violumas
High Power UV LED Solutions

295nm UVC LED

- SMD - medium & high power
- Chip on Board (COB)
- 3x3 and 4x4 Arrays - COB
- Light Bars (12x1)
- Applications Sets (LED, Heat Sink, Driver)

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VS5252C48L6-295 | Mid Power 295nm SMD

The VS5252C48L6-295 is a mid power surface-mount-device (SMD) UV LED with a peak wavelength of 295±5nm. The SMD is structured with a patented 3-PAD LED Flip Chip mounted onto a copper-based Pillar substrate to boost output efficiency and reduce the thermal resistance. The VS5252C48L6-295 is packaged in a single-chip structure with a 60° fused silica lens and is ideal for mid power UV applications.

**VS5252C48L6-295 is also available with 30°, 120°, and 135° lenses. Please contact Violumas for specifications regarding alternative LED beam angles.*

Features & Benefits

- Dimensions: 5.2mm x 5.2mm x 3.3mm
- Typical Peak Wavelength: 295nm
- Equipped with a 60° fused silica lens*
- Integrated thermal technology in LED chip and substrate for lowest thermal resistance & reduced thermal decay

Electro-Optical Characteristics at I_F=700mA and T_A=25°C

Parameter	Symbol	Unit	Min	Typical	Max
Peak Wavelength	λ_P	nm	290	295	300
Forward Voltage	V_F	V	5.1	5.8	6.2
Radiant Flux	P_O	mW	80	95	115
Full Width of Half Magnitude	$\Delta\lambda$	nm	-	12.3	-
Radiant Angle	$2\Phi_{1/2}$	Degree	-	60	-
Thermal Resistance, Junction to Solder Joint	R_{th}(J-S)	°C/W	-	0.9	-

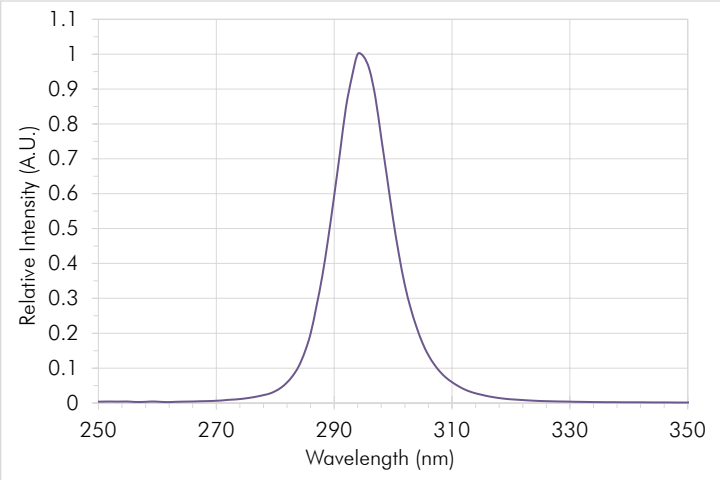
Peak Wavelength Tolerance: ±3nm; Forward Voltage Tolerance: 0.1V; Radiant Flux Tolerance: ±10%

Absolute Maximum Ratings

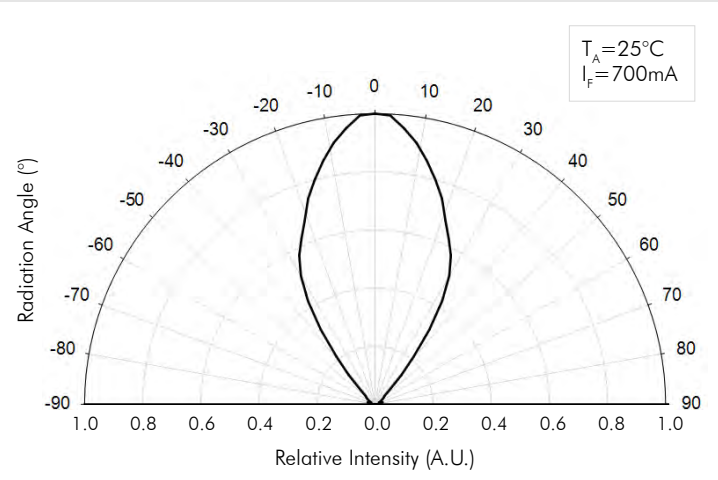
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	1000
Reverse Voltage	V_R	V	5
Power	P_D	W	6.5
Junction Temperature	T_J	°C	90
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 100

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

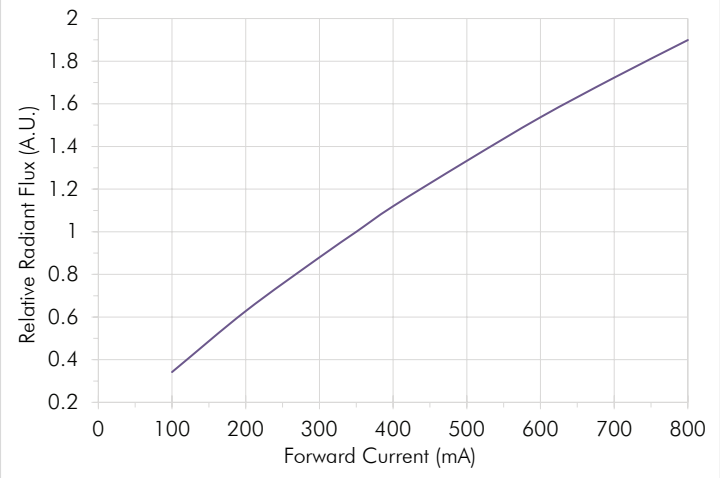
Spectral Output



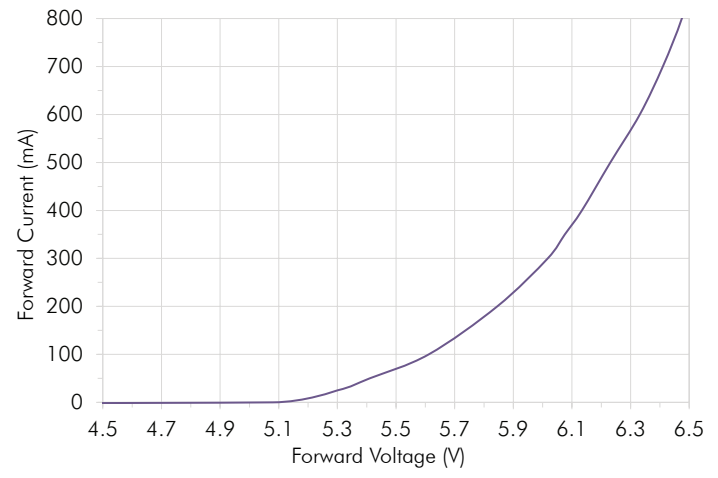
Radiation Pattern



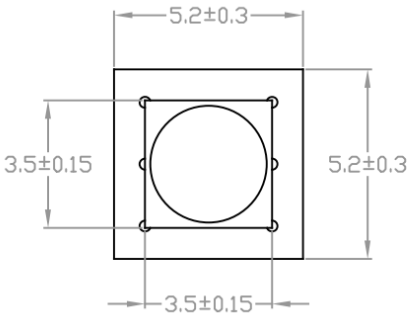
Forward Current vs. Relative Radiant Flux

