

**ProLight PBSM-10JLU-xDA36A0x
400W UV Power LED Module
Technical Datasheet
Version: 1.4**

ProLight Opto ProEngine Series

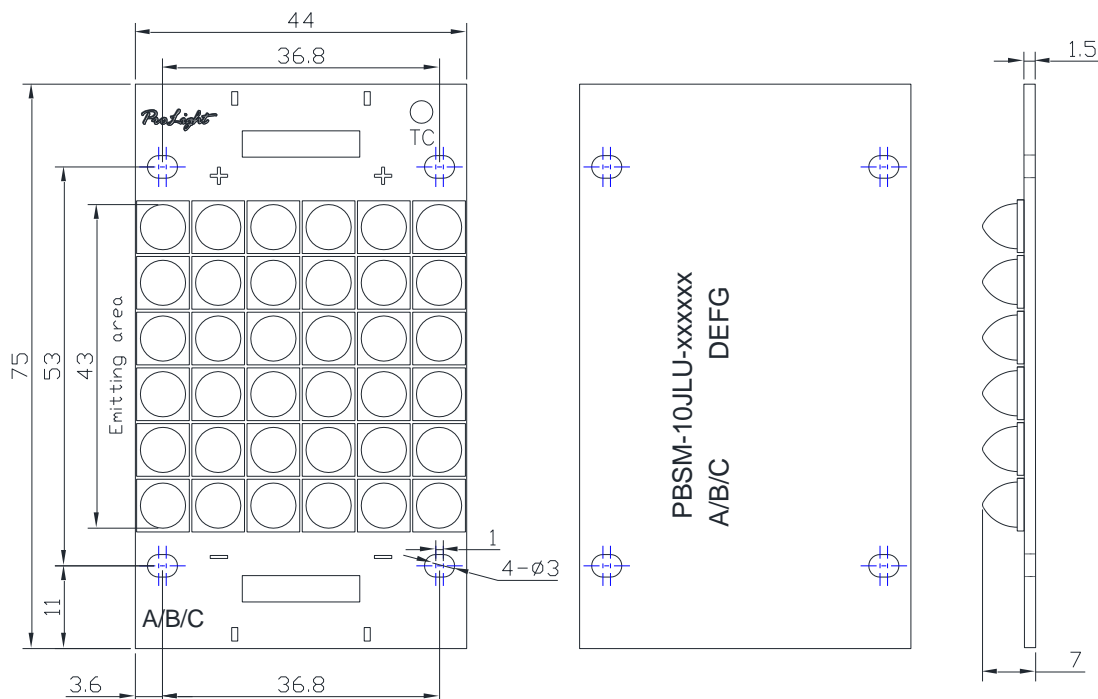
Features

- RoHS compliant
- Quartz Glass Lens
- View angle 48°

Main Applications

- UV gluing, UV curing, UV marking
- UV drying of printing inks and lacquers
- Currency inspection
- Forensic analysis-urine, protein stains
- Leak detection using fluorescent dyes
- Detects fluorescing minerals and gems

Mechanical Dimensions



Part No. = PBSM-10JLU-xxxxxx
 BIN Code = A/B/C
 A = Radiometric Power (mW)
 B = Peak Wavelength
 C = Voltage
 Date Code = DEFG

Notes:

1. The cathode side of the device is denoted by the chamfer on the part body.
2. Electrical insulation between the case and the board is required. Do not electrically connect either the anode or cathode to the slug.
3. Drawing not to scale.
4. All dimensions are in millimeters.
5. Unless otherwise indicated, tolerances are $\pm 0.15\text{mm}$.
6. Please do not solder the emitter by manual hand soldering, otherwise it will damage the emitter.
7. **Please do not use a force of over 3kgf impact or pressure on the lens of the LED, otherwise it will cause a catastrophic failure.**

*The appearance and specifications of the product may be modified for improvement without notice.

