

# V100T000A-680

BIDOS®



## Application

- Holographic Laser Scope
- Proximity Sensor

## Features:

- Package Description: TO-46 Can 4L
- Chip Technology: Single Aperture GaAs VCSEL – 6 µm Diameter
- Laser Wavelength: 671 nm
- Optical Power Class: 1.2 mW
- Radiation Profile: 12° FWHM
- ESD: 1 kV acc. to ANSI/ESDA/JEDEC JS-001

## Ordering Information

Type	Operating Mode: $T_a = 25^\circ\text{C}; I_F = 2 \text{ mA};$ DC = 100%	Ordering Code
V100T000A-680	1.2 mW	Q65113A7621

**Note:** V100T000A-680 is a Vixar legacy qualified product.



COMPLIES WITH IEC 60825-1, 3<sup>rd</sup> EDITION MAY 2014.  
COMPLIES WITH 21 CFR 1040.10 AND 1040-10.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER  
NOTICE NO.50 DATED 27 MAY 2001.

## Maximum Ratings

$T_a = 25^\circ\text{C}$ ,  $I_{op} = 2 \text{ mA}$

Parameter	Symbol		Values
Operation/Solder temperature	$T_S$	min.	$-40^\circ\text{C}$
		max.	$60^\circ\text{C}$
Storage temperature	$T_{stg}$	min.	$-40^\circ\text{C}$
		max.	$100^\circ\text{C}$
Forward current	$I_f$	max.	4 mA
Direct current operation; DC = 100%; $T_S = 25^\circ\text{C}$			
Reverse Voltage	Not designed for reverse operation		
Reflow soldering temperature	Not designed for solder reflow		
ESD withstand voltage (with ESD Diode) acc. to ANSI/ESDA/JEDEC JS-001	$V_{ESD}$	max.	1 kV

Note: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

## Characteristics

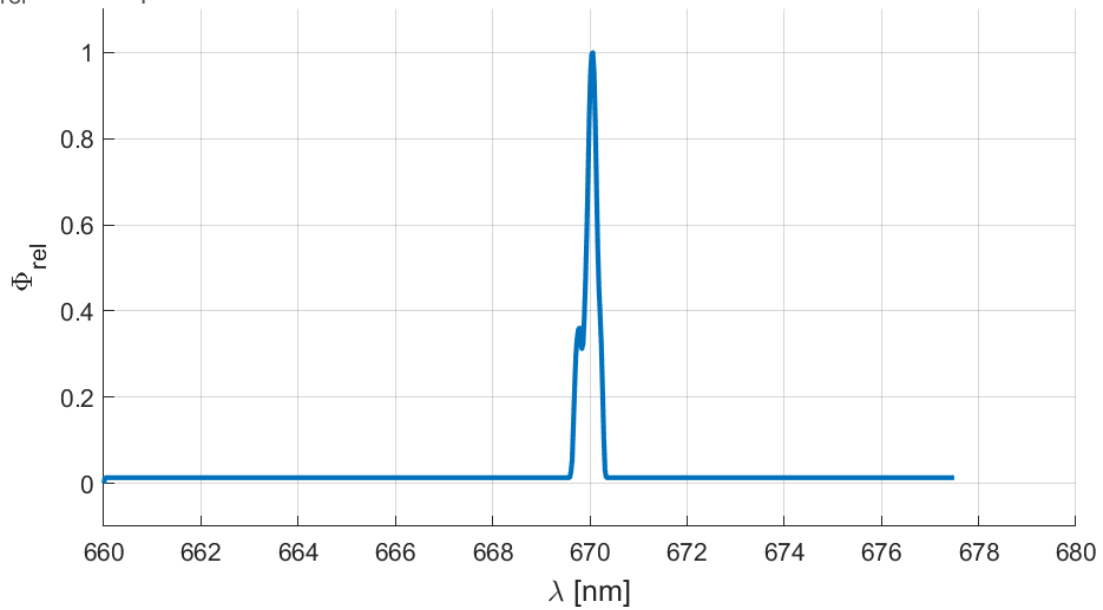
$T_a = 25^\circ\text{C}$ ,  $I_F = 2 \text{ mA}$ ;