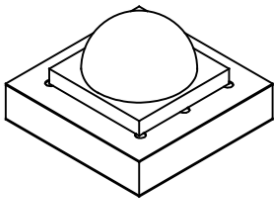


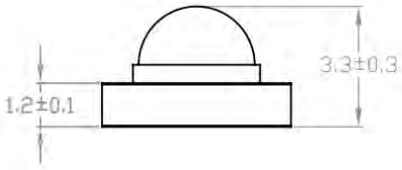
Forward Voltage vs. Forward Current

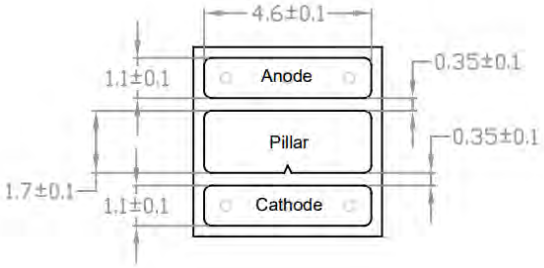


Mechanical Dimensions

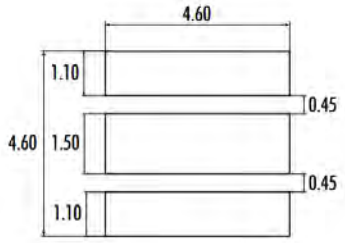






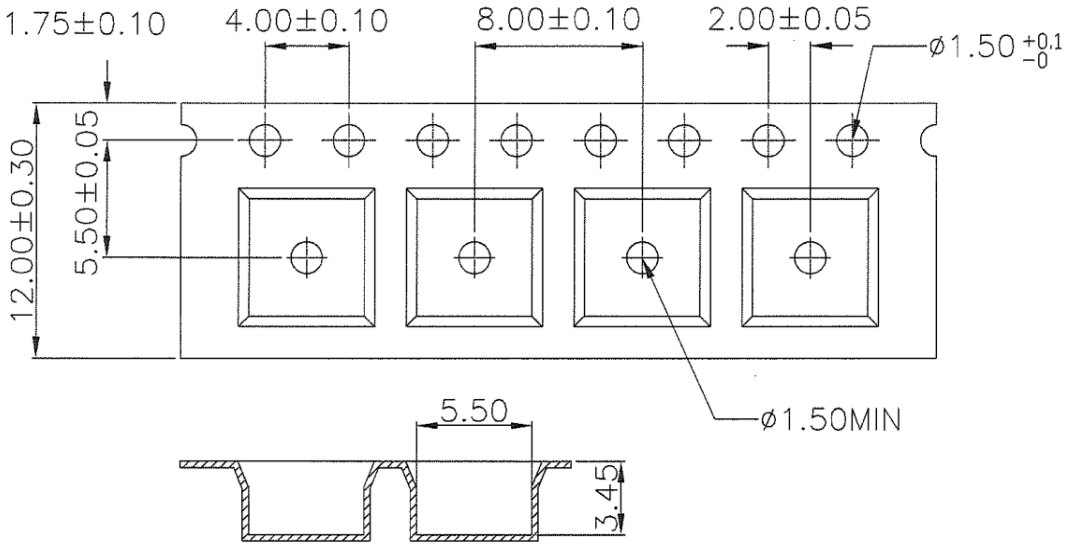


Recommended Solder Pad



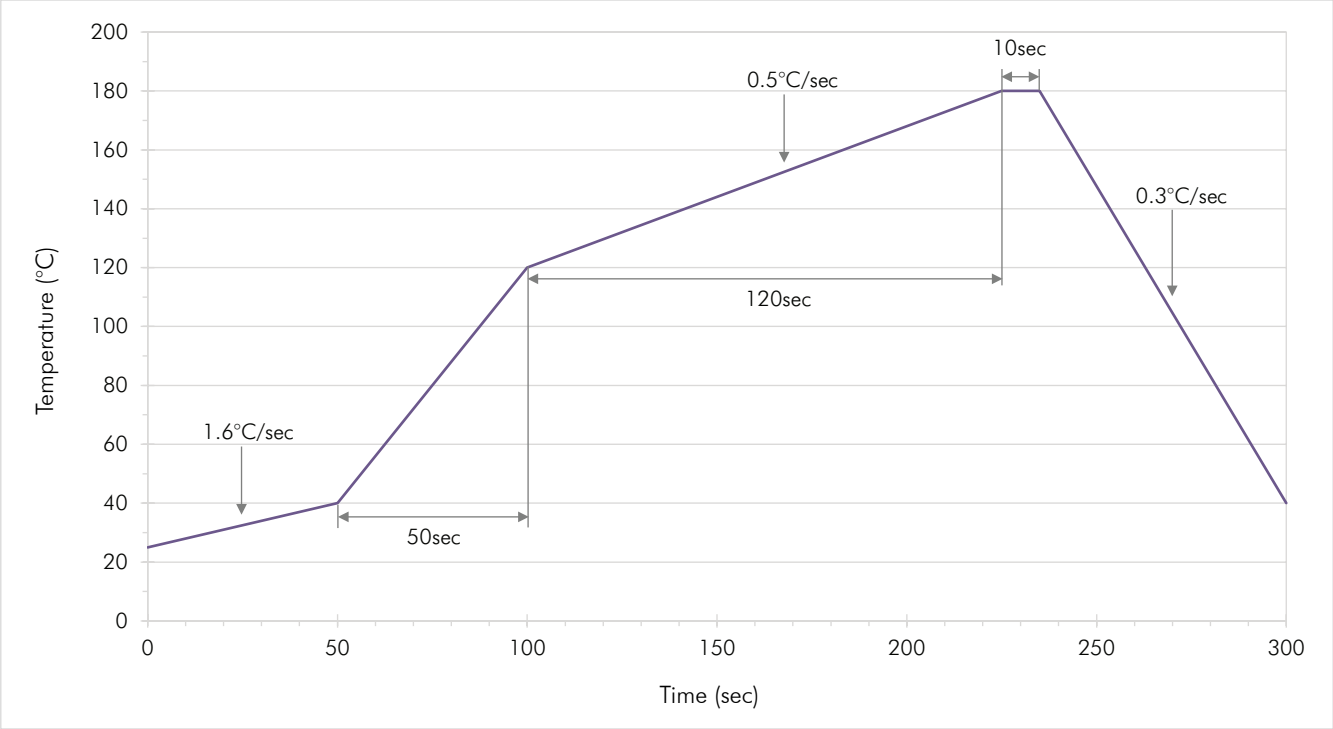
Note: The maximum offset (tolerance) for lens alignment over the LED is 0.2mm.

Reel Packaging Specifications



Each reel is loaded with 350 units and includes a leader section (200mm) and a trailer section (200mm) with empty pockets. The diameter of the reel is 177.8mm. Devices are placed with the anode to the left.

Soldering Guidelines



Reflow Profile Feature	Standard Parameters
Preheat Temperature Minimum	40°C
Preheat Temperature Maximum	120°C
Preheat Time	50 sec
Preheat Ramp-Up Rate	1.6°C/sec
Peak Temperature	±5°C
Time from Preheat Maximum Temperature to Peak Temperature	120 sec
Ramp-Up Rate from Maximum Temperature to Peak Temperature	0.5°C/sec
Time Within 5°C of Peak Temperature	5 sec
Maximum Time Maintained at Peak Temperature within Tolerance	10 sec
Ramp-Down Rate	3°C/sec

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.
- Ensure that the PCB is suitable for the product and be wary of LED placement and possible PCB warpage.
- 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

- Perform soldering as soon as the moisture-proof packaging is opened.
- After the storage duration has exceeded the recommended time, products may need to be baked before soldering.
- 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

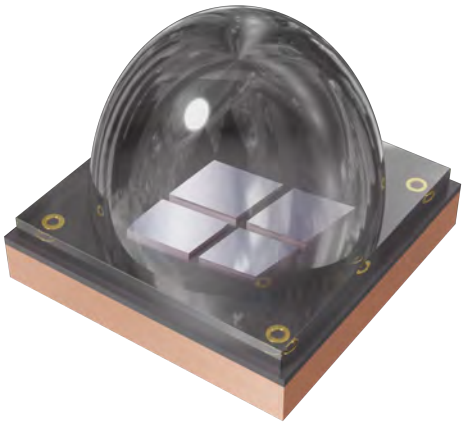
Violumas is not responsible for any damages that result from inaccurate use of the recommended guidelines. The information compiled in this document is a result of careful review of reference materials and reliable sources. Violumas does not make any claims regarding warranty or guarantee. It is recommended 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.

Revision History

- 01/09/2023: Release of initial version
- 04/07/2025: Reformatting of Spectral Output, Forward Current vs. Relative Radiant Flux, and Forward Voltage vs. Forward Current; Revision of Lens Type (30° to 60°), Radiation Pattern, and Mechanical Dimensions; Revision of Absolute Maximum Ratings (Junction Temperature); Addition of Reel Packaging Specifications

VS7272C48L6-295 | High Power 295nm SMD

The VS7272C48L6-295 is a high power surface-mount-device (SMD) UV LED with a peak wavelength of 295±5nm. The SMD is structured with four patented 3-PAD LED Flip Chips mounted onto a copper-based Pillar substrate to boost output efficiency and reduce the thermal resistance. The VS7272C48L6-295 is packaged in a four-chip structure with a 60° fused silica lens and is ideal for high power UV applications.



**VS7272C48L6-295 is also available with a 135° lens. Please contact Violumas for specifications regarding alternative LED beam angles.*

Features & Benefits

- Dimensions: 7.2mm x 7.2mm x 6.0mm
- Typical Peak Wavelength: 295nm
- Equipped with a 60° fused silica lens*
- Integrated thermal technology in LED chips and substrate for lowest thermal resistance & reduced thermal decay

Electro-Optical Characteristics at I_F = 1400mA and T_A = 25°C

Parameter	Symbol	Unit	Min	Typical	Max
Peak Wavelength	λ_P	nm	290	295	300
Forward Voltage	V_F	V	10.2	11.5	12.5
Radiant Flux	P_O	mW	285	335	400
Full Width of Half Magnitude	$\Delta\lambda$	nm	-	12.3	-
Radiant Angle	$2\Phi_{1/2}$	Degree	-	60	-
Thermal Resistance, Junction to Solder Joint	R_{th}(J-S)	°C/W	-	0.32	-

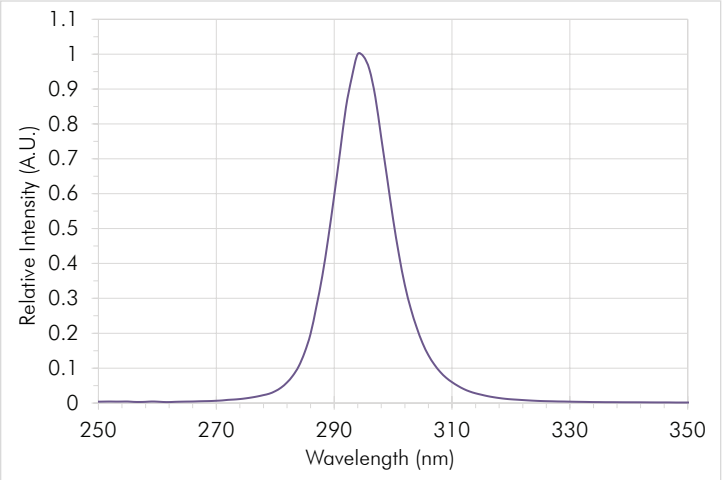
Peak Wavelength Tolerance: ±3nm; Forward Voltage Tolerance: 0.1V; Radiant Flux Tolerance: ±10%

Absolute Maximum Ratings

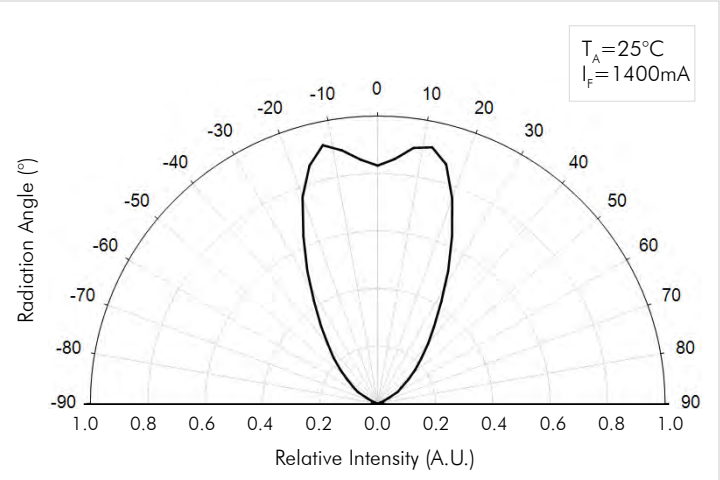
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	2000
Reverse Voltage	V_R	V	10
Power	P_D	W	26
Junction Temperature	T_J	°C	90
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 100

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

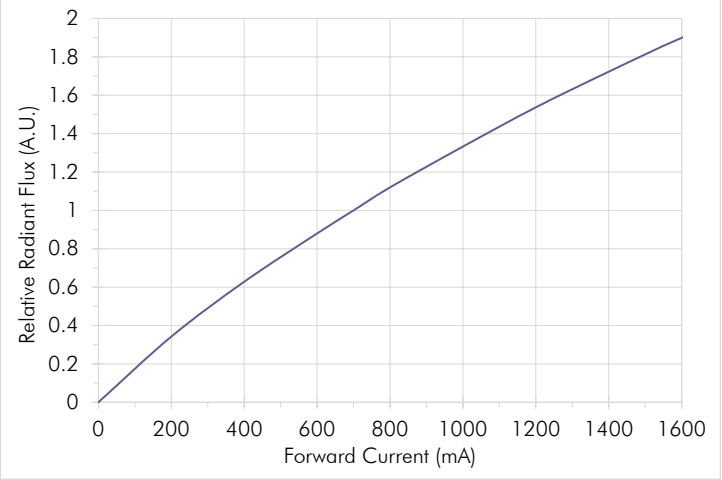
Spectral Output



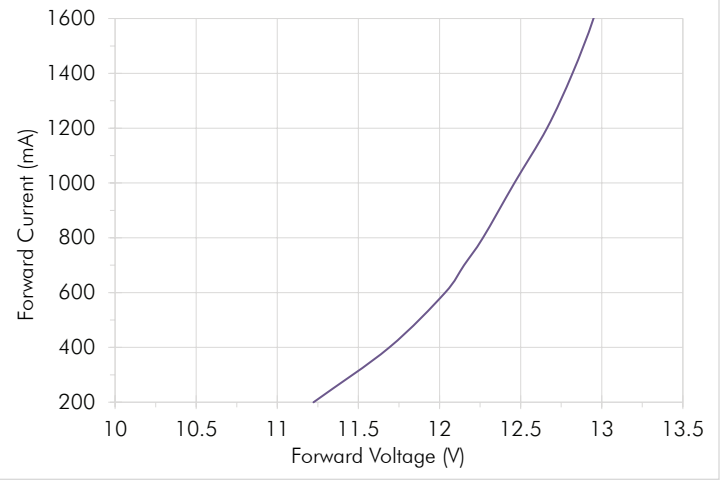
Radiation Pattern



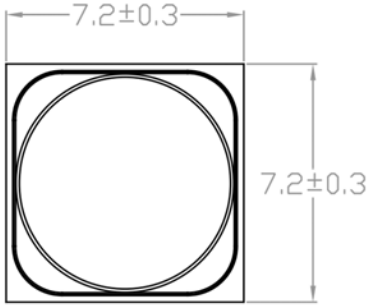
Forward Current vs. Relative Radiant Flux

