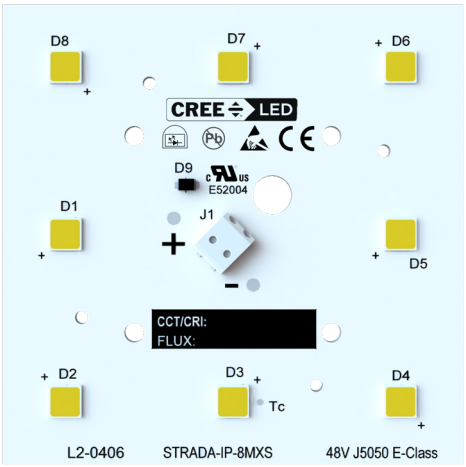
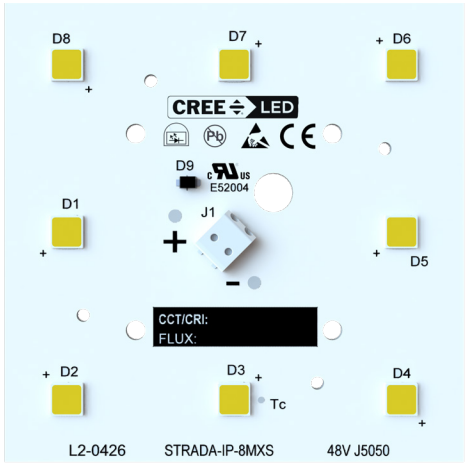
LS8 Product Family



L2-0406



L2-0426

PRODUCT DESCRIPTION

The LS8 product family is equipped with 8 J Series® 5050 LEDs, either JR5050C E Class, JK5050B H Class or JR5050B K Class LEDs, providing three different levels of performance. The LS8 product family is a Cree LED standard product.

These PCBAs are available in an 8 LED square configuration with a centered 2-pole connector and TVS diode 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 connector
- 2000-V, Class 2 ESD-rated LEDs
- REACH and RoHS compliant
- UL® recognized component (E520046)

Cree LED / 4001 E. Hwy. 54, Suite 2000 / Durham, NC 27713 USA / +1.919.313.5330 / www.cree-led.com

TABLE OF CONTENTS

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	8	8	1	0.4	1	43.0	44.6	46.1	17.2	17.8	18.4
H						44.9	46.56	48.2	18.0	18.6	19.3
K						43.2	44.72	46.3	17.3	17.9	18.5

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 LED Square PCBAs are configured as follows:

Order Code Example: L2-0406000008-50500EB27GFF000A

Expanded: L2-0406 000 008 - 5050 0E B 27 G FF 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
- FF = 70 mm x 70 mm

Internal Use

FLUX CHARACTERISTICS (T_C = 60 °C)

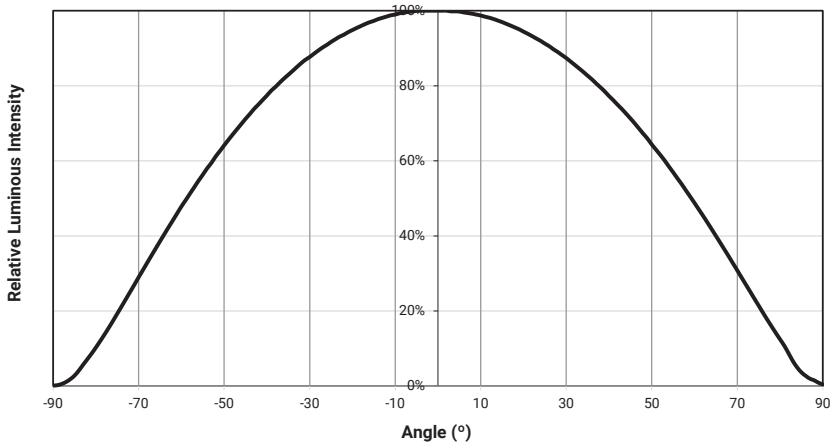
All values are @ T_C = 60 °C, 400 mA per LED.

