# V00013

## Assy; 2222; 680; Q; 3R; S6AP, BP, CP; 1mW; 0.17X0.24; PLCC; 3020; 2L; Encaps; ESD

## Applications

- Laser Printing
- Medical Devices
- Barcode Scanners
- Holography

## Features:

- Package Description: SMD Plastic Package with encapsulant
- Chip Technology: GaAs VCSEL
- Laser Wavelength: 680 nm
- Optical Power Class: 1 mW
- Radiation Profile: 12°
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

## Ordering Information

| Description | Operating Mode: $T_a$ = 25°C; $I_F$ = 3 mA; DC = 100% | Ordering Code |
|---|---|---|
| Assy; 2222; 680; Q; 3R; S6AP, BP, CP; 1mW; 0.17X0.24; PLCC; 3020; 2L; Encaps; ESD | 1 mW | V00013 |

REACH COMPLIANT

RoHS COMPLIANT


COMPLIES WITH IEC 60825-1, 3rd 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.



Vixar OSRAM Opto Semiconductors

## Maximum Ratings

$T_a$ = 25°C

| Parameter | Symbol | | Values |
|---|---|---|---|
| Operation/Solder temperature | $T_S$ | min. | -20°C |
| DC = 100% | | max. | 50°C |
| Storage temperature | $T_{stg}$ | min. | -40°C |
| | | max. | 125°C |
| Forward current | $I_f$ | max. | 3 mA |
| Direct current operation; DC = 100%; $T_S$ = 25°C | | | |
| Reverse Voltage | Not designed for reverse operation | | |
| Reflow soldering temperature | $T_{Ref}$ | max. | 260°C |
| ESD withstand voltage | $V_{ESD}$ | max. | 2 kV |
| acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2) | | | |

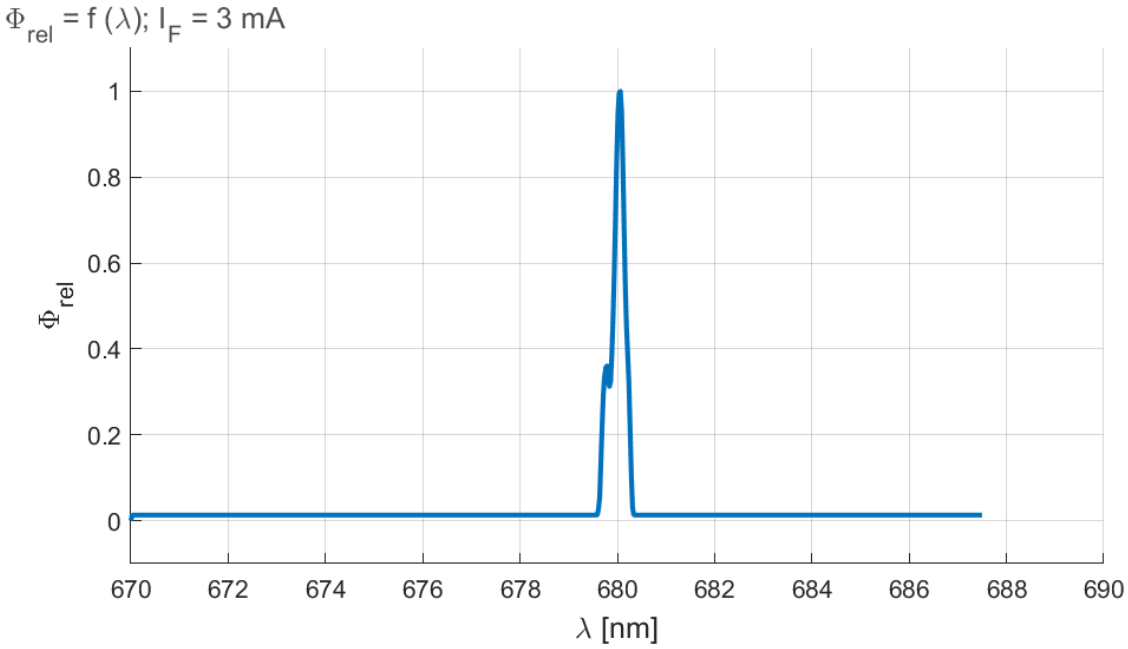
Note: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

