

LUXEON XR-7070

A 5000lm building block compatible with off-the-shelf optics

LUXEON XR-7070 product is a standard integrated module compatible with off-the-shelf drivers, optics, and heat sinks. Four LUXEON 7070 LEDs are built on a MCPCB substrate for thermal efficiency and mechanical robustness. Using this standard module eliminates LED-assembly engineering costs, tooling costs, and material inventory costs. With this versatile building-block approach, it simplifies system integration and accelerates time-to-market.



FEATURES AND BENEFITS

- Efficacy and luminous flux of up to 170lm/W typical and 5400lm available
- Available CCT/CRI options: 2700K, 3000K, 3500K, 4000K, 5000K (70 & 80 CRI)
- Superior board level color control of $\leq 3\text{SDCM}$
- MCPCB for efficient heat dissipation and mechanical robustness
- UL 8750, ENEC, CE, UKCA compliance
- 5-year limited guarantee

PRIMARY APPLICATIONS

- High Bay
- Low Bay
- Outdoor Area Lights

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General Product Information

Product Test Conditions

LUXEON XR-7070 LEDs are tested using a 20 ms monopulse (MP) at 700mA and a case temperature, T_c , of 85°C.

Part Number Nomenclature

Part numbers for LUXEON XR-7070 follow the convention below:

L 2 2 4 – **A A B B 0 C C M D D 0 1 0**

Where:

- A A** – designates nominal ANSI CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K)
- B B** – designates minimum CRI (70=70CRI and 80=80CRI)
- C C** – designates number of emitters (04=4 emitters)
- D D** – designates internal Lumileds program code.
- 1 0** – designates internal Lumileds program code.

Therefore, a LUXEON XR-7070 4000K 80CRI with 4 emitters, will have the following part number:

L 2 2 4 – **4 0 8 0 0 0 4 M L U 0 1 0**

Lumen Maintenance

Please contact your local Sales Representative or Lumileds Technical Solutions Manager for more information about the long-term performance of this product.

Environmental Compliance

Lumileds LLC is committed to providing environmentally friendly products to the solid-state lighting market. LUXEON XR-7070 is compliant to the European Union directives on the restriction of hazardous substances in electronic equipment, namely the RoHS Directive 2011/65/EU and REACH Regulation (EC) 1907/2006. Lumileds LLC will not intentionally add the following restricted materials to its products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

Performance Characteristics

Product Selection Guide

Table 1. Product performance of LUXEON XR-7070 at 700mA, $T_c=85^\circ\text{C}$.

NOMINAL CCT	MINIMUM CRI ^[1, 2]	LUMINOUS FLUX ^[1] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	ENERGY EFFICIENCY CLASS	PART NUMBER
		MINIMUM	TYPICAL			
2700K	70	4708	5042	156	E	L224-2770004MLU010
3000K	70	4878	5222	162	E	L224-3070004MLU010
3500K	70	5064	5354	166	D	L224-3570004MLU010
4000K	70	5155	5498	170	D	L224-4070004MLU010
5000K	70	5112	5417	168	D	L224-5070004MLU010
2700K	80	4374	4611	143	E	L224-2780004MLU010
3000K	80	4545	4818	149	E	L224-3080004MLU010
3500K	80	4627	4906	152	E	L224-3580004MLU010
4000K	80	4717	5044	156	E	L224-4080004MLU010
5000K	80	4693	4999	155	E	L224-5080004MLU010

Notes for Table 1:

1. Lumileds maintains a tolerance of ± 2 on CRI and $\pm 7\%$ on luminous flux measurements.
2. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.

Electrical Characteristics

Table 2. Electrical characteristics for LUXEON XR-7070 at 700mA, $T_c=85^\circ\text{C}$.

