

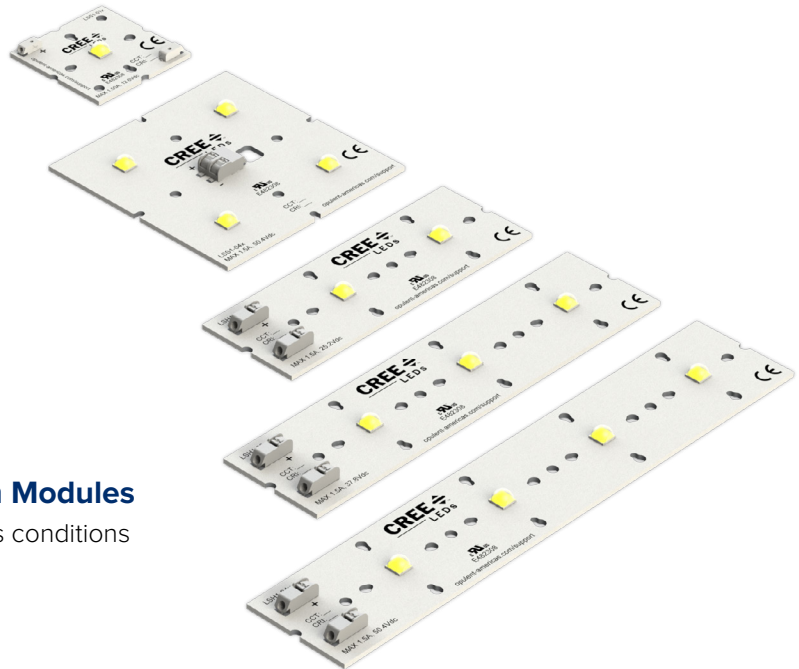
# Cree Performance XHP50.2 LED Module

# 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

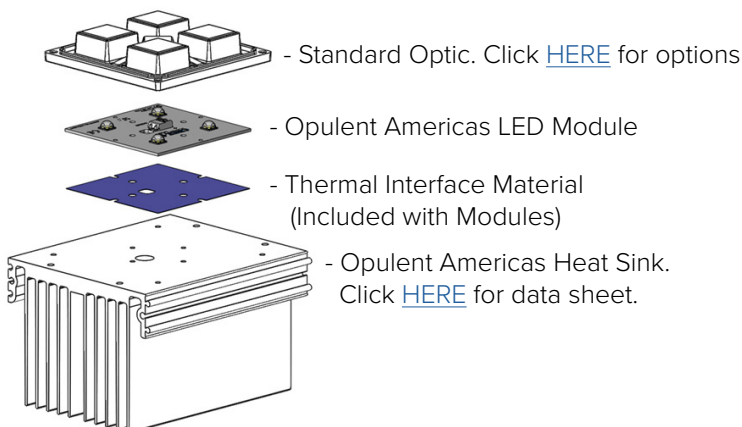
- Market leading L90 & L70 lifetimes, even in high stress conditions
- 70, 80, and 90 CRI LEDs available
- Metal core PCB for optimal thermal management
- Configurable with off the shelf optics, and heat sinks
- Private label or custom designs available

