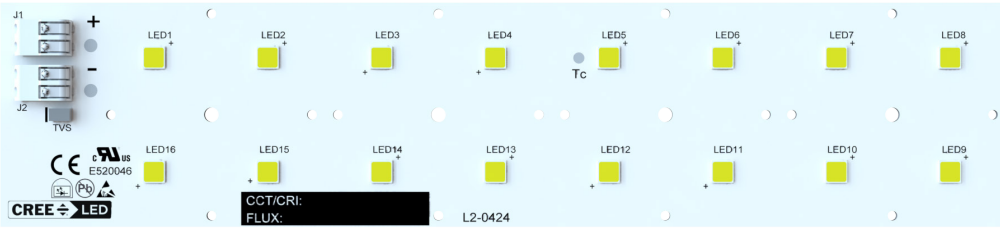
LS16 Product Family



PRODUCT DESCRIPTION

The LS16 product family is equipped with 16 J Series® 5050 LEDs, either JR5050C E Class, JK5050B H Class or JR5050B K Class LEDs, providing three different levels of performance. The LS16 product family is a Cree LED standard product.

These PCBAs are available in a 16-LED rectangular configuration with two two-pole connectors and a TVS diode for circuit protection.

J Series 5050 LEDs are optimized for medium-density lighting applications where high efficacy and long lifetime are critical, such as street lights, outdoor area and indoor directional lights.

FEATURES

- Three performance options with either JR5050C E Class, JK5050B H Class or JR5050B K Class LEDs
- 2700-5000 K ANSI CCTs
- 70 CRI (other options available)
- 3-step MacAdam ellipse
- Flux and chromaticity binned at T_c = 60 °C
- 2-pin poke-in connectors
- 2000-V, Class 2 ESD-rated LEDs
- REACH and RoHS compliant
- UL® recognized component (E520046)

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MAXIMUM RATINGS & TYPICAL CHARACTERISTICS

Characteristics	Unit	Minimum	Typical	Maximum
Viewing angle (FWHM)	degrees		120	
ESD classification (HBM per Mil-Std-883L)	-	Class 2 (<2 kV)		
Isolation breakdown voltage (V_{ac})	V	> 3000		
LED junction temperature (T_j)	°C			125
PCBA case temperature (T_c)	°C	-40		105
Ambient operating humidity, non-condensing	RH%			80
Storage temperature	°C	-40		85
Color consistency (MacAdam ellipse)	-			3-step

ELECTRICAL CHARACTERISTICS & CIRCUIT DESIGNS

LED Class	LED Qty	Circuit Design		Current		Voltage @ 60 °C			Power @ 60 °C		
		Series	Parallel	Binning Current (A)	Maximum Current (A)	Minimum Voltage (V)	Typical Voltage (V)	Maximum Voltage (V)	Minimum Power (W)	Typical Power (W)	Maximum Power (W)
E	16	8	2	1.05	2	43.8	45.4	46.9	46.0	47.6	49.3
H						46.2	47.9	49.6	48.6	50.3	52.1
K						44.1	45.7	47.3	46.3	48.0	49.6

1. Voltage and power calculations are based on the typical current condition.
2. Maximum current and power are based on the maximum number of LEDs. PCBA power must be managed by heat sink or duty cycle to remain below the stated maximum temperature.

ORDER CODE FORMAT

Order codes for LS16 PCBAs are configured as follows:

Order Code Example: L2-0424000016-50500EB27GJF000A

Expanded: L2-0424 000 016 - 5050 0E B 27 G JF 000A

Code Details: AA-AAAA BBB CCC - DDDD EE F GG H JJ KKKK

PCB Design

Internal Use

LED Quantity

LED Type
5050 = J Series 5050 LEDs

LED Class or Min Flux
0E = E Class
0H = H Class
0K = K Class

Color Rendering Index (CRI)
B = 70 CRI

CCT
50 = 5000 K
40 = 4000 K
30 = 3000 K
27 = 2700 K

MacAdam Ellipse
G = 3-Step

L x W Dimensions
JF = 225 mm x 50 mm

Internal Use

FLUX CHARACTERISTICS (T_C = 60 °C)

