

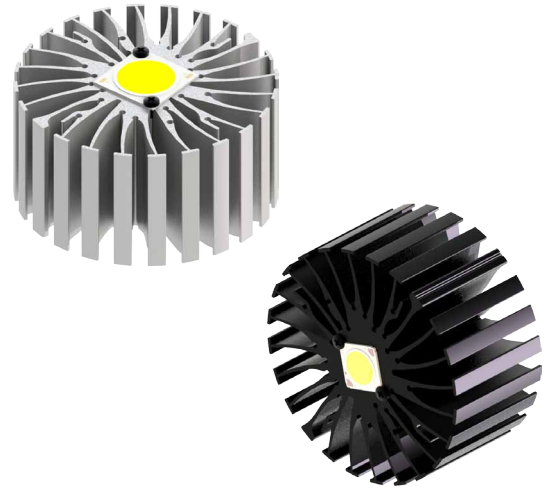
MechaTronix *in* LED

ModuLED Modular Passive Star LED Cooler ø99mm



Features & Benefits

- For spot and downlight designs from 700 to 3,000 lumen
- Thermal resistance range Rth 1.02 - 1.34°C/W
- Modular design with mounting holes foreseen for direct mounting of a wide range of LED modules and COB's:
 - Zhaga Book 3 Spot Light Modules Edison Edilex, Tridonic Talexx Stark SLE, Vossloh Schwabe Luga Shop, ...
 - Bridgelux BXRA ESR, RS
 - Citizen Cited CLL032-CLU034, CLL042-CLU044
 - Edison EdiPower II Star/HM series
 - LG Innotek LEMWM18 10W, 13W, 17W, 24W, LEMWM28
 - Lustrous LUSTRON 6 series LL613F, LL620F, LL630F, LL630D, LL660D
 - Prolight Opto PABA, PABB, PACC, PACD
 - Seoul Semiconductor ZC18, ZC25, ZC40
 - Tridonic Talexx Stark SLE GEN3 Mini LES-17
- Diameter 99mm - Standard height 50mm & 80mm
Other heights on request
- Extruded from highly conductive aluminum



Order Information



Example : ModuLED 9950-B

ModuLED 99 **1** - **2**

- 1** Height (mm)
- 2** Anodising Color
B - Black
C - Clear

ModuLED is designed in this way that you can mount LED modules from various manufacturers on the same LED cooler

Simple mounting with M3 x 6mm self tapping screws

Recommended screw force 6lb/in

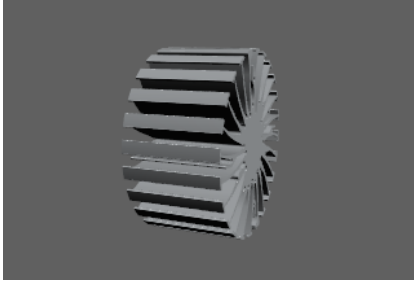
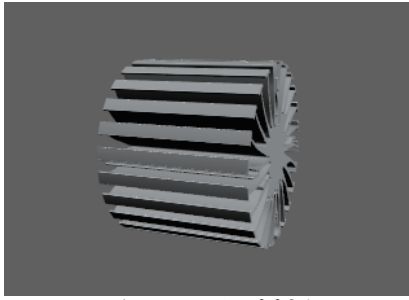
Screws are available from MechaTronix

MechaTronix *in* LED

ModulED Modular Passive Star LED Cooler ø99mm



Product Details

Model n°	 ModulED 9950	 ModulED 9980
Dimension (mm) ^{*1}	ø99 x h50	ø99 x h80
Volume (mm ³)	137181	219491
Cooling Surface (mm ²)	104563	164008
Weight (gr)	356	573
Thermal Resistance (°C/W) ^{*2}	1.34	1.02
Power Pd (W) ^{*3}	37.3	48.9
Heat Sink Material	AL6063-T5	AL6063-T5