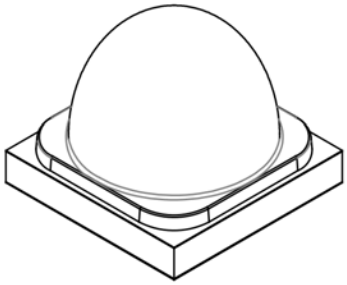


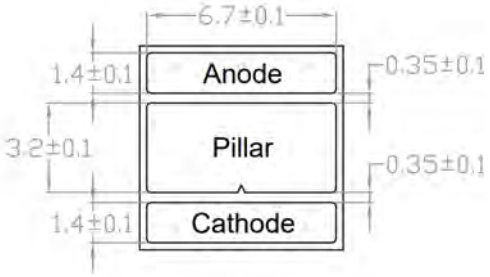
Forward Voltage vs. Forward Current



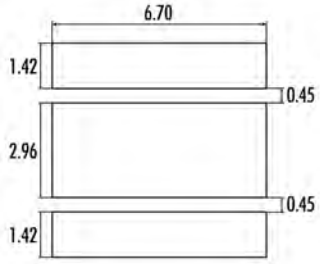
Mechanical Dimensions





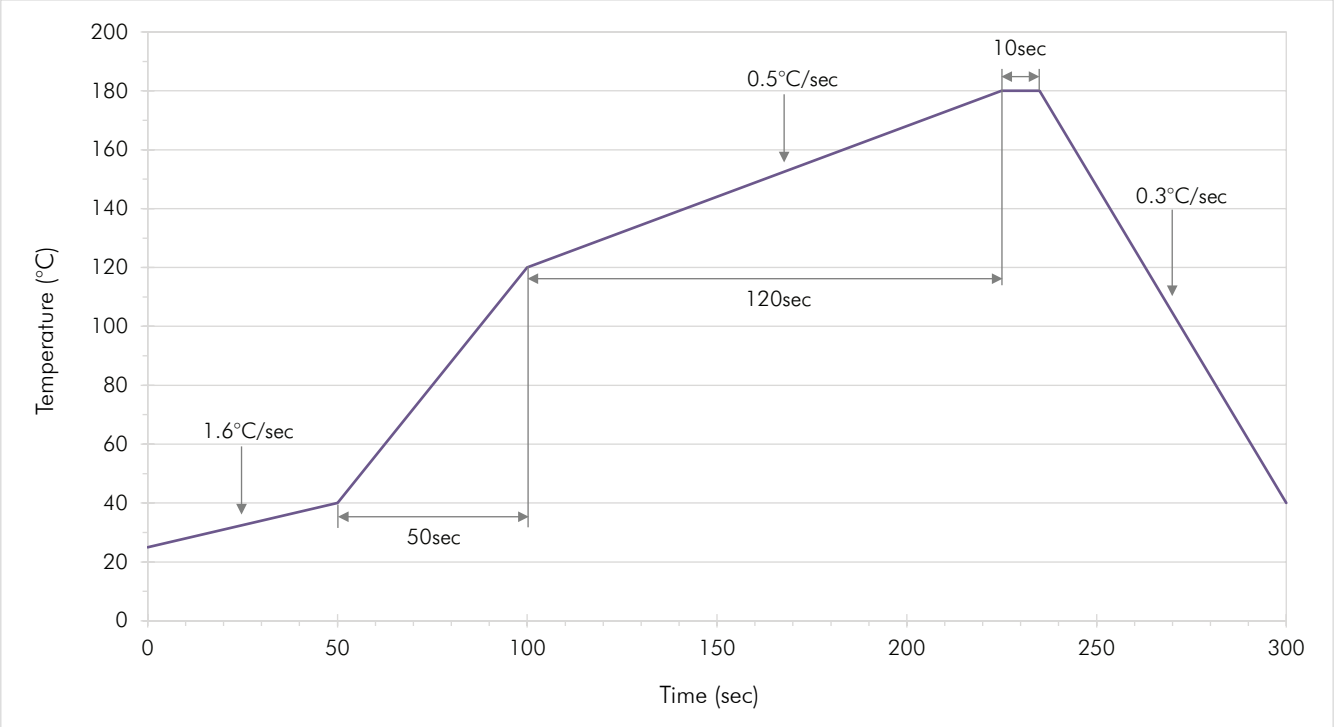


Recommended Solder Pad



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

Soldering Guidelines



Reflow Profile Feature	Standard Parameters
Preheat Temperature Minimum	40°C
Preheat Temperature Maximum	120°C
Preheat Time	50 sec
Preheat Ramp-Up Rate	1.6°C/sec
Peak Temperature	±5°C
Time from Preheat Maximum Temperature to Peak Temperature	120 sec
Ramp-Up Rate from Maximum Temperature to Peak Temperature	0.5°C/sec
Time Within 5°C of Peak Temperature	5 sec
Maximum Time Maintained at Peak Temperature within Tolerance	10 sec
Ramp-Down Rate	3°C/sec

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.
- Ensure that the PCB is suitable for the product and be wary of LED placement and possible PCB warpage.
- 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

- Perform soldering as soon as the moisture-proof packaging is opened.
- After the storage duration has exceeded the recommended time, products may need to be baked before soldering.
- 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

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Revision History

- 01/09/2023: Release of initial version
- 04/07/2025: Reformatting of Spectral Output, Forward Current vs. Relative Radiant Flux, and Forward Voltage vs. Forward Current; Revision of Radiation Pattern and Mechanical Drawing

VC1X1C48L6-295 | Mid Power 295nm COB

The VC1X1C48L6-295 is a mid power chip-on-board (COB) UV LED with a peak wavelength of 295±5nm. The COB is structured with a patented 3-PAD Flip Chip LED mounted onto a copper-based Pillar MCPCB to boost output efficiency and reduce the thermal resistance. The VC1X1C48L6-295 is ready for plug and play with no soldering required and is ideal for mid power UV applications.

**VC1X1C48L6-295 is also available with 30°, 120°, and 135° lenses. Please contact Violumas for specifications regarding alternative LED beam angles.*

Features & Benefits

- Dimensions: 15mm x 15mm x 3.3mm
- Typical Peak Wavelength: 295nm
- Equipped with a 60° fused silica lens*
- Ready for plug and play (solder-free)
- Poke-in connectors for easy wiring
- TVS built in for ESD protection
- Integrated thermal technology in LED chip and MCPCB for lowest thermal resistance & reduced thermal decay

Electro-Optical Characteristics at I_F=700mA and T_A=25°C

Parameter	Symbol	Unit	Min	Typical	Max
Peak Wavelength	λ_P	nm	290	295	300
Forward Voltage	V_F	V	5.1	5.8	6.2
Radiant Flux	P_O	mW	80	95	115
Full Width of Half Magnitude	$\Delta\lambda$	nm	-	12.3	-
Radiant Angle	$2\Phi_{1/2}$	Degree	-	60	-
Thermal Resistance, Junction to COB Bottom Surface	R_{th}(J-B)	°C/W	-	0.9	-

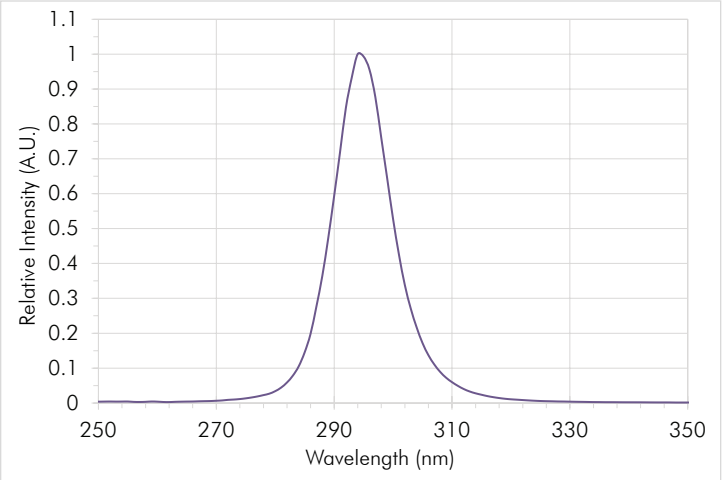
Peak Wavelength Tolerance:±3nm; Forward Voltage Tolerance: 0.1V; Radiant Flux Tolerance: ±10%

Absolute Maximum Ratings

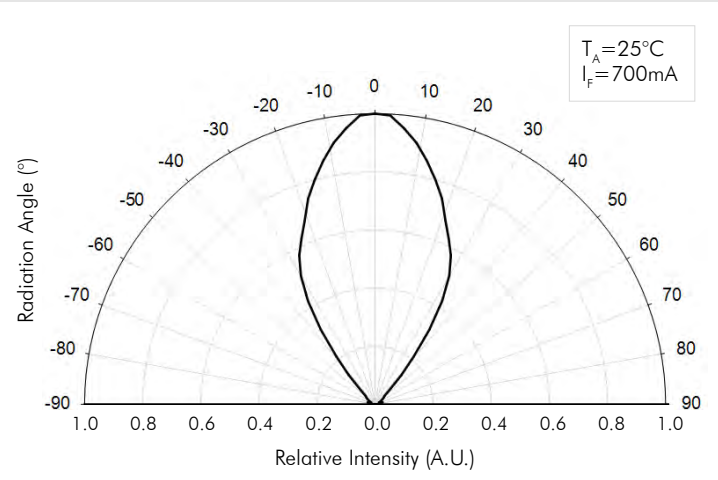
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	1000
Reverse Voltage	V_R	V	5
Power	P_D	W	6.5
Junction Temperature	T_J	°C	90
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 100

