

VC12X1 Series | 12-LED Light Bar COB

The VC12X1 Series is a 12-LED light bar chip-on-board (COB) UV LED available in 405nm, 395nm, 385nm, 375nm, 365nm, 310nm, 295nm, 275nm, 265nm, and 255nm wavelengths. The COB is structured with twelve patented 3-PAD Flip Chip LEDs mounted onto a copper-based Pillar MCPCB to boost output efficiency and reduce the thermal resistance. The VC12X1 Series is ready for plug and play with no soldering required and is ideal for large-area UV applications.



**VC12X1 Series is also available with alternative lens types. Please contact Violumas for specifications regarding alternative LED beam angles.*

Features & Benefits

- Dimensions: 304mm x 20mm
- Available in UVA, UVB, and UVC
- Equipped with 60° fused silica lenses*
- Ready for plug and play (solder-free)
- Poke-in connectors for easy wiring
- TVS built in for ESD protection
- Integrated thermal technology in LED chips and MCPCB for lowest thermal resistance & reduced thermal decay

Electro-Optical Characteristics for 405nm, 395nm, 385nm, 375nm, 365nm ($I_F=700\text{mA}$ and $T_A=25^\circ\text{C}$)

Part Number	Wavelength	Radiant Flux	Forward Voltage	Power
VC12X1C45L6-405	405nm	12W	44.4V	31.1W
VC12X1C45L6-395	395nm	13W	44.8V	31.3W
VC12X1C45L6-385	385nm	12W	46.8V	32.8W
VC12X1C45L6-375	375nm	9W	46.8V	32.8W
VC12X1C45L6-365	365nm	6W	49.2V	34.4W

Peak Wavelength Tolerance: $\pm 3\text{nm}$; Forward Voltage Tolerance: 0.1V ; Radiant Flux Tolerance: $\pm 10\%$

Absolute Maximum Ratings for 405nm, 395nm, 385nm, 375nm, 365nm

Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	1000
Reverse Voltage	V_R	V	60
Power	P_O	W	48
Junction Temperature	T_J	$^\circ\text{C}$	90
Operating Temperature	T_{OPR}	$^\circ\text{C}$	-30 ~ 85
Storage Temperature	T_{STG}	$^\circ\text{C}$	-40 ~ 100

Note: Operating the LED at or above the listed absolute maximum ratings may affect device reliability and result in permanent LED failure.

Please contact Violumas for additional information regarding performance curves, irradiance maps, and suitable heatsinks/drivers for this product.

Electro-Optical Characteristics for 310nm, 295nm, 275nm, 265nm ($I_F = 1400\text{mA}$ and $T_A = 25^\circ\text{C}$)

Part Number	Wavelength	Radiant Flux	Forward Voltage	Power
VC12X1C48L6-310-V1	308nm	1.44W	36.0V	50.4W
VC12X1C48L6-295	295nm	1.1W	34.8V	48.7W
VC12X1C48L6-275-V1	275nm	1.56W	37.2V	52.1W
VC12X1C48L6-265-V1	265nm	1.32W	37.2V	52.1W

Peak Wavelength Tolerance: $\pm 3\text{nm}$; Forward Voltage Tolerance: 0.1V; Radiant Flux Tolerance: $\pm 10\%$

Electro-Optical Characteristics for 255nm ($I_F = 1000\text{mA}$ and $T_A = 25^\circ\text{C}$)

Part Number	Wavelength	Radiant Flux	Forward Voltage	Power
VC12X1C48L6-255-V1	255nm	0.61W	35.4V	35.4W

Peak Wavelength Tolerance: $\pm 3\text{nm}$; Forward Voltage Tolerance: 0.1V; Radiant Flux Tolerance: $\pm 10\%$

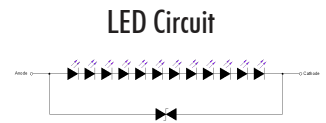
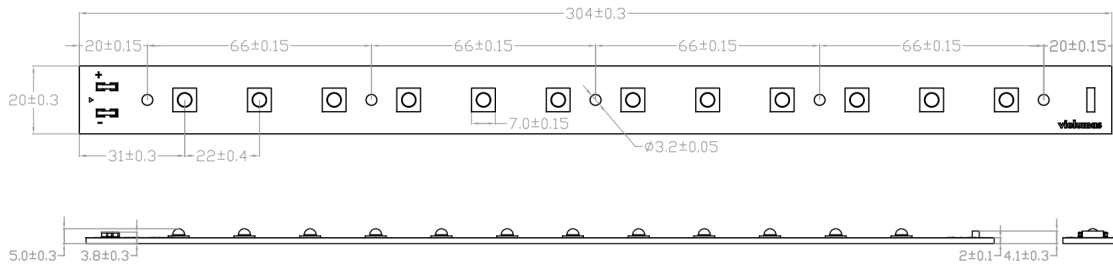
Absolute Maximum Ratings for 310nm, 295nm, 275nm, 265nm, 255nm