## Characteristics

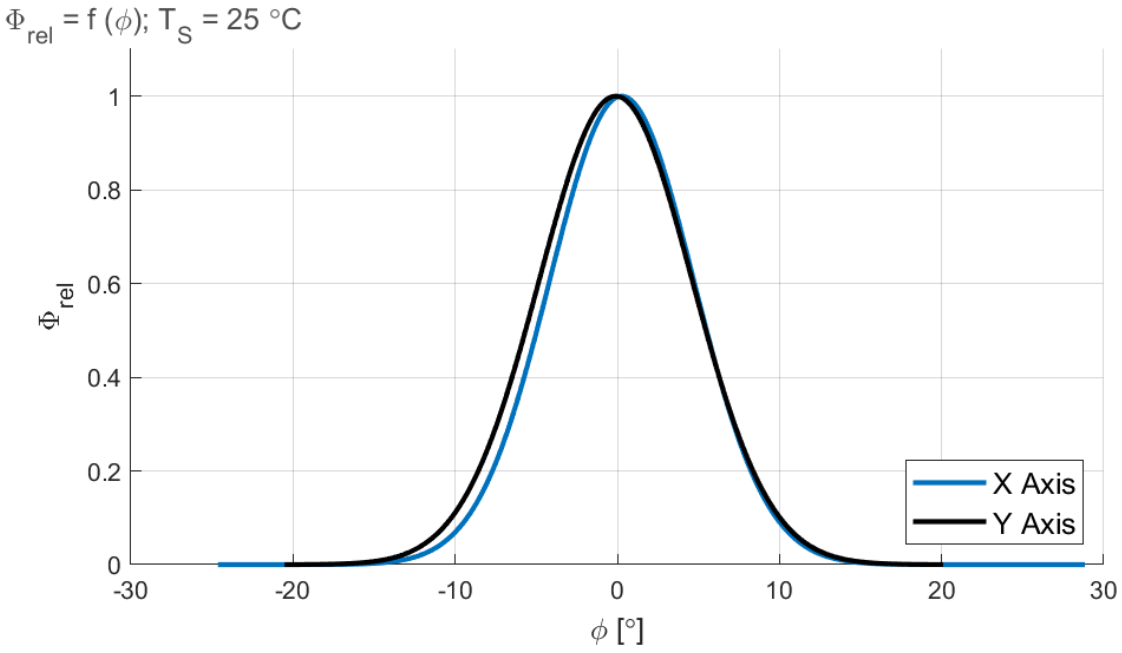
$T_a$ = 25°C, $I_F$ = 3 mA; DC = 100%

| Parameter | Symbol | | Values |
|---|---|---|---|
| Forward voltage | $V_F$ | typ. | 2.6 V |
| Output power | $\Phi$ | typ. | 1.2 mW |
| Threshold current | $I_{th}$ | typ. | 0.7 mA |
| Slope efficiency | SE | typ. | 0.4 W / A |
| Peak wavelength | $\lambda_{peak}$ | min. | 670 nm |
| | | typ. | 680 nm |
| | | max. | 690 nm |
| Spectral bandwidth at FWHM (50% of $\Phi_{max}$) | $\lambda_{FWHM}$ | typ. | 2 nm |
| Temperature coefficient of wavelength | $TC_\lambda$ | typ. | 0.045 nm / K |
| Field of view at FWHM (50% of $\Phi_{max}$) | $\phi_X$ | typ. | 12° |
| | $\phi_Y$ | typ. | 12° |

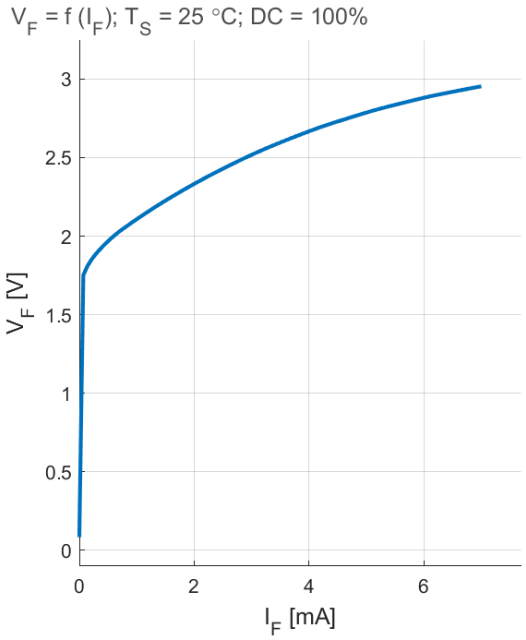
## Relative Spectral Emission [1)]