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

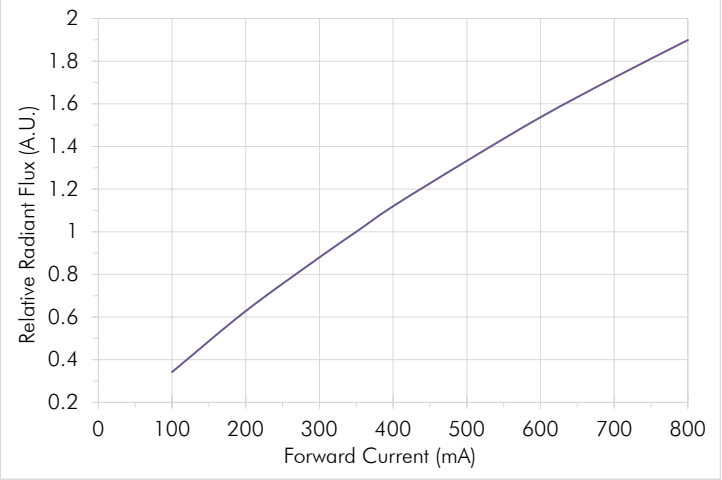
Spectral Output



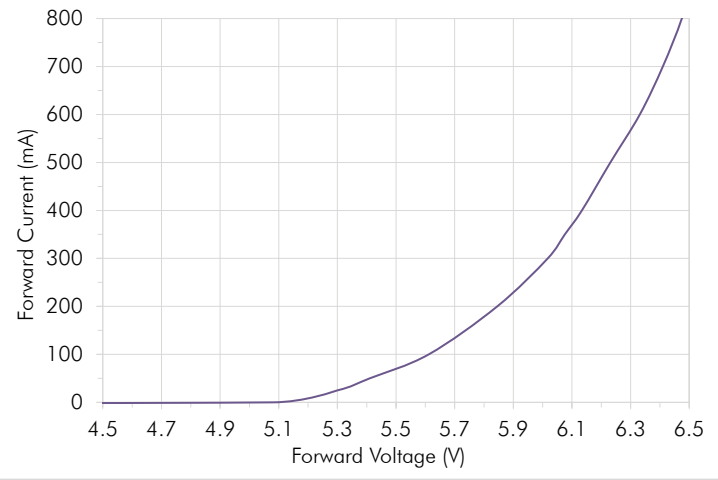
Radiation Pattern



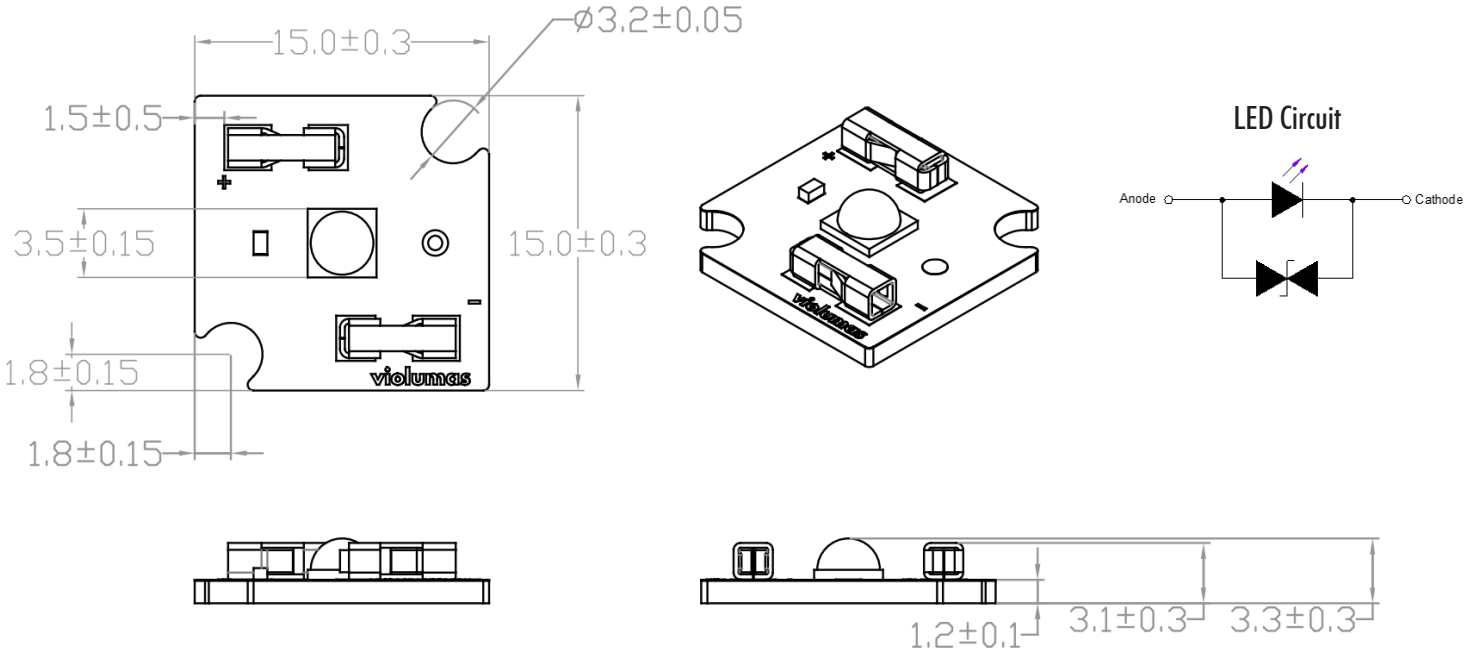
Forward Current vs. Relative Radiant Flux



Forward Voltage vs. Forward Current



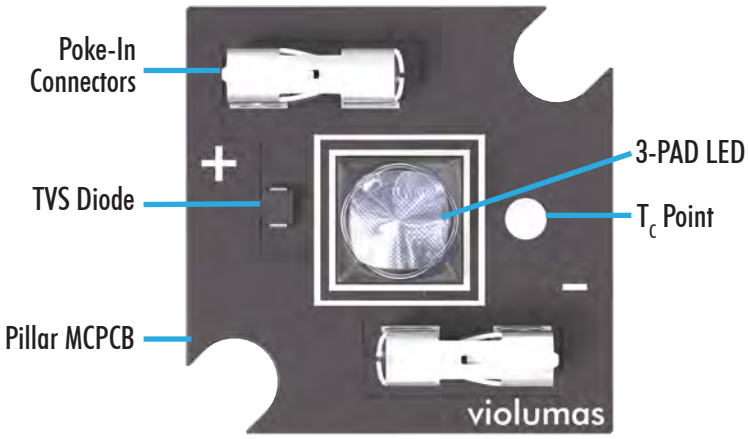
Mechanical Dimensions



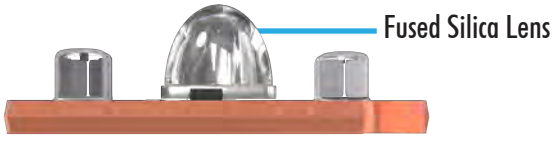
Note: The maximum offset (tolerance) for lens alignment over the LED is 0.2mm.

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.



- Poke-in connectors for direct wiring (acceptable wire gauge: 20-24 AWG)
- Bi-directional TVS against 600W over-voltage surge



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

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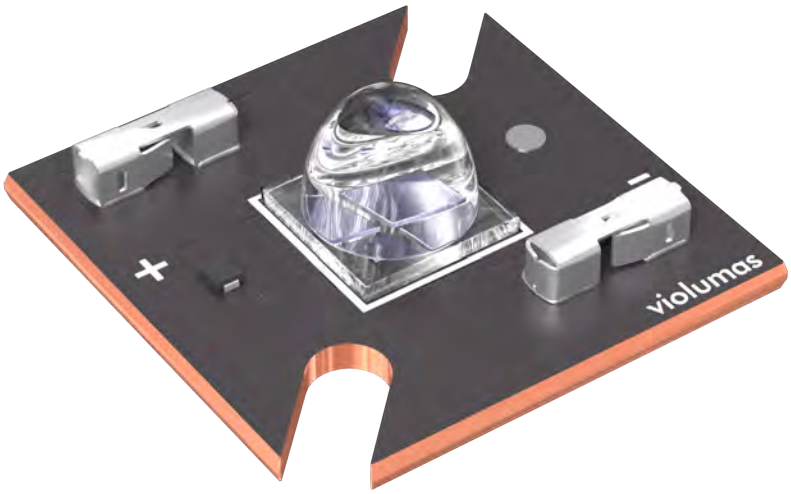
Revision History

- 01/09/2023: Release of initial version
- 04/07/2025: Reformatting of Spectral Output, Forward Current vs. Relative Radiant Flux, and Forward Voltage vs. Forward Current; Revision of Lens Type (30° to 60°), Radiation Pattern, and Mechanical Dimensions; Revision of Absolute Maximum Ratings (Junction Temperature)

VC2X2C48L6-295 | High Power 295nm COB

The VC2X2C48L6-295 is a high power chip-on-board (COB) UV LED with a peak wavelength of 295±5nm. The COB is structured with four patented 3-PAD Flip Chip LEDs mounted onto a copper-based Pillar MCPCB to boost output efficiency and reduce the thermal resistance. The VC2X2C48L6-295 is ready for plug and play with no soldering required and is ideal for high power UV applications.



**VC2X2C48L6-295 is also available with a 135° lens. Please contact Violumas for specifications regarding alternative LED beam angles.*

Features & Benefits

- Dimensions: 20mm x 20mm x 6.0mm
- Typical Peak Wavelength: 295nm
- Equipped with a 60° fused silica lens*
- 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 at I_F = 1400mA and T_A = 25°C

Parameter	Symbol	Unit	Min	Typical	Max
Peak Wavelength	λ_P	nm	290	295	300
Forward Voltage	V_F	V	10.2	11.5	12.5
Radiant Flux	P_O	mW	285	335	400
Full Width of Half Magnitude	$\Delta\lambda$	nm	-	12.3	-
Radiant Angle	$2\Phi_{1/2}$	Degree	-	60	-
Thermal Resistance, Junction to COB Bottom Surface	R_{th}(J-B)	°C/W	-	0.32	-

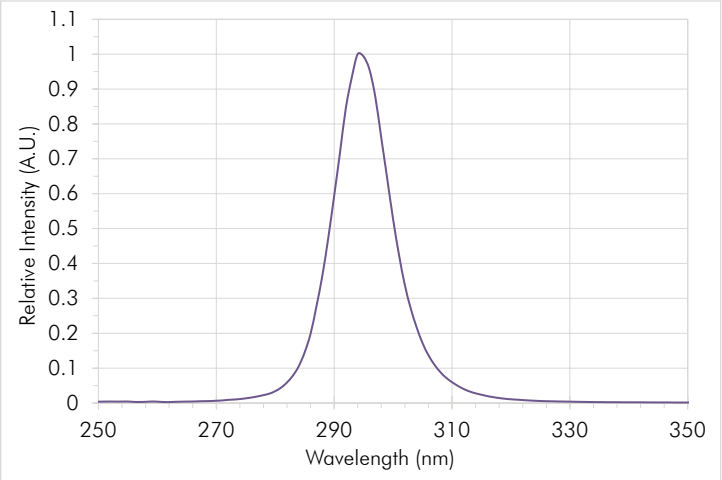
Peak Wavelength Tolerance: ±3nm; Forward Voltage Tolerance: 0.1V; Radiant Flux Tolerance: ±10%

Absolute Maximum Ratings

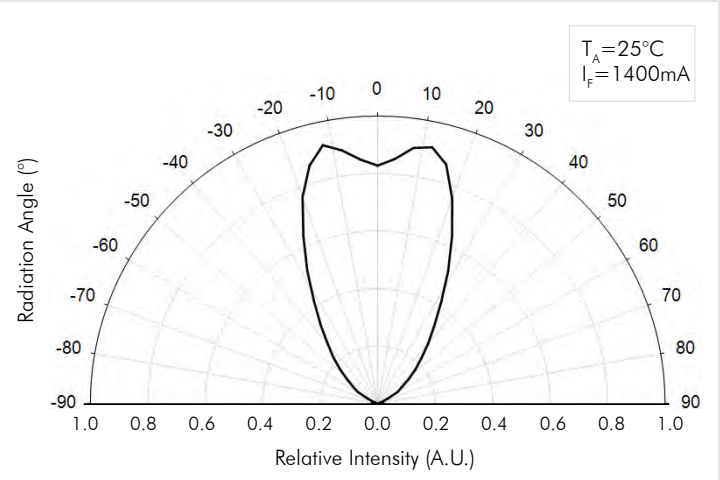
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	2000
Reverse Voltage	V_R	V	10
Power	P_D	W	26
Junction Temperature	T_J	°C	90
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 100