## 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 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.

## XHP50.2 Series 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	LSS1-01C22-2780-00	2700K	80	3-Step	900 lm	1664 lm	115	7.8	17.6
Square <sup>(1)</sup>	Single	LSS1-01C22-3070-00	3000K	70	5-Step	1040 lm	1923 lm	132	7.8	17.6
Square <sup>(1)</sup>	Single	LSS1-01C22-4070-00	4000K	70	5-Step	1120 lm	2071 lm	143	7.8	17.6
Square <sup>(1)</sup>	Single	LSS1-01C22-5070-00	5000K	70	5-Step	1120 lm	2071 lm	143	7.8	17.6
Square <sup>(1)</sup>	Single	LSS1-01C22-5770-00	5700K	70	ANSI	1120 lm	2071 lm	143	7.8	17.6
Linear <sup>(1)</sup>	1x2	LSH1-02C22-2780-00	2700K	80	3-Step	1800 lm	3328 lm	115	15.6	35.2
Linear <sup>(1)</sup>	1x2	LSH1-02C22-3070-00	3000K	70	5-Step	2080 lm	3846 lm	132	15.6	35.2
Linear <sup>(1)</sup>	1x2	LSH1-02C22-4070-00	4000K	70	5-Step	2240 lm	4142 lm	143	15.6	35.2
Linear <sup>(1)</sup>	1x2	LSH1-02C22-5070-00	5000K	70	5-Step	2240 lm	4142 lm	143	15.6	35.2
Linear <sup>(1)</sup>	1x2	LSH1-02C22-5770-00	5700K	70	ANSI	2240 lm	4142 lm	143	15.6	35.2
Linear <sup>(1)</sup>	1x3	LSH1-03C22-2780-00	2700K	80	3-Step	2700 lm	4992 lm	115	23.4	52.8
Linear <sup>(1)</sup>	1x3	LSH1-03C22-3070-00	3000K	70	5-Step	3120 lm	5769 lm	132	23.4	52.8
Linear <sup>(1)</sup>	1x3	LSH1-03C22-4070-00	4000K	70	5-Step	3360 lm	6213 lm	143	23.4	52.8
Linear <sup>(1)</sup>	1x3	LSH1-03C22-5070-00	5000K	70	5-Step	3360 lm	6213 lm	143	23.4	52.8
Linear <sup>(1)</sup>	1x3	LSH1-03C22-5770-00	5700K	70	ANSI	3360 lm	6213 lm	143	23.4	52.8
Linear <sup>(1)</sup>	1x4	LSH1-04C22-2780-00	2700K	80	3-Step	3600 lm	6656 lm	115	31.2	70.4
Linear <sup>(1)</sup>	1x4	LSH1-04C22-3070-00	3000K	70	5-Step	4160 lm	7692 lm	132	31.2	70.4
Linear <sup>(1)</sup>	1x4	LSH1-04C22-4070-00	4000K	70	5-Step	4480 lm	8284 lm	143	31.2	70.4
Linear <sup>(1)</sup>	1x4	LSH1-04C22-5070-00	5000K	70	5-Step	4480 lm	8284 lm	143	31.2	70.4
Linear <sup>(1)</sup>	1x4	LSH1-04C22-5770-00	5700K	70	ANSI	4480 lm	8284 lm	143	31.2	70.4
Square <sup>(1)</sup>	2x2	LSS1-04C22-2780-00	2700K	80	3-Step	3600 lm	6656 lm	115	31.2	70.4
Square <sup>(1)</sup>	2x2	LSS1-04C22-3070-00	3000K	70	5-Step	4160 lm	7692 lm	132	31.2	70.4
Square <sup>(1)</sup>	2x2	LSS1-04C22-4070-00	4000K	70	5-Step	4480 lm	8284 lm	143	31.2	70.4
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Square <sup>(1)</sup>	2x2	LSS1-04C22-5770-00	5700K	70	ANSI	4480 lm	8284 lm	143	31.2	70.4

<sup>(1)</sup> Product performance at 700mA Tj = 85°C.

<sup>(2)</sup> Cree XLamp XHP50.2 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.

# XHP50.2 Series Specifications

## Order Code Formatting

Series	-	LED Count	LED Code	-	Color Temperature	Color Rendering Index	-	Internal Code
LSH1 - Standard High Power LED PCB Assembly, Linear		01 - 1 LED	C22 - Cree XHP50.2		27 - 2700K	70 - 70 CRI		XX
LSS1 - Standard 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			

