

The SABER² SW-04 series of high power side-emitting LED modules features a single Rebel LED soldered to a 16 mm x 11 mm x 0.8 mm thick, COFAN Super Pillar aluminum board for optimal heat dissipation. This patented technology significantly lowers the LED junction temperature, enhancing LED longevity, brightness, and reliability.

Wire connections can be soldered to the SW-04 using standard bench top tools and hand soldering techniques, making it easy to use this LED for R&D, OEM, and MRO applications.



SPECIFICATIONS	Base Type	0.8 mm COFAN USA Pillar Aluminum
	Thermal Performance ¹ R _{θC-B}	0.39 °C/W
	Pad Finish	Immersion Gold, ENIG
	Solder Mask Color	White
	Solder Paste	AIM NC258-M8 Lead-Free, No-Clean
	Max Operating Temperature ²	120°C
	UV Lens Adhesive	DELO DUALBOND AD4930
	Mounted Optic	Fraen F360L-3C-S
	Overall Dimensions (Including Optic)	16 x 11 x 8.3 (lwh)
	Weight	1.5g

FEATURES

- COFAN USA Pillar¹ direct thermal path technology
- Replacement option for the original Luxeon side-emitting LEDs that are no longer manufactured by Lumileds
- Available with your choice of any Rebel LED currently produced by Lumileds.
 - Available with binned LEDs³
 - RoHS/REACH compliant
 - PB free
 - No minimum order requirements

BENEFITS

- High-performance Pillar technology minimizes cooling requirements, increases lumens output and extends LED life
- Production quantity binning provides consistent color and brightness
- Cost-effective design delivers a low-cost option in both small and large quantities
- No minimum order requirements mean fast, low-cost prototyping

- Acrylic & glass edge lighting
 - Wall washing
 - Light beacons
 - Back lighting for sign letters
 - Architectural decoration lighting
 - Specialty lighting

APPLICATIONS

1. See the thermal model on page 4.
 2. For maximum life, the board temperature must be kept below this value.
 3. Minimum order quantities apply.

WIRE CONNECTIONS

PAD No	LED Connection
1	Anode
2	Cathode

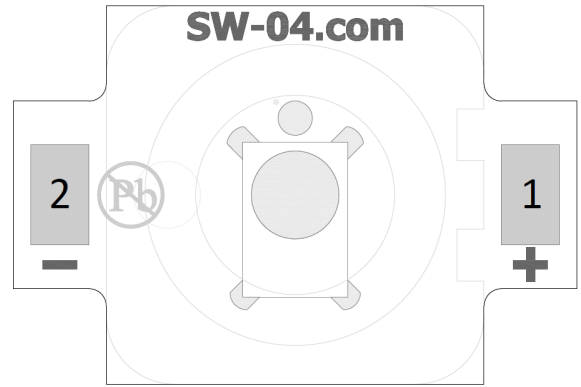


Image 1

MOUNTING & COOLING

The SW-04 LED module requires careful attention to mounting and cooling to ensure that the LED junction temperature is kept well below the maximum rating as specified in the LED documentation published by Lumileds.

For optimal cooling, the LED module needs to be mounted to a suitable finned heat sink (aluminum or copper) that is exposed to open air. The LED module can be fastened to the heat sink in one of two ways:

- [Pressure sensitive, thermally conductive tape](#)
- [Thermally conductive adhesive](#)

Always ensure that the module is being adequately cooled by testing the LED junction temperature using the method described in Measuring LED Junction Temperature section on page 4 of this document.

BASE CONDUCTIVITY

The bottom of the LED module is electrically neutral, so it is not necessary to electrically isolate the base from the cooling surface.



Bottom View

MOUNTING USING PRESSURE SENSITIVE THERMAL TAPE

Pressure-sensitive thermal tape such as [Bond-Ply[®] 100](#) makes it easy to fasten the base directly to a heat sink without the need for screws, clip mounts, or fasteners. However, to ensure a sound thermal bond, it is essential that the tape is used correctly. This includes:

- Ensuring that all mating surfaces are clean, totally flat, and free of voids
- Sizing and positioning the tape so that all mating surfaces are covered
- Applying a minimum of 20 PSI of even pressure between the LED module and heat sink for at least 10 seconds

Refer to the [Bond-Ply Application Note](#) for more details about using thermal tape.

