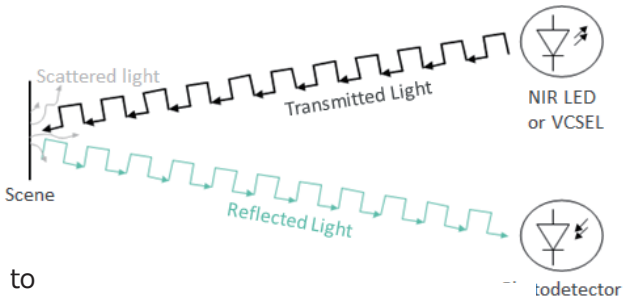
To support the rapid development of this technology, Stanley Electric has started collaborating with manufacturers who are responsible for the components that are critical to the construction of the system. We will respond to the rapid evolution of automotive industry and contribute to a safer and more secure world.

Features and benefits of the ToF evaluation kit

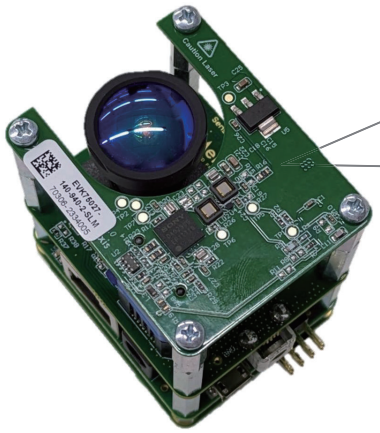
Two methods:

- dToF (Direct Time-of-Flight) is based on measuring the time difference between the transmitted pulse and the reflected pulse.
- iToF (Indirect Time-of-Flight) is based on measuring the phase difference between the emitted and reflected pulses.

Our evaluation kit uses the iToF method, which is less sensitive to sunlight. This evaluation kit includes the Stanley's high-power and high-efficiency IR-VCSELs, which can increase the detection distance and achieves a wider detection range and a more compact unit.



Principle of operation of iToF



Stanley Electric & Lumentum
IR VCSEL UGN1ZE

Melexis
iToF image sensor MLX75027

Sony Semiconductor Solutions
Laser driver CXD4029

Evaluation kit line-up (provided by Melexis)

FOI 140 x 110°	EVK75027-140-940-2-SLM
FOI 110 x 85°	EVK75027-110-940-2-SLM
FOI 80 x 65°	EVK75027-70-940-2-SLM