

V100P000A-680-C

BIDOS®

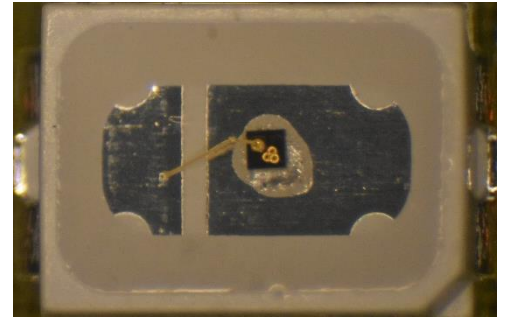


Applications:

- Biometric Sensor
- Low Light Laser Therapy
- Industrial Sensors
- Pulse Oximetry

Features:

- Chip Technology: GaAs VCSEL
- Laser Wavelength: 680nm
- Optical Power Class: 7.0 mW
- Radiation Profile: Multi-Mode



Ordering Information

Type	Operational Mode: $I_F = 15 \text{ mA}$, $T_a = 25^\circ\text{C}$ DC = 100%	Ordering Code
V100P000A-680-C	7.0 mW	Q65113A7623

Note: V100P000A-680-C is a Vixar legacy qualified product.

Maximum Ratings

Parameter	Rating	Notes
Storage temperature	-40 to 100 °C	
Operating temperature (VCSEL)	-20°C to 50 °C	
Lead solder temperature	260°C, 10 seconds	
CW current (VCSEL)	20 mA	(Note 1)
Laser reverse voltage	5 V	(Note 1)

Note 1: The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the top of this table; however, the maximum CW laser current decreases with increasing temperature. Contact Vixar for maximum CW laser current values at other temperatures.

Note 2: For details refer to the Vixar Application Note "VCSEL EOS/ESD Considerations and Lifetime Optimization".

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may affect device reliability.

Electro-Optical Characteristics

VCSEL Operating Temp (Tv) =25°C & Operating Current=15mA unless otherwise stated)

Parameter	Symbol	Units	Min	Typ	Max	Notes	Verification (Note 3)
Threshold current	I _{th}	mA	3.0	5.0	8.0		Wafer test & Qualification
Operating voltage	V _f	Volts	--	2.3	2.6		Final test
Series resistance (VCSEL)	R _s	Ohms	--	25	--		Wafer test
Slope efficiency	SE	mW/mA	--	0.7	--		Wafer test & Qualification
Optical output power	L _{op}	mW	5	7.0		T=25°C	Final test
Reverse breakdown voltage		V	10	--	--	I _r ≤ 1nA	Wafer test
Operating wavelength	λ _{op}	nm	675	680	685		Final test
Spectral width (RMS)	Δλ	nm	--	--	1.5		Wafer test & Qualification
Beam divergence 1/e ²		deg	15	17	21	Whole angle	Wafer test
Beam divergence FWHM	FWHM	deg	12	14	18	Whole angle	Wafer test
Wavelength temp. coefficient		nm/°C		0.045			By Design

Note 3: Verification indicates how Vixar will verify specification compliance:

- "By Design" means that these parameters are built in by design. These are controlled by material properties, mask layout, wafer processing controls, or assembly tolerances.
- "Qualification" means testing that is performed on product to check that these specifications are met with sufficient design margin during the qualification testing process. These will not be measured during production.
- "Final Test" means that these parameters will be verified after packaging assembly at the final test station.
- "Wafer Test" means that these parameters will be measured during wafer level testing, 100% during production, so that Known Good Die (KGD) are shipped for assembly

