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# Cree Performance XHP70.2 LED Module

# Data Sheet

Power of Cree XHP Series in Standard and Custom LED modules

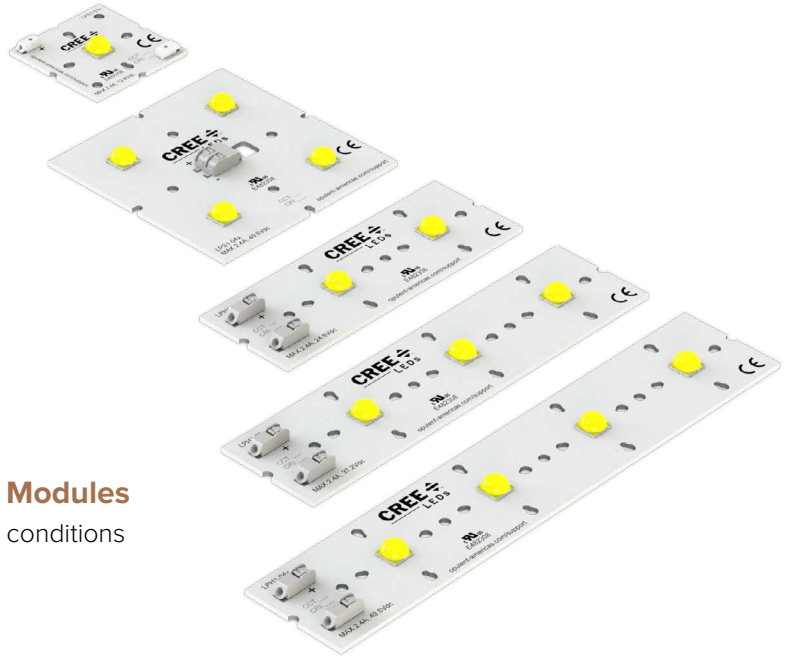
## Illumination Accelerated

- Design Faster** – use standard, UL-listed modules
- Superior Performance & Cost** – top flux bin LEDs at competitive prices
- Thermal Interface Included** – pre-installed to simplify assembly
- Add Standard Optics** – configured for off-the-shelf optics

## Primary Applications



- |               |          |
|---------------|----------|
| High Mast     | Canopy   |
| Streetlight   | Garage   |
| Stadium       | Portable |
| Architectural | High bay |



## Superior Performance in Standard & Custom Modules

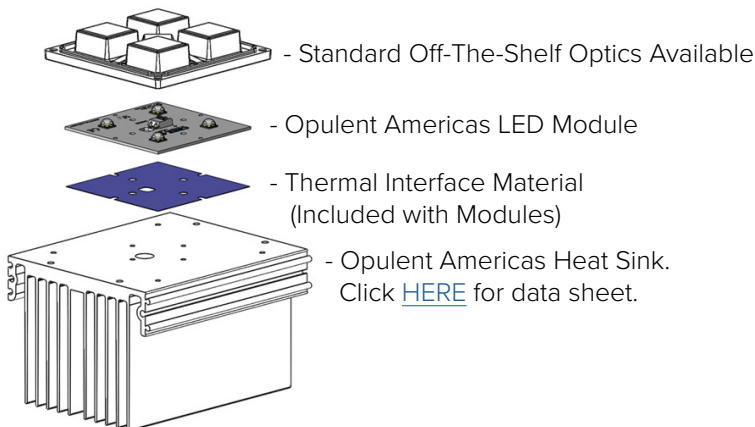
- Market leading L90 & L70 lifetimes, even in high stress conditions
- 70, 80, and 90 CRI LEDs available
- Metal core PCB for optimal thermal management
- Configurable with off the shelf optics, and heat sinks
- Private label or custom designs available

## Simplify Your Next Design

The Cree performance modules, are an off-the-shelf platform to rapidly move from prototype to finished LED lighting fixture. These versatile building blocks are UL-listed and include Cree XHP35, XHP50.2 & XHP70.2 LEDs in square, linear or rectangle formats. The thermal interface is already installed with easy to use connectors to help simplify the lighting design and get to market faster. These competitively priced modules come in a range of lumen outputs and can achieve both DLC Premium or DLC Standard lumens per watt specifications.

## Integrate Further

Opulent Americas also offers standard heat sinks and fully assembled IP-rated modules.



## About Opulent Americas

Opulent Americas, part of Singapore based Opulent Group, is a fully integrated, global manufacturer for the lighting, automotive and medical industries. Through 30 years of manufacturing experience and state-of-the-art facilities, the company offers leading solid state lighting components and modules. The NC-based office provides quick engineering & sales support with an R&D lab to provide prototype development and custom solutions. See [Opulent-Americas.com](http://Opulent-Americas.com) for more information.