^{*1} 3D files are available in ParaSolid, STP and IGS on request

^{*2} The thermal resistance Rth is determined with a calibrated heat source of 30mm x 30mm central placed on the heat sink, Tamb 40° and an open environment. Reference data @ heat sink to ambient temperature rise Ths-amb 50°C
The thermal resistance of a LED cooler is not a fix value and will vary with the applied dissipated power Pd

^{*3} Dissipated power Pd. Reference data @ heat sink to ambient temperature rise Ths-amb 50°C
The maximal dissipated power needs to be verified in function of required case temperature Tc or junction temperature Tj and related to the estimated ambient temperature where the light fixture will be placed
Please be aware the dissipated power Pd is not the same as the electrical power Pe of a LED module

To calculate the dissipated power please use the following formula: $Pd = Pe \times (1 - \eta_L)$

Pd - Dissipated power

Pe - Electrical power

η_L = Light efficiency of the LED module

Notes:

- MechaTronix reserves the right to change products or specifications without prior notice.
- Mentioned models are an extraction of full product range.
- For specific mechanical adaptations please contact MechaTronix.

MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

The ModuLED passive LED coolers are standard foreseen from a variety of mounting holes which allow direct mounting of LED engines, COB's and secondary optics on the LED heat sink.

In this way mechanical afterwork and related costs can be avoided, and lighting designers can standardize their designs on a limited number of LED coolers.

Below you find an overview of LED modules and COB's which standard fit on the ModuLED cooler.

The ModuLED is probably the most complete standard LED cooler with regards to mounting possibilities of Zhaga and the latest generation of COB LED modules.

For more details about the required mounting holes and thermal results for your specific LED brand and model, please refer to the brand LED cooler datasheets under "Brand Products" and the brand LED cooler overview under the "Download" menu.

Zhaga



The Zhaga Consortium is developing specifications that enable the interchangeability of LED light sources made by multiple different manufactures. The Zhaga specifications, known as Books, describe the interfaces between LED luminaires and LED light engines. Zhaga's members include hundreds of companies from throughout the global lighting industry. The cooperation is governed by a consortium agreement that defines rules regarding confidentiality, intellectual property and decision making.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



Zhaga Book 3 Spot Light Modules

Zhaga Interface Specification Book 3 defines the interfaces of a type-D LED light engine (non-socketable LED module with separate electronic control gear). The LED light engine LLE has a round disc shape with a maximum height of 7.2 mm and a typical diameter of 50 mm. It is suitable for spot-lighting and other applications that benefit from a small, circular source. Book 3 specifies a circular light-emitting surface (LES) that can have a range of diameters, namely 9 mm, 13.5 mm, 19 mm and 23 mm.

Zhaga book 3 compliant LED Spot Light modules *1

- Edison Edilex SLM
- Osram PrevaLED CORE
- Philips Fortimo SLM
- Tridonic Talexx Stark SLE
- Vexica Lumaera
- Vossloh Schwabe Luga Shop

*1 This is a non-binding overview of available Zhaga book 3 LED modules at press

Zhaga Book 3 mounting through the use of LED holders and connectors

With the use of Zhaga Book 3 mechanical compatible LED holders, a wide variety of LED COB's can be mounted in the same way on these LED coolers.

Zhaga Book 3 compatible LED holders can be found from BJB, TE Connectivity (Tyco), Molex and Ideal Industries.



MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options



Zhaga Book 3 Spot Light Modules

LED COB's for which Zhaga book 3 LED holders are available

- Bridgelux ES rectangular LED array
- Citizen CitiLED CLL022, CLU024, CLL032, CLU034
- Cree XLamp CXA13xx, 15xx, 18xx, 25xx, 30xx
- Edison Opto HM05, HM09, HM16, HM30
- Lextar Nimbus 1500, 2000, 3000
- LG Innotek LEMWM 10, 13, 17, 24
- Nichia J216, J360, L110, L121, L204
- Osram Soleriq S13, S19, E30
- Philips Lumileds Luxeon 1203, 1204, 1205 and 1208, Luxeon K12 and K16
- Prolight Opto PABA, PANA, PACB, PACC
- Samsung LC026, LC040
- Seoul Semiconductor ZC12, ZC18, ZC25, ZC40
- Sharp Mega Zenigata and Tiger Zenigata
- Tridonic Talexx Stark LES 10, LES 17