Performance Curve

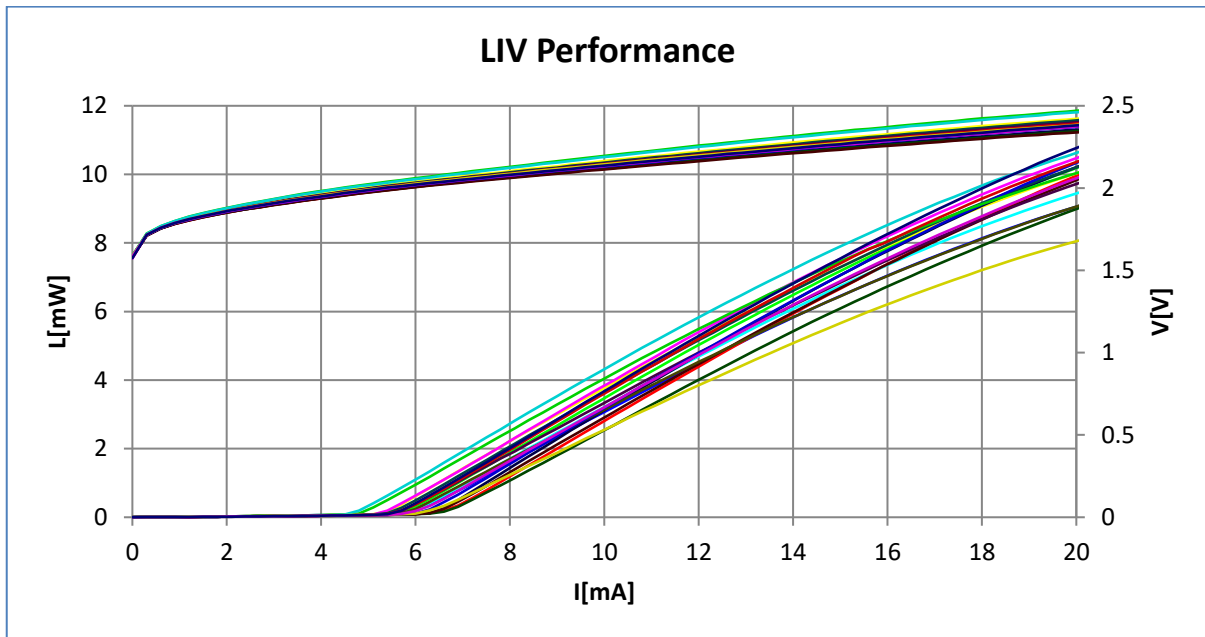


Figure 1 LIV Performance of many packaged K0-0680M-1263-DP0 at room temperature

Typical Spectral Performance

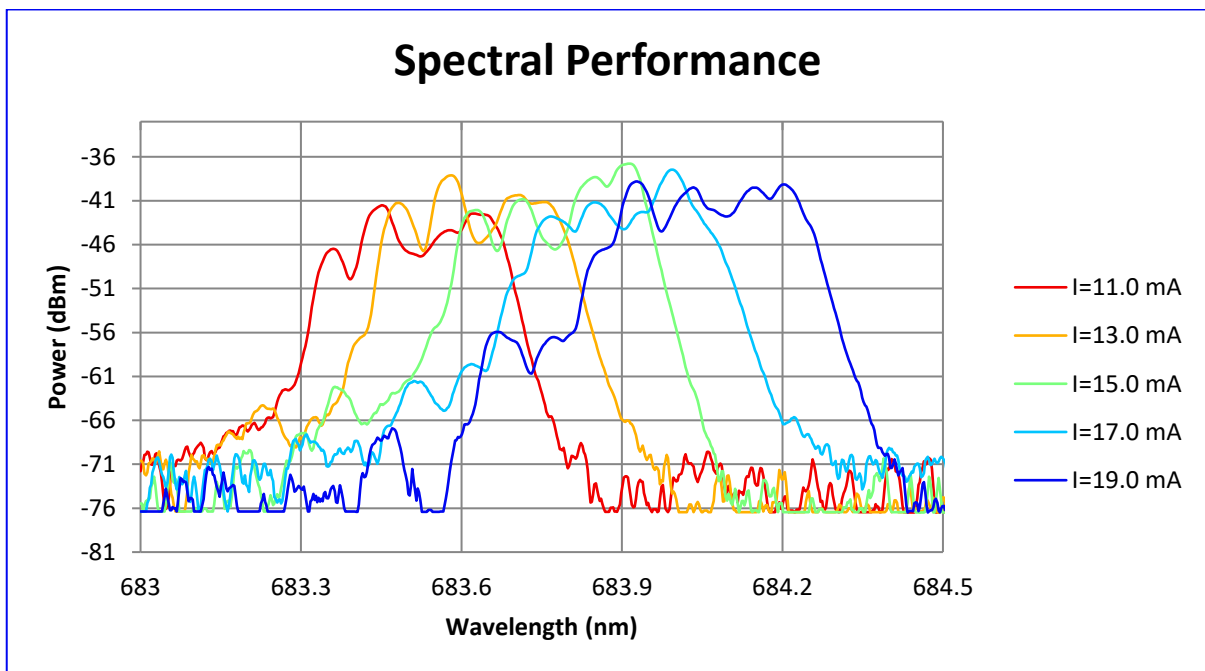