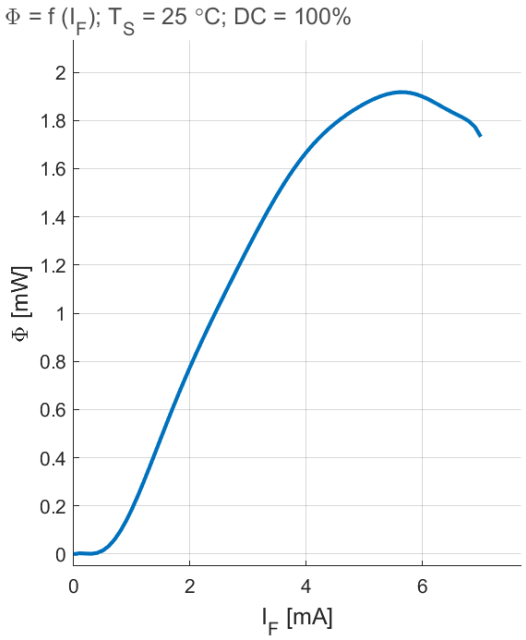

## Radiation Characteristics [1)]



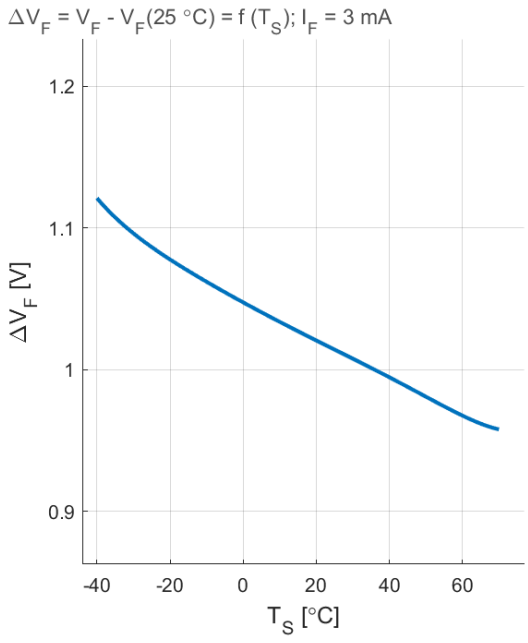
## Forward Voltage [1) 2)]