# XHP70.2 Series Specifications

## Product Selection Table

Configuration	LED Layout	Part Number	CCT	CRI	Binning	Luminous Flux (lm)		Efficacy Nominal (lm/W)	Watts (W)	
						Nominal	Max		Nominal	Max
Square <sup>(1)</sup>	Single	LPS1-01C24-2780-00	2700K	80	3-Step	1485	2917.6	126	11.8	28.8
Square <sup>(1)</sup>	Single	LPS1-01C24-3070-00	3000K	70	5-Step	1710	3359.6	145	11.8	28.8
Square <sup>(1)</sup>	Single	LPS1-01C24-4070-00	4000K	70	5-Step	1830	3595.4	156	11.8	28.8
Square <sup>(1)</sup>	Single	LPS1-01C24-5070-00	5000K	70	5-Step	1830	3595.4	156	11.8	28.8
Square <sup>(1)</sup>	Single	LPS1-01C24-5770-00	5700K	70	ANSI	1830	3595.4	156	11.8	28.8
Linear <sup>(1)</sup>	1x2	LPH1-02C24-2780-00	2700K	80	3-Step	2970	5835.2	126	23.5	57.6
Linear <sup>(1)</sup>	1x2	LPH1-02C24-3070-00	3000K	70	5-Step	3420	6719.2	145	23.5	57.6
Linear <sup>(1)</sup>	1x2	LPH1-02C24-4070-00	4000K	70	5-Step	3660	7190.8	156	23.5	57.6
Linear <sup>(1)</sup>	1x2	LPH1-02C24-5070-00	5000K	70	5-Step	3660	7190.8	156	23.5	57.6
Linear <sup>(1)</sup>	1x2	LPH1-02C24-5770-00	5700K	70	ANSI	3660	7190.8	156	23.5	57.6
Linear <sup>(1)</sup>	1x3	LPH1-03C24-2780-00	2700K	80	3-Step	4455	8752.8	126	35.3	86.4
Linear <sup>(1)</sup>	1x3	LPH1-03C24-3070-00	3000K	70	5-Step	5130	10078.8	145	35.3	86.4
Linear <sup>(1)</sup>	1x3	LPH1-03C24-4070-00	4000K	70	5-Step	5490	10786.2	156	35.3	86.4
Linear <sup>(1)</sup>	1x3	LPH1-03C24-5070-00	5000K	70	5-Step	5490	10786.2	156	35.3	86.4
Linear <sup>(1)</sup>	1x3	LPH1-03C24-5770-00	5700K	70	ANSI	5490	10786.2	156	35.3	86.4
Linear <sup>(1)</sup>	1x4	LPH1-04C24-2780-00	2700K	80	3-Step	5940	11670.4	126	47	100/115.2 <sup>(2)</sup>
Linear <sup>(1)</sup>	1x4	LPH1-04C24-3070-00	3000K	70	5-Step	6840	13438.4	145	47	100/115.2 <sup>(2)</sup>
Linear <sup>(1)</sup>	1x4	LPH1-04C24-4070-00	4000K	70	5-Step	7320	14381.6	156	47	100/115.2 <sup>(2)</sup>
Linear <sup>(1)</sup>	1x4	LPH1-04C24-5070-00	5000K	70	5-Step	7320	14381.6	156	47	100/115.2 <sup>(2)</sup>
Linear <sup>(1)</sup>	1x4	LPH1-04C24-5770-00	5700K	70	ANSI	7320	14381.6	156	47	100/115.2 <sup>(2)</sup>
Square <sup>(1)</sup>	2x2	LPS1-04C24-2780-00	2700K	80	3-Step	5940	11670.4	126	47	100/115.2 <sup>(2)</sup>
Square <sup>(1)</sup>	2x2	LPS1-04C24-3070-00	3000K	70	5-Step	6840	13438.4	145	47	100/115.2 <sup>(2)</sup>
Square <sup>(1)</sup>	2x2	LPS1-04C24-4070-00	4000K	70	5-Step	7320	14381.6	156	47	100/115.2 <sup>(2)</sup>
Square <sup>(1)</sup>	2x2	LPS1-04C24-5070-00	5000K	70	5-Step	7320	14381.6	156	47	100/115.2 <sup>(2)</sup>
Square <sup>(1)</sup>	2x2	LPS1-04C24-5770-00	5700K	70	ANSI	7320	14381.6	156	47	100/115.2 <sup>(2)</sup>

<sup>(1)</sup> Nominal product performance at 1050mA Tj = 85°C.

<sup>(2)</sup> Input power not to exceed 100W for UL Class 2. Suitability for usage in other than Class 2 circuits shall be determined in the end-product investigation.

<sup>(3)</sup> Cree XLamp XHP70.2 LED order codes specify only a minimum flux bin and not a maximum. Opulent Americas may ship modules in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.