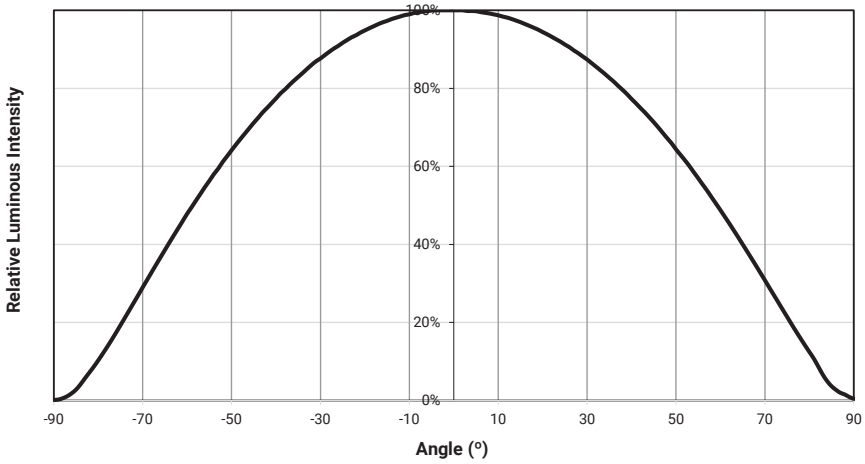
All values are @ T_C = 60 °C, 1.05 A.

The following table lists LS16 PCBA order codes. For chromaticity bin definitions, please see the Chromaticity section.

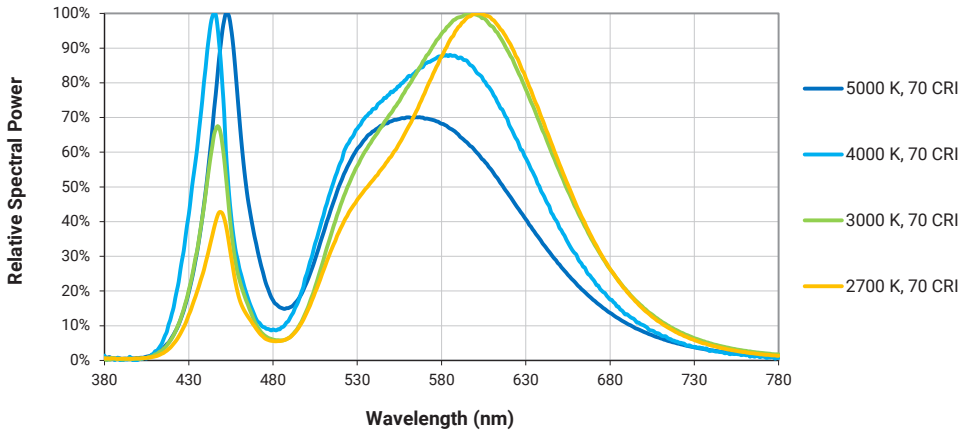
Final PN	LED CLass	LED Qty	CCT	CRI	Minimum LPW	Typical LPW	Maximum LPW	Minimum Flux	Typical Flux	Maximum Flux
L2-0424000016-50500EB27GJF000A	E	16	2700	70	167	179	192	7,931	8,528	9,125
L2-0424000016-50500EB30GJF000A	E	16	3000	70	172	185	198	8,214	8,832	9,450
L2-0424000016-50500EB40GJF000A	E	16	4000	70	185	199	213	8,809	9,472	10,135
L2-0424000016-50500EB50GJF000A	E	16	5000	70	185	199	213	8,809	9,472	10,135
L2-0425000016-50500HB27GJF000A	H	16	2700	70	156	168	179	7,842	8,432	9,022
L2-0425000016-50500HB30GJF000A	H	16	3000	70	165	178	190	8,318	8,944	9,570
L2-0425000016-50500HB40GJF000A	H	16	4000	70	176	190	203	8,868	9,536	10,204
L2-0425000016-50500HB50GJF000A	H	16	5000	70	176	190	203	8,868	9,536	10,204
L2-0425000016-50500KB27GJF000A	K	16	2700	70	155	167	178	7,440	8,000	8,560
L2-0425000016-50500KB30GJF000A	K	16	3000	70	163	175	188	7,827	8,416	9,005
L2-0425000016-50500KB40GJF000A	K	16	4000	70	172	184	197	8,229	8,848	9,467
L2-0425000016-50500KB50GJF000A	K	16	5000	70	172	184	197	8,229	8,848	9,467

- Cree LED maintains measurement tolerances of ±7% on flux and power, ±0.005 on chromaticity (CCx, CCy) and ±2 on CRI.