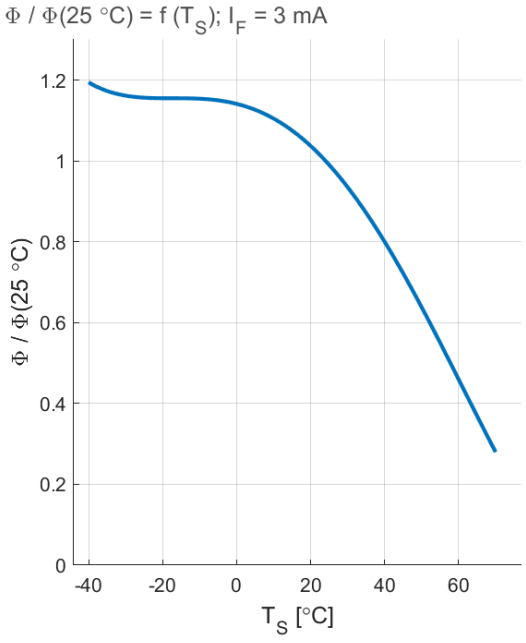

## Optical Output Power [1) 2)]



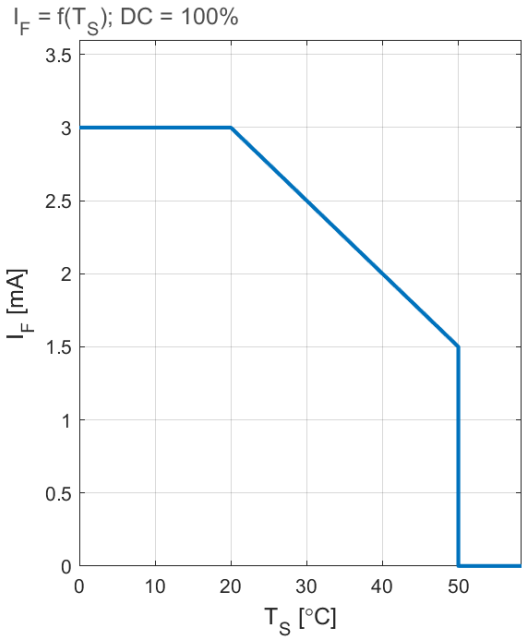

## Relative Forward Voltage [1)]



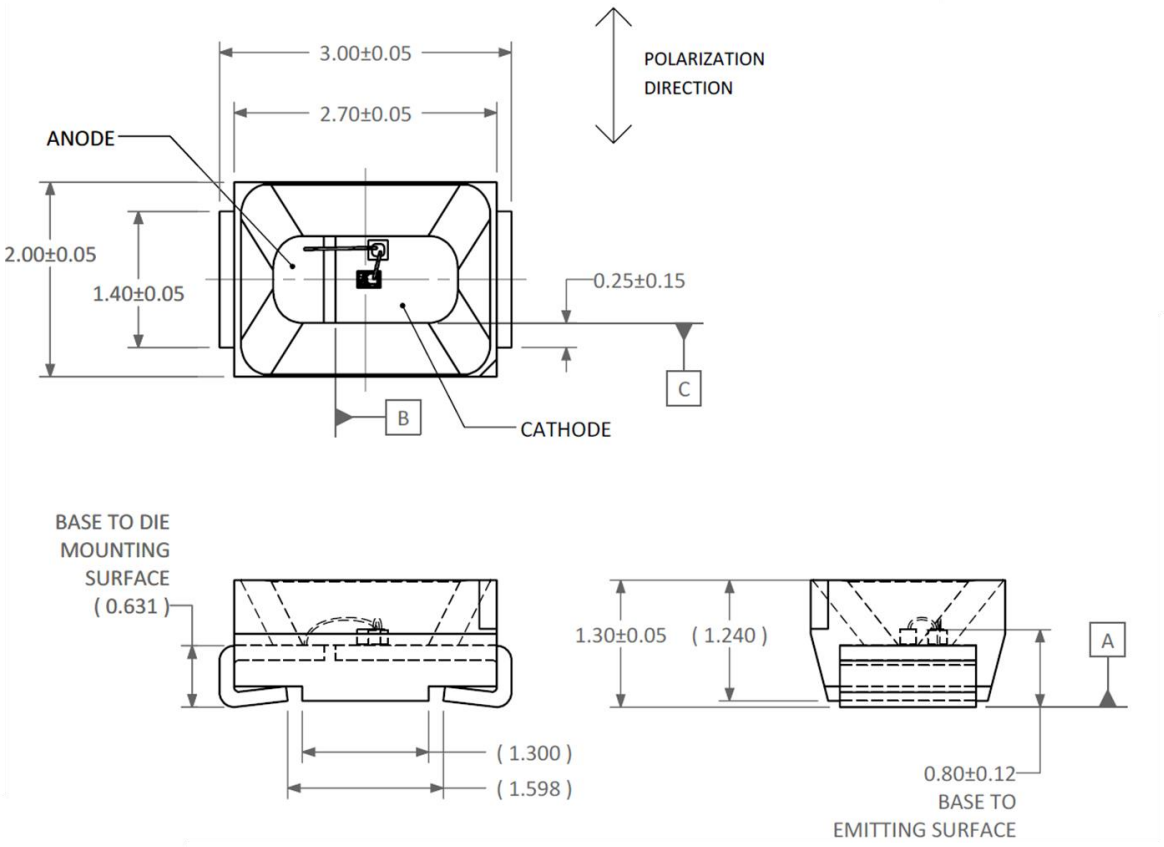

## Relative Radiant Power [1)]



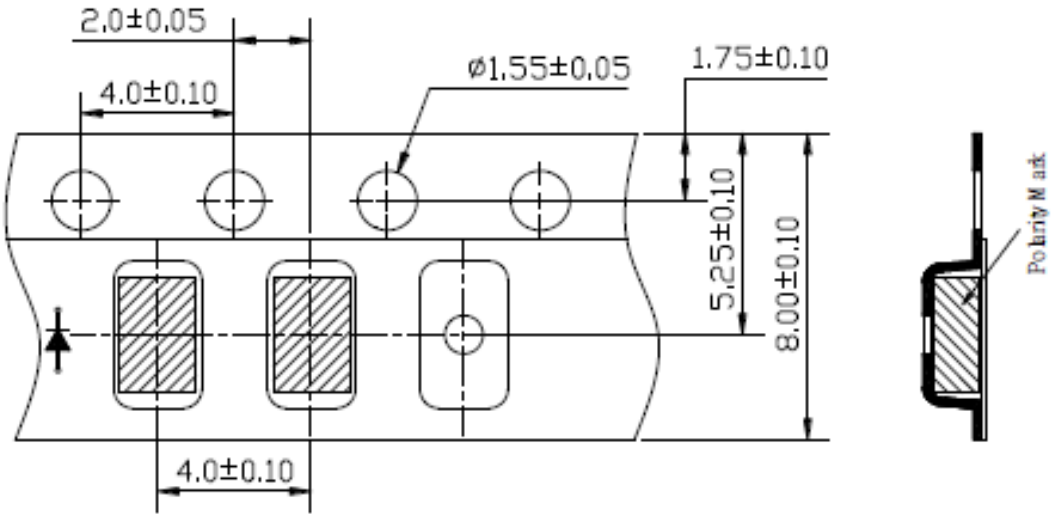
## Max Permissible Current



## Dimension Drawings [3)]

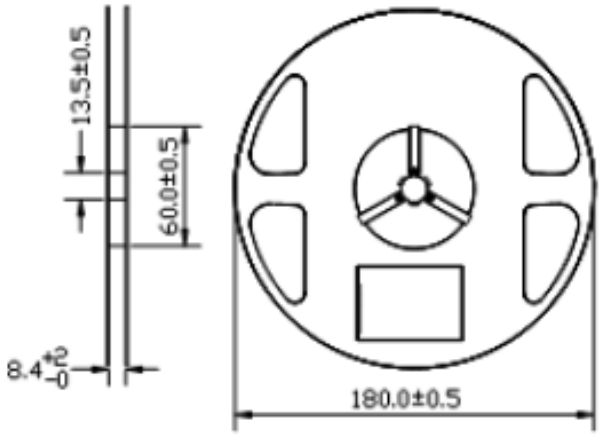


## Taping [3) 4)]




Unit: mm

## Tape and Reel [4)]




Unit: mm

| Pieces per PU |
| --- |
| 2500 |

## Barcode-Product-Label (BPL)

VIXAR Vertical Cavity Surface Emitting Laser (VCSEL) Product

Model: _____

Manufacturer: VIXAR
2355 Polaris AVE N. SUITE 100
Plymouth, MN 55447 USA

Manufactured: Bare Die by VIXAR,
Fabricated or Packaged by: _____
City: _____, Country: _____

Wafer #: _____
Date Code: _____
Manufacturer Lot No.: _____
Quantity: _____

Complies with FDA/CDRH 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

CDRH Accession No.: 1210159-000 Product Code: RDW

# 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 vixarinc.com/vcsel-technology/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 ±0.1 and dimensions are specified in mm.

4) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

## Revision History

| Version | Date | Change |
|---|---|---|
| 4.0 | August 01 - 2019 | Legacy Datasheet |
| 5.0 | May 11 - 2021 | Update datasheet format, characterization data, and performance graphs |
| 5.1 | June 14 – 2021 | Updated product drawing |
| 5.2 | July 1 – 2021 | Added max permissible current graph |



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