PART NUMBER	FORWARD VOLTAGE ^[1] (V_f)		
	MINIMUM	TYPICAL	MAXIMUM
L224-xxxx004MLU010	41.0	46.2	49.0

Notes for Table 2:

1. Lumileds maintains a tolerance of $\pm 0.1\text{V}$ on forward voltage measurements.

Absolute Maximum Ratings

Table 3. Absolute maximum ratings for LUXEON XR-7070.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current ^[1,2]	1200mA
Peak Pulsed Forward Current ^[1,3]	1440mA
ESD Sensitivity	IEC 61000-4-2 Level 4 (8/15 kV contact/air discharge)
Operating Temperature at T _c point ^[1]	-40°C to 85°C
Storage Temperature	-40°C to 105°C
Reverse Voltage (V _{reverse})	LUXEON LEDs are not designed to be driven in reverse bias

Notes for Table 3:

- Proper current derating must be observed to maintain the T_c temperature below the maximum limit 85°C.
- Residual periodic variations due to power conversion from alternating current (AC) to direct current (DC), also called "ripple", are acceptable if the following conditions are met:
 - The frequency of the ripple current is 100Hz or higher
 - The average current for each cycle does not exceed the maximum allowable DC forward current
 - The maximum amplitude of the ripple does not exceed the maximum peak pulsed forward current
- At 10% duty cycle with pulse width of 10ms.
- For more details, please refer to Application Brief AB385.

Approbations

Table 4. Approbation for LUXEON XR-7070.

ITEM	COMPLIANT TO
Test and Certification	CE
	UKCA
	ENEC
	UL8750
Declaration	RoHS
	REACH

Recommended Wire

Table 5. Recommended Wire for LUXEON XR-7070.^[1]

RECOMMENDED WIRE	STRIP LENGTH
AWG 24-18	7mm to 9mm

Notes for Table 5:

- Please refer to Application Brief AB385 for installation guide.

Characteristic Curves

Spectral Power Distribution Characteristics

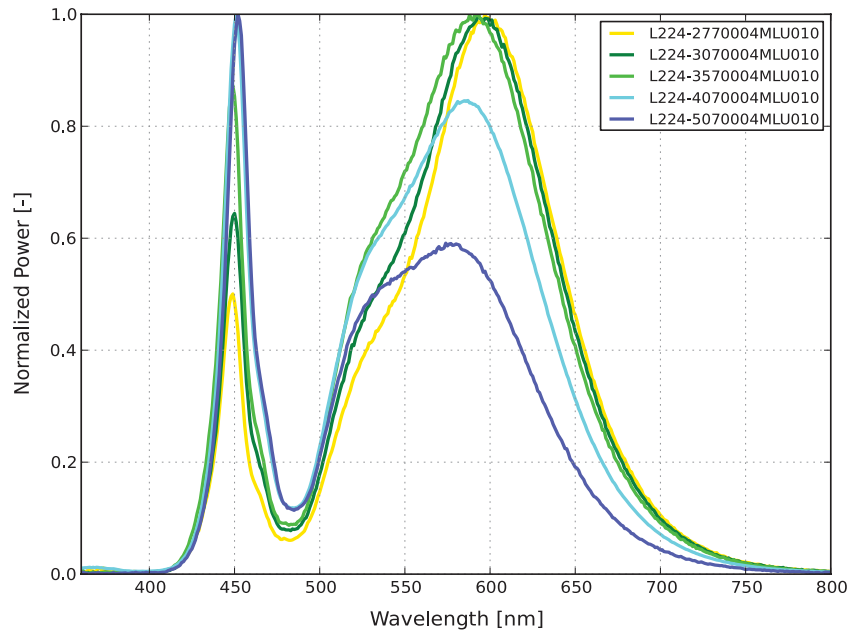


Figure 1. Typical normalized power vs. wavelength for 70CRI LUXEON XR-7070 at 700mA, $T_c=85^\circ\text{C}$.

