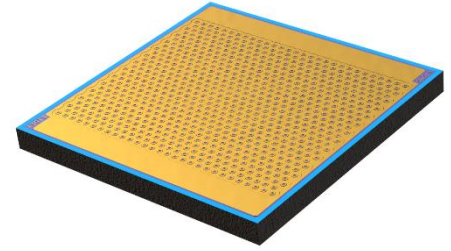


OLI5050V.A1-850-A

BIDOS® Core



Features:

- Chip Technology: GaAs VCSEL
- IR Laser Wavelength: 850 nm
- Optical Power Class: 4 W pulsed
- Radiation Profile: Multi-Mode
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

Ordering Information

| Type | Operational Mode: $I_F = 5 \text{ A}$, $T_a = 25^\circ\text{C}$ $t_p = 100\mu\text{s}$, DC = 1% | Ordering Code |
|-------------------|---|---------------|
| OLI5050V.A1-850-A | 4 W | Q65113A1724 |

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 the “Notes” section.

Maximum Ratings

$T_a = 25^\circ\text{C}$

| Parameter | Symbol | | Values |
|--|------------------------------------|------|---------------------|
| Operation/Solder temperature | T_s | min. | -40°C |
| $t_p = 100\ \mu\text{s}$; DC = 1 % | | max. | 110°C |
| Storage temperature | T_{stg} | min. | -40°C |
| | | max. | 110°C |
| Forward current | I_f | max. | 18 A |
| Pulsed operation; $T_p = 100\ \mu\text{s}$; DC = 1%; $T_s = 25^\circ\text{C}$ | | | |
| Forward current | I_f | max. | 8.5 A |
| Direct current operation; DC = 100%; $T_s = 25^\circ\text{C}$ | | | |
| Reverse Voltage | Not designed for reverse operation | | |
| 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.

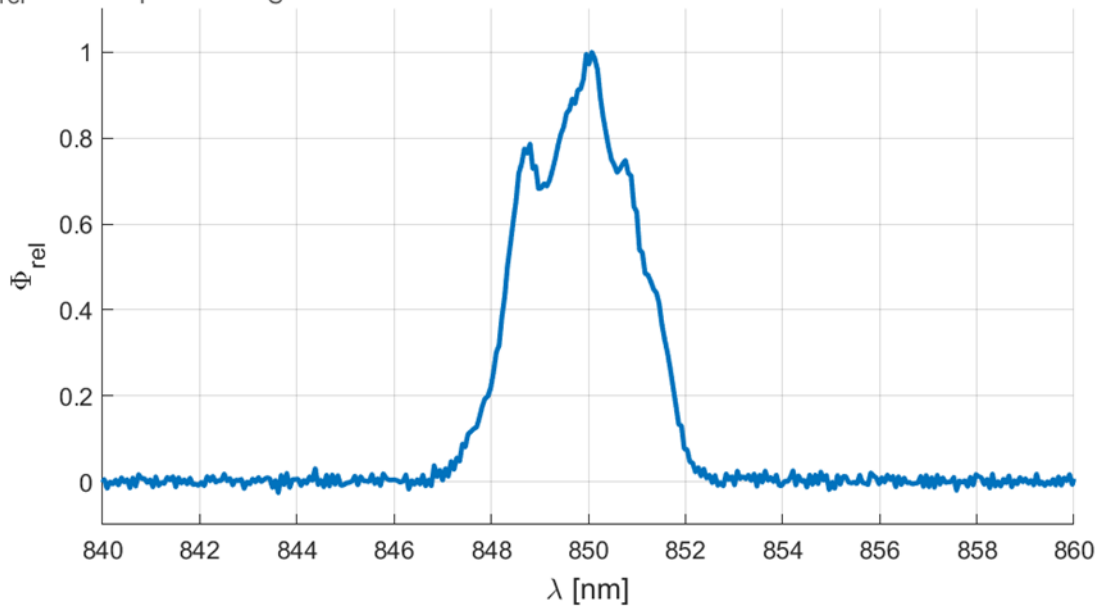
Characteristics

$T_a = 25^\circ\text{C}$, $I_F = 5\text{ A}$; $t_p = 100\ \mu\text{s}$; DC = 1%

| Parameter | Symbol | | Values |
|---|------------------|------|-------------|
| Forward voltage | V_F | typ. | 2.1 V |
| Output power | Φ | typ. | 4.2 W |
| Threshold current | I_{th} | typ. | 0.80 A |
| Slope efficiency | SE | typ. | 1.1 W / A |
| Power conversion efficiency | η | typ. | 40 % |
| Peak wavelength | λ_{peak} | min. | 840 nm |
| | | typ. | 850 nm |
| | | max. | 860 nm |
| Spectral bandwidth at FWHM (50% of Φ_{max}) | λ_{FWHM} | typ. | 2 nm |
| Temperature coefficient of wavelength | TC_λ | typ. | 0.059 nm /K |
| Field of view at FWHC (50% of Φ_{max}) | ϕ_x | typ. | 18° |
| | ϕ_y | typ. | 18° |