MOUNTING USING THERMALLY CONDUCTIVE ADHESIVE

Thermally conductive adhesive such as [Arctic Silver™](#) requires more effort to use than thermal tape but offers a permanent bond, wider operating temperature range, and higher reliability, especially in environments where the module will be subjected to mechanical shock and vibration.

To create a thermally efficient and reliable bond:

- Ensure that all mating surfaces are clean and free of any grease or oil
- Use just enough epoxy to create as thin a bond line as possible
- Apply as much pressure as possible between the LED and heat sink for at least 30 seconds, and then maintain pressure using a clamp or weight until the epoxy has set

Like our thermal tape, we include a thermal press with every order of Arctic Silver Thermal Adhesive to make it easier to create a sound bond. A video that demonstrates how to properly use the Arctic Silver Thermal Adhesive and a thermal press is available at luxeonstar.com/using-arctic-silver.

POWER DRIVERS

The choice of power driver will depend on the Rebel LED that is mounted to the base, the desired lumens output, the number of LEDs being powered, the input voltage source, and the drive current. For help with selecting and using LED power drivers, visit our online support center at luxeonstar.com/powering-leds.

We offer a complete selection of compatible current regulating drivers on our website at luxeonstar.com/drivers.

MEASURING THE LED JUNCTION TEMPERATURE

As the optic on the SW-04 module does not allow you to access the temperature test point, you will need to use a similarly sized surrogate module to get a close approximation of the LED junction temperature when operated under identical conditions.

The [SW-15 LED module](#) would be a good surrogate candidate as it is about the same size as the SW-04.

Failure to ensure that the LED junction temperature is kept below its maximum temperature rating will result in poor color rendering, early degradation of light output, and premature LED failure.

THERMAL MODEL

Image 2 is a cross-section of a typical SABER² LED module that illustrates how the LED is attached to the base and shows the thermal paths between the LED junction, temperature test point and bottom of the LED module.

- $R\theta_{J-C}$ is the thermal resistance from the LED junction (T_j) to the LED thermal pad
- $R\theta_{C-S}$ is the thermal resistance from the LED thermal pad to the temperature test point (T_C)
- $R\theta_{C-B}$ is the thermal resistance from the LED thermal pad to the bottom of the module