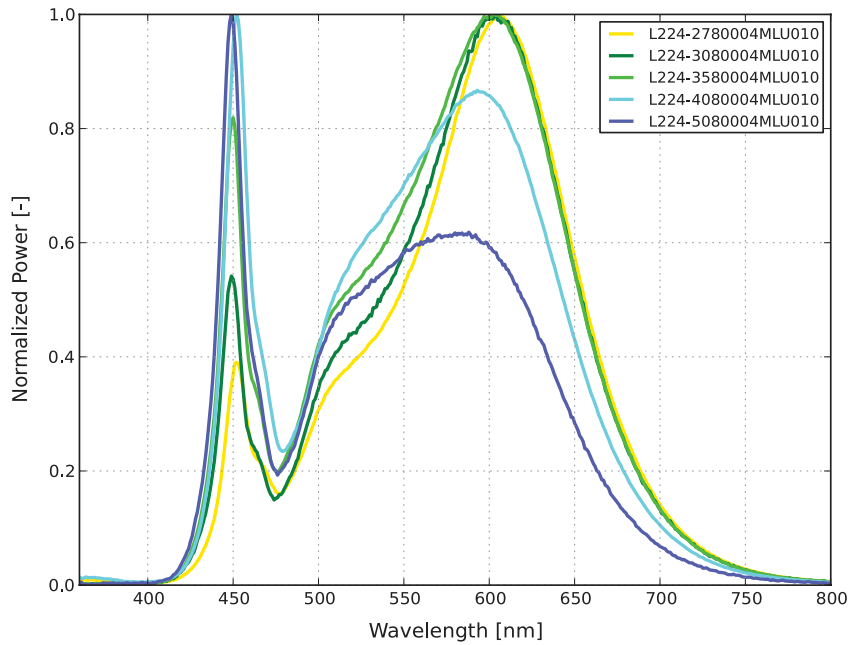


Figure 2. Typical normalized power vs. wavelength for 80CRI LUXEON XR-7070 at 700mA, $T_c=85^\circ\text{C}$.

Light Output Characteristics

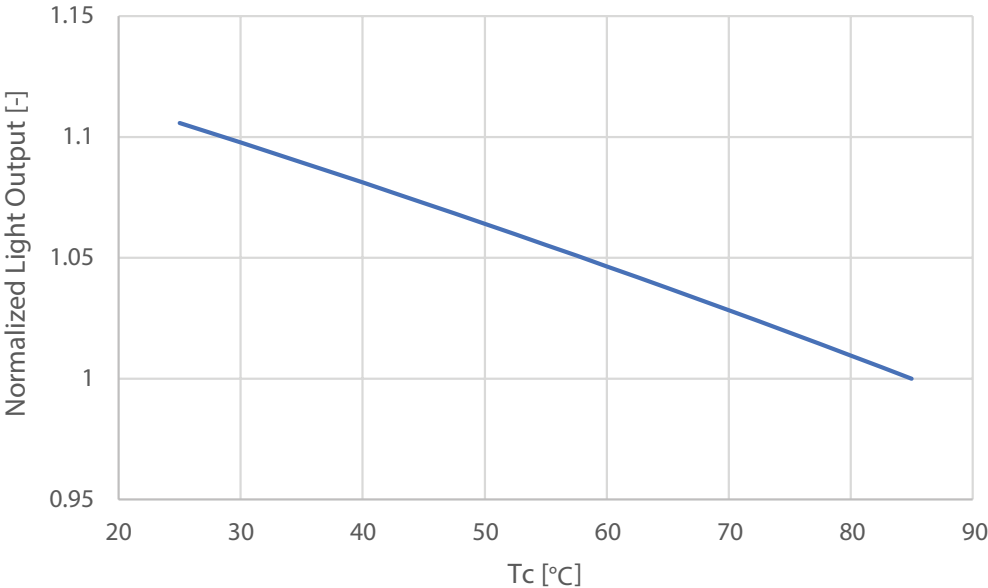


Figure 3. Typical normalized light output vs. T_c temperature for LUXEON XR-7070 at 700mA.