## XHP50.2 Series Electrical Characteristics

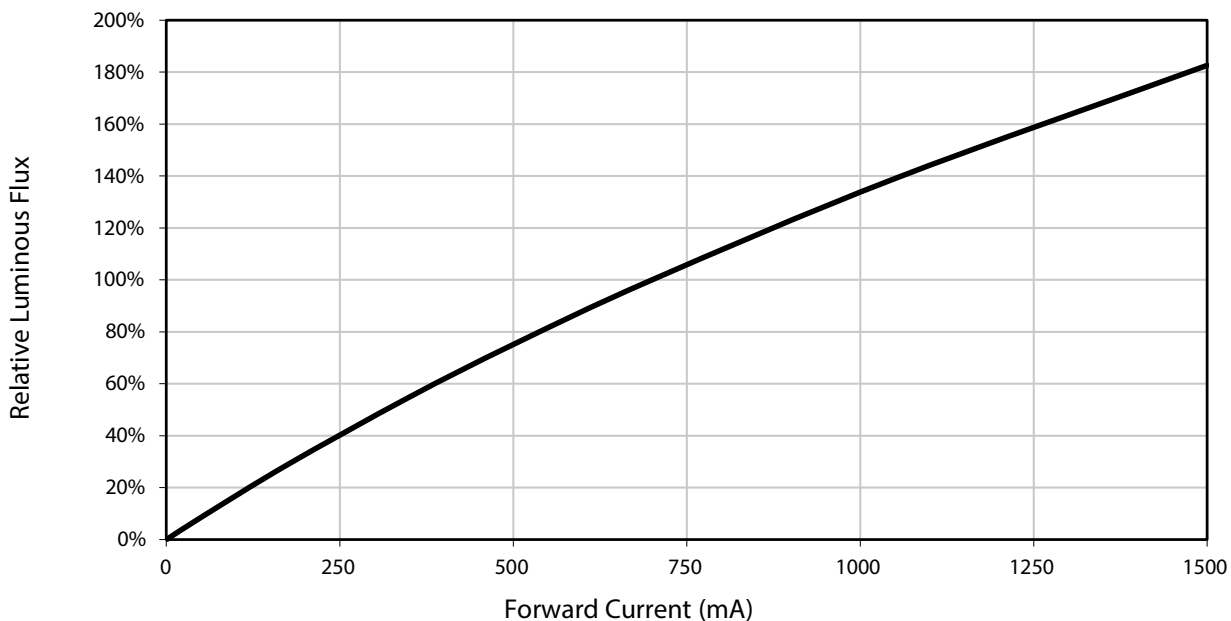
Part Number	Forward Voltage (v)		Typical Thermal Resistance - Junction to Solder Point (°C/W) RTh J-HS
	Typical	Maximum	
LSS1-01x	11.2	12.4	1.2
LSH1-02x	22.4	22.4	1.2
LSH1-03x	33.6	33.6	1.2
LSH1-04x	44.8	44.8	1.2
LSS1-04x	44.8	44.8	1.2

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

## Maximum Ratings

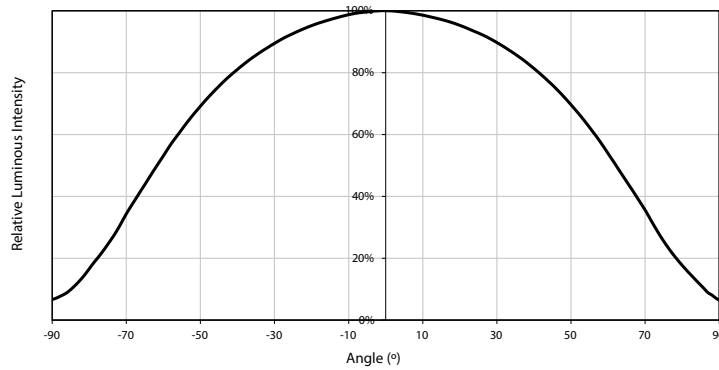
Part Number	DC Current (A)	Tc Temp (°C)	Power (W)
LSS1-01x	1.5	125	17.6
LSH1-02x	1.5	125	35.2
LSH1-03x	1.5	125	52.8
LSH1-04x	1.5	125	70.4
LSS1-04x	1.5	125	70.4