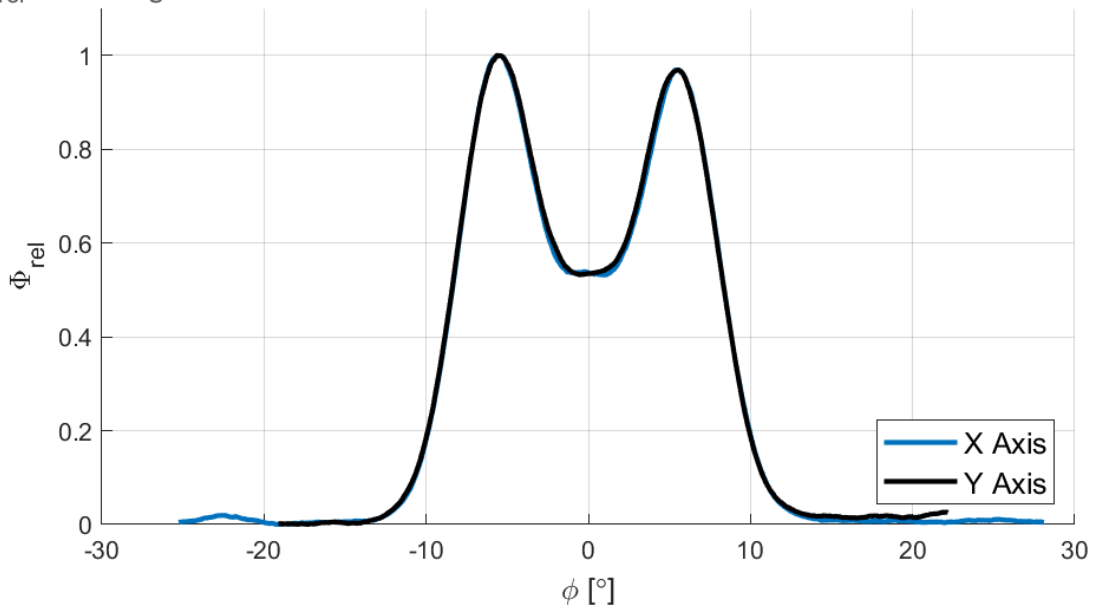
Relative Spectral Emission ¹⁾

$$\Phi_{\text{rel}} = f(\lambda); I_F = 5 \text{ A}; T_S = 25 \text{ }^\circ\text{C}$$