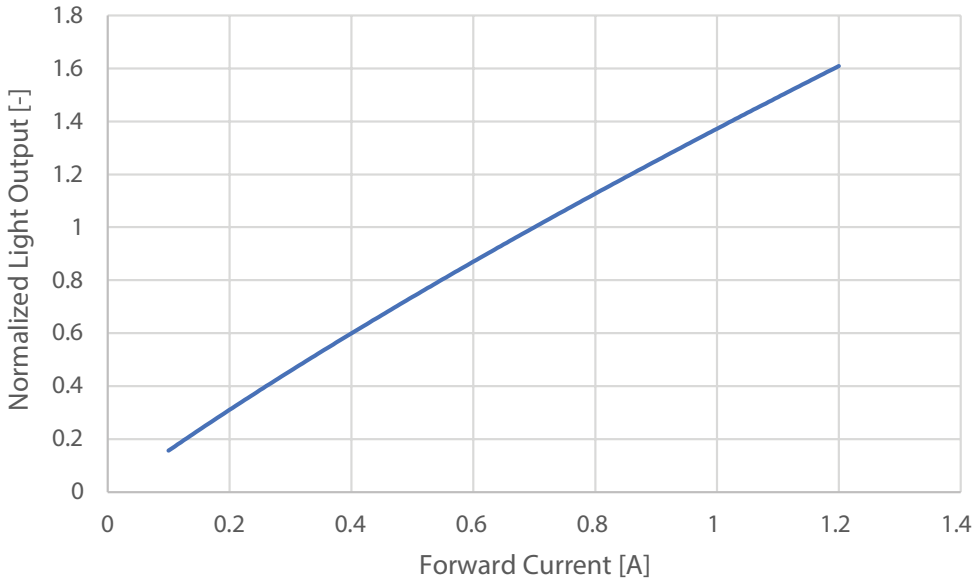


Figure 4. Typical normalized light output vs. forward current for LUXEON XR-7070 at T_c=85°C.

Efficacy Characteristics

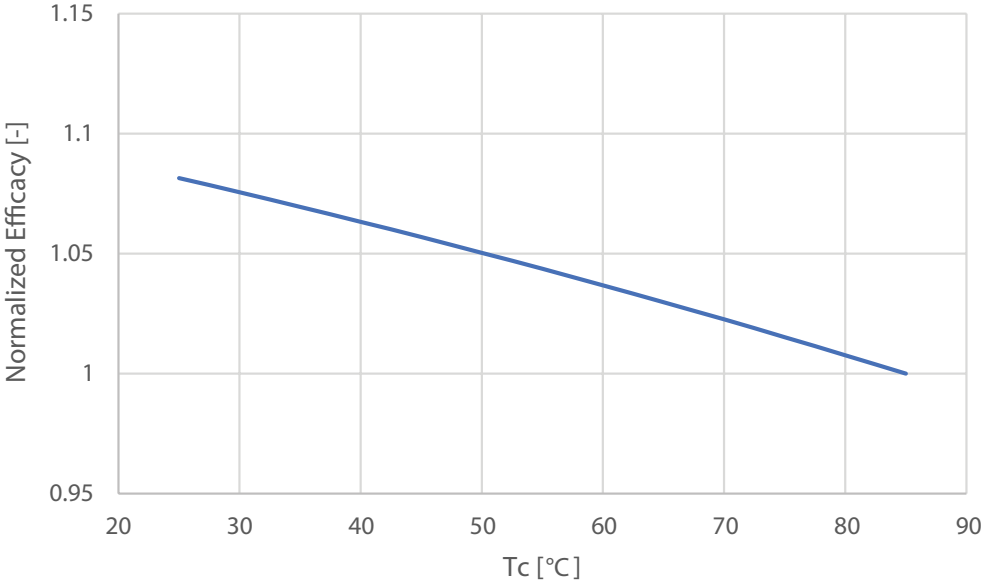


Figure 5. Typical normalized efficacy vs. T_c temperature for LUXEON XR-7070 at 700mA.