Mounting

- Direct mounting with 2 screws
M3 x 10mm
Green indicator marks

MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

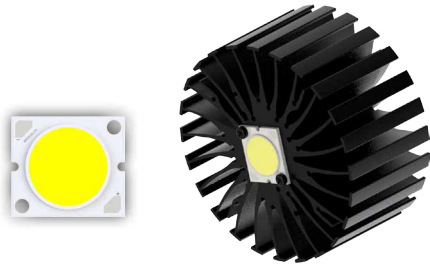
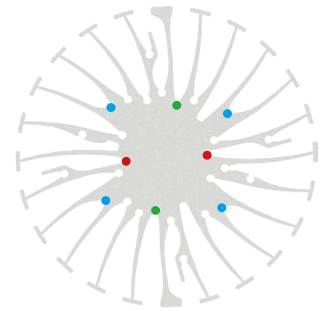
Bridgelux LED Arrays



Bridgelux is a leading provider of high power, cost effective and energy efficient light emitting diode (LED) solutions. Leveraging patented light source technology, Bridgelux LED Arrays replace traditional technologies (such as incandescent, halogen, fluorescent and high intensity discharge lighting) with integrated solid state light sources enabling high performance and energy-efficient products for the general lighting market.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



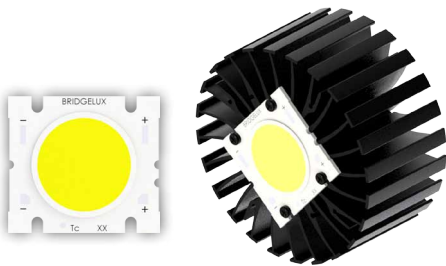
Bridgelux ES Rectangle LED Array

Model names

- BXRA-xxx0800
- BXRA-xxx1200
- BXRA-xxx2000
- BXRA-40E0950
- BXRA-40E1350
- BXRA-40E2200
- BXRA-xxC1100
- BXRA-xxC1600
- BXRA-xxC2600

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Red indicator marks
- With Zhaga Book 3 LED holder
BJB spotlight connector 47.319.2040
Mounting with 2 self tapping screws M3 x 6mm
Green indicator marks



Bridgelux RS LED Array

Model names

- BXRA-xxx3500-F
- BXRA-xxx4000-H
- BXRA-xxx7000-J
- BXRA-40E4000-F
- BXRA-40E4500-H
- BXRA-40E7500-J
- BXRA-xxC4500-F
- BXRA-xxC5300-H
- BXRA-xxC9000-J

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Blue indicator marks

MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

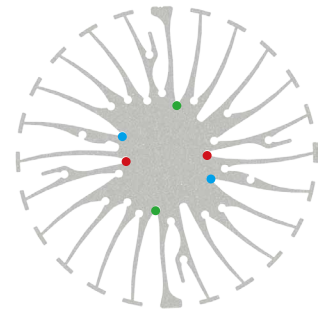
Citizen LED COB



Citizen Electronics Co., Ltd. is a precision electronics manufacturer with headquarters in Fujiyoshida City, Yamanash Japan. Prefecture and a subsidiary of Citizen Holdings Co., Ltd. Citizen Electronics is a leader in LED light sources for electronic devices and high power white LED lamps. The second generation CITED LED COB modules and the new upcoming generation CLU distinguish themselves through the combination of high lumen per watt performance combined with a perfect light quality control.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



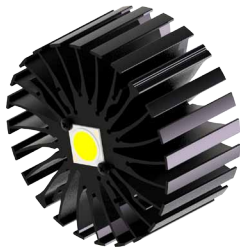
Citizen Cited CLL032 - CLU034

Model names

- CLL032-xxxx
- CLU034-xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Red indicator marks
- With Zhaga Book 3 LED holder
TE Connectivity Lumawise type Z50 2213254-1
TE Connectivity Lumawise type Z50 2213254-2
BJB spotlight connector 47.319.2020
Mounting with 2 self tapping screws M3 x 6mm
Green indicator marks