Parameter	Symbol		Values
Forward voltage	$V_F$	typ.	2.3 V
Output power	$\Phi$	min.	0.5 mW
		typ.	0.8 mW
Threshold current	$I_{th}$	typ.	0.75 mA
		max.	1.00 mA
Slope efficiency	SE	typ.	0.5 W / A
Power conversion efficiency	$\eta$	typ.	19 %
Peak wavelength	$\lambda_{peak}$	min.	660 nm
		typ.	670 nm
		max.	678 nm
Spectral bandwidth at FWHM (50% of $\Phi_{max}$ )	$\lambda_{FWHM}$	max.	1 nm
Temperature coefficient of wavelength	$TC_\lambda$	typ.	0.045 nm / K
Field of view at FWHM (FWHM)	$\theta$	typ.	12 °
		max.	16 °
Field of view at FWHM (1/e <sup>2</sup> )	$\theta$	typ.	17 °

Note 1: For lasers with only a few primary modes, the RMS spectral width can be estimated as the mode spacing between the lowest and highest primary modes. Higher order modes with more than 10 dB suppression are not included in the RMS spectral width measurement. The spectral characteristics will be verified at a current higher than the typical operating current to provide a guard band under typical operation and as an attempt to meet the spectral specifications (# modes, width, and HMSR) over the full operating temperature with current tuning. Characterization of how the spectral characteristic vary over the operating temperature range with current tuning needs to be studied through testing within the final product application and through qualification testing at Vixar. Vixar cannot guarantee these spectral specifications over the full operational range, but will perform 100% testing to the spectral limits during wafer level testing.

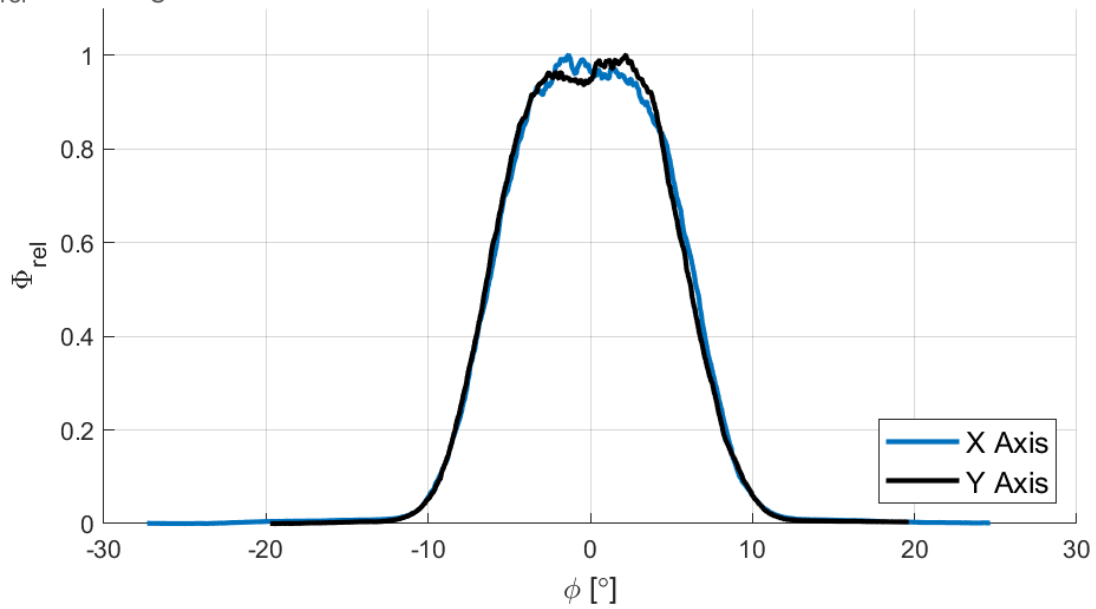
### Relative Spectral Emission <sup>1)</sup>