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

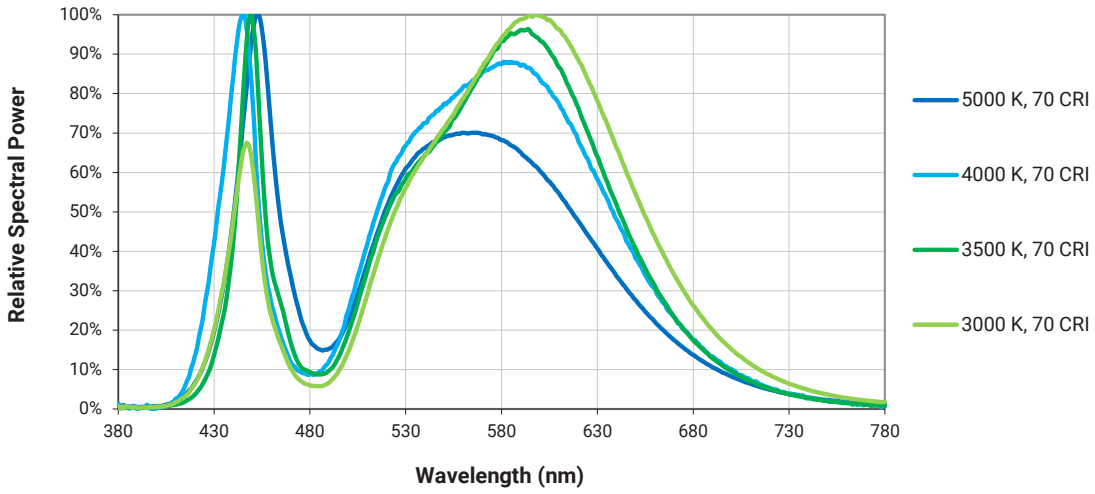
Final PN	LED CLass	LED Qty	CCT	CRI	Minimum LPW	Typical LPW	Maximum LPW	Minimum Flux	Typical Flux	Maximum Flux
L2-0406000008-50500EB27GFF000A	E	8	2700	70	172	185	198	3075	3306	3537
L2-0406000008-50500EB30GFF000A	E	8	3000	70	179	192	205	3188	3428	3668
L2-0406000008-50500EB40GFF000A	E	8	4000	70	192	206	220	3416	3673	3930
L2-0406000008-50500EB50GFF000A	E	8	5000	70	192	206	220	3416	3673	3930
L2-0426000008-50500HB27GFF000A	H	8	2700	70	162	174	187	3043	3272	3501
L2-0426000008-50500HB30GFF000A	H	8	3000	70	171	183	196	3229	3472	3715
L2-0426000008-50500HB40GFF000A	H	8	4000	70	179	193	206	3445	3704	3963
L2-0426000008-50500HB50GFF000A	H	8	5000	70	179	193	206	3445	3704	3963
L2-0426000008-50500KB27GFF000A	K	8	2700	70	162	174	187	2902	3120	3338
L2-0426000008-50500KB30GFF000A	K	8	3000	70	171	183	196	3050	3280	3510
L2-0426000008-50500KB40GFF000A	K	8	4000	70	179	193	206	3207	3448	3689
L2-0426000008-50500KB50GFF000A	K	8	5000	70	179	193	206	3207	3448	3689

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

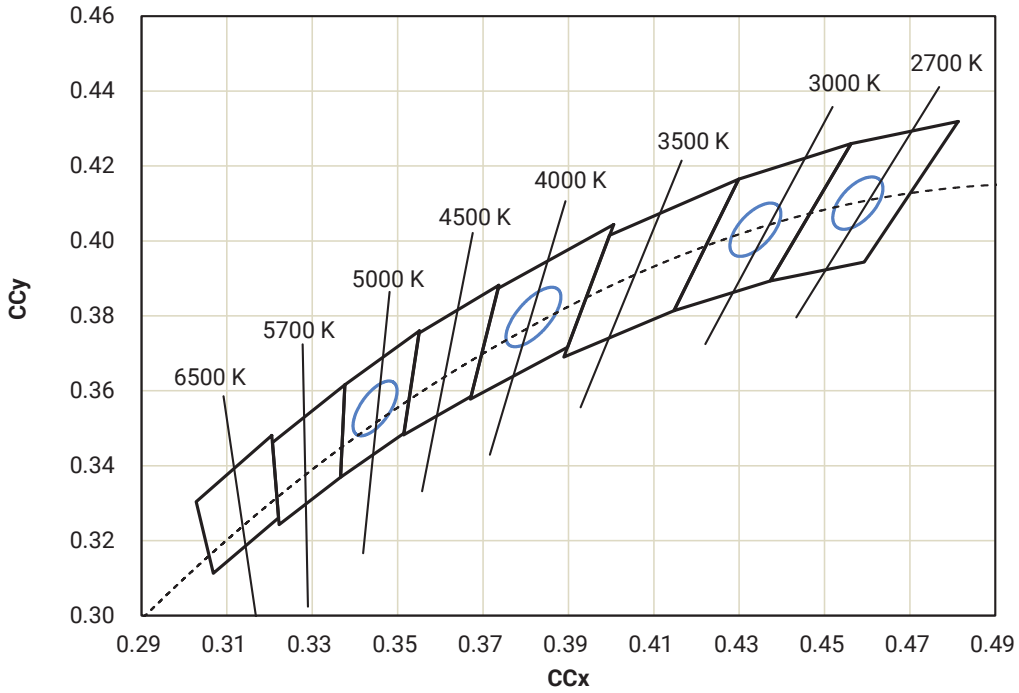
TYPICAL SPATIAL DISTRIBUTION



RELATIVE SPECTRAL POWER DISTRIBUTION



CHROMATICITY (T_C = 85 °C)