# XHP70.2 Series Specifications

## Order Code Formatting

Series	LED Count	LED Code	Color Temperature	Color Rendering Index	Internal Code
LPH1 - Performance High Power LED PCB Assembly, Linear	01 - 1 LED	C24 - Cree XHP70.2	27 - 2700K	70 - 70 CRI	XX
LPS1 - Performance High Power LED PCB Assembly, Square	02 - 2 LEDs		30 - 3000K	80 - 80 CRI	
	03 - 3 LEDs		40 - 4000K	90 - 90 CRI	
	04 - 4 LEDs		50 - 5000K		
			57 - 5700K		

## Electrical Characteristics

Part Number	Forward Voltage (v)		Typical Thermal Resistance - Junction to Solder Point (°C/W) RTh J-HS
	Typical	Maximum	
LPS1-01x	11.2	12.0	0.9
LPH1-02x	22.4	24.0	0.9
LPH1-03x	33.6	36.0	0.9
LPH1-04x	44.8	48.0	0.9
LPS1-04x	44.8	48.0	0.9

Intended for connection to a class 2 power source with a maximum operating voltage of 50 Vdc

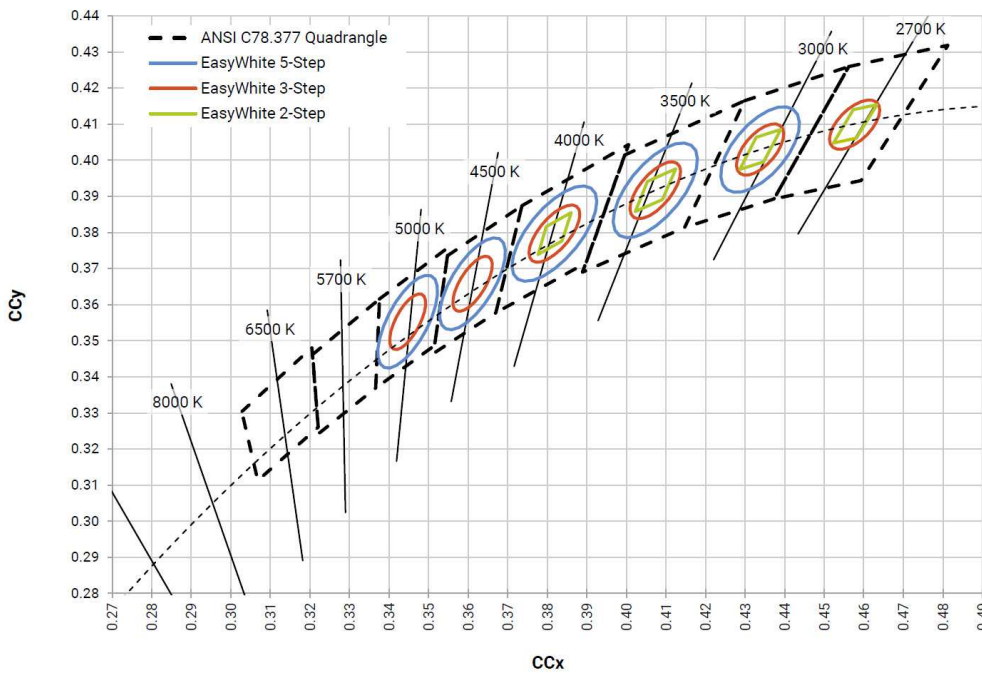
## Maximum Ratings

Part Number	DC Current (A)	Tsp Temp (°C)	Power (W)
LPS1-01x	2.4	105	28.8
LPH1-02x	2.4	105	57.6
LPH1-03x	2.4	105	86.4
LPH1-04x	2.4	105	100/115.2 <sup>(1)</sup>
LPS1-04x	2.4	105	100/115.2 <sup>(1)</sup>

<sup>(1)</sup> Input power not to exceed 100W for UL Class 2. Suitability for usage in other than Class 2 circuits shall be determined in the end-product investigation.

# XHP70.2 Series Specifications

## Standard White Chromaticity Regions Plotted On The CIE 1931 Curve



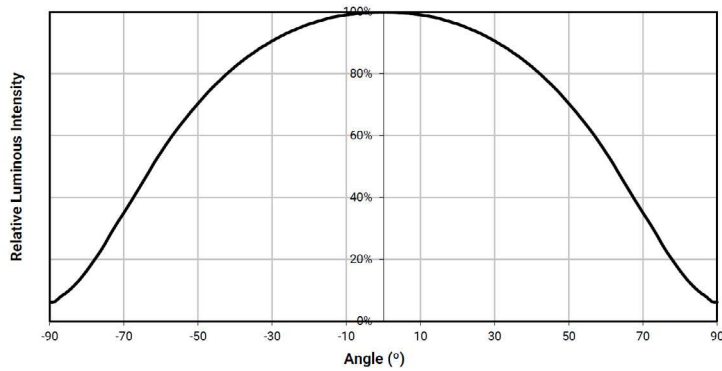
## Performance Groups – Chromaticity

Binning	CCT	X	Y
ANSI	5700K	0.3207	0.3462
		0.3376	0.3616
		0.3366	0.3369
		0.3222	0.3243