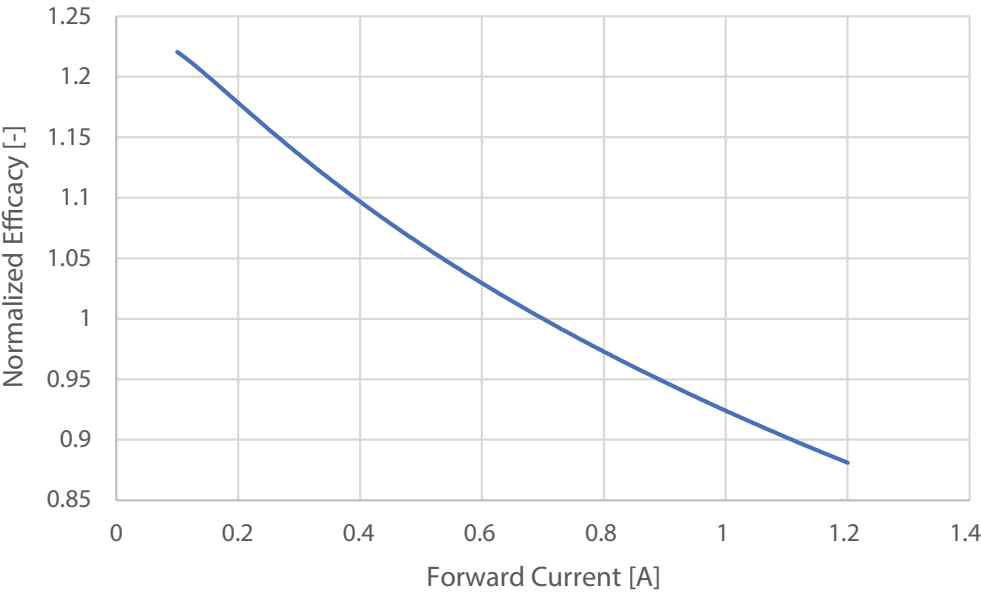


Figure 6. Typical normalized efficacy vs. forward current for LUXEON XR-7070 at T_c=85°C.