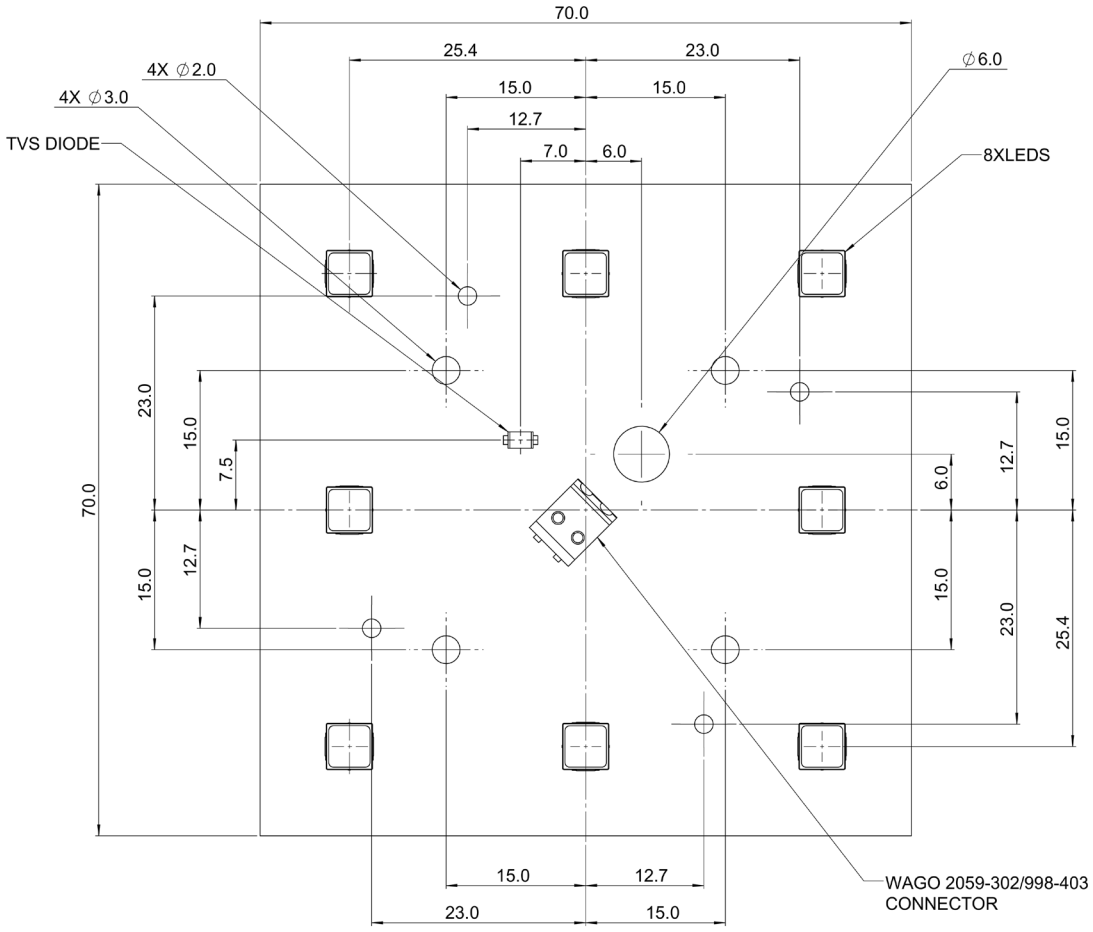


CCT	MacAdam Ellipse	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
5000 K	3-step	0.3447	0.3553	0.00822	0.00354	59.62
4000 K	3-step	0.3818	0.3797	0.00939	0.00402	53.72
3000 K	3-step	0.4338	0.4030	0.00834	0.00408	53.22
2700 K	3-step	0.4578	0.4101	0.00810	0.00420	53.70