Figure 2 Typical spectral beam shape at room temperature

Beam Divergence at Room Temperature

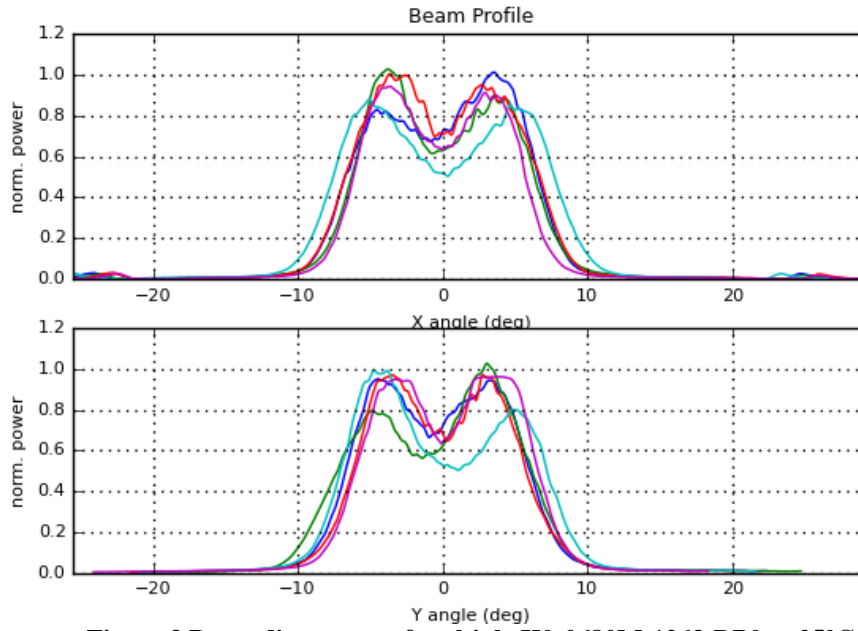
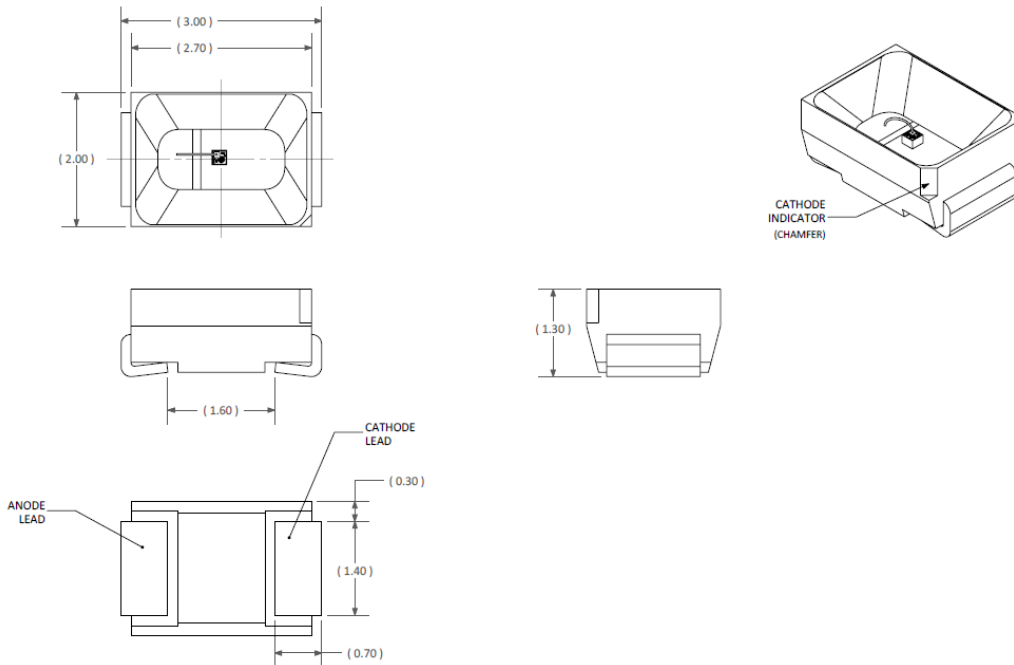