Mechanical Dimensions

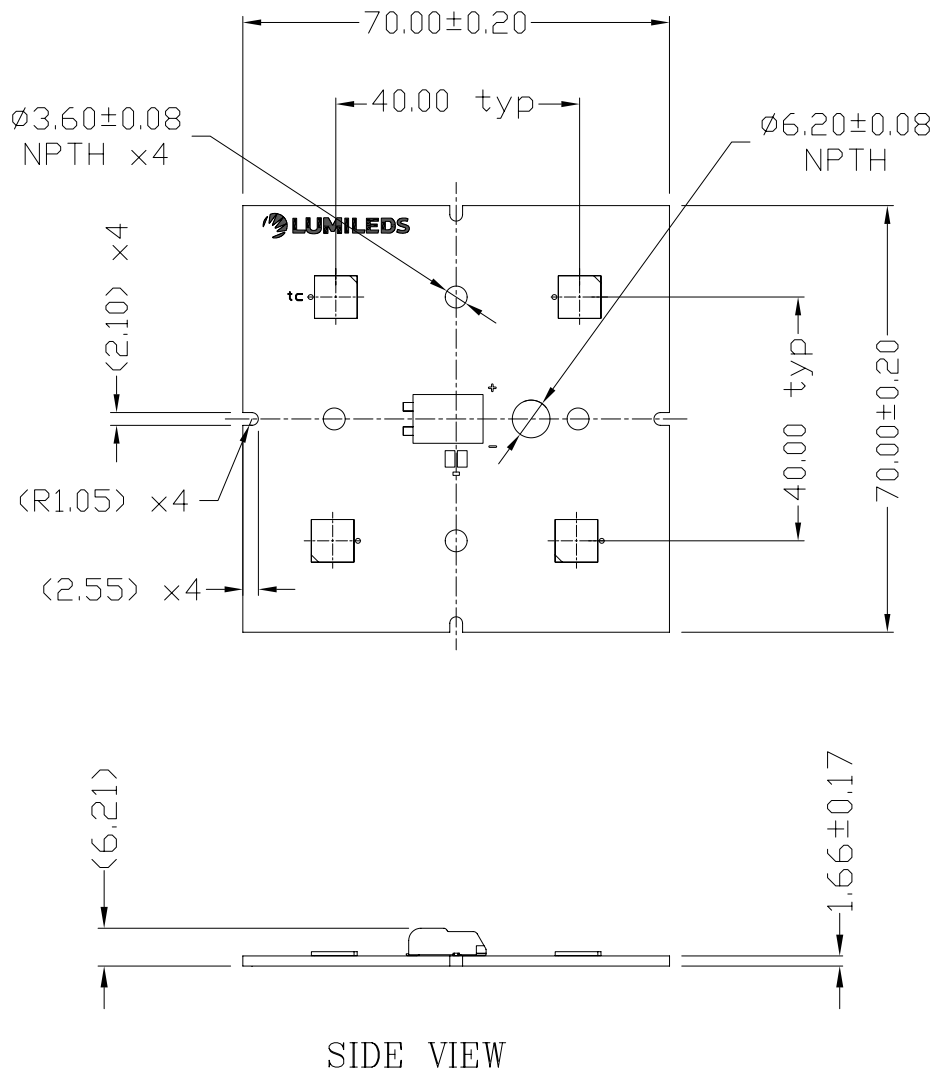


Figure 7. Mechanical dimensions for LUXEON XR-7070.

Notes for Figure 7:

1. Drawings are not to scale.
2. All dimensions are in millimeters.
3. In this document, t_c is equivalent to T_c (t_c or T_c is typically used in current IEC/EN or UL standards).

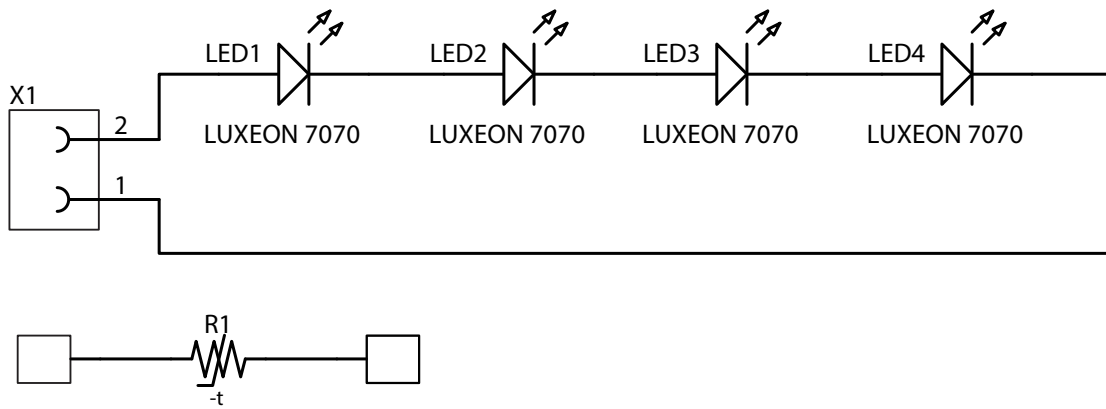


Figure 8. Electric circuit diagram for LUXEON XR-7070.

Note for Figure 8:

1. Two solder pads are available for NTC lead wires on the product.

Table 6. Bill of Materials for LUXEON XR-7070.

COMPONENT	QUANTITY
LED: LUXEON 7070	4
PCB: MCPCB	1
2-pole Connectors	1
Thermistor 15kΩ	1

Packaging Information

Table 7. Packing information for LUXEON XR-7070.

PART NUMBER	QUANTITY PER TRAY	TRAY QUANTITY PER BOX	STANDARD PACKING INCREMENT, SPI	SHIPPING BOX DIMENSION, L x W x H (mm)
L224-xxxx004MLU010	40	5	160	442 x 382 x 100

About Lumileds

Companies developing automotive, mobile, IoT and illumination lighting applications need a partner who can collaborate with them to push the boundaries of light. With over 100 years of inventions and industry firsts, Lumileds is a global lighting solutions company that helps customers around the world deliver differentiated solutions to gain and maintain a competitive edge. As the inventor of Xenon technology, a pioneer in halogen lighting and the leader in high performance LEDs, Lumileds builds innovation, quality and reliability into its technology, products and every customer engagement. Together with its customers, Lumileds is making the world better, safer, more beautiful—with light.

To learn more about our lighting solutions, visit lumileds.com.



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