Flux Characteristics, $T_j = 25^{\circ}\text{C}$

Radiation Pattern	Color	Part Number Emitter	Radiometric Power (W)		
			@6000mA		Refer @8400mA
			Minimum	Typical	Typical
Lambertian	UV-S	PBSM-10JLU-GDA36A0S	72	104	142
	UV-M	PBSM-10JLU-DA36A0M	90	120	163
	UV	PBSM-10JLU-DA36A0	90	128	171
	UV-L	PBSM-10JLU-DA36A0L	90	128	171

- ProLight maintains a tolerance of $\pm 7\%$ on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

Electrical Characteristics, $T_j = 25^{\circ}\text{C}$

Color	Min.	Forward Voltage V_F (V)		Refer @8400mA Typ.
		@6000mA Typ.	Max.	
UV-S	38.4	44.4	50.4	45.6
UV-M	36.0	40.8	45.6	42.0
UV	36.0	40.8	45.6	42.0
UV-L	36.0	40.8	45.6	42.0

- ProLight maintains a tolerance of $\pm 0.1\text{V}$ for Voltage measurements.

Optical Characteristics at 6000mA, $T_j = 25^{\circ}\text{C}$

Radiation Pattern	Color	Peak Wavelength λ_P			Total included Angle (degrees)	Viewing Angle (degrees)
		Min.	Typ.	Max.	$\theta_{0.90V}$	$2\theta_{1/2}$
Lambertian	UV-S	365 nm	367.5 nm	370 nm	60	48
	UV-M	380 nm	385 nm	390 nm	60	48
	UV	390 nm	395 nm	400 nm	60	48
	UV-L	400 nm	405 nm	410 nm	60	48

- ProLight maintains a tolerance of $\pm 1\text{nm}$ for dominant wavelength measurements.

Absolute Maximum Ratings

Parameter	UV-S/UV-M/UV/UV-L
DC Forward Current (mA)	8400
Peak Pulsed Forward Current (mA)	10000 (less than 1/10 duty cycle@1KHz)
ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7)	±4000V
LED Junction Temperature	125°C
Operating Board Temperature at Maximum DC Forward Current	-40°C - 85°C
Storage Temperature	-40°C - 100°C
Soldering Temperature	JEDEC 020c 260°C
Allowable Reflow Cycles	3
Reverse Voltage	Not designed to be driven in reverse bias

Radiometric Power Bin Structure at 6000mA

Color	Bin Code	Minimum Radiometric Power (W)	Maximum Radiometric Power (W)	Available Color Bins
UV-S	A	72	90	All
	B	90	108	[1]
	C	108	126	[1]
	D	126	144	[1]
UV-M	B	90	108	All
	C	108	126	[1]
	D	126	144	[1]
	E	144	162	[1]
UV	B	90	108	All
	C	108	126	[1]
	D	126	144	[1]
	E	144	162	[1]
UV-L	B	90	108	All
	C	108	126	[1]
	D	126	144	[1]
	E	144	162	[1]

- ProLight maintains a tolerance of $\pm 7\%$ on flux and power measurements.
- The flux bin of the product may be modified for improvement without notice.
- ^[1] The rest of color bins are not 100% ready for order currently. Please ask for quote and order possibility.

Peak Wavelength Bin Structure

Color	Bin Code	Minimum Peak Wavelength (nm)	Maximum Peak Wavelength (nm)
UV-S	2	365	370
UV-M	B	380	385
	A	385	390
UV	1	390	395
	2	395	400
UV-L	3	400	405
	4	405	410

- ProLight maintains a tolerance of $\pm 1\text{nm}$ for peak wavelength measurements.