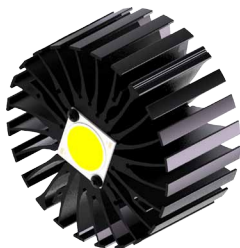
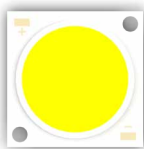
Citizen Cited CLL042 - CLU044

Model names

- CLL042-xxxx
- CLU044-xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Blue indicator marks
- With Zhaga Book 3 LED holder
BJB spotlight connector 47.319.2030
Mounting with 2 self tapping screws M3 x 6mm
Green indicator marks



MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

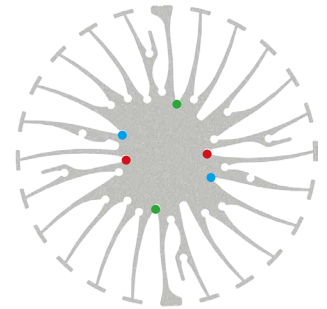
Edison Opto LED Modules and COB's



Edison Opto with headquarters in Chung-Ho Dist, New Taipei City, Taiwan is a professional LED manufacture with specializes in designing and producing High-power LEDs, solid state lighting applications, LED sensors and SPDIFs. In response to rapid growth of capacity demand, Edison Opto has established factories in Dongguan and Yangzhou China and subsidiaries in USA and Germany. Edison Opto COB LED modules outstand in light quality and are available in the broadest lumen and CRI range available on the market.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



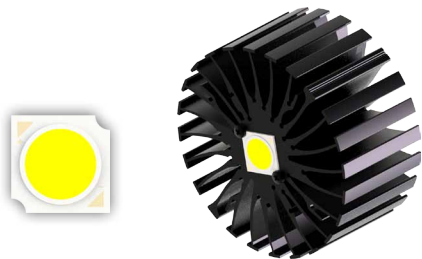
Edison Opto Edipower II HM

Model Names 16W - 30W

- 2PHM16xxxx
- 2PHM30xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Red indicator marks
- With Zhaga Book 3 LED holder
BJB Spotlight connector 47.319.2020
TE Connectivity Lumawise type Z50 2213254-1
TE Connectivity Lumawise type Z50 2213254-2
Mounting with 2 self tapping screws M3 x 8mm
Green indicator marks

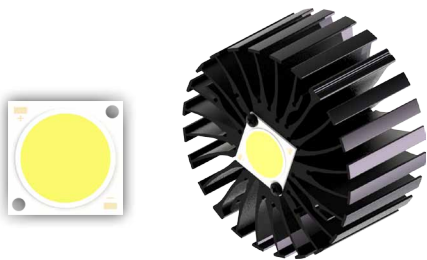


Model Names 40W

- 2PHM40xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Blue indicator marks
- With Zhaga Book 3 LED holder
BJB spotlight connector 47.319.2030
Mounting with 2 self tapping screws M3 x 6mm
Green indicator marks



Edison Opto EdiLex Spot Light Module (SLM)

Model names

- 5PHR09xxxx
- 5PHR11xxxx
- 5PHR22xxxx
- 5PHV35xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 10mm
Green indicator marks



MechaTronix *in* LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

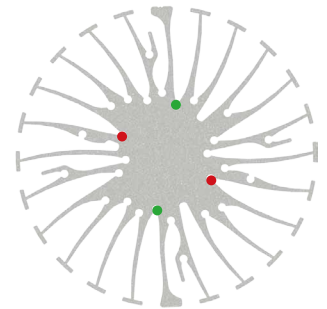
LG Innotek LED COB



LG Innotek is a global specialized material and component manufacturer who is making a better world through cutting edge core component technology that is leading the market and opening a smarter future through the development of new eco-friendly materials. With the world's highest production capacity as a single-factory and a solid LED business base built over more than a decade, LG Innotek's Paju LED factory produces 2 billion chips a month. Their LEMWM COB LED modules deliver a perfect lumen per watt ratio in an uncompromised lighting quality.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