$$\Phi_{rel} = f(\lambda); I_F = 2 \text{ mA}$$



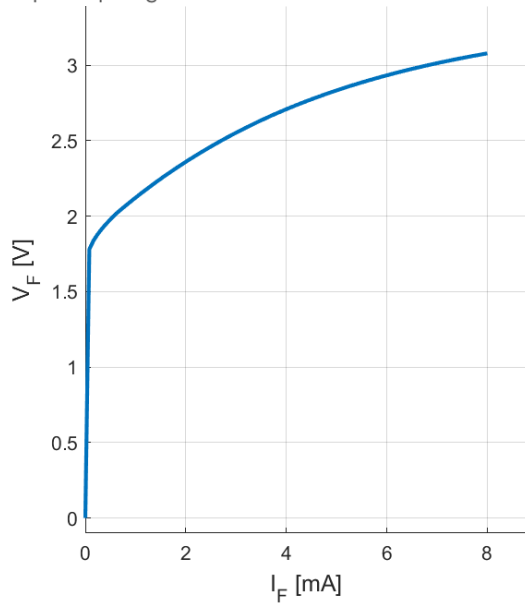
### Radiation Characteristics <sup>1)</sup>

$$\Phi_{rel} = f(\phi); T_S = 25 \text{ }^\circ\text{C}$$



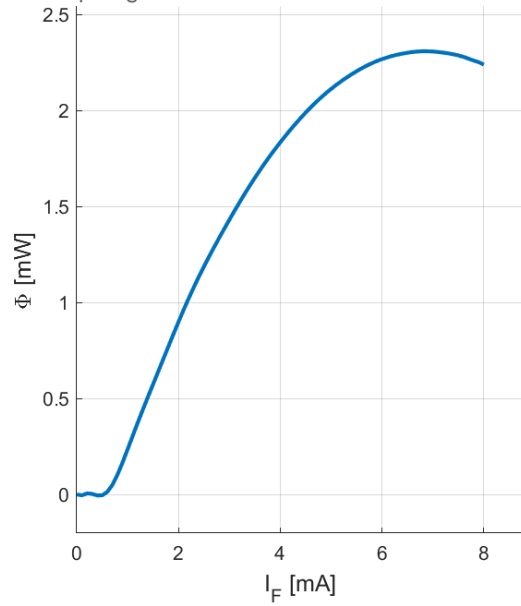
### Forward Voltage <sup>1) 2)</sup>

$$V_F = f(I_F); T_S = 25\text{ °C}; \text{DC} = 100\%$$



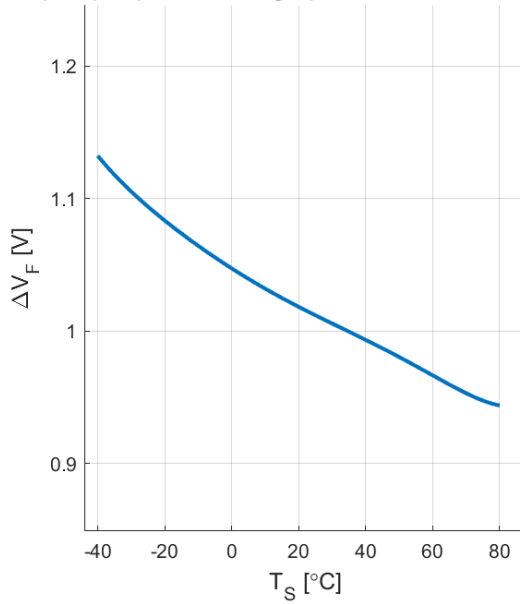
### Optical Output Power <sup>1) 2)</sup>