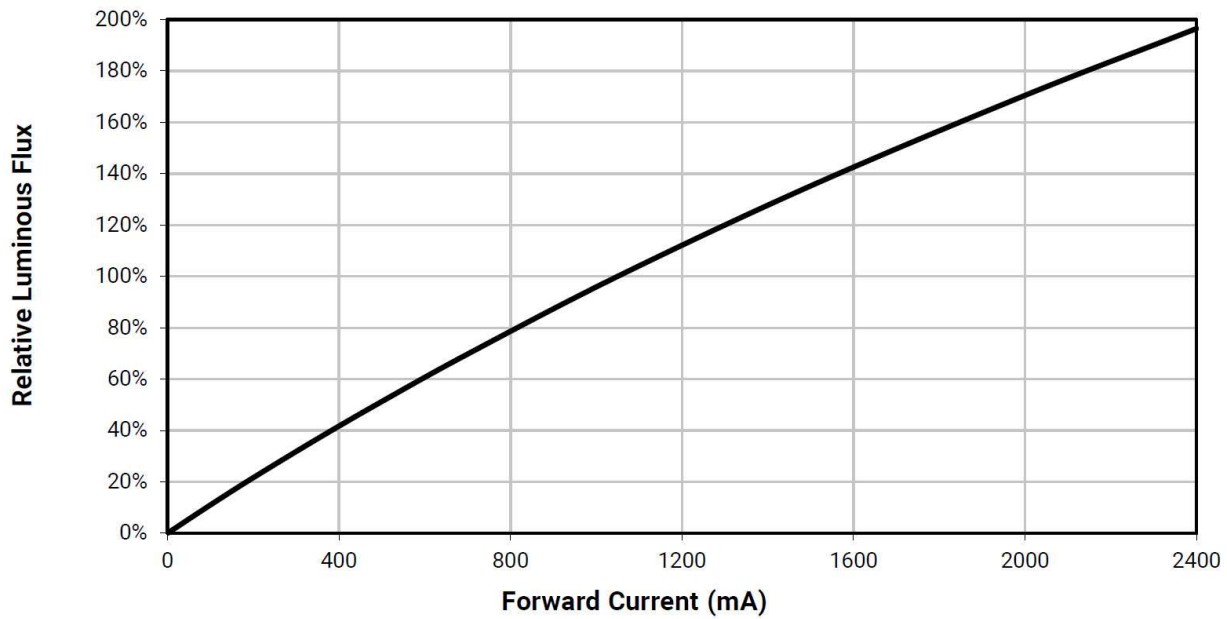
Binning	CCT	Center Point		Major Axis		Rotation Angle (°)
		X	Y	a	b	
5-Step	5000K	0.3447	0.3553	0.01400	0.00520	65.0
5-Step	4000K	0.3818	0.3797	0.001420	0.00550	61.5
5-Step	3000K	0.4338	0.4030	0.01390	0.00680	53.2
3-Step	2700K	0.4577	0.4099	0.01350	0.00700	48.5

# XHP70.2 Series Specifications

## Spatial Distribution



## Relative Flux Vs Board Current (T<sub>J</sub> = 85°C)



# XHP70.2 Series Specifications

## Thermal Interface Properties

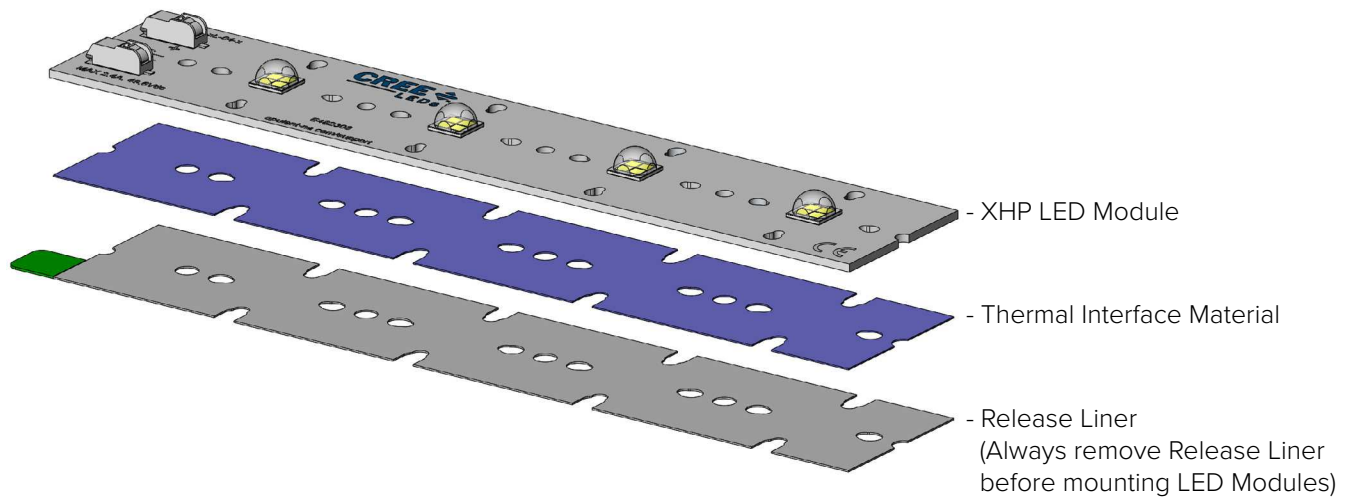
Property	Test Method	Value	Unit
Color	-	Blue	-
Thickness	ASTM D374	0.3	mm
Construction	-	Silicone / Ceramic	-
Temperature Range	EN344	-50-200	°C
Breakdown Voltage	ASTM D149	>8.0	Kv/mm
Flame Rating	UL94	V-0	-
Thermal Conductivity	ASTM D5470	3.0	W/m-K