## Relative Flux Vs Board Current (TJ = 85°C)



# XHP50.2 Series Specifications

## Spatial Distribution



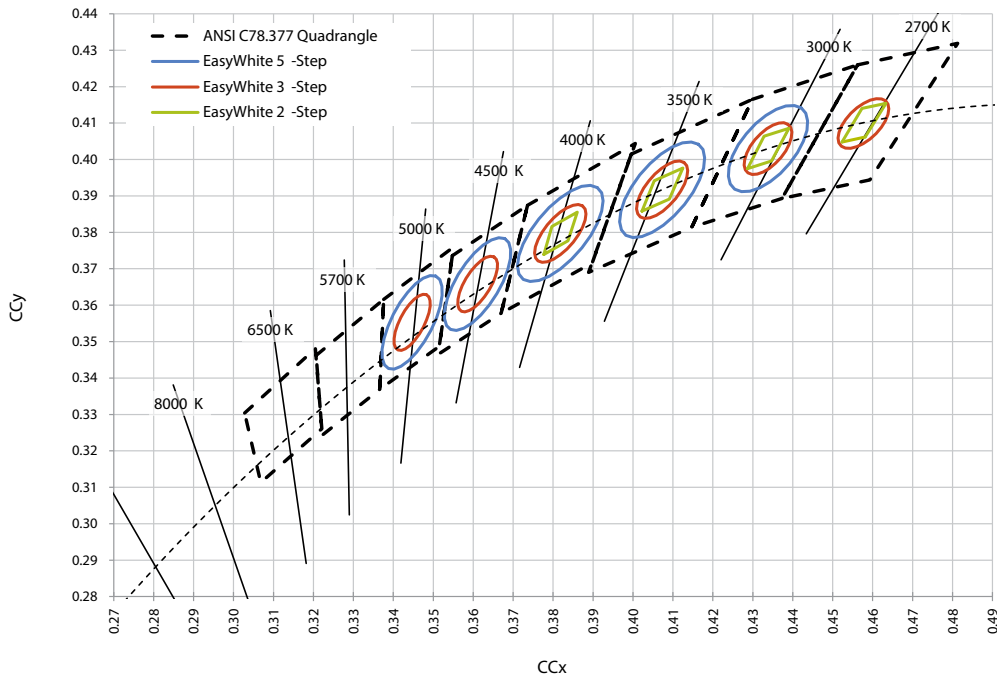
## Performance Groups – Chromaticity

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

# XHP50.2 Series Specifications

Standard White Chromaticity Regions Plotted On The CIE 1931 Curve



## Thermal Interface Properties

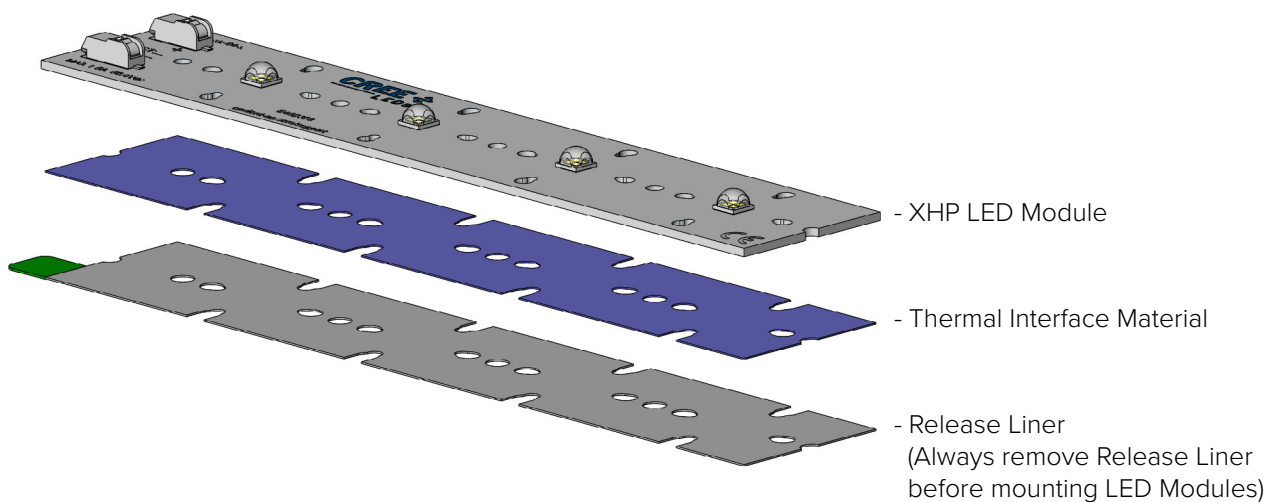
Property	Test Method	Value	Unit
Color	-	Blue	-
Thickness	ASTM D374	0.3	mm
Construction	-	Silicone / Ceramic	-
Temperature Range	EN344	-50-200	°C
Breakdown Voltage	ASTM D149	>8.0	Kv/mm
Flame Rating	UL94	V-0	-
Thermal Conductivity	ASTM D5470	3.0	W/m-K

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.