Figure 3 Beam divergence of multiple K0-0680M-1263-DP0 at 25°C

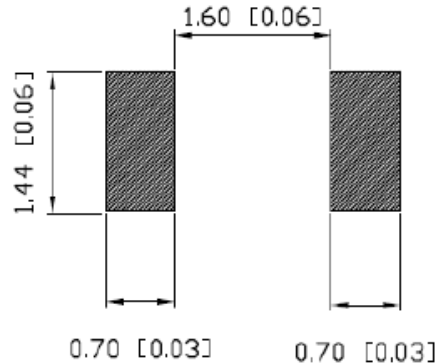
Package Information

The product will be shipped in a tape & reel package which is inside a sealed ESD bag with moisture sensitivity labels & desiccant.

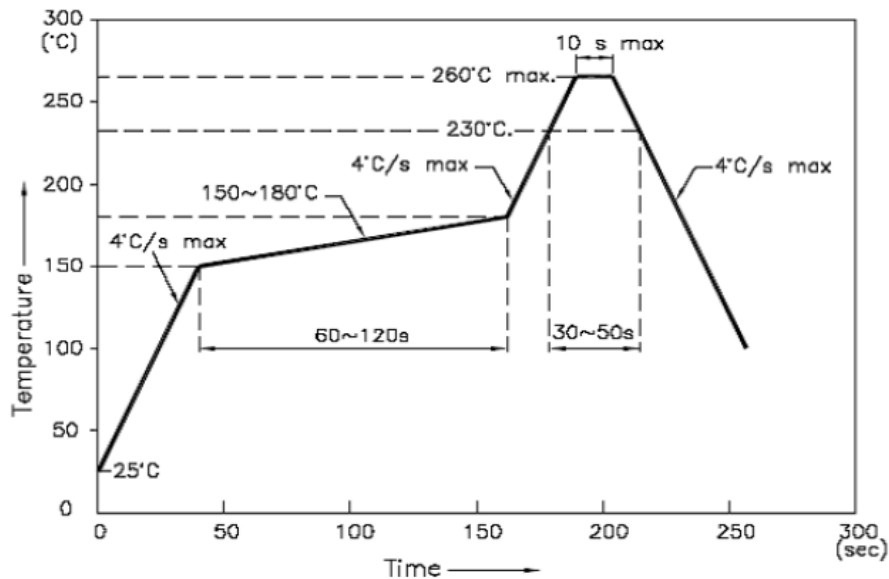
Package Dimension



Recommended PCB Solder layout



Solder Reflow Profile



Package Handling Instructions

The package should be treated as **Moisture Sensitivity Level 5a** (MSL 5a) prior to assembly.

1. The shelf life in the sealed bag is 12 months at 5°C-30°C and < 60% R.H.
2. After the package is opened

2.1 It is recommended to bake before the first use:

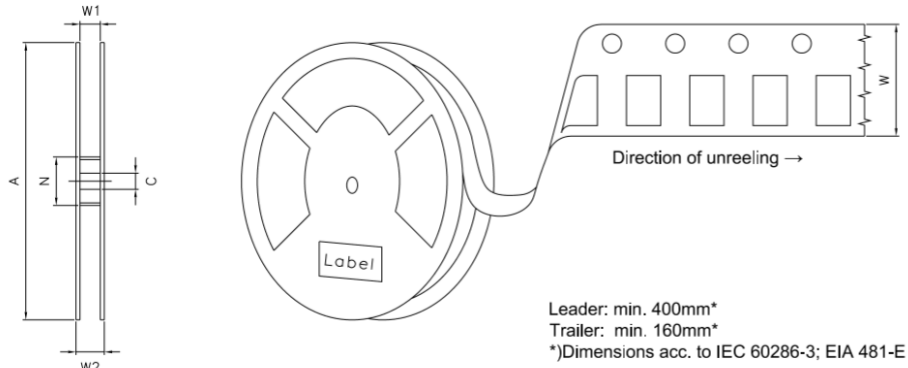
Baking condition:

- a. 60+/- 5°C for 24-48 hours and <5% R.H. in tape and reel
- b. 110+/-5°C for 8-16 hours in bulk type

2.2 The devices should be used within a week and to be stored at <20% R.H. with zip lock sealed:

- a. Baking is required before soldering when the pack is unsealed after 24 hours
- b. Bake conditions as described in 2.1

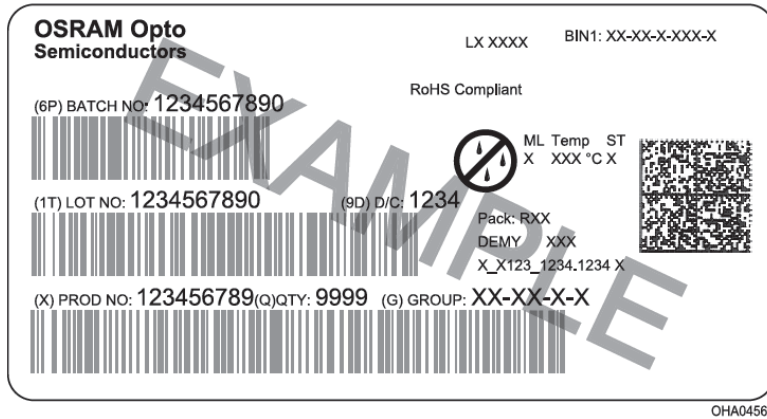
Tape and Reel information



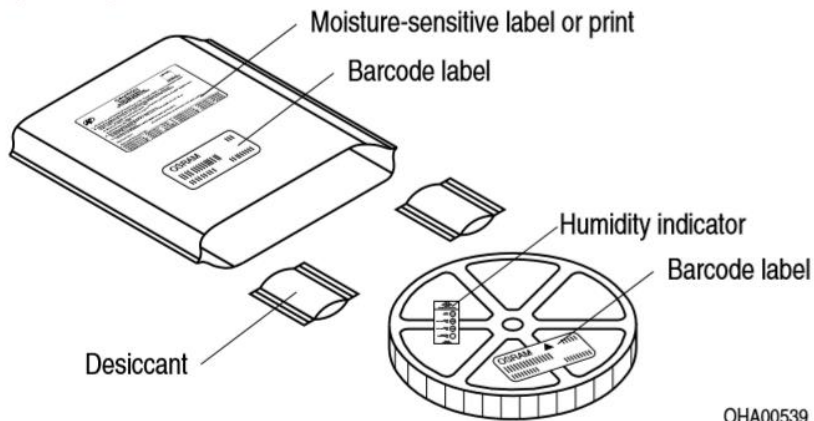
Reel dimensions [mm]

A	W	N _{min}	W ₁	W ₂ max	Pieces per PU
180 mm	8.00 ± 0.10	60	8.4	10.4	3000

Barcode-Product-Label (BPL)



Dry Packing Process and Materials



Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Revision History

Version	Date	Change
002	05/08/2018	Changed package photo & drawing. Edited beam divergence spec to narrower angle Changed LIV graph Added a spectral data graph
RevA	07/11/2018	remove header/footer, adjust margin, package dimension, method of delivery, pre-release into ISOXpress
Rev B	08/06/2018	Added verification notes Removed package drawing and replaced with drawing number Added shipping and handling instructions Edited method of delivery.
Rev C	9/19/2018	Addition of Header & Footer, Release into SharePoint
Rev D	10/4/2019	Include Reflow Soldering Profile, Package Dimension, Packaging Information, Label and update header
1.0	December 4 th - 2023	Update Ordering Code, Product Number and Barcode-Product-Label (BPL).



COMPLIES WITH IEC 60825-1, 2nd Edition 2007.
COMPLIES WITH 21 CFR 1040.10 AND 1040-10.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER
NOTICE NO.50 DATED 27 MAY 2001.