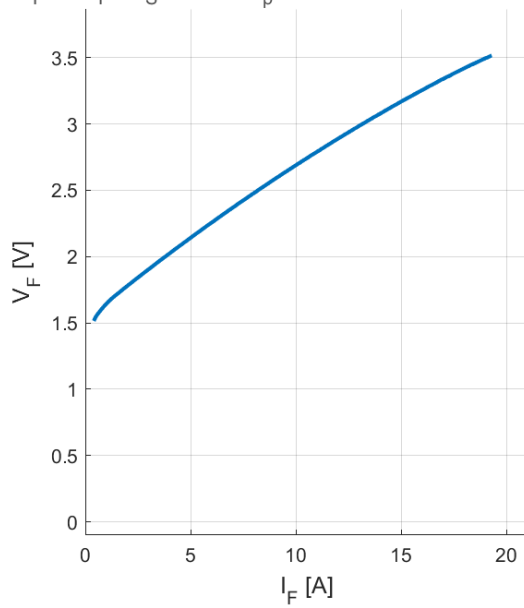
Radiation Characteristics ¹⁾

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



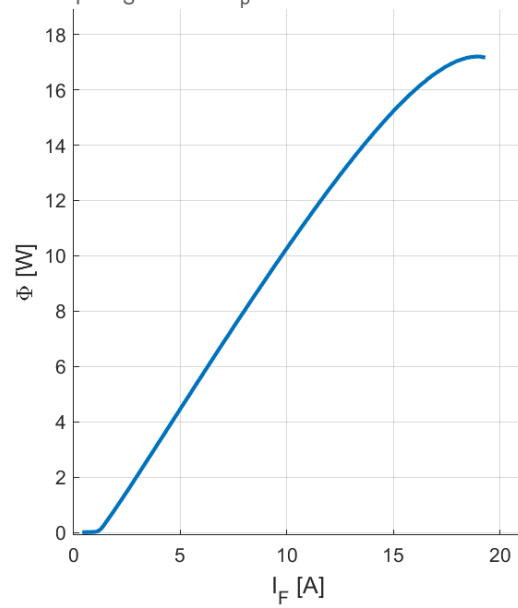
Forward Voltage ^{1) 2)}

$$V_F = f(I_F); T_S = 25\text{ °C}; t_p = 100\ \mu\text{s}; \text{DC} = 1\%$$



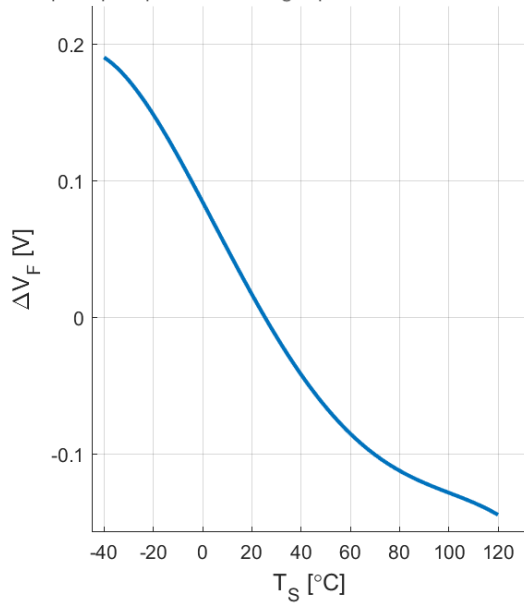
Optical Output Power ^{1) 2)}

$$\Phi = f(I_F); T_S = 25\text{ °C}; t_p = 100\ \mu\text{s}; \text{DC} = 1\%$$



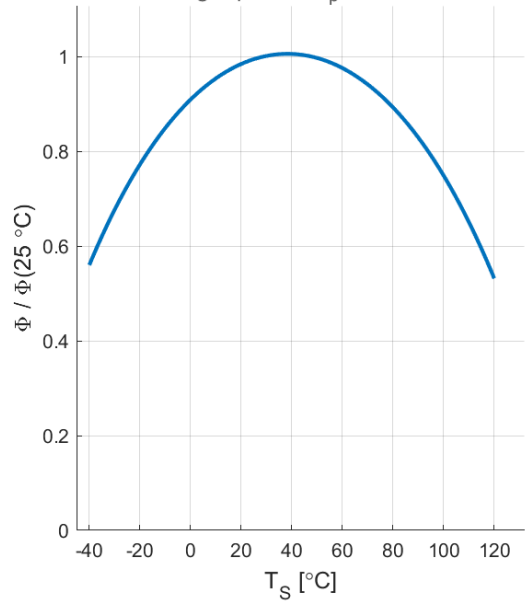
Relative Forward Voltage ¹⁾

$$\Delta V_F = V_F - V_F(25\text{ °C}) = f(T_S); I_F = 5\text{ A}$$

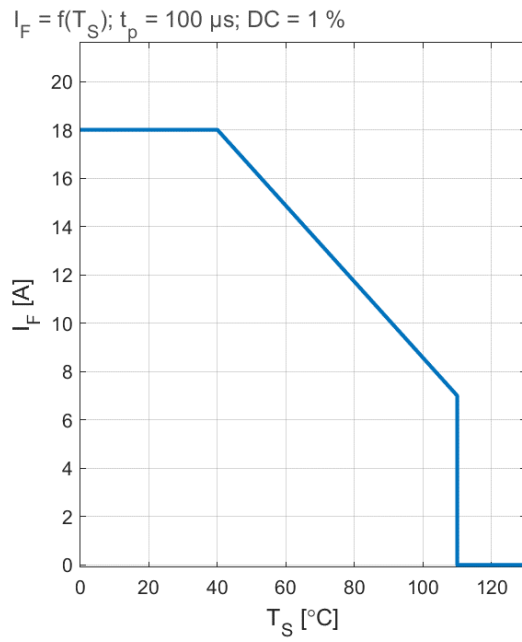


Relative Radiant Power ¹⁾

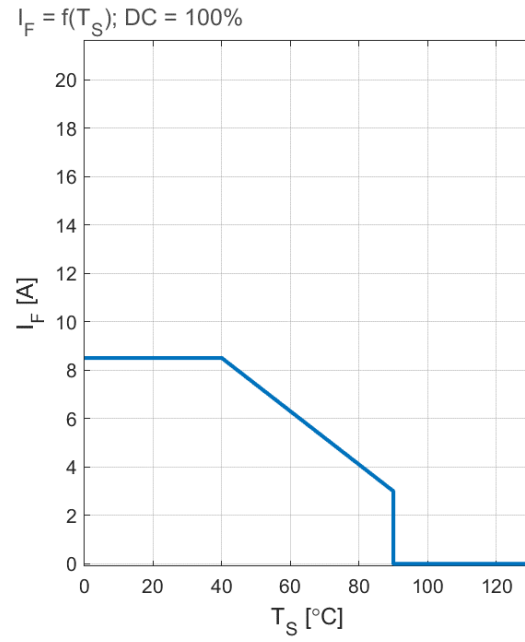
$$\Phi / \Phi(25\text{ °C}) = f(T_S); I_F = 5\text{ A}; t_p = 100\ \mu\text{s}; \text{DC} = 1\%$$