Parameter	Symbol	Unit	Value	Value
			310nm, 295nm, 275nm, 265nm	255nm
Forward Current	I_F	mA	2000	1400
Reverse Voltage	V_R	V	30	30
Power	P_O	W	78	57
Junction Temperature	T_J	$^\circ\text{C}$	90	90
Operating Temperature	T_{OPR}	$^\circ\text{C}$	-30 ~ 85	-30 ~ 85
Storage Temperature	T_{STG}	$^\circ\text{C}$	-40 ~ 100	-40 ~ 100

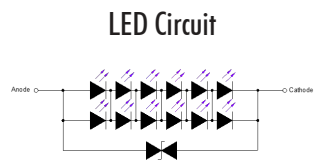
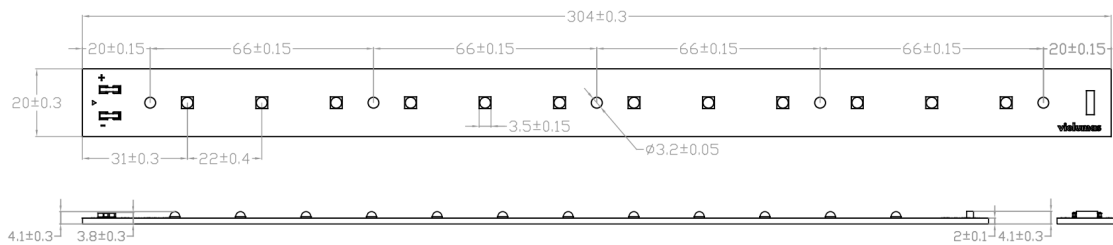
Note: Operating the LED at or above the listed absolute maximum ratings may affect device reliability and result in permanent LED failure.

Please contact Violumas for additional information regarding performance curves, irradiance maps, and suitable heatsinks/drivers for this product.

Mechanical Dimensions for 405nm, 395nm, 385nm, 375nm, 365nm



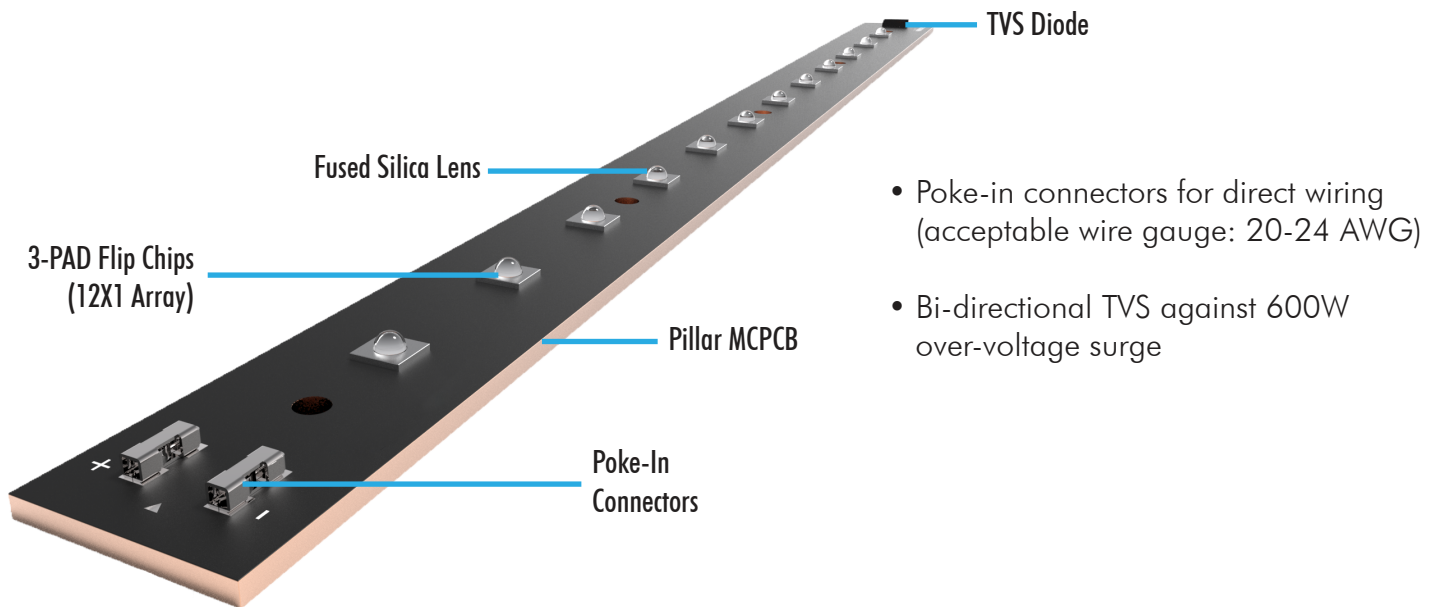
Mechanical Dimensions for 310nm, 295nm, 275nm, 265nm, 255nm