Intended for connection to a class 2 power source with a maximum operating voltage of 50 Vdc

Note: Release liner must be removed for proper thermal performance. Do not remove thermal Interface Material.

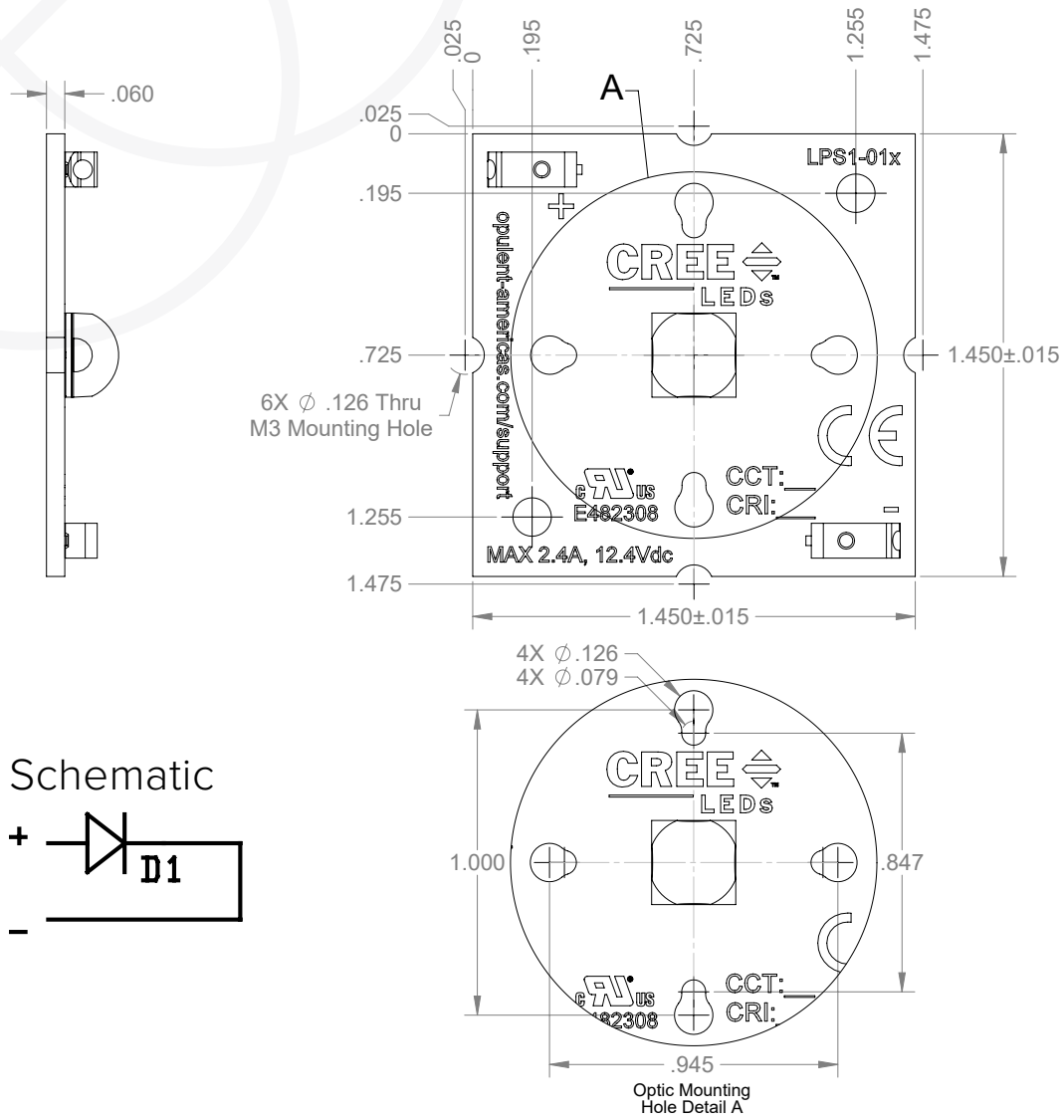
## Board Material Properties

Property	Value	Unit
Solder Mask Color	White	-
Thickness	.062	in
Construction	AL	-
Temperature	130	°C
Flame Rating	V-0	-
Copper Thickness	2	oz