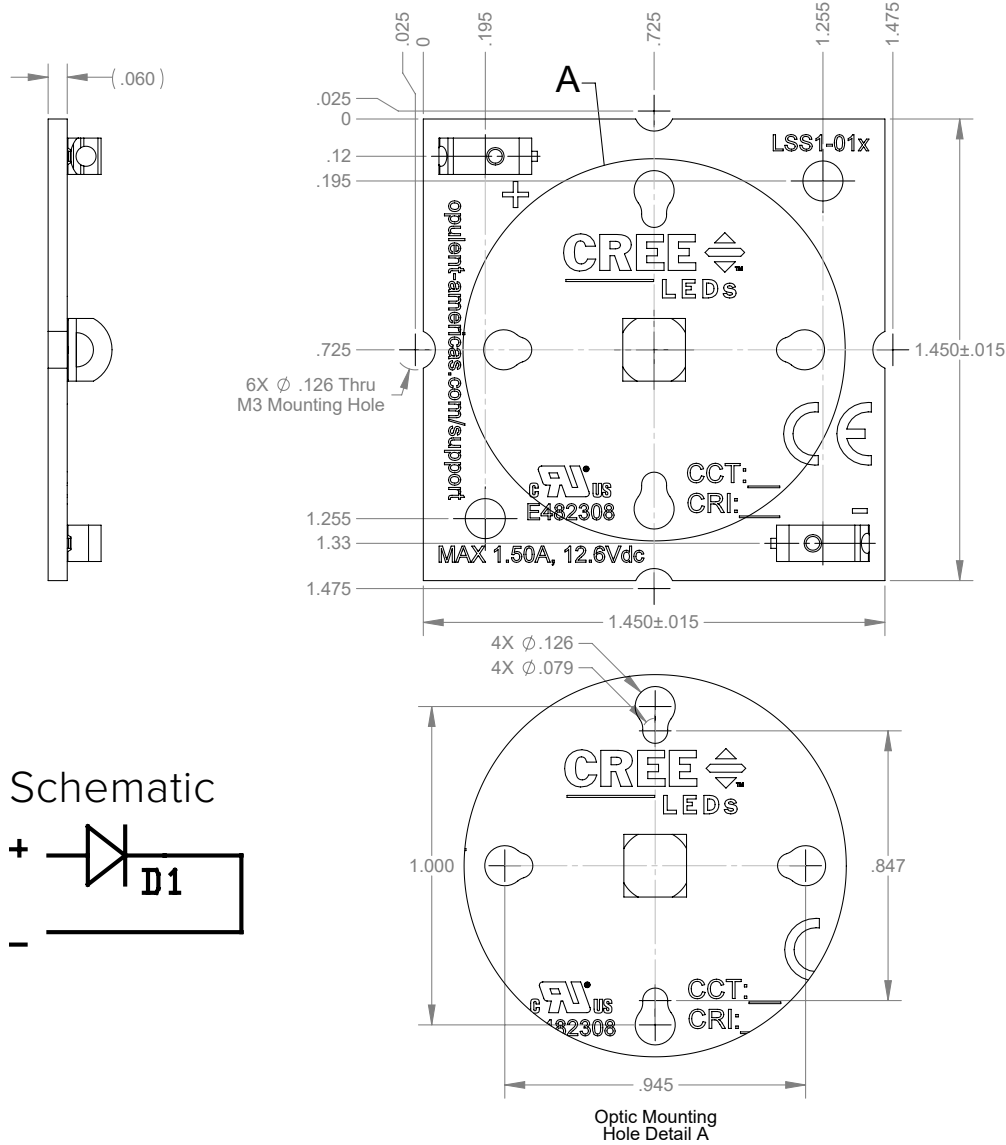
## Board Material Properties

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

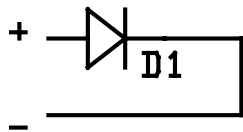


# XHP50.2 Series Specifications

## Opulent Americas Square 1 LED XHP50.2 Module



### Schematic

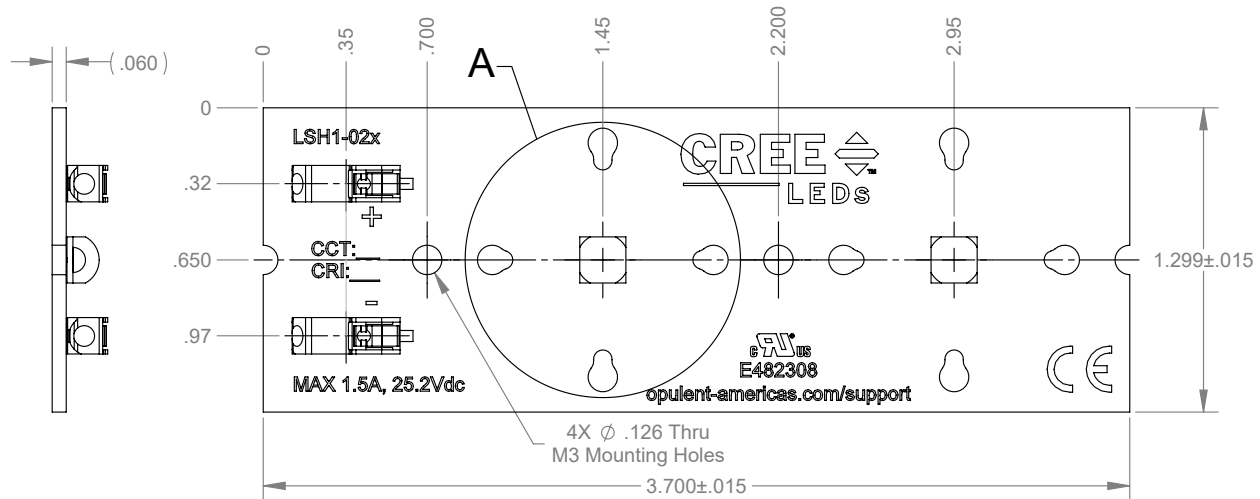