Forward Voltage Bin Structure

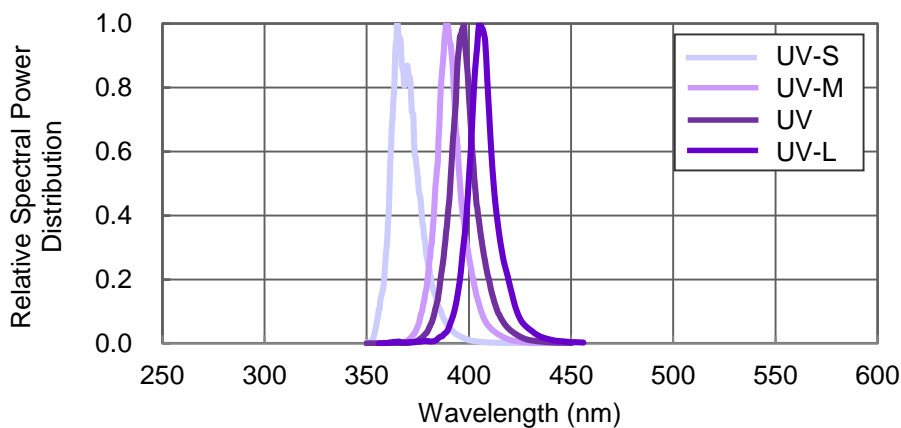
Color	Bin Code	Minimum Voltage (V)	Maximum Voltage (V)
UV-S	B	38.4	40.8
	C	40.8	43.2
	D	43.2	45.6
	E	45.6	48.0
	F	48.0	50.4
UV-M	A	36.0	38.4
	B	38.4	40.8
	C	40.8	43.2
	D	43.2	45.6
UV	A	36.0	38.4
	B	38.4	40.8
	C	40.8	43.2
	D	43.2	45.6
UV-L	A	36.0	38.4
	B	38.4	40.8
	C	40.8	43.2
	D	43.2	45.6

- ProLight maintains a tolerance of $\pm 0.1\text{V}$ for Voltage measurements.

Note: Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all colors.

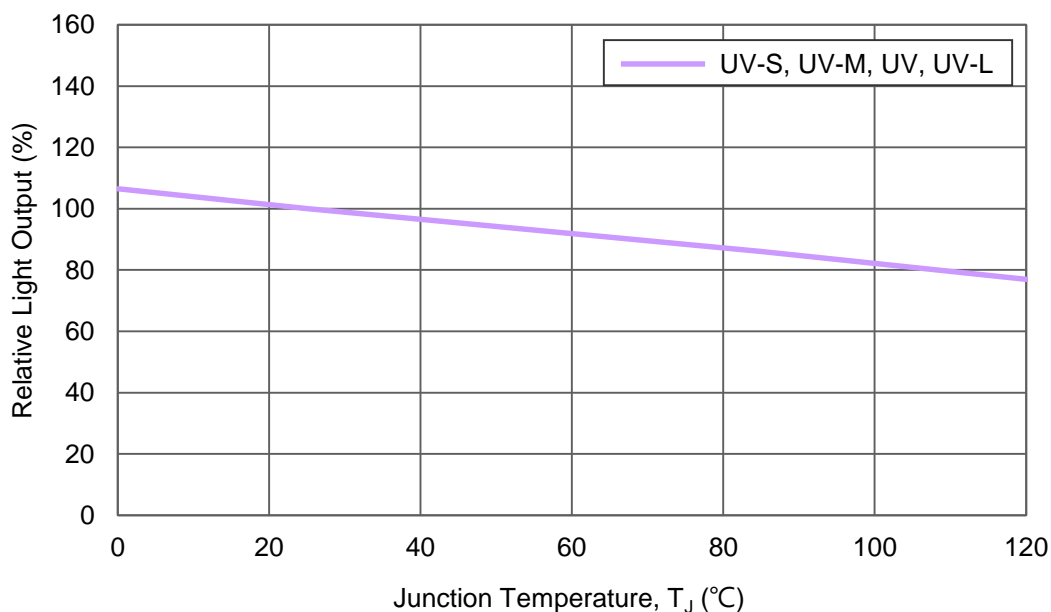
Color Spectrum, $T_j = 25^\circ\text{C}$