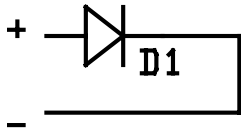


# XHP70.2 Series Specifications

## Opulent Americas Square 1 LED XHP70.2 Module



### Schematic

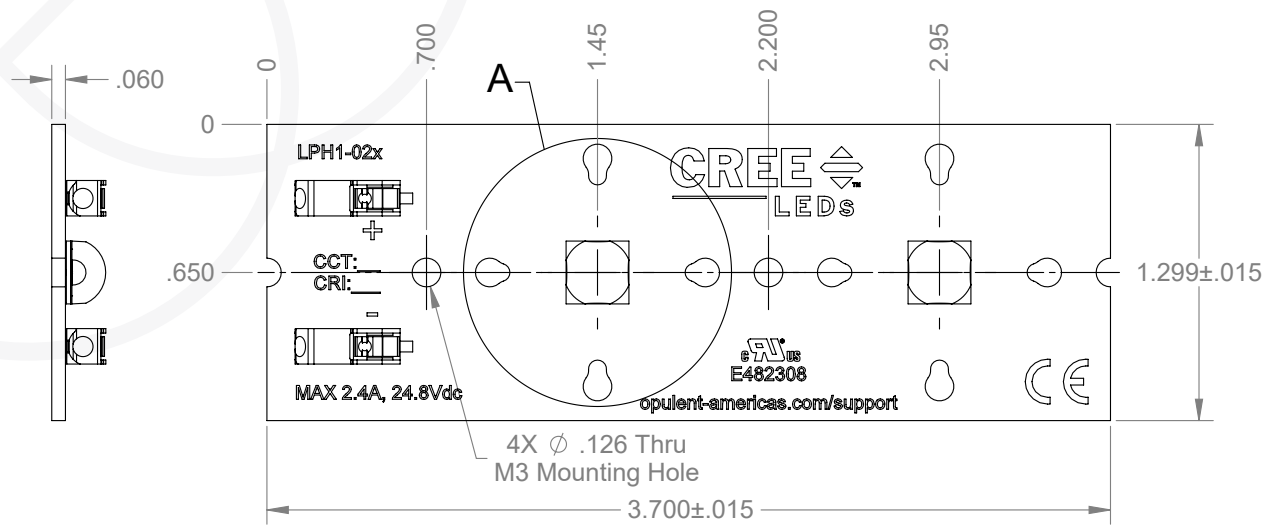


1. Single Poke-In Connectors accept 22-26 AWG solid or stranded wire
2. Recommended Mounting Hardware: 6x M3-.5 Socket Head Cap Screws

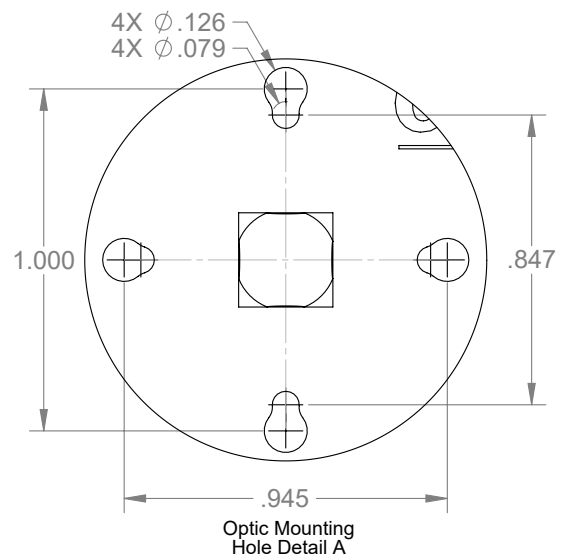
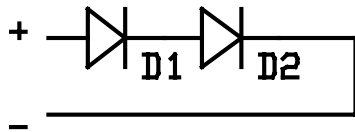