1. See [XHP Modules Approved Optic Guide](#) for recommended solutions
2. Single Poke-In Connectors accept 22-26 AWG solid or stranded wire
3. Recommended Mounting Hardware: 6x M3-.5 Socket Head Cap Screws

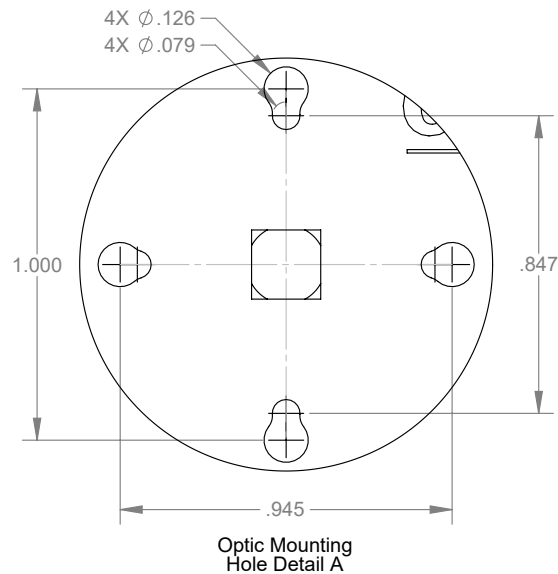
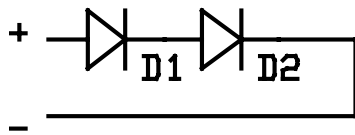