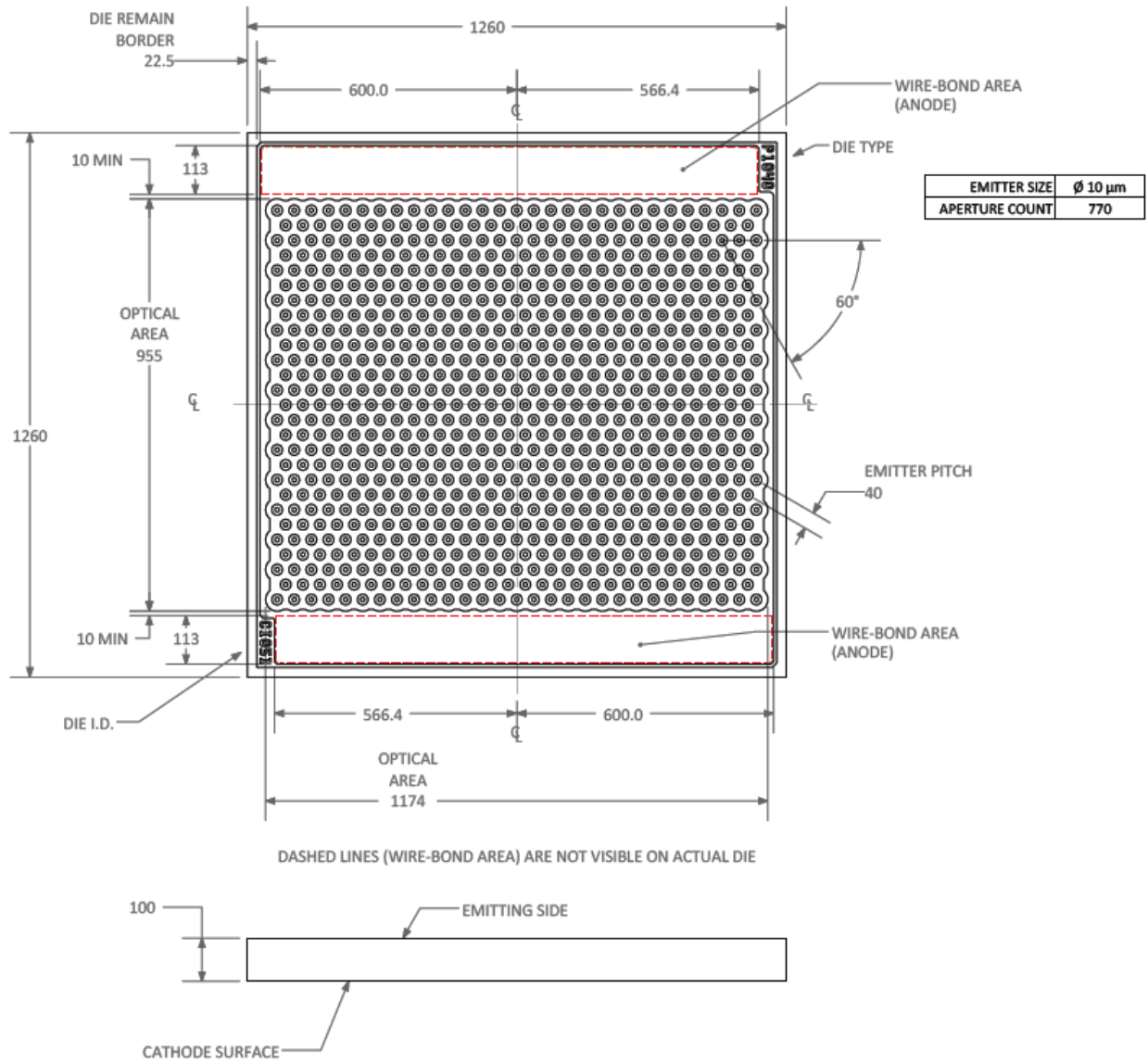
Max Permissible Pulse Current



Max Permissible Current



Dimension Drawings ³⁾



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.osram-os.com/appnotes

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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:** $T_a = 25^\circ\text{C}$
- 3) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.

Revision History

| Version | Date | Change |
|---------|-----------------------------|--|
| 0.0 | Jan 4 th , 2021 | Initiation of preliminary datasheet |
| 1.0 | Jan 21 st , 2021 | Release |
| 1.1 | Oct 5 th , 2021 | Updated Characteristic Graphs and Dimension Drawings |

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