Note: The maximum offset (tolerance) for lens alignment over the LED is 0.2mm.

Product Overview

COB LEDs are ready for plug and play with no soldering required. All Violumas COBs are equipped with connectors for direct wiring and a TVS diode for protection against ESD and voltage issues.



Note: Violumas COB products may be delivered with a protective tape on the backside of the LED. The tape should be removed before operation or assembly.

Handling & Usage Precautions

- Exhibit extreme care when handling LEDs. Do not touch the LED with bare hands as doing so may contaminate and affect the optical characteristics of the LED. When using tweezers, do not apply excessive force, especially to the glass lens. Do not drop the LED as doing so may cause product damage.
- Ensure that electrostatic discharge specifications are followed. Static electricity and surge voltages may cause product damage. Proper electrostatic discharge protection equipment, working machinery, and protected mounting equipment are recommended.
- Do not expose the LEDs to volatile organic compounds as well as hazardous, acidic, and corrosive substances during storage and operation to avoid product damage.
- Do not apply excess mechanical force and vibration while handling the product.
- Do not expose the product to sudden changes in temperature, high humidity levels, and condensation.
- To avoid fault issues, do not couple any electrical wires to the metal substrate of the MCPCB or COB. If any electrical wires from the power source have contact with the MCPCB's metal base under power ON conditions, permanent damage may occur due to inner arcing within the LED structure.
- Avoid grounding of the LED copper substrate. Transient charges can propagate from the ground to the heatsink and finally to the copper substrate of the LED unit and damage the dielectric layer from ground charges. An insulator must be placed between the heatsink and the benchtop to avoid transient charge propagation from the ground.

Storage Precautions

- Do not expose the product to sudden changes in temperature, high humidity levels, and condensation. It is recommended to store all products in a controlled environment under 30°C free of dust.
- Please consult the Violumas engineering team for further information on storage precautions.

Eye Safety Precautions

- Avoid exposure to UV light during LED operation. Do not look directly into the UV light during LED operation. Do not look directly into the UV light during optical measurements even through optical instruments. Protect the body, skin, and eyes with UV protective equipment.
- Attach warning labels on all products and systems that use UV LEDs.

Cleaning Precautions

- Do not use brushes or organic solvents for cleaning the LEDs.
- Perform electrical and optical measurements before and after cleaning to ensure optimal performance.

Static Electricity Precautions

- Ensure that equipment and machinery are properly grounded.
- Anti-electrostatic attire (wristbands, gloves, footwear, etc.) is recommended.
- Damage inspection is recommended while performing characteristics inspection of LEDs.

Disclaimers

Violumas is not responsible for any damages that result from inaccurate use of the recommended guidelines. The information compiled in this document is a result of careful review of reference materials and reliable sources. Violumas does not make any claims regarding warranty or guarantee. It is recommended that each customer consults the Violumas engineering team before engaging Violumas products in extreme applications where the failure of the LED and damage to human health may be possible. Each user assumes full responsibility for determining the suitability of the use of Violumas products in various applications. Disassembling Violumas products without consent is prohibited. No part of these documents may be reproduced in any form without prior written permission from Violumas. Please note that the data presented in this document is measured from the use of exclusive Violumas patented products - the 3-PAD LED Flip Chip and the Pillar MCPCB.