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

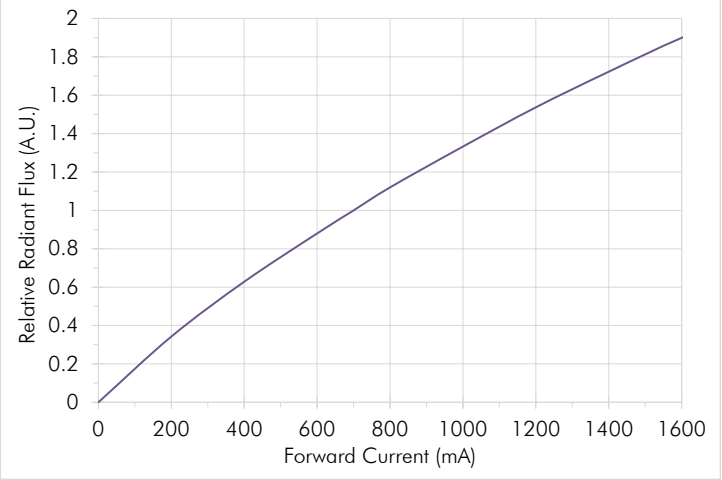
Spectral Output



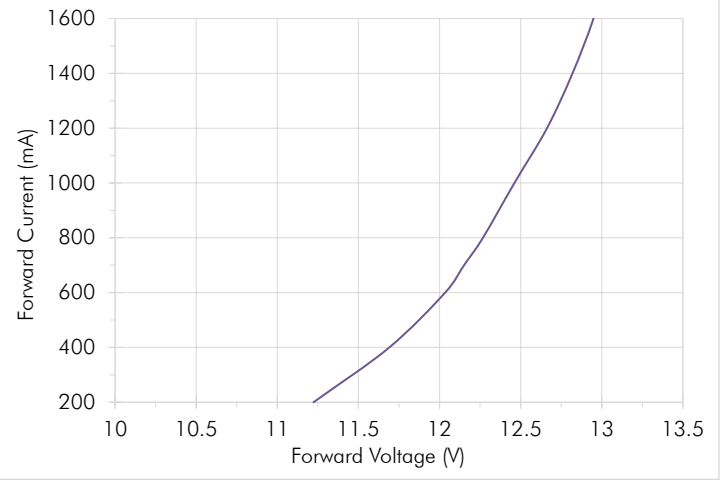
Radiation Pattern



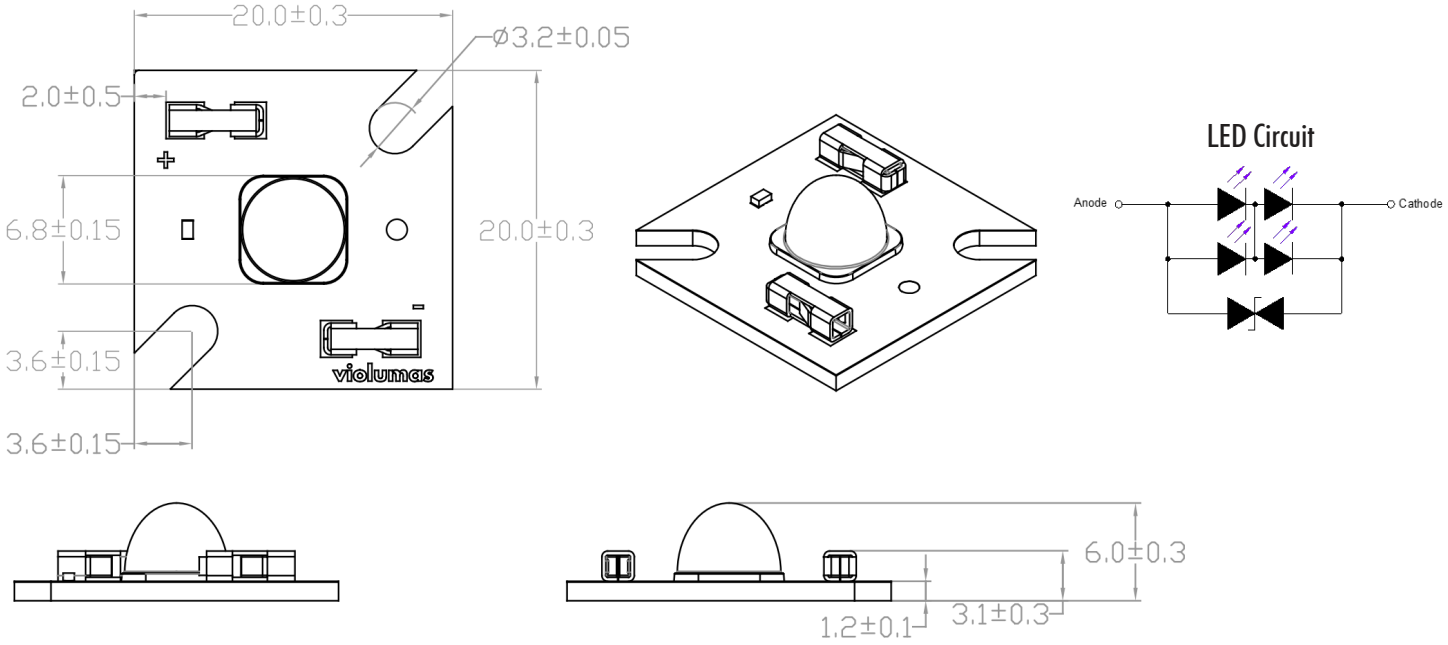
Forward Current vs. Relative Radiant Flux



Forward Voltage vs. Forward Current



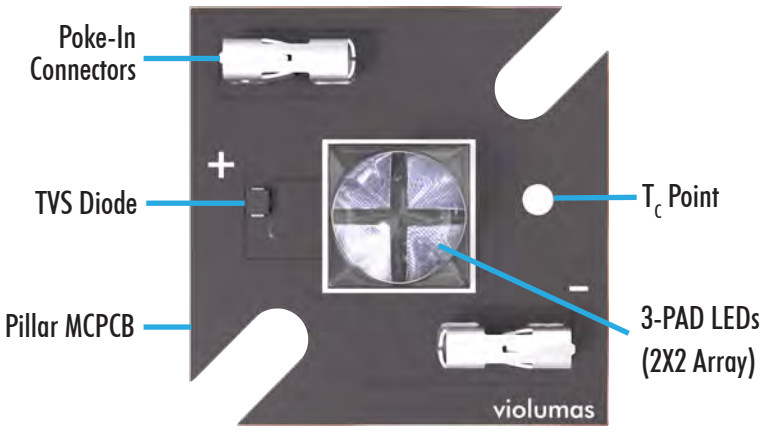
Mechanical Dimensions



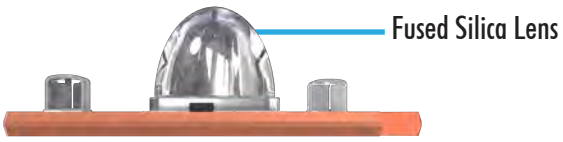
Note: The maximum offset (tolerance) for lens alignment over the LED is 0.2mm.

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.



- Poke-in connectors for direct wiring (acceptable wire gauge: 20-24 AWG)
- Bi-directional TVS against 600W over-voltage surge



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

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Revision History

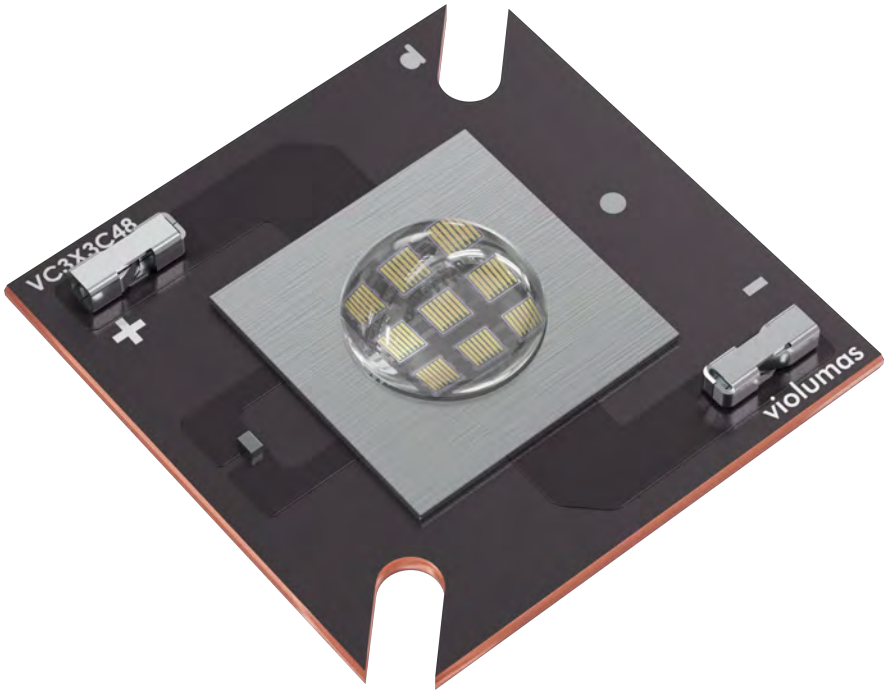
- 01/09/2023: Release of initial version
- 04/07/2025: Reformatting of Spectral Output, Forward Current vs. Relative Radiant Flux, and Forward Voltage vs. Forward Current; Revision of Radiation Pattern and Mechanical Drawing

violumas
High Power UV LED Solutions

Data Sheet

VC3X3C48L9-295 3X3 UVB LED COB

VC3X3C48L9-295 is a UV LED Chip on Board (COB) module offering UV radiation at a peak wavelength of 295±5nm. Each COB is structured based on the patented 3-PAD LED Flip Chip mounted directly onto the Super Pillar MCPCB to further boost output efficiency and decrease the thermal resistance. The VC3X3C48L9 series is ready for plug and play with no soldering required and is equipped with a 90° lens for high power UV output.



FEATURES & BENEFITS

- Dimensions: 30mm x 30mm x 6.15mm
- Ready for plug and play (solder-free)
- Equipped with 90° fused silica lens
- TVS built in for ESD protection

THE VIOLUMAS DIFFERENCE

- 3-PAD flip chip structure
- Lowest thermal resistance at 0.1°C/W
- Minimal thermal decay with higher output
- Industry-leading reliability & lifetime

Electro-Optical Characteristics at T=25°C and I_F =2100mA

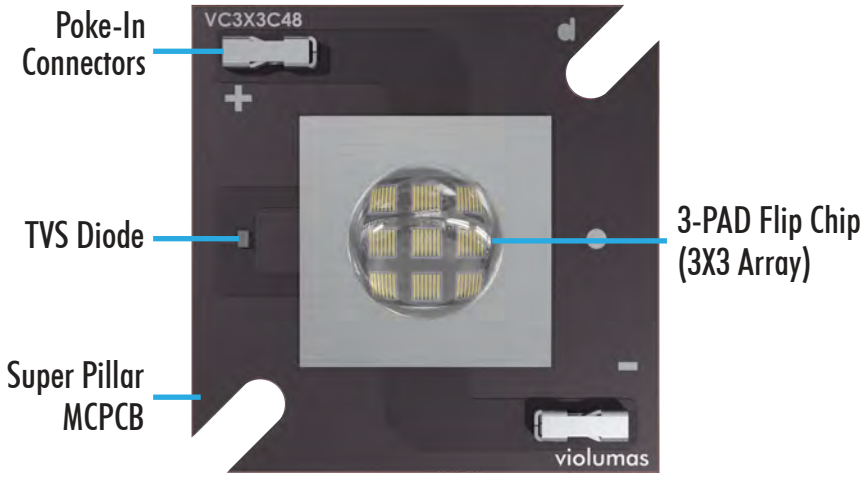
Parameter	Symbol	Unit	Min	Typical	Max
Peak Wavelength	λ_P	nm	290	295	300
Forward Voltage	V_F	V	15.3	17.4	20.0
Radiant Flux	P_O	mW	600	720	880
Full Width of Half Magnitude	$\Delta\lambda$	nm	-	12	-
Radiant Angle	$2\Phi_{1/2}$	Degree	-	90	-
Thermal Resistance, Junction to Solder Joint	R_{th}(J-S)	°C/W	-	0.1	-

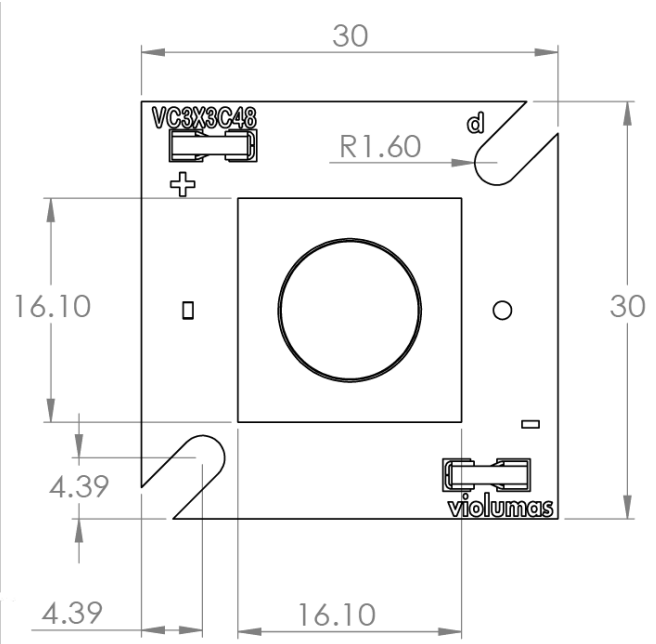
Absolute Maximum Ratings

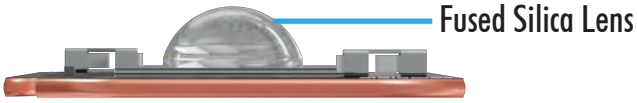
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	3000
Reverse Voltage	V_R	V	15
Power	P_D	W	58.5
Junction Temperature	T_J	°C	90
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 85