1. UV-S, UV-M, UV, UV-L



Light Output Characteristics

Relative Light Output vs. Junction Temperature at 8400mA



Forward Current Characteristics, $T_j = 25^\circ\text{C}$

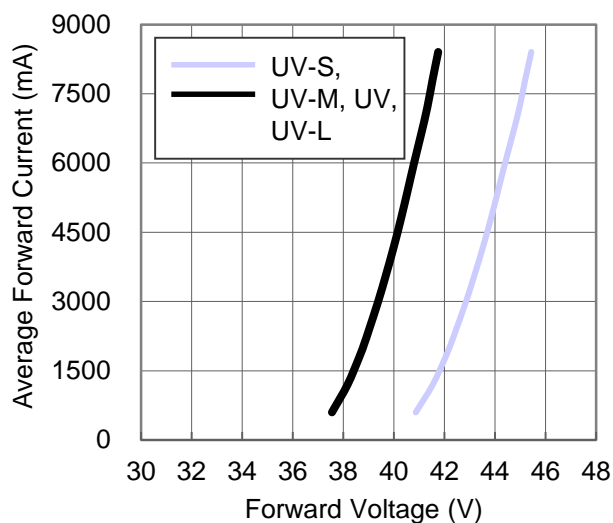


Fig 1. Forward Current vs. Forward Voltage for UV-S, UV-M, UV, UV-L.

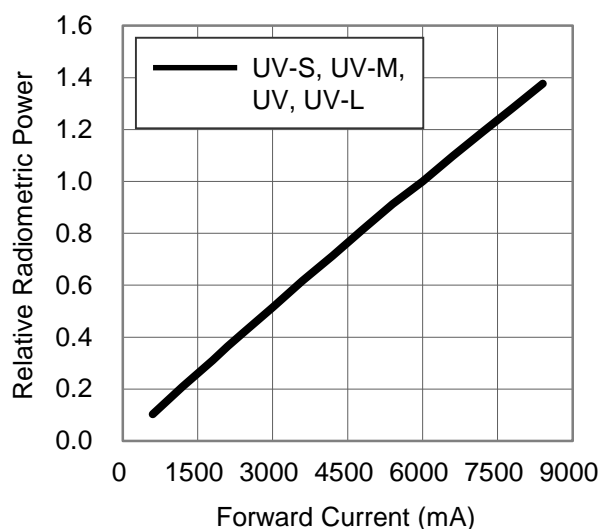
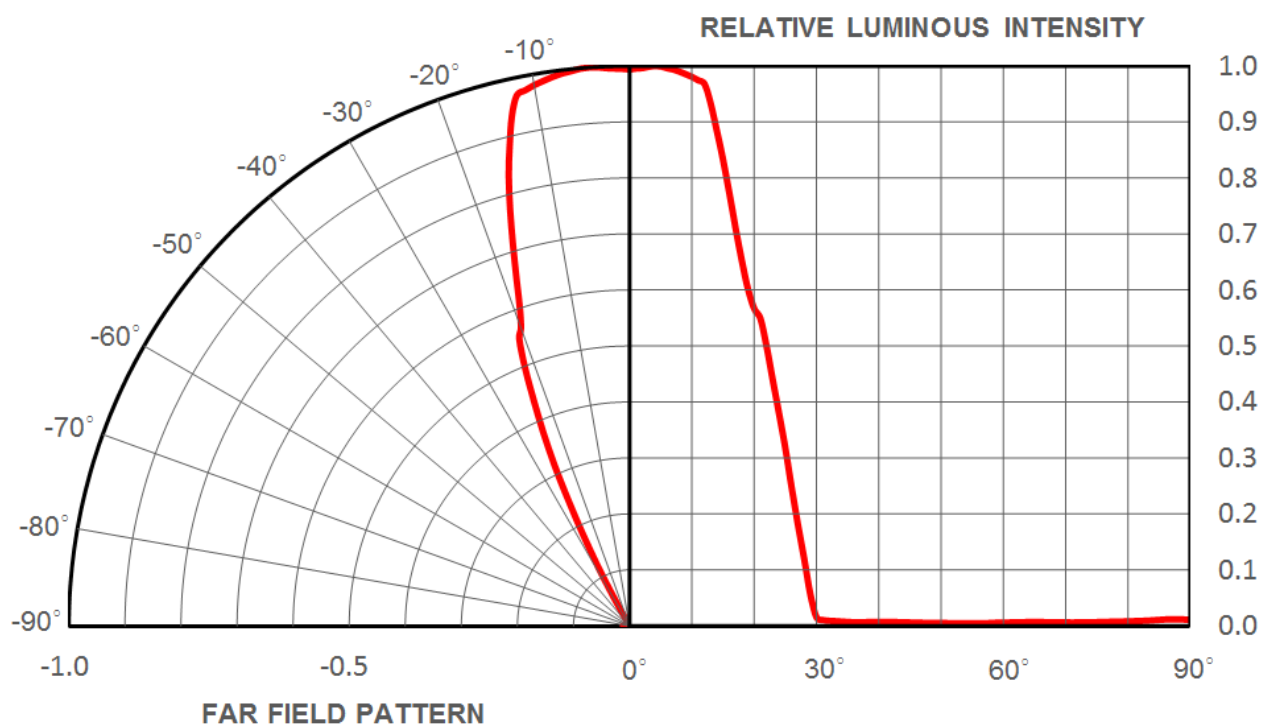