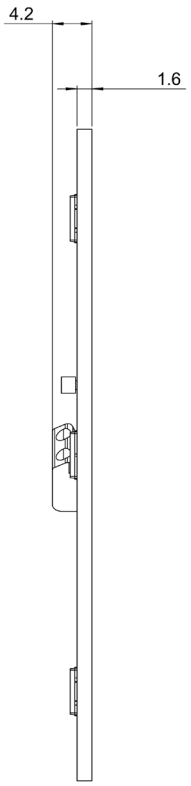
MECHANICAL DETAILS

Tolerances: Length/Width/Thickness: ± 0.1 mm

L2-0406



Top View

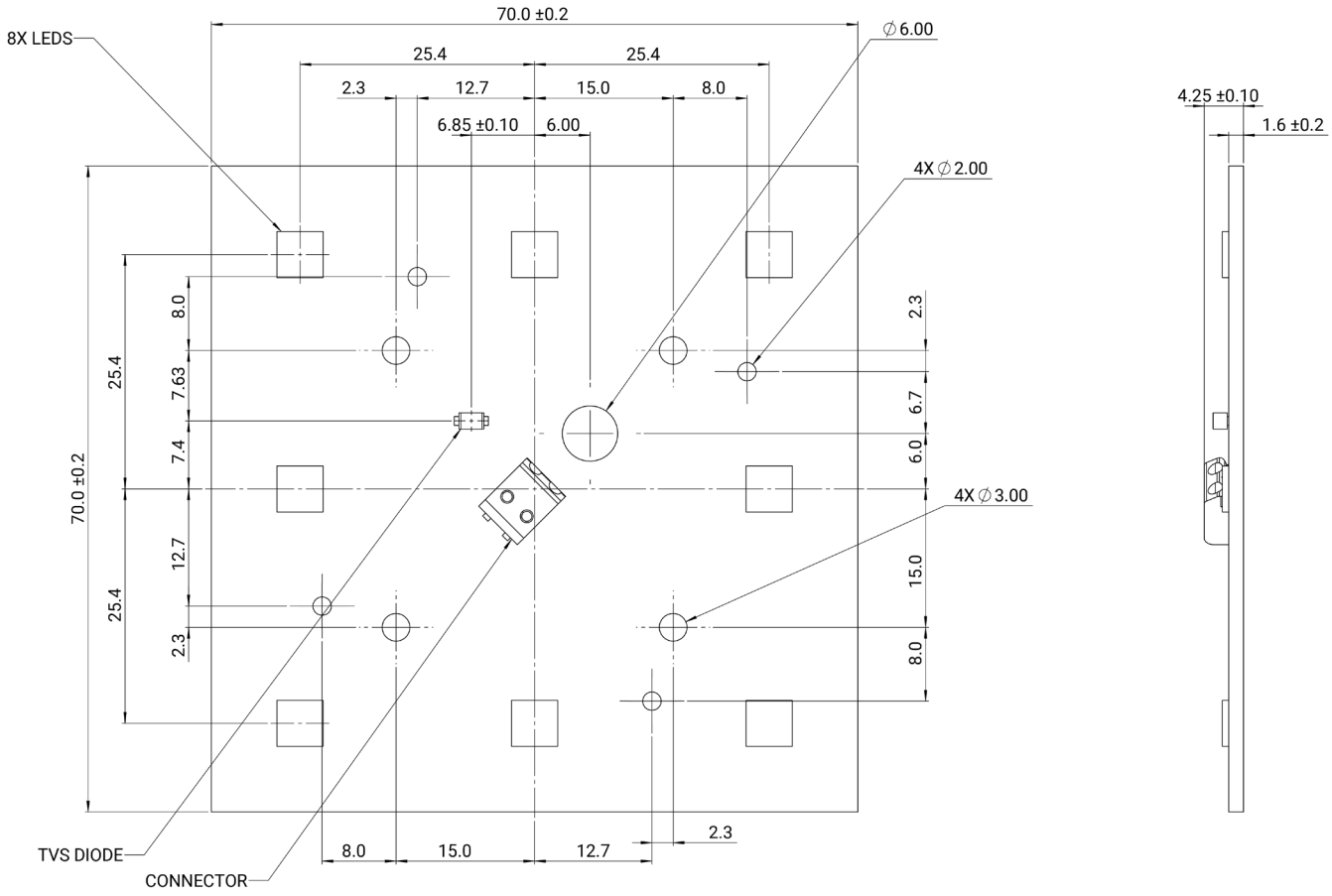


Side View

MECHANICAL DETAILS - CONTINUED

Tolerances: Length/Width/Thickness: ± 0.1 mm or as shown in the diagram

L2-0426



Top View

Side View

PCB PROPERTIES & CONFIGURATIONS

Property	PCB Part Number	
	L2-0406	L2-0426
PCB Material	Aluminum MCPCB	
Solder Mask Material	White	
Silkscreen Color	Black	
LED Count	8	
Electrical Connector	Wago 2059-302/998-403	
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
L2-0406	12,000	600	600	400	200	16.5	1200x800	25	20

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 for the products as shipped by Cree LED. They are not provided or intended as operational values for intended applications. Calculated values are provided for reference and informational purposes only and are not intended or provided as specifications.

ESD

The LED Square 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.