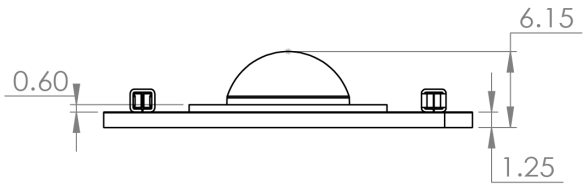
Product Overview

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

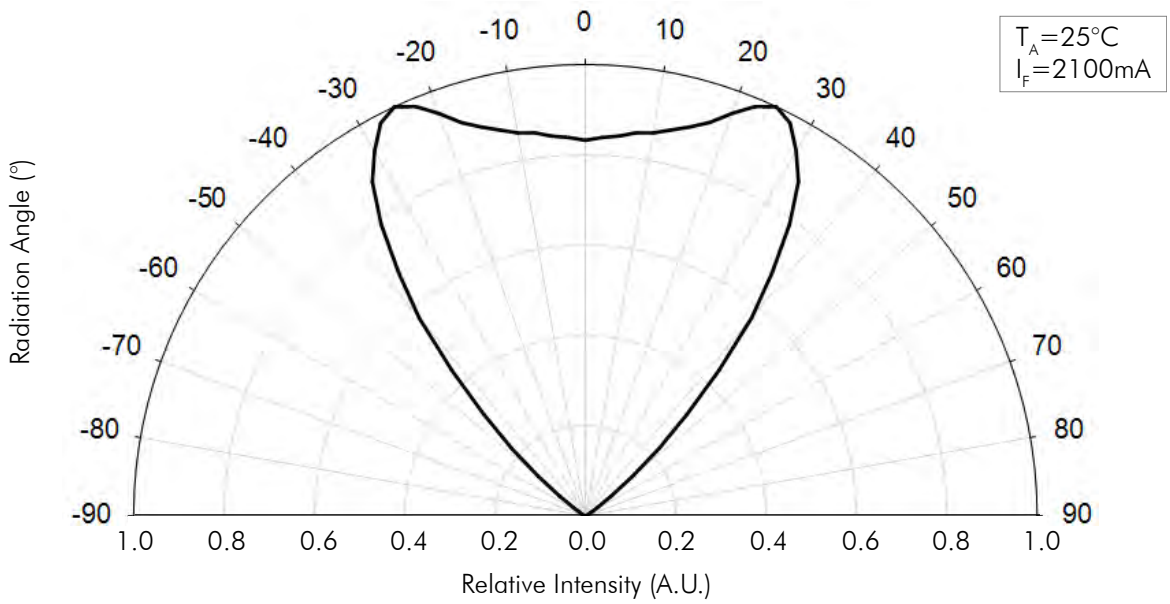




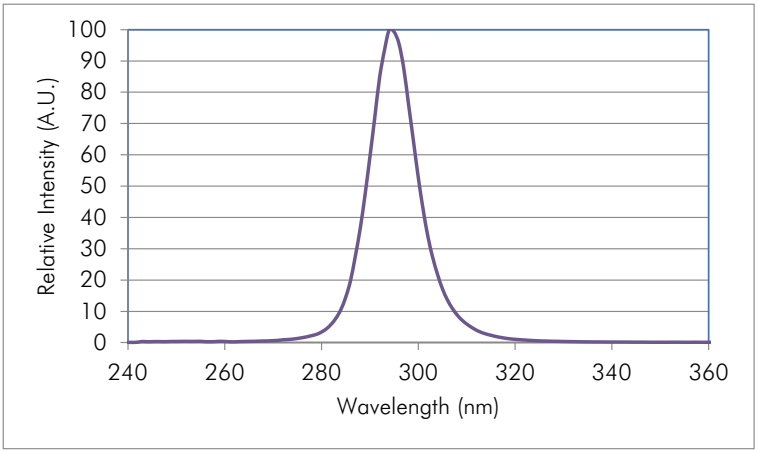




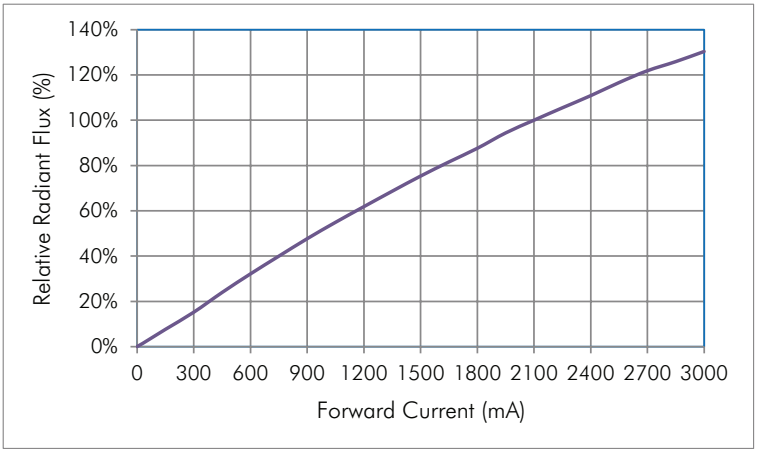
Radiation Pattern



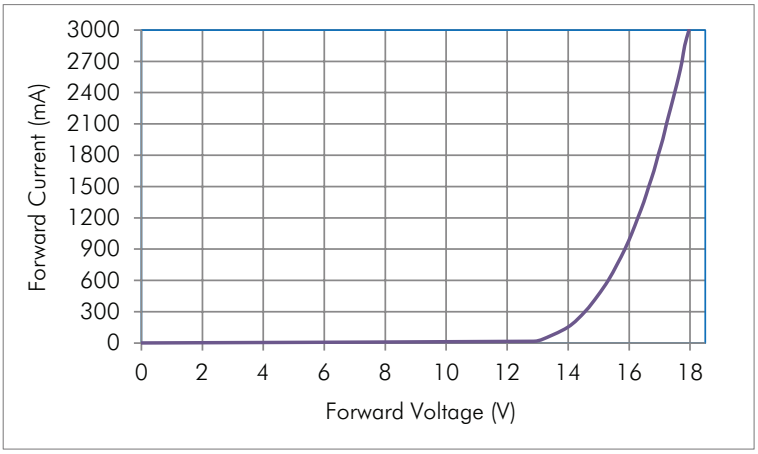
Spectral Output



Forward Current vs. Relative Radiant Flux



Forward Voltage vs. Forward Current



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.
- Ensure that the PCB is suitable for the product and be wary of LED placement and possible PCB warpage.
- 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 3-PAD LED structure.

Storage Precautions

- Perform soldering as soon as the moisture-proof packaging is opened.
- After the storage duration has exceeded the recommended time, products may need to be baked before soldering.
- Store all products in a controlled environment under 30° C free of dust. Do not expose the product to sudden changes in temperature, high humidity levels, and condensation.
- 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.

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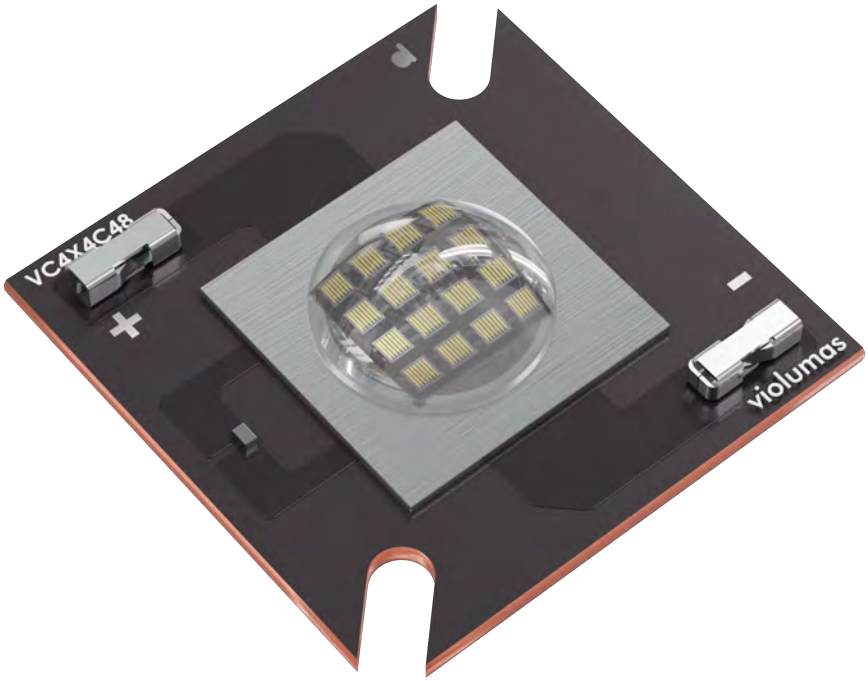
violumas
High Power UV LED Solutions

Data Sheet

VC4X4C48L9-295 4X4 UVB LED COB

VC4X4C48L9-295 is a UV LED Chip on Board (COB) module offering UV radiation at a peak wavelength of 295±5nm. Each COB is structured based on the patented 3-PAD LED Flip Chip mounted directly onto the Super Pillar MCPCB to further boost output efficiency and decrease the thermal resistance. The VC4X4C48L9 series is ready for plug and play with no soldering required and is equipped with a 90° lens for high power UV output.



FEATURES & BENEFITS

- Dimensions: 30mm x 30mm x 5.45mm
- Ready for plug and play (solder-free)
- Equipped with 90° fused silica lens
- TVS built in for ESD protection

THE VIOLUMAS DIFFERENCE

- 3-PAD flip chip structure
- Lowest thermal resistance at 0.06°C/W
- Minimal thermal decay with higher output
- Industry-leading reliability & lifetime

Electro-Optical Characteristics at T=25°C and I_F =2800mA

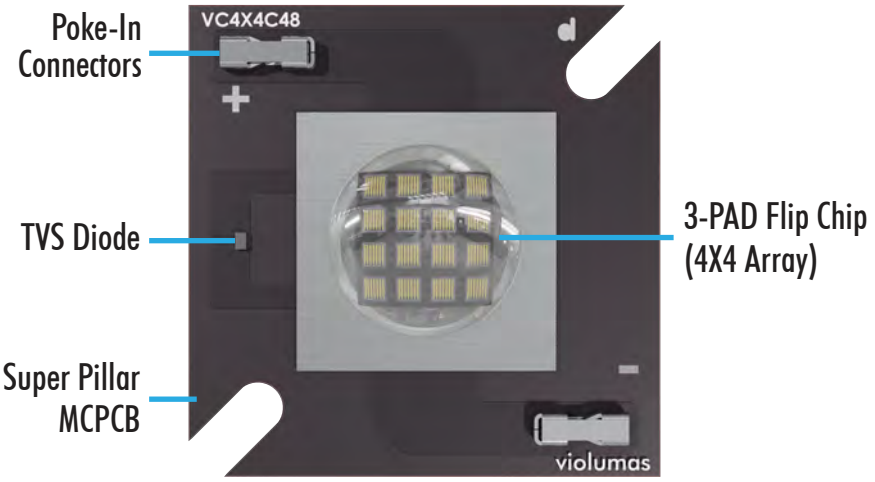
Parameter	Symbol	Unit	Min	Typical	Max
Peak Wavelength	λ_P	nm	290	295	300
Forward Voltage	V_F	V	20.4	23.2	26.8
Radiant Flux	P_O	mW	1020	1280	1570
Full Width of Half Magnitude	$\Delta\lambda$	nm	-	12	-
Radiant Angle	$2\Phi_{1/2}$	Degree	-	90	-
Thermal Resistance, Junction to Solder Joint	R_{th}(J-S)	°C/W	-	0.06	-

