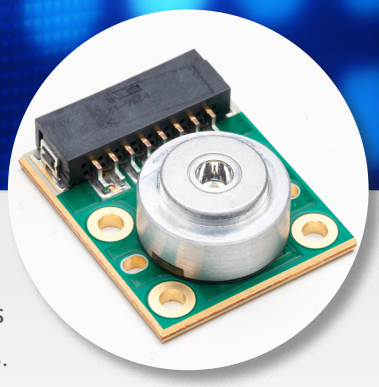
LumiBright™ UV 2400B-505



LumiBright Ultraviolet Light Engines provide extreme brightness and a highly uniform light distribution. Chip-on-Board LED technology with metallic PCB substrates offers excellent thermal performance. The specialized glass primary optic is ideal for high power UV light. It is a non-imaging concentrator that delivers high collection efficiency and a homogeneous beam requiring no additional optics.

The Model LE 2400B-505 produces a 37-degree half angle beam from a 5-mm diameter aperture with options for 7 LED die in single or multi-wavelength configurations. An on-board thermistor (included) allows real-time monitoring of temperature for closed-loop control.

Benefits:

- Uniform near and far fields
- Fused silica optics for UV, high power, and high temperature operations
- Continuous high current or pulsed operation
- RoHS compliant - Environmentally friendly

Ultraviolet:

- λ_p 365 nm thru 405

Features:

- 37 degree half angle far field
- 5.0 mm output diameter
- High thermal conductivity metal core PCB
- COB array technology, 7 Die
- Patent-pending non-imaging optics

Options:

- Single or multi-wavelength configurations
- Heat sink and thermal pads
- Drivers and Controllers

Typical Applications:

Ultraviolet:

- UV curing
- High speed printing
- Document verification
- Water and air purification
- Medical phototherapy
- Fluorescence excitation
- Mercury lamp replacement
- Machine vision

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DS-UV2400B-505-170821

SPECIFICATIONS

Parameter	Specification	Comment
Number of LED die	7	Connected in parallel, chip-on-board
Drive current	20A Maximum	Continuous operation
*Forward voltage	Turn on: 3.0V Limit: 4.8V	Requires constant current operation
UV optical power	> 16 Watts	At max current
UV optical power density	> 95 W/cm^2	At exit aperture, max current
Clear aperture (CA_0)	4.8 mm	At exit aperture
Far field angle	37°	-
Numerical aperture (NA_0)	0.60	-
Electrical connector	1 row, 8 pin	Surface mount, high current
Overall size (mm)	30 x 36 x 11.7	W x L x H
PCB Thermal impedance	0.45° C/W	-
Thermistor $B_{25/85}$	3574 to 3646	For 10 kΩ
Thermistor impedence	10 kΩ	At 25° C
Operating temperature	15° C to 45° C	<85% RH, non-condensing
Lifetime (hours)	-	Depending on drive conditions and temperature
*Note: Drive circuits must prevent exceeding the maximum recommended open circuit voltage for any LED die.		

NOTES

Notes on Lightguide Coupling

The 2400B-505 can easily couple to liquid light guides and fiber bundles. The aperture and half-angle of the 2400B-505 matched the diameter and numerical aperture of typical light guides. The light guide ferrule can be butt-coupled to the solid-glass aperture of the 2400B-505. No additional optics are necessary.

The maximum coupling efficiency for the Model 2400B-505 requires the use of a fiberoptic or liquid lightguide with equivalent specifications for both the nominal values of Numerical Aperture (NA_0) and Clear Aperture (CA_0). When the lightguide design parameters of NA_f or CA_f are smaller than the nominal values of the Model 2400B-505, the coupling efficiency is reduced by the square of the ratios, $(NA_f/NA_0)^2$ *and/or* $(CA_f/CA_0)^2$. Other factors that contribute to coupling efficiency are the reflectance loss at the face of the fiberoptic or lightguide, as well as the packing fraction when using a fiber bundle.

Notes on Thermal Management

The 2400B-505 uses a metal core circuit board for high thermal conductivity that allows heat to dissipate in all directions. An external heat sink or heat pipe is required to dissipate the heat generated at full drive power. Adding the feature of forced air convection across the heat sink or heat pipe fins removes heat faster and more efficiently. The 2400B-505 circuit board features an attached thermal pad for heat sink contact, no thermal grease is needed. Every 2400B-505 circuit board has a built-in thermistor for temperature monitoring. Lifetime of the LEDs will be compromised if the temperature of the circuit board exceeds 70° C.