LG LEMWM18 10W/13W/17W/24W COB



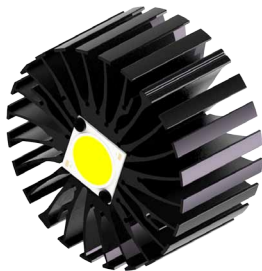
Model names

- LEMWM18580xxxx
- LEMWM18680xxxx
- LEMWM18780xxxx
- LEMWM18880xxxx

Mounting

- With Zhaga Book 3 LED holder
- BJB Spotlight connector 47.319.2080
- Mounting with 2 self tapping screws M3 x 8mm
- Green indicator marks

LG LEMWM28 COB



Model names

- LEMWM28xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
- Red indicator marks
- With Zhaga Book 3 LED holder
- BJB Spotlight connector 47.319.2030
- Mounting with 2 self tapping screws M3 x 8mm
- Green indicator marks

MechaTronix *in* LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

Lustrous LED COB

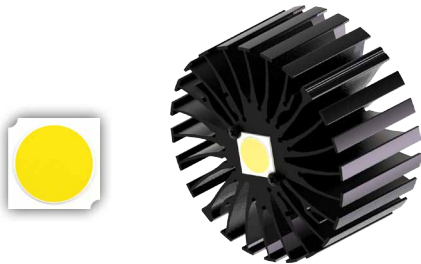
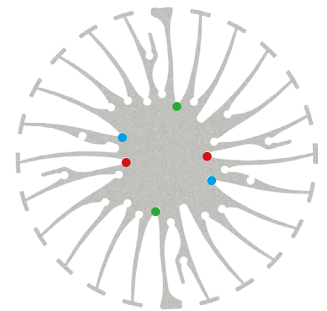
LUSTROUS

Green Technology of Lighting

LUSTROUS unique Chip-on-Board (COB) packaging technology of High Power LED leads the core competence of LUSTROUS. COB packaging technology shows excellent thermal management and high efficiency performance. One of the benefits of COB is bright, uniform light output. The excellent low thermal resistance is achieved through state of the art COB technology on highly conductive substrates. This enables low junction temperatures at chip level for much higher efficiencies.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



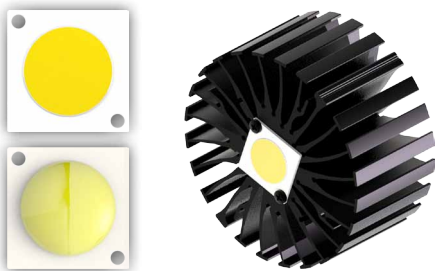
Lustrous Lustron LL613F - LL620F LED COB

Model names

- Lustron LL613F1206-xxx
- Lustron LL620F1208-xxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
- Red indicator marks
- With Zhaga Book 3 LED holder
- BJB spotlight connector 47.319.2020
- Mounting with 2 self tapping screws M3 x 8mm
- Green indicator marks



Lustrous Lustron LL630F - LL630D - LL660D LED COB

Model names

- Lustron LL630F1210-xxx
- Lustron LL630D1210-xxx
- Lustron LL660D1210-xxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
- Blue indicator marks
- With Zhaga Book 3 LED holder
- BJB spotlight connector 47.319.2030
- Mounting with 2 self tapping screws M3 x 8mm
- Green indicator marks

MechaTronix *in* LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

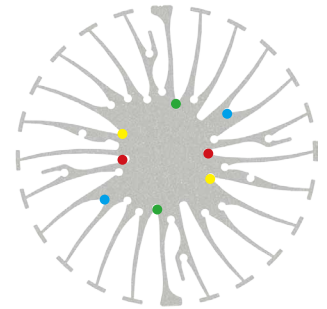
Prolight Opto LED COB's



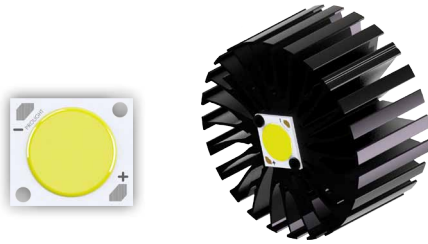
Founded in October 2004, Prolight Opto Technology Corporation is a professional manufacturer of LED packaging, dedicated to the research, development, and manufacturing of mid-to-high-power, high reliability LED packages. Prolight Opto continually invests over 6% of sales revenue in R&D and patents. With own package patents from the US and Taiwan they insure a wide range of LED emitters in the smallest foot prints and COB LED modules with perfect thermal management and high density lumen output.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