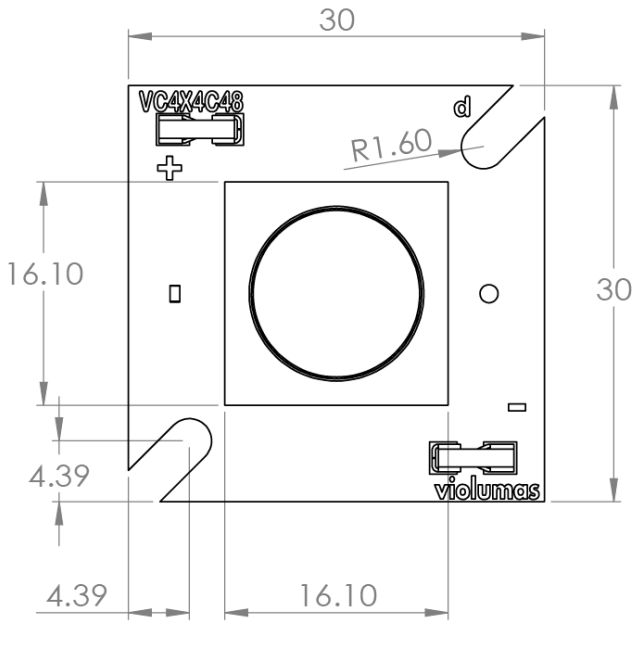
Absolute Maximum Ratings

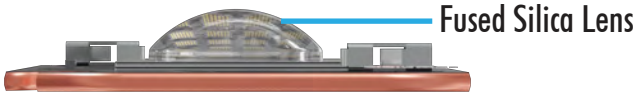
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	4000
Reverse Voltage	V_R	V	20
Power	P_D	W	104
Junction Temperature	T_J	°C	90
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 85

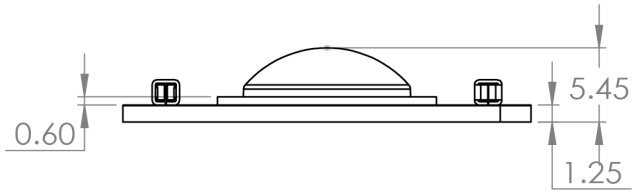
Product Overview

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

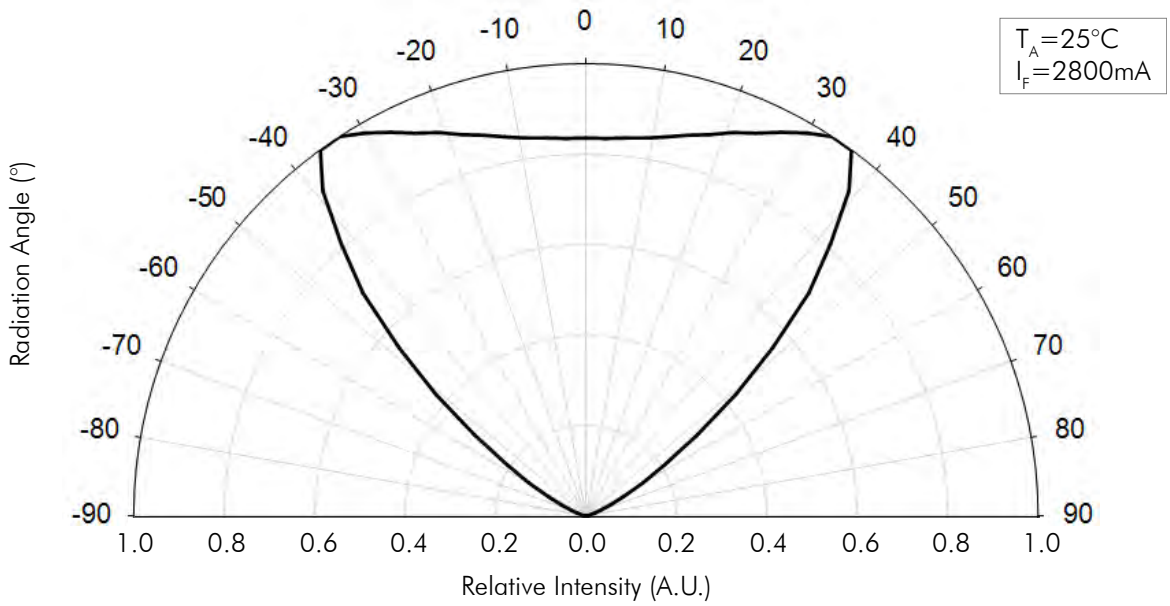




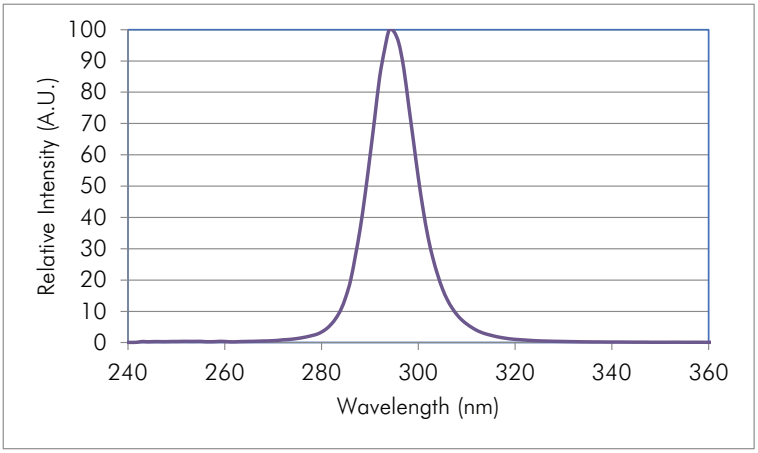




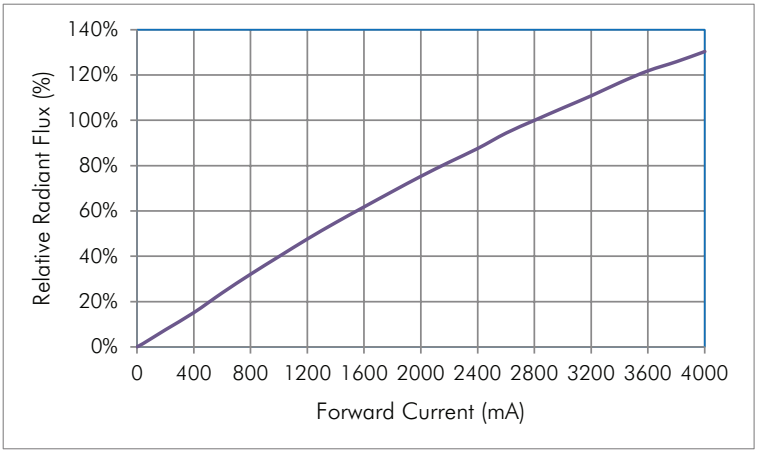
Radiation Pattern



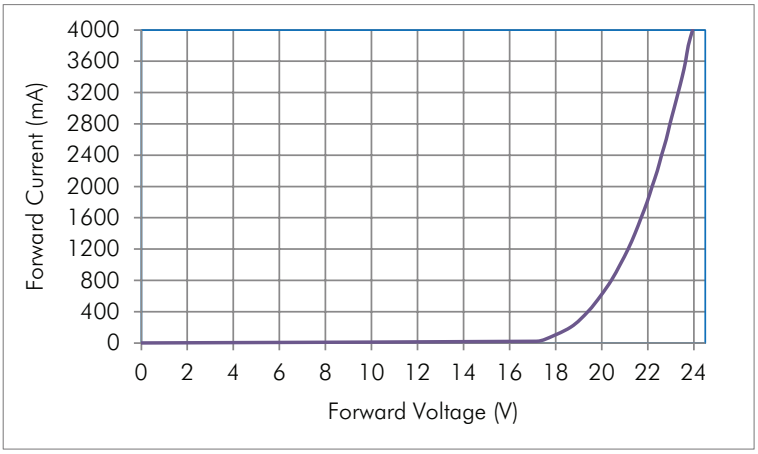
Spectral Output



Forward Current vs. Relative Radiant Flux



Forward Voltage vs. Forward Current



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.
- Ensure that the PCB is suitable for the product and be wary of LED placement and possible PCB warpage.
- 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 3-PAD LED structure.

Storage Precautions

- Perform soldering as soon as the moisture-proof packaging is opened.
- After the storage duration has exceeded the recommended time, products may need to be baked before soldering.
- Store all products in a controlled environment under 30° C free of dust. Do not expose the product to sudden changes in temperature, high humidity levels, and condensation.
- 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

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Data Sheet
Preliminary Document

VC12X1 Series 12-LED Light Bar COB

VC12X1 Series is UV LED Light Bar Chip on Board (COB) module with 12 chips bonded in a linear structure. Each COB is structured based on the patented 3-PAD LED Flip Chip mounted directly onto the Super Pillar MCPCB to further boost output efficiency and decrease the thermal resistance. The VC12X1 Series is ready for plug and play with no soldering required and is equipped with a 60° lens.

FEATURES & BENEFITS

- Dimensions: 304mm x 20mm
- Ready for plug and play (solder-free)
- Equipped with 60° fused silica lens
- TVS built in for ESD protection

THE VIOLUMAS DIFFERENCE

- 3-PAD flip chip structure
- Lowest thermal resistance at 0.075°C/W
- Minimal thermal decay with higher output
- Industry-leading reliability & lifetime

Electro-Optical Characteristics for UVA (T=25°C and I_F=700mA)

Part Number	Wavelength	Typ. Output	Forward Voltage	Power Consumption
VC12X1C45L6-405	405nm	12W	43.5V	30.5W
VC12X1C45L6-395	395nm	13W	43.5V	30.2W
VC12X1C45L6-385	385nm	12W	43.5V	30.2W
VC12X1C45L6-375	375nm	9W	43.5V	30.2W
VC12X1C45L6-365	365nm	6W	46.8V	30.8W

Absolute Maximum Ratings for UVA

Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	1000
Reverse Voltage	V_R	V	60
Power	P_D	W	48
Junction Temperature	T_J	°C	120
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 105

Reliability

Test	Condition	Test Duration	Test Failed/Tested
Thermal Shock	-45°C ~ 125°C	2000 Cycles	0/10

Electro-Optical Characteristics for UVB & UVC (T=25°C and I_F =1400mA)

Part Number	Wavelength	Typ. Output	Forward Voltage	Power Consumption
VC12X1C48L6-310	310nm	1.33W	36.0V	50.4W
VC12X1C48L6-295	295nm	1.1W	35.0V	49.0W
VC12X1C48L6-275	275nm	1W	37.8V	52.9W
VC12X1C48L6-265	265nm	0.8W	38.4V	53.8W