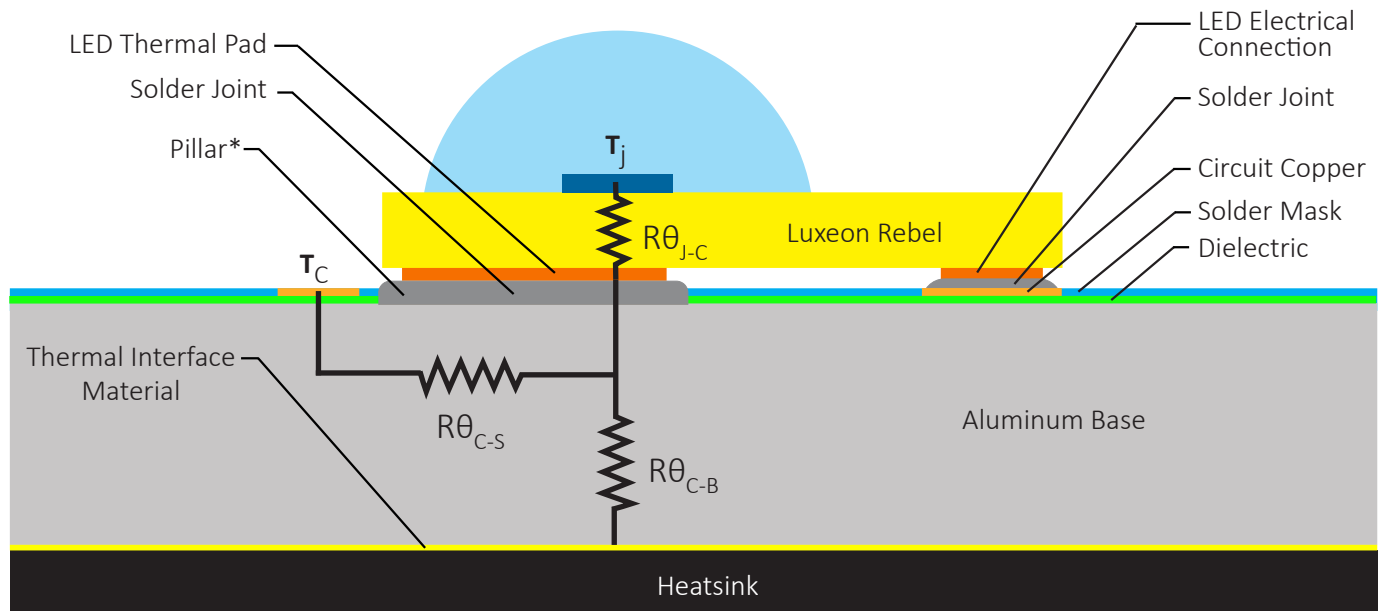
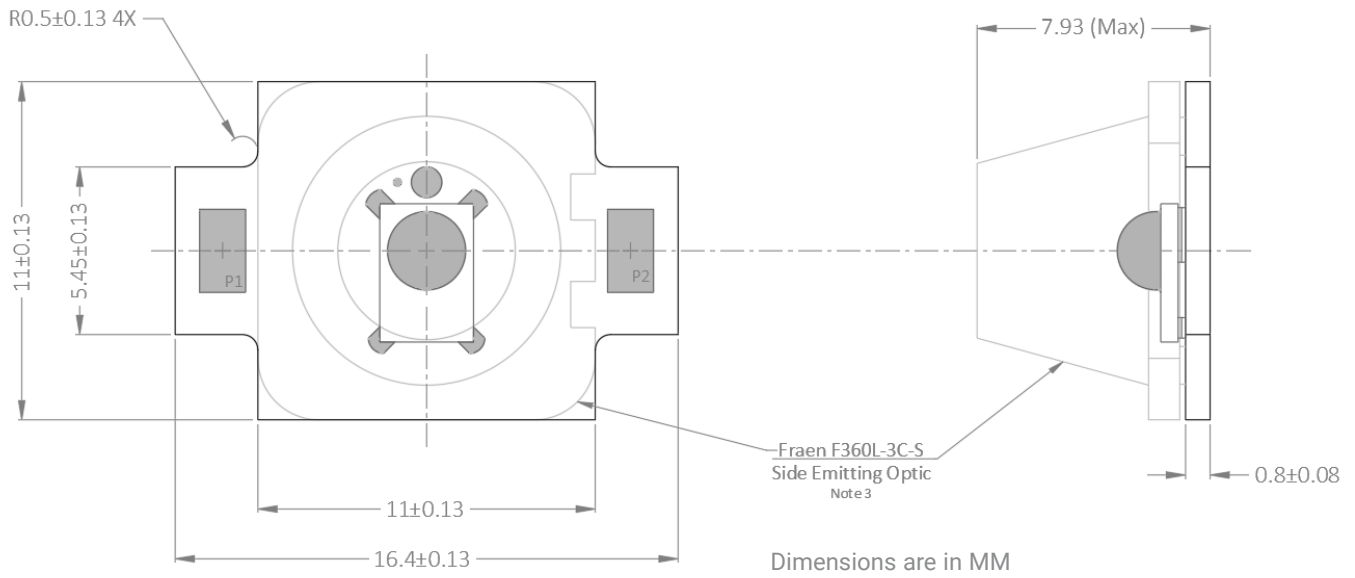


Image 2

* PILLAR

Pillar aluminum technology eliminates the dielectric layer and provides a solderable surface on the aluminum base, removing a significant barrier of thermal resistance between the LED and heatsink.