Prolight Opto BI series PABA COB



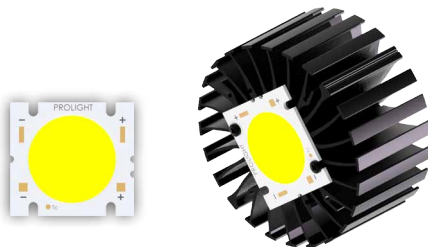
Model names

- PABA-10xx-xxxxx
- PABA-15xx-xxxxx
- PABA-22xxx-xxxx
- PABA-26xxx-xxxx
- PABA-35xxx-xxxx
- PABA-50xxx-xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Red indicator marks
- With Zhaga Book 3 LED holder
BJB spotlight connector 47.319.2040
Mounting with 2 self tapping screws M3 x 8mm
Green indicator marks

Prolight Opto BII series PABB COB



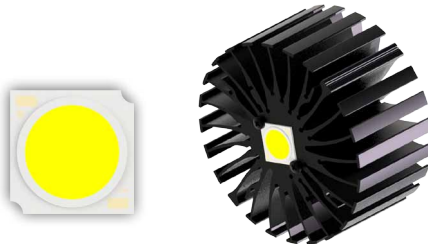
Model names

- PABB-65xxx-xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Blue indicator marks

Prolight Opto CII series PACC COB



Model names

- PACC-18xxx-xxxx

Mounting

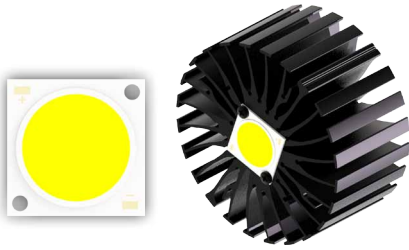
- Direct mounting with 2 self tapping screws M3 x 6mm
Red indicator marks
- With Zhaga Book 3 LED holder
BJB Spotlight connector 47.319.2020
TE Connectivity Lumawise type Z50 2213254-1
TE Connectivity Lumawise type Z50 2213254-2
Mounting with 2 self tapping screws M3 x 8mm
Green indicator marks

MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options



Prolight Opto CIII series PACD COB

Model names

- PACD-40xxx-xxxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Yellow indicator marks
- With Zhaga Book 3 LED holder
BJB Spotlight connector 47.319.2030
Mounting with 2 self tapping screws M3 x 8mm
Green indicator marks

Seoul Semiconductor LED COB

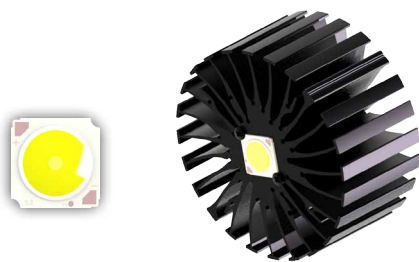
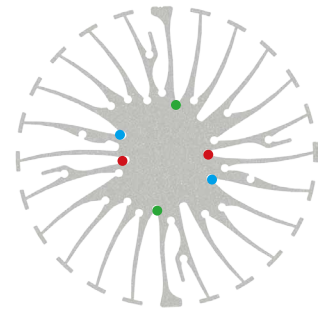


SEOUL SEMICONDUCTOR

The new Seoul Semiconductor ZC series Chip-On-Board (COB) LED Arrays offer high lumen density and efficacies of up to 140lm/W in a single, easy-to-use LED component family. Available in all major color temperatures from 2700K up to 6000K, these high flux packages deliver system level performance of 700 lumens to over 6,000 lumens. The new ZC series family is available in a single 3-step MacAdam Ellipse binning, ensuring excellent color consistency with minimum CRI options of 70, and 80 combining high quality of light with high efficacy.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