$$\Phi = f(I_F); T_S = 25\text{ °C}; \text{DC} = 100\%$$



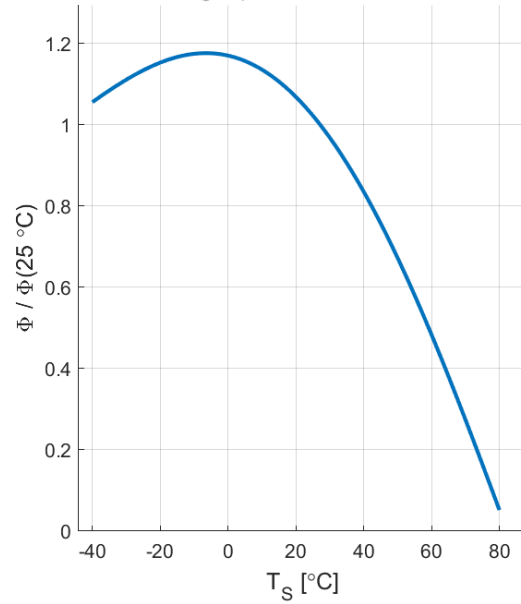
### Relative Forward Voltage <sup>1)</sup>

$$\Delta V_F = V_F - V_F(25\text{ °C}) = f(T_S); I_F = 2\text{ mA}$$

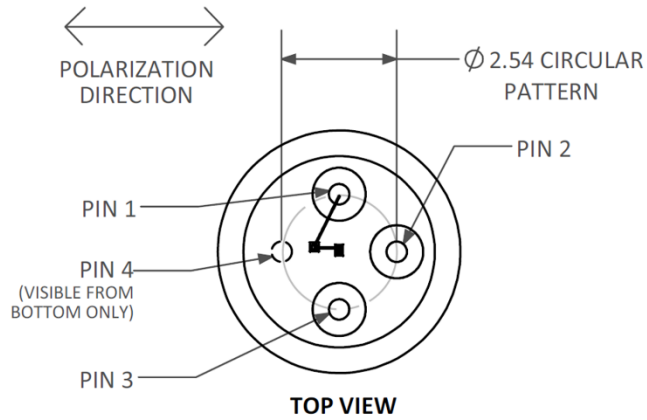
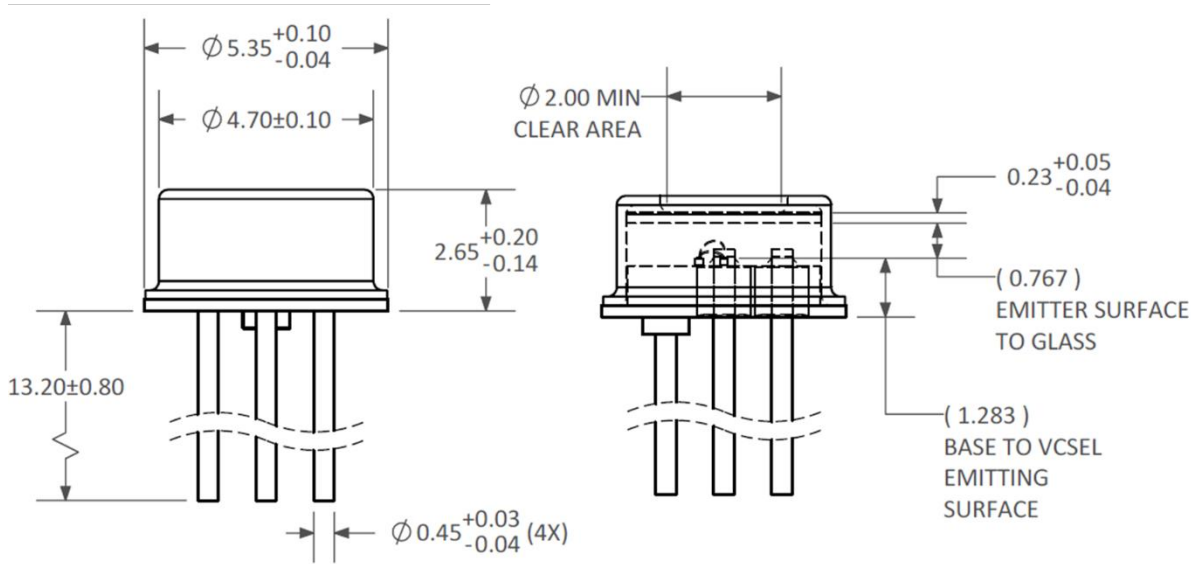