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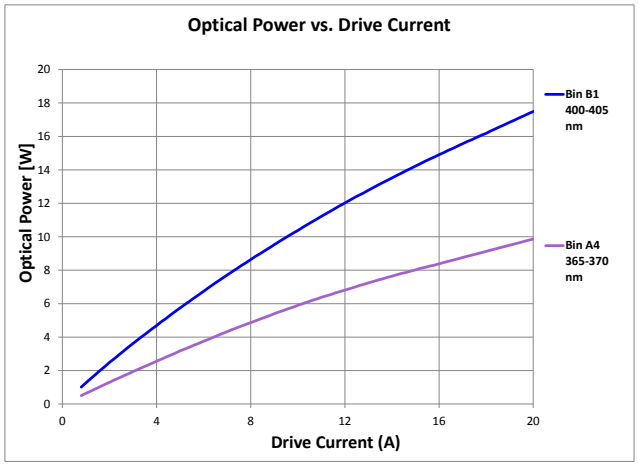


Figure 1

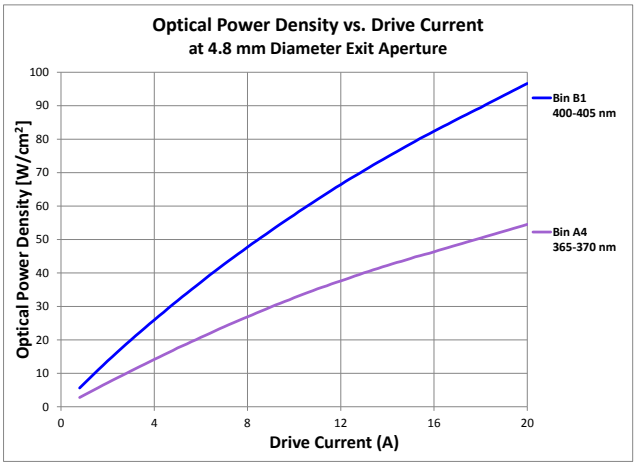


Figure 2

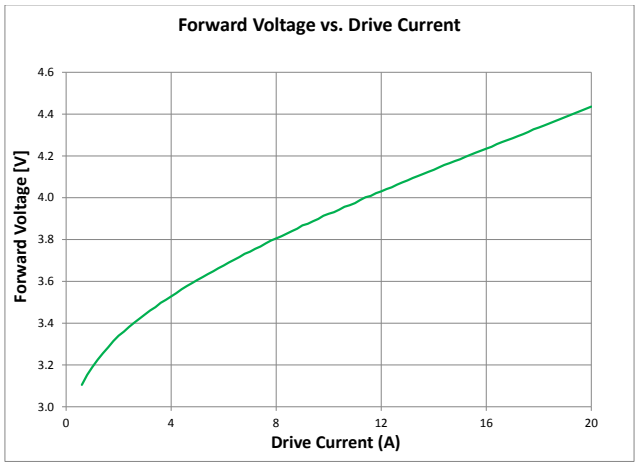


Figure 3

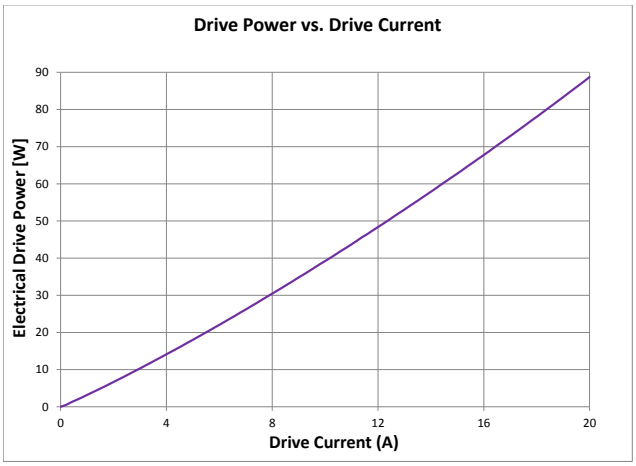


Figure 4

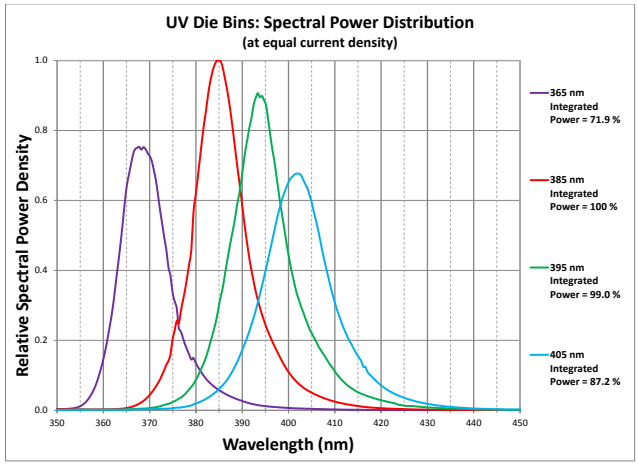


Figure 5

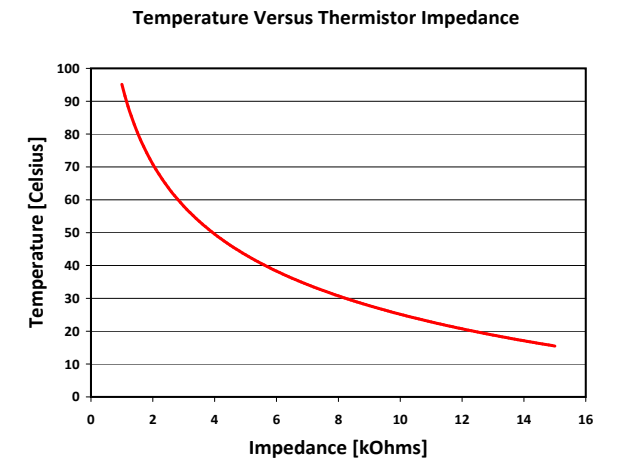
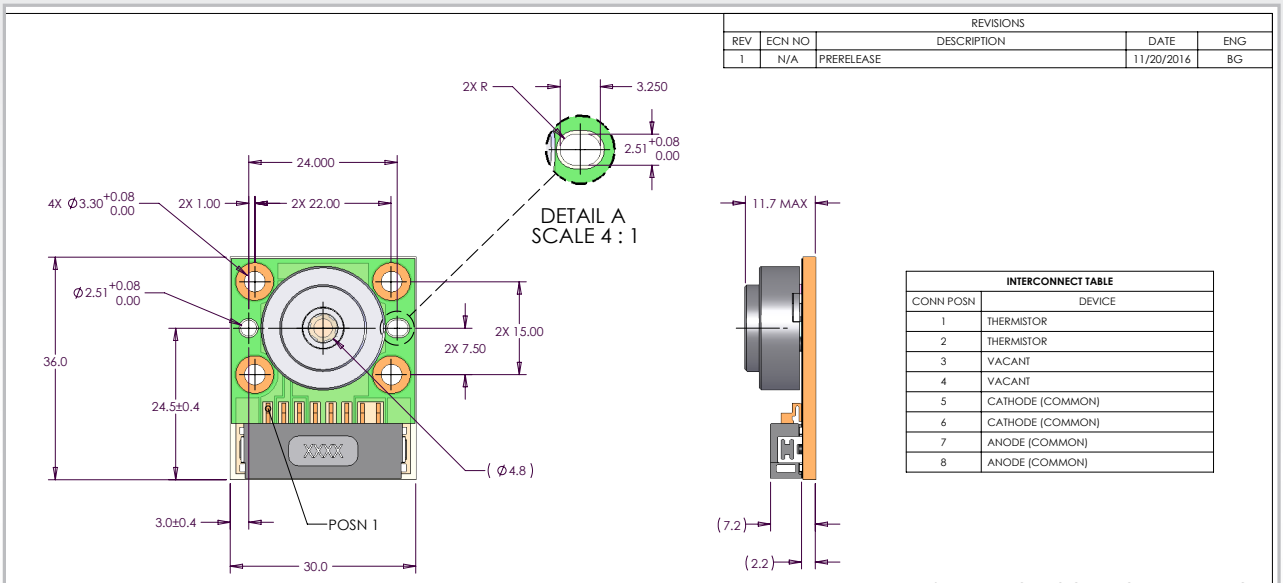


Figure 6

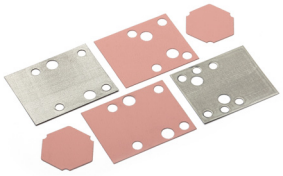
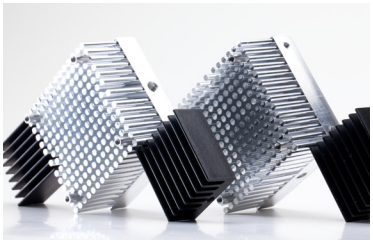
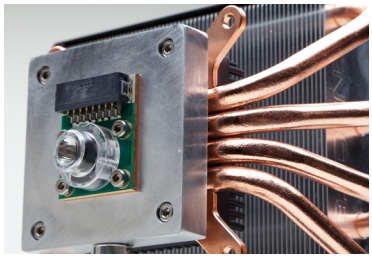
INSTALLATION CONTROL DRAWING



ORDERING INFORMATION

Nominal Wavelength	Part Number	Notes
365nm	2400B-505-011	Wavelength bins are +/- 5nm from nominal
385nm	2400B-505-007	
395nm	2400B-505-014	
405nm	2400B-505-008	

ACCESSORIES

		
Cooling Fans	Thermal Pads	Heat Sinks
		
LumiBright DR Driver/ Controller	Heat Pipes	Wire Harness Assemblies

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