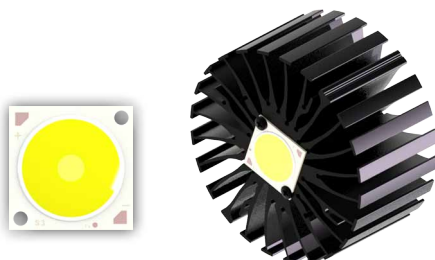
Seoul Semiconductor ZC 18 LED COB

Model names

- SDW03F1C
- SDW83F1C
- SDW93F1C

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Red indicator marks
- With Zhaga Book 3 LED holder
BJB Spotlight connector 47.319.2020
TE Connectivity Lumawise type Z50 2213254-1
TE Connectivity Lumawise type Z50 2213254-2
Mounting with 2 self tapping screws M3 x 8mm
Green indicator marks



Seoul Semiconductor ZC 25 / 40 LED COB

Model names

- SDW04F1C
- SDW84F1C
- SDW94F1C
- SDW05F1C
- SDW85F1C
- SDW95F1C

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
Blue indicator marks
- With Zhaga Book 3 LED holder
BJB spotlight connector 47.319.2030
Mounting with 2 self tapping screws M3 x 8mm
Green indicator marks

MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

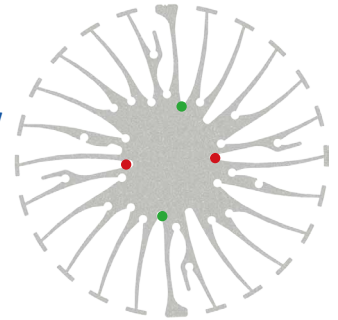
Tridonic LED Modules and COB



With the TALEXX LED products Tridonic gives you the confidence that your chosen lighting solution will give you precisely the results you want. Thanks to Tridonic's many years of experience in product development they have been able to raise the quality of light from their LEDs to new levels. The production series have an exceptionally constant light color so they guarantee a uniform and crystal clear color appearance. In addition to high efficiency and balanced distribution of light Tridonic offers you impressive robustness in the latest generation of their products and the resultant long life will save you maintenance and repair costs.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



Tridonic Talexx Stark SLE GEN3 SELECT / CLASSIC / FOOD / ART



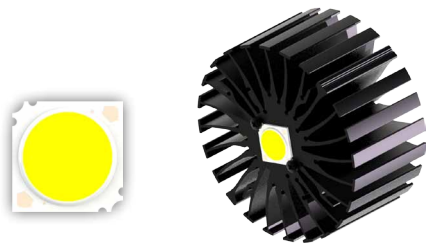
Model names

- STARK-SLE-G3-19-xxx
- STARK-SLE-G3-PURE-19-xxx
- STARK-SLE-G3-23-xxx
- STARK-SLE-G3-PURE-23-xxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 8mm
- Green indicator marks

Tridonic Talexx Stark SLE GEN3 Mini LES-17 SELECT / CLASSIC / ART



Model names

- STARK-SLE-PURE-G3-17-xxx

Mounting

- Direct mounting with 2 self tapping screws M3 x 6mm
- Red indicator marks
- With Zhaga Book 3 LED holder
- BJB Spotlight connector 47.319.2020
- Mounting with 2 self tapping screws M3 x 8mm
- Green indicator marks

MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Mounting Options

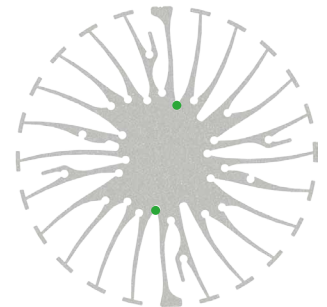
Vossloh Schwabe LED Modules



Vossloh-Schwabe is an independent brand within the Panasonic Group responsible for the global development of the business area "Components for light technology". Panasonic employs 367,000 members of staff with an annual turnover of 76.75 billion Euros (8692.7 billion yen) and is represented throughout the world by more than 634 companies or representations in Asia, America and Europe. The Vossloh Schwabe Luga Shop LED modules are ideal solution for high-end luminaire designs where quality stands at the first place.