MECHANICAL DIMENSIONS

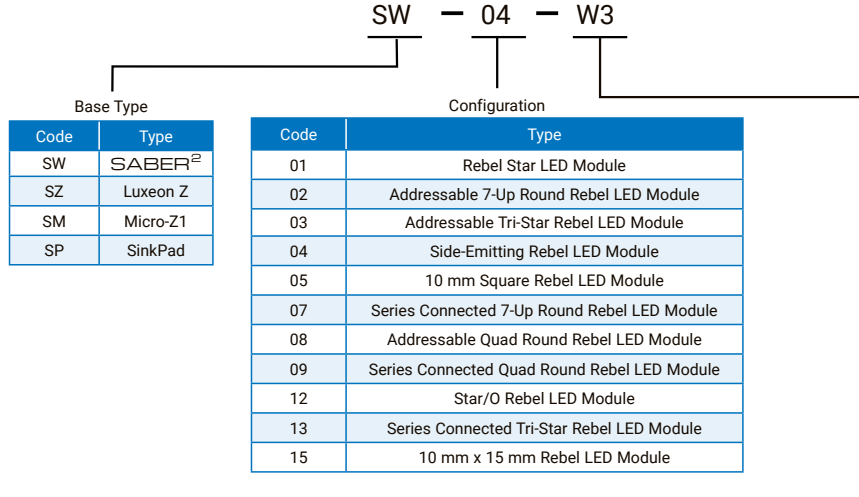


2D Drawing Download: luxeonstar.com/sw-04-drawing.pdf

3D Model Download: luxeonstar.com/sw-04.step

ORDERING INFORMATION

The SW-04 LED module can be ordered directly from luxeonstar.com/sw-04. There is no minimum order requirement, and shipping is available to anywhere in the World.



Color	Color Temperature (K) or Wavelength (nm)	Rebel LED Part Number	Production Code ²
Cool White	6500K	LXML-PWC1-0100	W3
Cool White	6500K	LXML-PWC1-0120	W4
Cool White	5650K	LXML-PWC2	W5
ANSI White	5000K	LX18-P150-3	T9
Neutral White	4100K	LXML-PWN1-0100	N2
Neutral White	4100K	LXML-PWN1-0120	N3
Neutral White	4100K	LXML-PWN2	N4
ANSI White	4000K	LX18-P140-3	T7
ANSI White	3500K	LX18-P135-3	T5
ANSI White	3000K	LX18-P130-3	T3
ANSI White	2700K	LX18-P127-3	T1
Far Red	720nm	LXML-PF01	D4
Deep Red	655nm	LXM3-PD01	D2
Red	627nm	LXM2-PD01-0040	R4
Red	627nm	LXM2-PD01-0050	R5
Red	627nm	LXM2-PD01-0060	D8
Red	627nm	LXM5-PD01	D9
Red	627nm	LXML-PD01-0040	R2
Red-Orange	617nm	LXM2-PH01-0060	E3
Red-Orange	617nm	LXM2-PH01-0070	E4
Red-Orange	617nm	LXM5-PH01	E6
Red-Orange	617nm	LXML-PH01-0050	E2
PC Amber	591nm	LXM2-PL01-0000	A5
Amber	590nm	LXM5-PL01	A8
Amber	590nm	LXML-PL01-0040	A2
Lime	567nm	LXML-PX02-0000	L1
Green	530nm	LXML-PM01-0090	G3
Green	530nm	LXML-PM01-0100	G4
Cyan	505nm	LXML-PE01-0070	C2
Blue	470nm	LXML-PB01-0030	B3
Blue	470nm	LXML-PB01-0040	B4
Royal-Blue	448nm	LXML-PR01-0500	V2
Royal-Blue	448nm	LXML-PR02-A900	V4

2. Do not confuse our production code with the LED bin code. They are not related.

COMPLIANCE:

Current compliance documents (e.g., RoHS, REACH, CMRT, etc.) are available for download from each product page on the luxeonstar.com website.

SAFETY:

The LED mounted onto this module will produce a highly intense point of light. Do not stare directly at the LED for any length of time.

RESTRICTED USE:

Products produced or sold by Quadica Developments Inc. are not certified for use as critical components in life support devices, systems, nor in medical operating rooms or life rescue equipment. A critical component is any component of a life support device, system or medical/rescue equipment whose failure to perform can be reasonably expected to cause failure or malfunction of the life support device, system, or medical operating room/ life rescue equipment.

DISCLAIMER:

Although QUADICA DEVELOPMENTS INC. has attempted to provide the most accurate information and services data (hereinafter "Data"), the Data is provided "as is" and may contain errors. The entire risk of use of the data shall be with the user. QUADICA DEVELOPMENTS INC. makes no warranty, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose regarding the contents or correctness of the Data provided or the ability of the Data to meet the user's needs or expectations. QUADICA DEVELOPMENTS INC. reserves the right to make changes and corrections without notice.

You, as the user, agree to this disclaimer and the user agreement with the download or use of the provided Data. In no event shall QUADICA DEVELOPMENTS INC. be liable for any direct, indirect, special, incidental, exemplary, or consequential damages arising out of or related to the use of the Data, however caused, regardless of theory of liability, and whether or not QUADICA DEVELOPMENTS INC. has been advised of the possibility of such damage. This limitation shall apply notwithstanding any failure of essential purpose or any exclusive remedy.