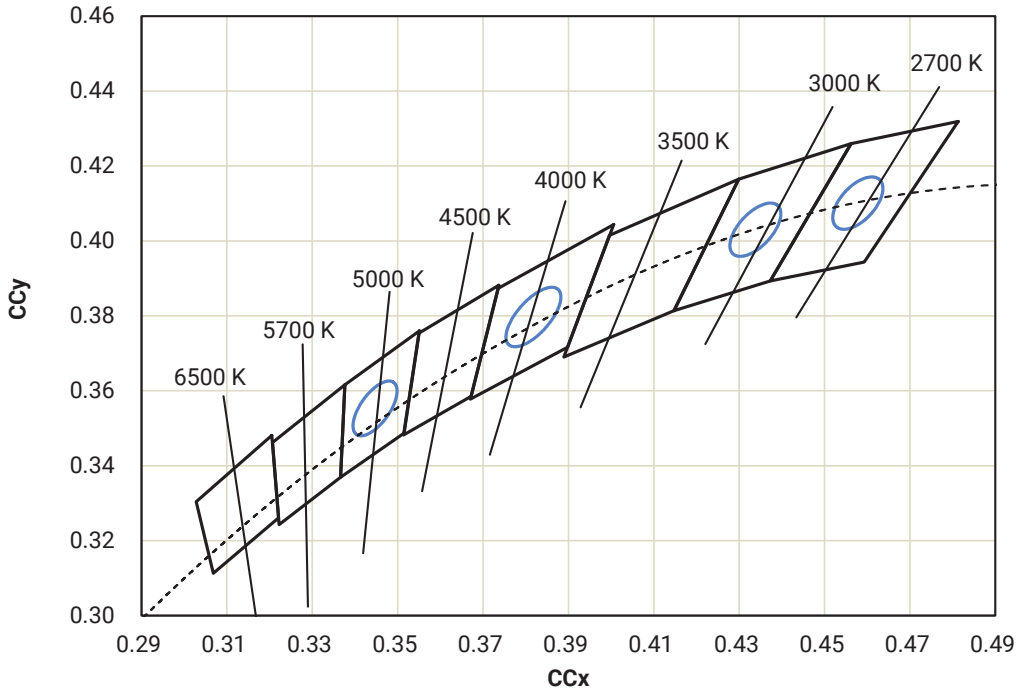
TYPICAL SPATIAL DISTRIBUTION



RELATIVE SPECTRAL POWER DISTRIBUTION



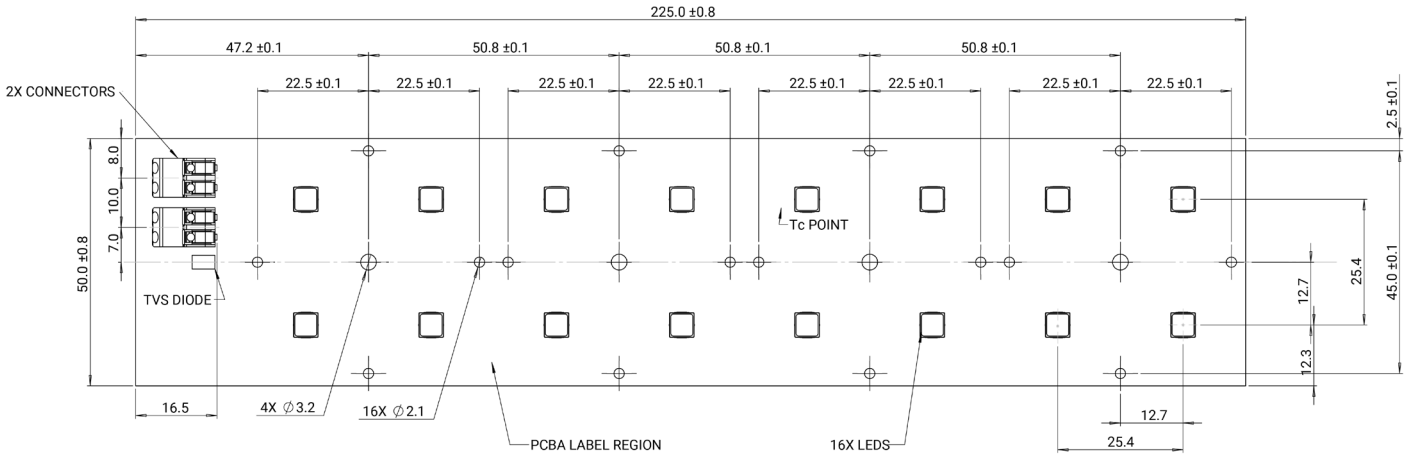
CHROMATICITY (T_C = 85 °C)