Mounting indicator marks overview

MechaTronix recommends the use of a high thermal conductive interface between the LED module and the LED cooler. Either thermal grease, a thermal pad or a phase change thermal pad thickness 0.1-0.15mm is recommended. Thermal pads or phase change thermal pads can be pre-applied from MechaTronix.



Luga Shop 2014 LED modules

Model names

- WU-M-484 / WU-M-461
- WU-M-485 / WU-M-462
- WU-M-486 / WU-M-464

Mounting

- Direct mounting with 2 self tapping screws M3 x 10mm
- Green indicator marks



Luga Shop 2014 Kit LED COB

Model names

- DMS088
- DMS128
- DMS158

Mounting

- With Luga Shop Kit holder
- Mounting with 2 self tapping screws M3 x 6mm
- Green indicator marks

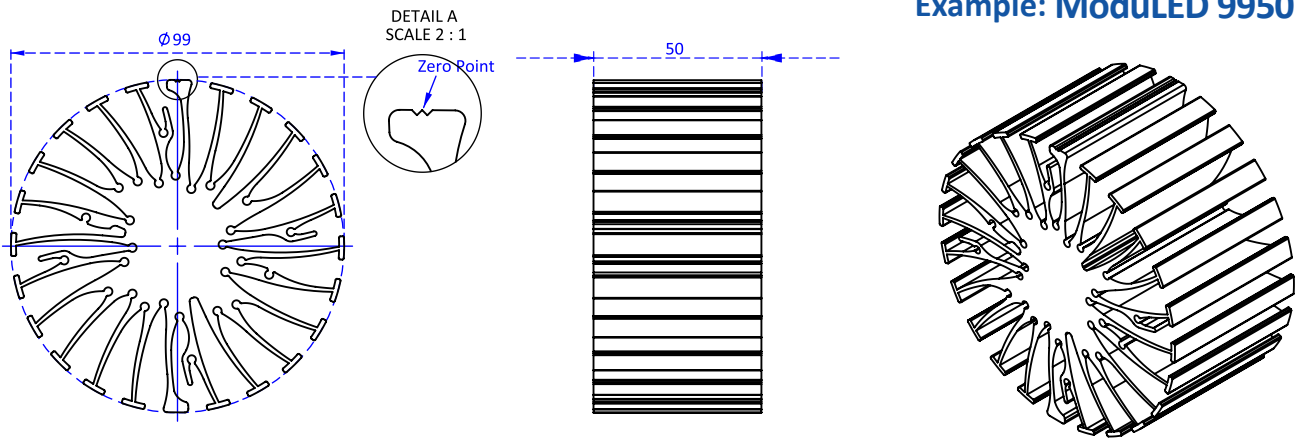
MechaTronix in LED

ModuLED Modular Passive Star LED Cooler ø99mm



Drawings & Dimensions

Example: ModuLED 9950



Thermal Data

$P_d = P_e \times (1 - \eta_L)$			LED Light efficiency, η_L (%)			Heat sink to ambient thermal resistance R_{hs-amb} (°C/W)		Heat sink to ambient temperature rise T_{hs-amb} (°C)	
			17%	20%	25%	ModuLED 9950	ModuLED 9980	ModuLED 9950	ModuLED 9980
Dissipated Power P_d (W)	10	Electrical Power P_e (W)	12.0	12.5	13.3	1.9	1.5	19	15
	15		18.1	18.8	20.0	1.7	1.4	26	21
	20		24.1	25.0	26.7	1.6	1.3	32	26
	25		30.1	31.3	33.3	1.5	1.2	37	30
	30		36.1	37.5	40.0	1.4	1.2	43	35
	35		42.2	43.8	46.7	1.4	1.1	48	39
	40		48.2	50.0	53.3	1.3	1.1	53	43
	50		60.2	62.5	66.7	1.2	1.0	62	51