# XHP50.2 Series Specifications

## Opulent Americas Linear 2 LED XHP50.2 Module



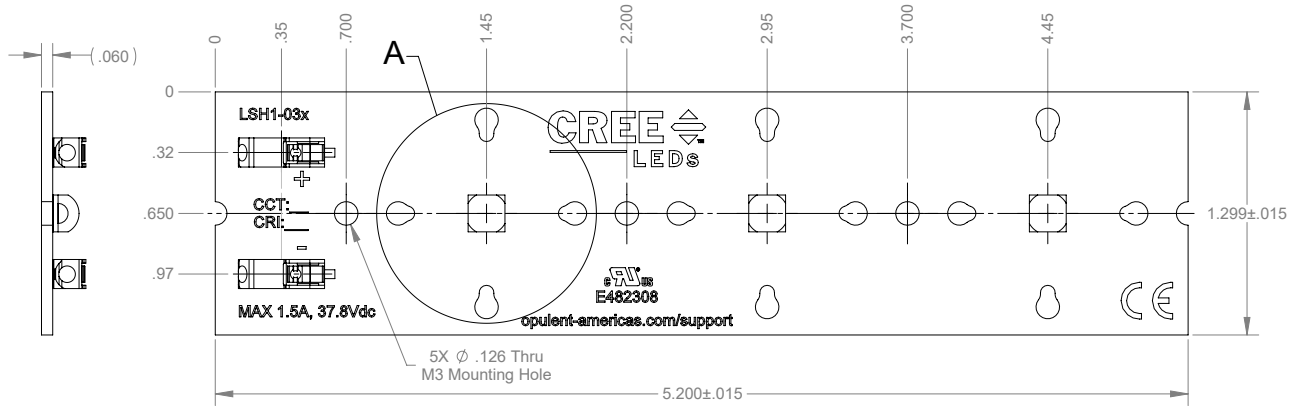
### Schematic



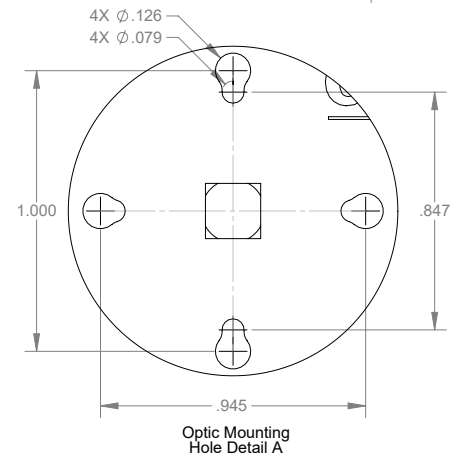
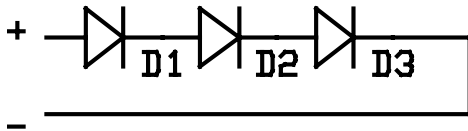
1. See [XHP Modules Approved Optic Guide](#) for recommended solutions
2. Single Poke-In Connectors accept 18-24 AWG solid or stranded wire
3. Recommended Mounting Hardware: 4x M3-.5 Socket Head Cap Screws

# XHP50.2 Series Specifications

## Opulent Americas Linear 3 LED XHP50.2 Module



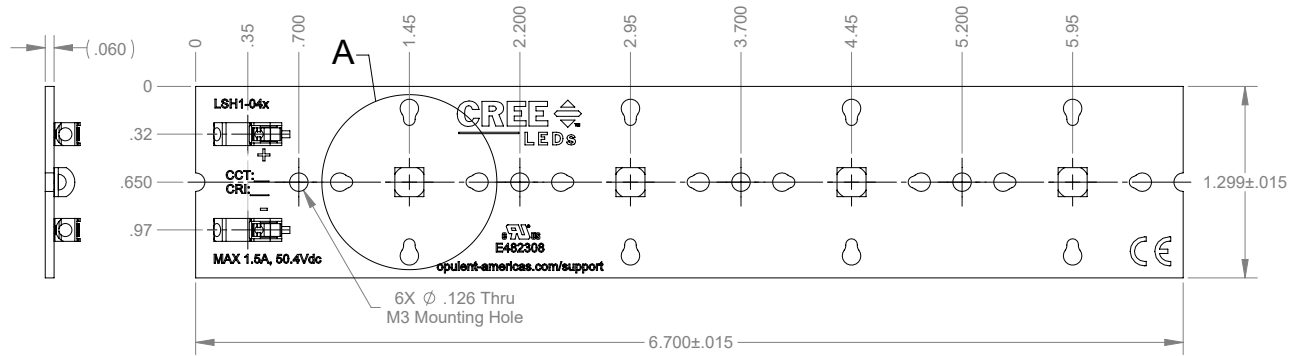
### Schematic



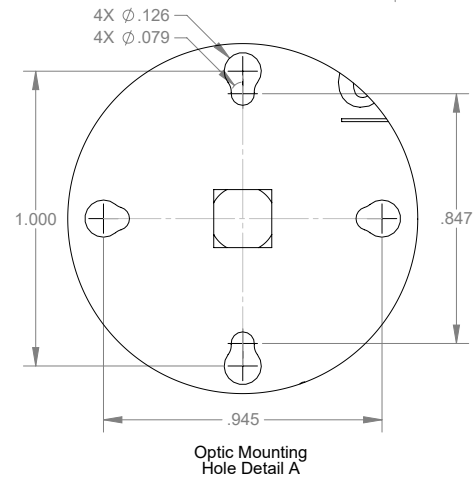
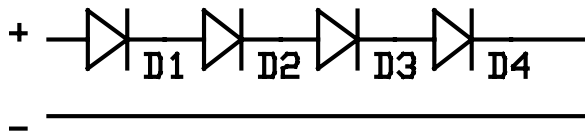
1. See [XHP Modules Approved Optic Guide](#) for recommended solutions
2. Single Poke-In Connectors accept 18-24 AWG solid or stranded wire
3. Recommended Mounting Hardware: 5x M3-.5 Socket Head Cap Screws