# XHP70.2 Series Specifications

## Opulent Americas Linear 2 LED XHP70.2 Module



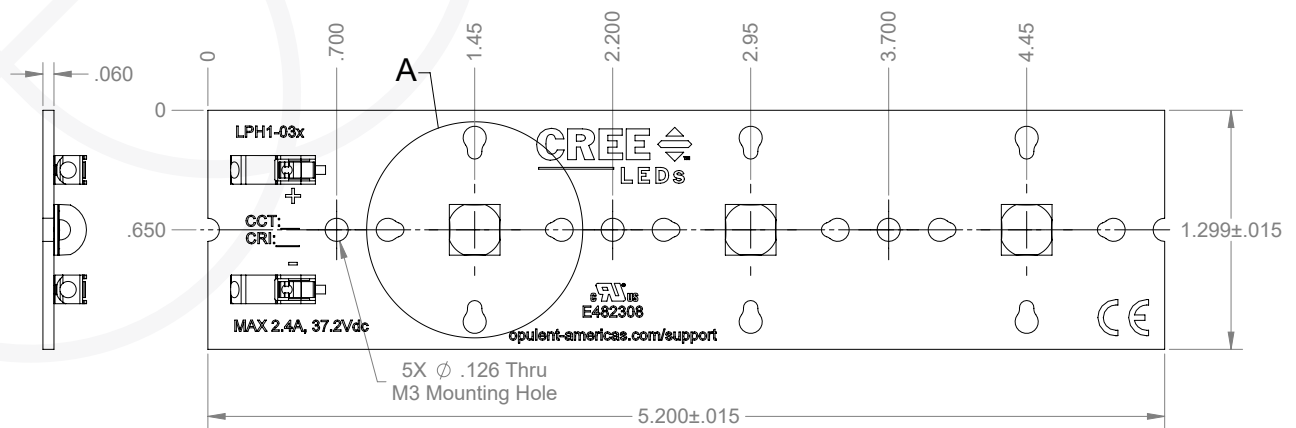
### Schematic



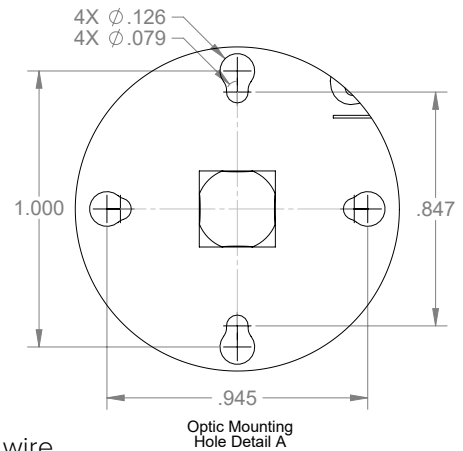
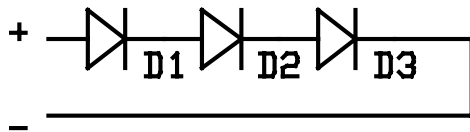
1. Single Poke-In Connectors accept 18-24 AWG solid or stranded wire
2. Recommended Mounting Hardware: 4x M3-5 Socket Head Cap Screws

# XHP70.2 Series Specifications

## Opulent Americas Linear 3 LED XHP70.2 Module



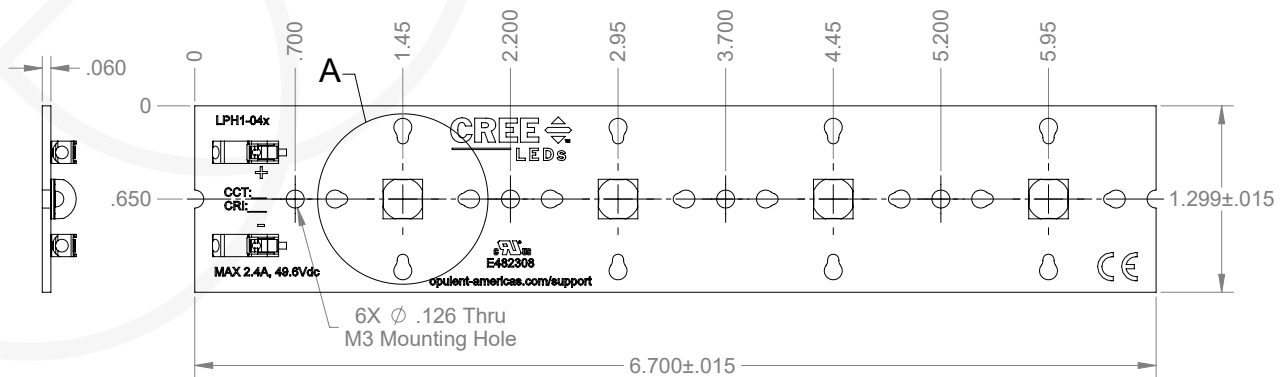
### Schematic



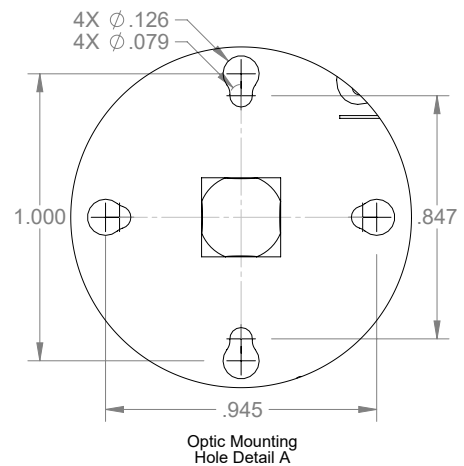
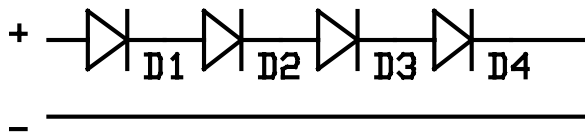
1. Single Poke-In Connectors accept 18-24 AWG solid or stranded wire
2. Recommended Mounting Hardware: 5x M3-5 Socket Head Cap Screws