### Relative Radiant Power <sup>1)</sup>

$$\Phi / \Phi(25\text{ °C}) = f(T_S); I_F = 2\text{ mA}$$



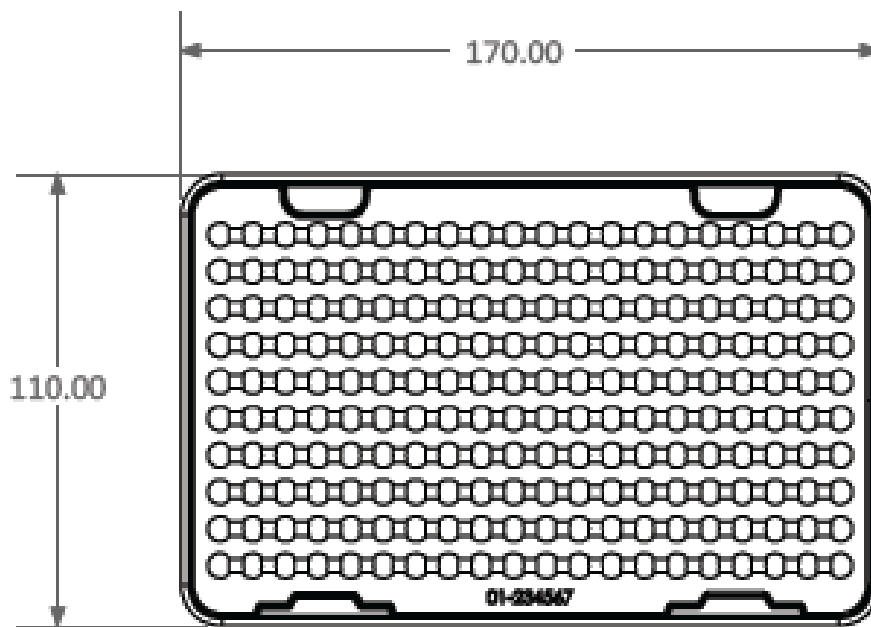
Dimension Drawings <sup>3)</sup>



## Method of Delivery

**Package details:** V100T000A-680 is packaged in a hermetically sealed TO-46 can with an ESD diode.

V100T000A-680 is delivered in a 170mm X 110mm tray. Refer to image below:



TOP VIEW



## Barcode-Product-Label (BPL)

**OSRAM Opto Semiconductors** LX XXXX BIN1: XX-XX-X-XXX-X

RoHS Compliant




(6P) BATCH NO: 1234567890

(1T) LOT NO: 1234567890 (9D) D/C: 1234

(X) PROD NO: 123456789 (Q) QTY: 9999 (G) GROUP: XX-XX-X-X

ML Temp ST  
X XXX °C X

Pack: RXX  
DEMY XXX  
X\_X123\_1234.1234 X



OHA04563



## Notes

Depending on the mode of operation, these devices emit highly concentrated visible and non-visible light which can be hazardous to the human eye. Products which incorporate these devices must follow the safety precautions given in IEC 60825-1.

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

For further application related information please visit [www.vixarinc.com/applications/application-notes](http://www.vixarinc.com/applications/application-notes)

## Glossary

- 1) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 2) **Testing temperature:** TA = 25°C
- 3) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with  $\pm 0.1$  and dimensions are specified in mm.

## Revision History

Version	Date	Change
1.0	March – 2017	Initial Draft
2.0	July – 2018	Release in IMSXpress, addition of delivery method, ordering information, package drawing, VCSEL mechanical specs, update E-O Table
3.0	December - 2019	Addition of Carrier Drawing, Product Image
4.0	Sept - 2020	Updated part number, characteristics table, temperature graphs, and document layout
4.1	March 31 – 2021	Updated datasheet graphs/layouts
4.2	December 4 – 2023	Update Ordering Code, Product Number and Barcode-Product-Label (BPL).



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