Fig 2. Relative Radiometric Power vs. Forward Current for UV-S, UV-M, UV, UV-L at $T_j=25$ maintained.

Typical Representative Spatial Radiation Pattern

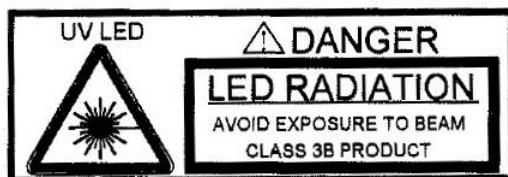


Precaution for Use

- Storage
Please do not open the moisture barrier bag (MBB) more than one week. This may cause the leads of LED discoloration. We recommend storing ProLight's LEDs in a dry box after opening the MBB. The recommended storage conditions are temperature 5 to 30 °C and humidity less than 40% RH. It is also recommended to return the LEDs to the MBB and to reseal the MBB.
- LEDs are ESD (electrostatic discharge) sensitive; static electricity and surge voltages seriously damage UV LEDs and can result in product failure
 - (1) Ensure that tools, jigs and machines being used are properly grounded
 - (2) LED mounting equipment should include protection against voltage surge
 - (3) Use proper ESD protection, including grounded wrist straps, ESD footwear and clothes
- The slug is not electrically neutral. Therefore, we recommend to isolate the heat sink.
- **We recommend using the M705-S101-S4 solder paste from SMIC (Senju Metal Industry Co., Ltd.) for lead-free soldering.**
- **Do not use solder pastes with post reflow flux residue > 47%. (58Bi-42Sn eutectic alloy, etc) This kind of solder pastes may cause a reliability problem to LED.**
- Any mechanical force or any excess vibration shall not be accepted to apply during cooling process to normal temperature after soldering.
- Please avoid rapid cooling after soldering.
- Components should not be mounted on warped direction of PCB.
- Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a heat plate should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.
- This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When cleaning is required, isopropyl alcohol should be used.
- When the LEDs are illuminating, operating current should be decided after considering the package maximum temperature.
- The appearance, specifications and flux bin of the product may be modified for improvement without notice. Please refer to the below website for the latest datasheets.
<http://www.prolightopto.com/>

Eye Safety Guidelines

- During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes. UV light is hazardous to skin and may cause cancer. Avoid exposure to UV light when LED is operational. Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses. Do not look directly at the front of the LED or at the LED's lens when LED is operational.
- Attach warning labels on products/systems that use UV LEDs.



Use Handling of Quartz Lens LEDs

Notes for handling of quartz lens LEDs

- Please do not use a force of over 3kgf impact or pressure on the quartz lens, otherwise it will cause a catastrophic failure.
- The LEDs should only be picked up by making contact with the sides of the LED body.
- Avoid touching the quartz lens especially by sharp tools such as Tweezers.
- Avoid leaving fingerprints on the quartz lens.
- Please store the LEDs away from dusty areas or seal the product against dust.
- When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the quartz lens must be prevented.
- Please do not mold over the quartz lens with another resin. (epoxy, urethane, etc)

DISCLAIMER

- The information in this document has been compiled from reference materials and other sources believed to be reliable, and given in good faith. No warranty, either expressed or implied, is made, however, to the accuracy and completeness of the information, nor is any responsibility assumed or implied for any loss or damage resulting from inaccuracies or omissions. Each user bears full responsibility for making their own determination as to the suitability of Prolight products, recommendations or advice for its own particular use. Prolight makes no warranty or guarantee, express or implied, as to results obtained in end-use, nor of any design incorporating its Products, recommendation or advice.
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