# XHP70.2 Series Specifications

## Opulent Americas Linear 4 LED XHP70.2 Module



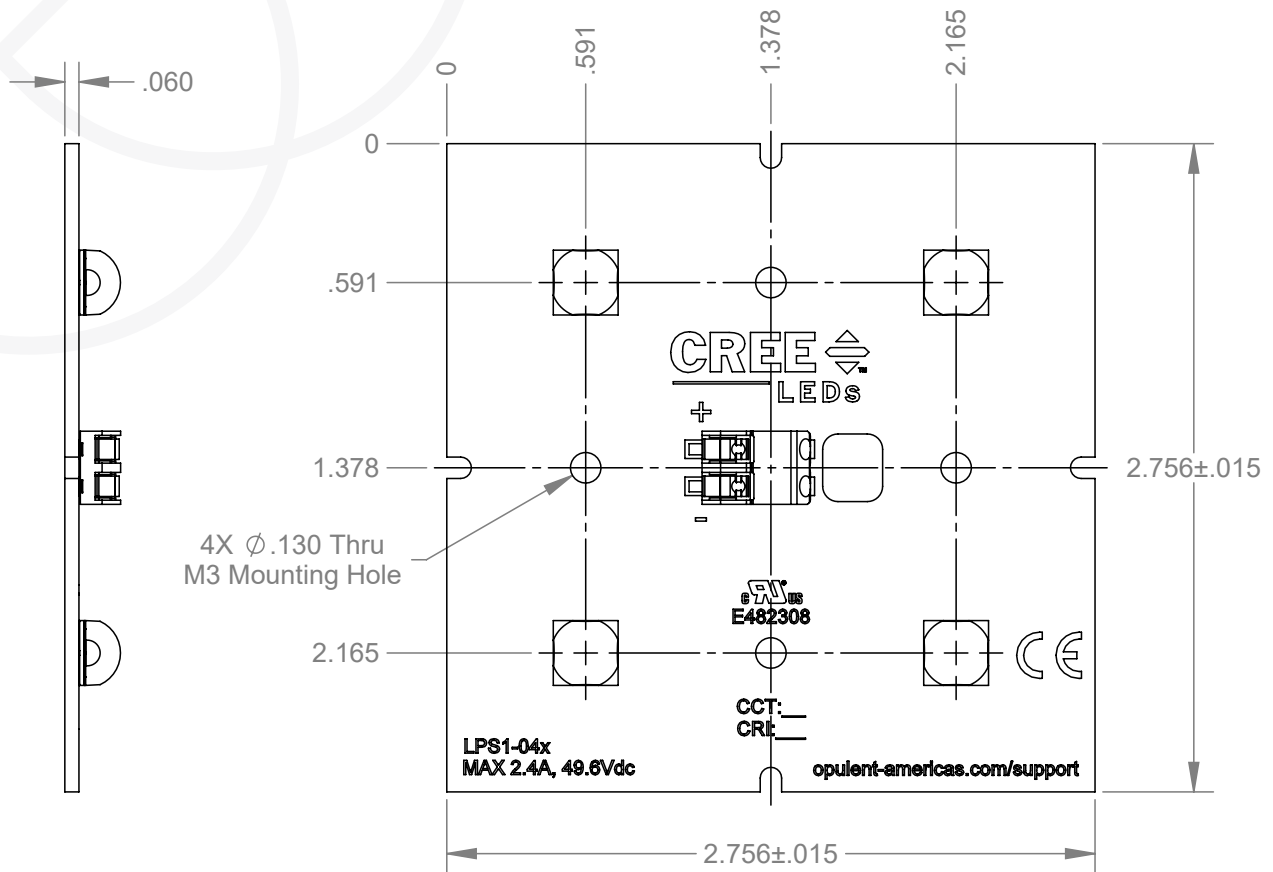
### Schematic



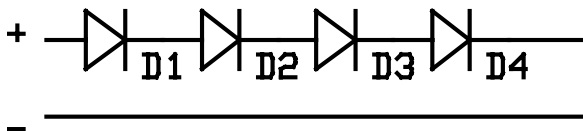
1. Single Poke-In Connectors accept 18-24 AWG solid or stranded wire
2. Recommended Mounting Hardware: 6x M3-5 Socket Head Cap Screws

# XHP70.2 Series Specifications

## Opulent Americas Square 4 LED XHP70.2 Module



### Schematic



1. Dual Poke-In Connectors accept 18-24 AWG solid or stranded wire
2. Recommended Mounting Hardware: 4x M3-.5 Socket Head Cap Screws