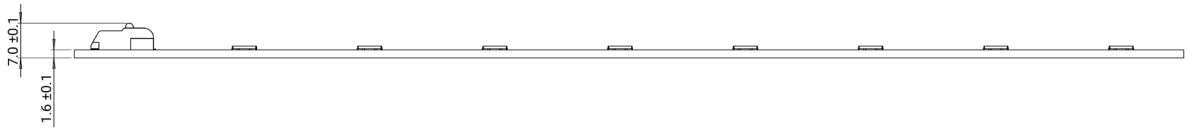
CCT	MacAdam Ellipse	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
5000 K	3-step	0.3447	0.3553	0.00822	0.00354	59.62
4000 K	3-step	0.3818	0.3797	0.00939	0.00402	53.72
3000 K	3-step	0.4338	0.4030	0.00834	0.00408	53.22
2700 K	3-step	0.4578	0.4101	0.00810	0.00420	53.70

MECHANICAL DETAILS

Tolerances: Length/Width/Thickness: ± 0.16 mm or as shown in the diagram



Top View



Side View

Tolerances for critical dimensions are shown above. All other dimensions are nominal and for reference only.

PCB PROPERTIES & CONFIGURATIONS

Property	PCB Part Number	
	L2-0424	L2-0425
PCB Material	Aluminum MCPCB	
Solder Mask Material	White	
Silkscreen Color	Black	
LED Count	16	
Electrical Connector	Wago 2060-452	
Conductor Entry Angle	0 Degree	

PACKAGING BOX DIMENSIONS

PCB PN	PCBs per Pallet	PCBs per Box	Box Length (mm)	Box Width (mm)	Box Height (mm)	Box Weight (kg)	Pallet Size (mm)	Pallet Weight (kg)	Boxes per Pallet
L2-0424, L2-0425	5600	280	600	400	200	16.5	1200x800	20	24

PRODUCT LABEL

The CRI, CCT, useful lumens and a 2D datamatrix will be marked on the PCBA.

INNER BOX LABEL

Inner box label example, details will vary by product and specifications. 2D barcode includes all label fields.

NOTES

Measurements

The luminous flux, radiant power, chromaticity, forward voltage and CRI measurements in this document are binning specifications only and solely represent product measurements as of the date of shipment. These measurements will change over time based on a number of factors that are not within Cree LED's control and are not intended or provided as operational specifications for the products. Calculated values are provided for reference and informational purposes only and are not intended or provided as specifications.

ESD

The LED PCBAs carry a Class 2 (2 kV) rating for electrostatic discharge (ESD) based on the ESDS Component Sensitivity Classification - Human Body Model (per ESD STM5.1-2007).

LED PCBAs must be handled with proper ESD handling protocols. Cree LED recommends removing LED PCBAs from packaging at an ESD-safe workstation and using appropriate handling protocols and precautions when handling the LED PCBAs.

Storage Conditions

Store LED PCBAs in their original packaging to minimize potential for unintended contact and contamination. LED PCBAs must be maintained between 0 - 40 °C within 0% to 80% humidity non-condensing.

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree LED representative or from the Product Ecology section of the Cree LED website.

REACH Compliance

REACH substances of very high concern (SVHCs) information is available for this product. The European Chemical Agency (ECHA) frequently revises the SVHC listing, please contact a Cree LED representative to receive the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

UL® Recognized Component

This product meets the requirements to be considered a UL Recognized Component with Level 4 enclosure consideration. The LED package or a portion thereof has been investigated as a fire and electrical enclosure per ANSI/UL 8750.

Vision Advisory

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye. For more information about LEDs and eye safety, please refer to the LED Eye Safety application note.

Hot Plugging

The LED PCBAs must not be electrically connected to an energized driver.