# XHP50.2 Series Specifications

## Opulent Americas Linear 4 LED XHP50.2 Module



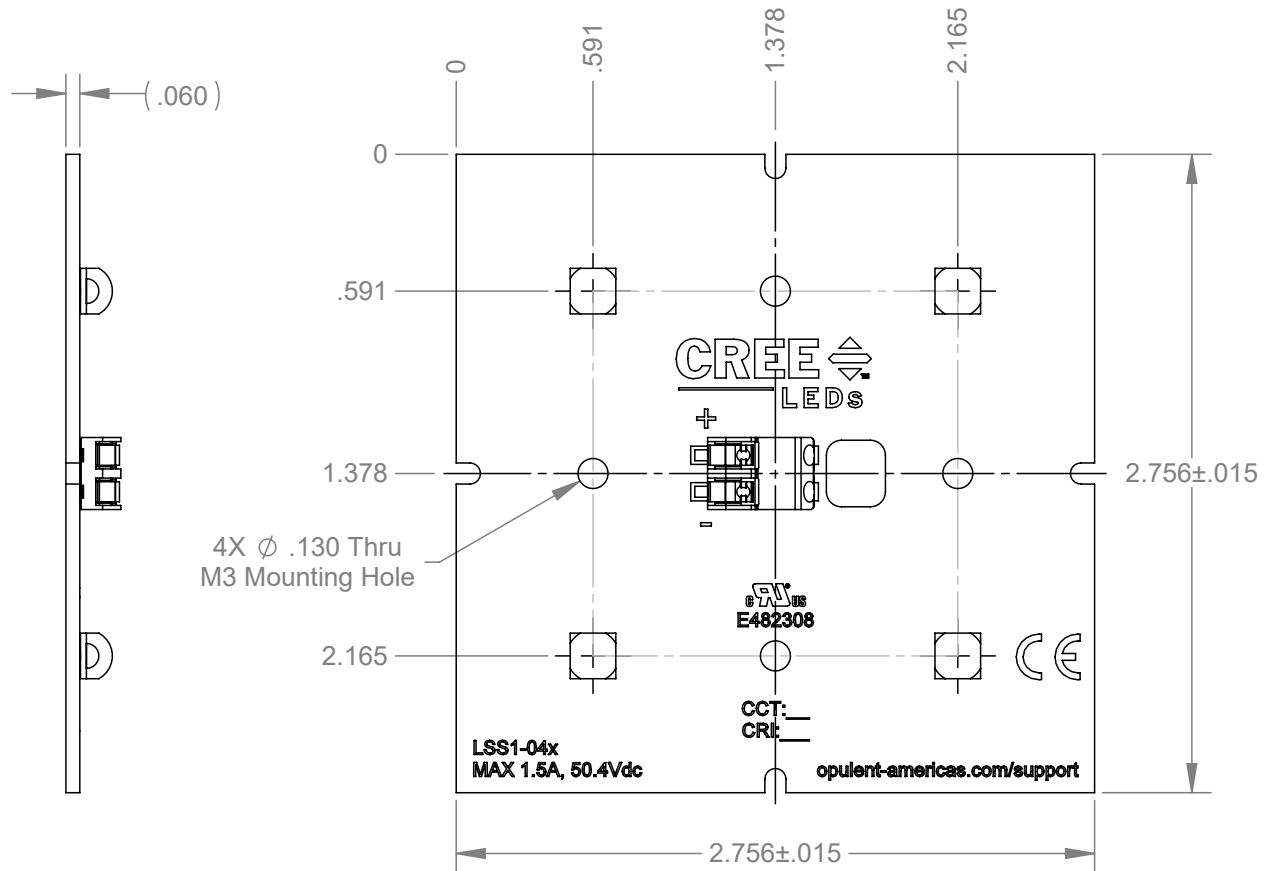
### Schematic



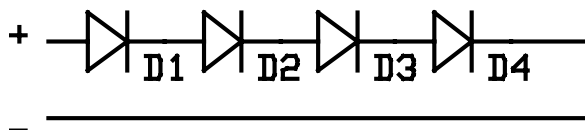
1. See [XHP Modules Approved Optic Guide](#) for recommended solutions
2. Single Poke-In Connectors accept 18-24 AWG solid or stranded wire
3. Recommended Mounting Hardware: 6x M3-.5 Socket Head Cap Screws

# XHP50.2 Series Specifications

## Opulent Americas Square 4 LED XHP50.2 Module



### Schematic



1. See [XHP Modules Approved Optic Guide](#) for recommended solutions
2. Dual Poke-In Connectors accept 18-24 AWG solid or stranded wire
3. Recommended Mounting Hardware: 4x M3-.5 Socket Head Cap Screws