Absolute Maximum Ratings for UVB & UVC

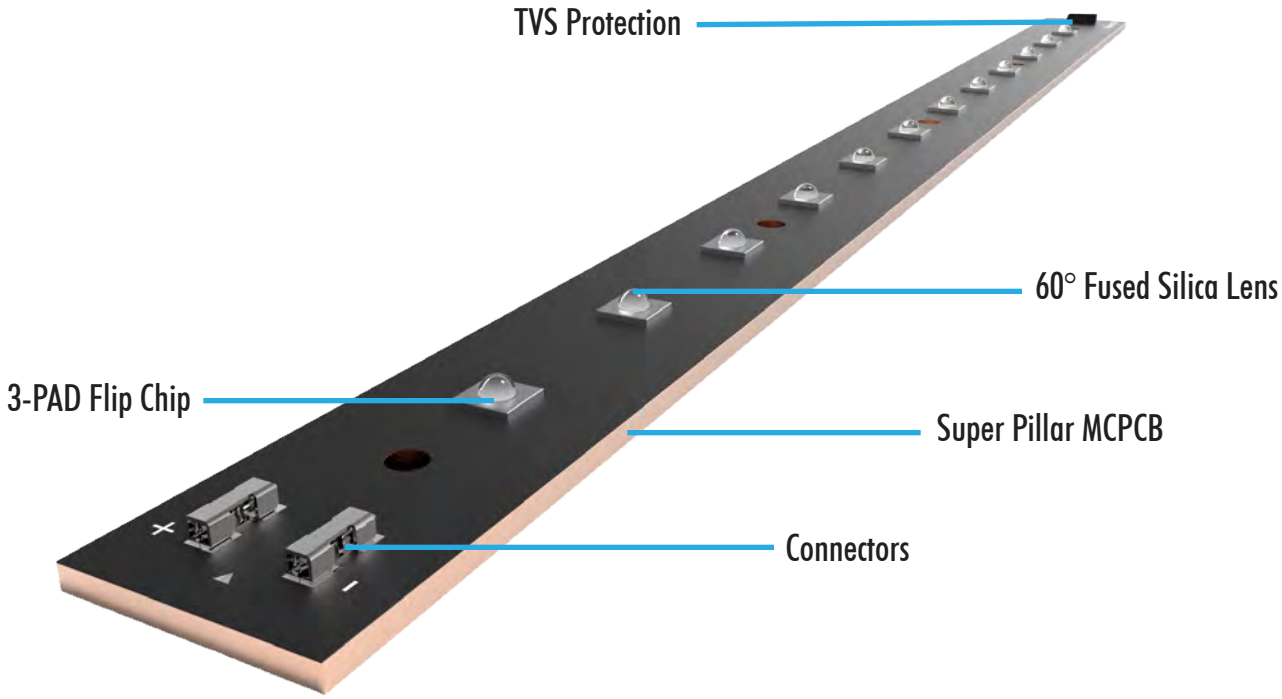
Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	2000
Reverse Voltage	V_R	V	30
Power	P_D	W	84
Junction Temperature	T_J	°C	120
Operating Temperature	T_{OPR}	°C	-30 ~ 85
Storage Temperature	T_{STG}	°C	-40 ~ 105

Reliability

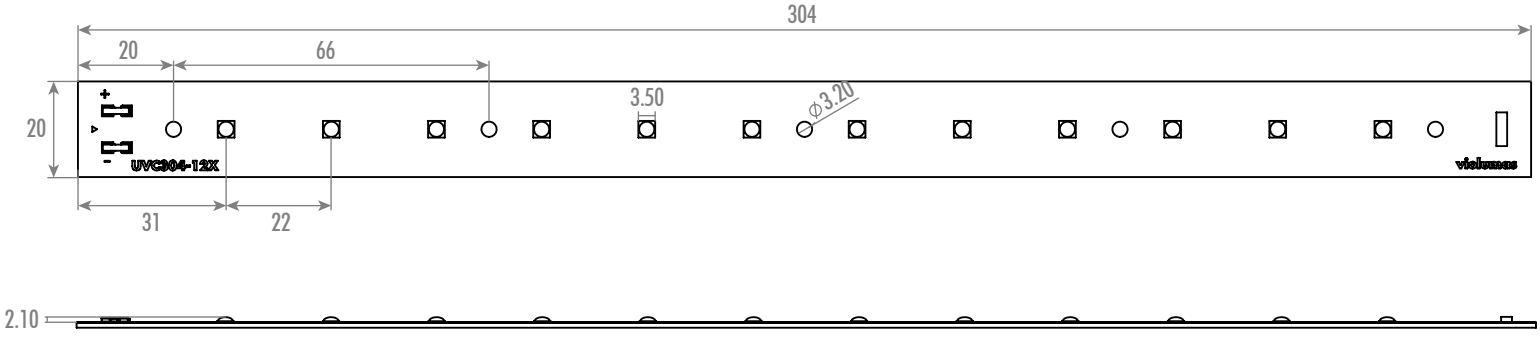
Test	Condition	Test Duration	Test Failed/Tested
Thermal Shock	-45°C ~ 125°C	2000 Cycles	0/10

Product Overview

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



Mechanical Dimensions



Please contact the Violumas team at info@violumas.com for additional information regarding performance curves, irradiance maps, and suitable heatsinks/drivers for this product.

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.
- Ensure that the PCB is suitable for the product and be wary of LED placement and possible PCB warpage.
- 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 3-PAD LED structure.

Storage Precautions

- Perform soldering as soon as the moisture-proof packaging is opened.
- After the storage duration has exceeded the recommended time, products may need to be baked before soldering.
- Store all products in a controlled environment under 30° C free of dust. Do not expose the product to sudden changes in temperature, high humidity levels, and condensation.
- 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.

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UV LED Application Set

Plug-and-Play:

- COB UV LED
- Heatsink Kit
- Driver Kit

Violumas COB LED

Violumas Heatsink Kit

Heatsink (x1), Mounting Screws (x2), Thermal Pad (x2)

Violumas Driver Kit with LED Wire & Connector - 110V or 220V

Negative/Black Wire (x1), Positive/Red Wire (x1), 2-Terminal Connectors (x2)

Photos are provided for reference only and may not be accurate of the exact items received.

www.boselec.com | uv@boselec.com | shop.boselec.com | 617.566.3821

All sets can be purchased via our web store

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UV LED Application Set

Step 1: Mounting the COB LED onto the Heatsink

- If there is a protective film on the backside of the LED, please remove the film. Inspect the contact surfaces and ensure the contact surfaces of the LED backside and the heatsink are smooth. If surfaces are not smooth, high resolution sandpaper polish is recommended. Gently clean the surfaces with alcohol.
- Place the thermal pad on the coupling area where the LED is to be mounted onto the heatsink.
- Tighten down the LED onto the heatsink surface via provided screws. Do not over torque the screws.

Violumas LED Wire & Connector Kit:

- Each wire is pre-stripped for plug-and-play connections.
- One end of each wire is stripped approximately 5mm (short side). The short side should be inserted into the COB LED.
- One end of each wire is stripped approximately 10mm (long side). The long side should be coupled with the driver kit wires.

Step 2: Connecting Wires to the COB LED

- Insert the short side of the "-" wire into the "-" COB connector.
- Insert the short side of the "+" wire into the "+" COB connector.
- Please insert the wire end fully into the appropriate COB connector (positive to positive, negative to negative). The connection should be tight even with a weak pull on the ends of the wires. Soldering is not required.

Step 3: Connecting Wires to the Driver Kit

- Couple the long side of the "-" wire to the "-" wire of the driver kit using the provided connector.
- Couple the long side of the "+" wire to the "+" wire of the driver kit using the provided connector.
- For coupling wires with the provided connector, please insert the wire end fully into an unoccupied terminal and snap the connector shut. The connection should be tight even with a weak pull on the 2 ends of the wires. Please ensure positive and negative wires are connected appropriately (positive to positive, negative to negative).

Notes for Operation

- Please ensure the driver kit is off before making any wire connections.
- Please connect the driver kit to a separate power strip (not provided) with an ON/OFF switch. Please utilize the power strip switch to turn the driver kit on and off. Directly plugging the driver kit into a wall outlet is not recommended.
- If the driver kit includes a dimmer dial, please ensure the dimmer dial is set to the lowest position before turning the power on.

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UV LED Application Set

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Precautions

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UV LED Application Sets Purchase on web store: https://shop.boselec.com/collections/uv-led

Set Part Number	UV LED	Heat Sink	Driver Kit
265 nm LED			
SET-265-MED-110V	VC1X1C48L3-265	30.1.006770	PS-700A6W-ND-110V
SET-265-MED-220V	VC1X1C48L3-265	30.1.006770	PS-700A6W-ND-220V
SET-265-HI-110V	VC2X2C48L6-265	30.1.006846	PS-1400A25W-ND-110V
SET-265-HI-220V	VC2X2C48L6-265	30.1.006846	request
275 nm LED			
SET-275-MED-110V	VC1X1C48L3-275	30.1.006770	PS-700A6W-ND-110V
SET-275-MED-220V	VC1X1C48L3-275	30.1.006770	PS-700A6W-ND-220V
SET-275-HI-110V	VC2X2C48L6-275	30.1.006846	PS-1400A25W-ND-110V
SET-275-HI-220V	VC2X2C48L6-275	30.1.006846	request
295 nm LED			
SET-295-MED-110V	VC1X1C48L3-295	30.1.006770	PS-700A6W-ND-110V
SET-295-MED-220V	VC1X1C48L3-295	30.1.006770	PS-700A6W-ND-220V
SET-295-HI-110V	VC2X2C48L6-295	30.1.006846	PS-1400A20W-ND-110V
SET-295-Hi-220V	VC2X2C48L6-295	30.1.006846	PS-1400A20W-ND-220V
310 nm LED			
SET-310-MED-110V	VC1X1C48L3-310	30.1.006770	PS-700A6W-ND-110V
SET-310-MED-220V	VC1X1C48L3-310	30.1.006770	PS-700A6W-ND-220V
SET-310-HI-110V	VC2X2C48L6-310	30.1.006846	PS-1400A25W-ND-110V
SET-310-HI-220V	VC2X2C48L6-310	30.1.006846	request
325 nm LED			
SET-325-MED-110V	WC1X1C40L3-325	30.1.006770	PS-350A3W-ND
SET-325-MED-220V	WC1X1C40L3-325	30.1.006770	PS-350A3W-ND
340 nm LED			
SET-325-MED-110V	WC1X1C40L3-340	30.1.006770	PS-350A3W-ND
SET-340-MED-220V	WC1X1C40L3-340	30.1.006770	PS-350A3W-ND
365 nm LED			
SET-365-MED-110V	VC1X1C45L6-365	30.1.006770	PS-700A3W-ND
SET-365-MED-220V	VC1X1C45L6-365	30.1.006770	PS-700A3W-ND
SET-365-HI-110V	VC2X2C45L9-365	30.1.006846	PS-1400A16W-ND
SET-365-HI-220V	VC2X2C45L9-365	30.1.006846	request
375 nm LED			
SET-375-MED-110V	VC1X1C45L6-375	30.1.006770	PS-700A3W-ND
SET-375-MED-220V	VC1X1C45L6-375	30.1.006770	PS-700A3W-ND
SET-375-HI-110V	VC2X2C45L9-375	30.1.006846	PS-1400A16W-ND
SET-375-HI-220V	VC2X2C45L9-375	30.1.006846	request
385 nm LED			
SET-385-MED-110V	VC1X1C45L6-385	30.1.006770	PS-700A3W-ND
SET-385-MED-220V	VC1X1C45L6-385	30.1.006770	PS-700A3W-ND
SET-385-HI-110V	VC2X2C45L9-385	30.1.006846	PS-1400A16W-ND
SET-385-HI-220V	VC2X2C45L9-385	30.1.006846	request
395 nm LED			
SET-395-MED-110V	VC1X1C45L6-395	30.1.006770	PS-700A3W-ND
SET-395-MED-220V	VC1X1C45L6-395	30.1.006770	PS-700A3W-ND
SET-395-HI-110V	VC2X2C45L9-395	30.1.006846	PS-1400A16W-ND
SET-395-HI-220V	VC2X2C45L9-395	30.1.006846	request
405 nm LED			
SET-405-MED-110V	VC1X1C45L6-405	30.1.006770	PS-700A3W-ND
SET-405-MED-220V	VC1X1C45L6-405	30.1.006770	PS-700A3W-ND
SET-405-HI-110V	VC2X2C45L9-405	30.1.006846	PS-1400A16W-ND
SET-405-HI-220V	VC2X2C45L9-405	30.1.006846	request