

LUMINAIRE PROTECTION



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When electronic components form part of lighting systems, it is often necessary to protect such components against power-supply interruptions and electric overloads (power surges).

This data sheet presents electronic components to protect luminaires against mains surges and inrush current limiters.



Luminaire Protection Device

For electronic devices

When electronic components form part of lighting systems, it is often necessary to protect such components against power-supply interruptions and electric overloads (power surges).

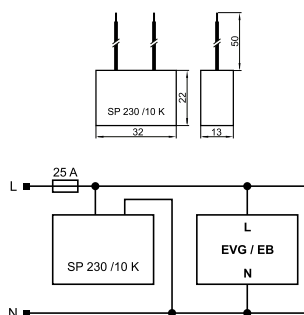
These can be caused by switching inductive loads or by atmospheric discharges such as lightning striking the mains or the ground. A further cause can be induced voltages from neighbouring cables when working with leading-edge phase-cutting controls.

The protection unit reduces over-voltages at the connection terminals of electronic components. The remaining residual voltage is then reduced to a respective protective level, based on the discharge current.

SP 230/10 K

Suitable for luminaires of protection class II
Type 3 product
With integrated thermal fuse
Dimensions (LxWxH): 32x22x13 mm
Weight: 20 g
Connecting: solid wire, length: 50 mm

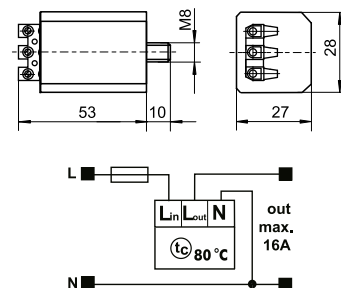
Ref. No.: 147230



SPC 230/10 K

If the protective luminaire component overloads, the connected lighting circuit will be interrupted. This cut-out function makes it easier to detect the end of life of the protective component, facilitates quick replacement by maintenance staff and provides reliable protection for lighting components.
Suitable for luminaires of protection class II
Type 3 product
Dimensions (LxWxH): 53x28x27 mm
Weight: 50 g
Screw terminals: 0.5–1.5 mm²

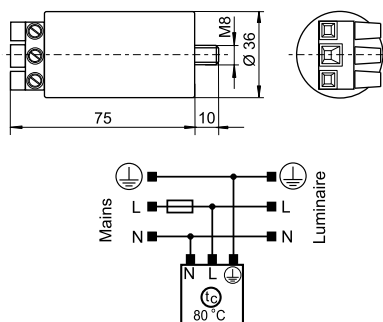
Ref. No.: 142736



SP 3/230/10 K

Suitable for luminaires of protection class I
Type 3 product
Dimensions (ØxH): Ø 36x75 mm
Weight: 60 g
Screw terminals: 0.75–4 mm²

Ref. No.: 147233



Type	Ref. No.	Voltage 50/60 Hz V ± 10 %	Max. load current A	Max. impulse voltage U _{OC} (V)	Discharge current* (8/20 µs) I _N (A) I _{max} (A)	Protection level at discharge current of 1000 A	Safety max. A	Max. permitted casing temperature (°C)	Min. permitted ambient temperature (°C)	Fixation
SP 230/10 K	147230	220–240	—	10000	5000 10000	≤ 850 V	25	80	–30	—
SPC 230/10 K	142736	220–240	16	10000	5000 10000	≤ 850 V	16	80	–30	M8x10
SP 3/230/10 K	147233	100–277	—	10000	5000 10000	≤ 1000 V	25	80	–30	M8x10

* Discharge current: at 5000 A min. 15 strikes; at 10,000 A min. 1 strike

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Luminaire Protection Device – Type 3

For electronic devices

These protective components are fitted with an LED indicator. Once the end of the component's life has been reached, the green LED goes out and the protective component has to be replaced.

SP230/10 K/HS/i

The green LED light will go out if the protective function fails

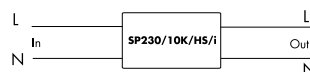
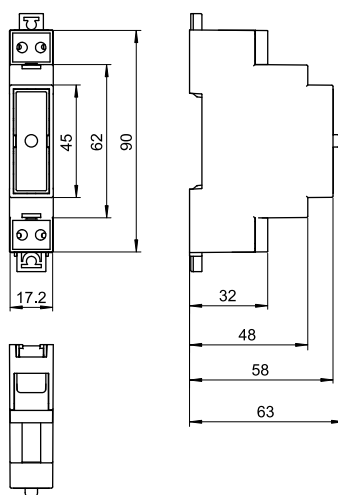
Dimensions (LxWxH): 90x17.2x63 mm

Weight: 45 g

Screw terminals: 0.5–2.5 mm²

Fixation on DIN installation rail

Ref. No.:147240



Type	Ref. No.	Voltage 50/60 Hz V ±10 %	Max. load current (A)	Protection level at discharge current of 1000 A	Max. impulse voltage U _{OC} (V)	Discharge current* (8/20 μs)		Safety	Max. permitted casing temperature °C	Fixation
						I _N (A)	I _{max} (A)			
SP230/10 K/HS/i	147240	220–240	16	≤ 1000 V	10000	5000	10000	16	–35 to 80	DIN-rail

* Discharge current: at 5000 A min. 15 strikes; at 10,000 A min. 1 strike

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Luminaire Protection Device – Type 3

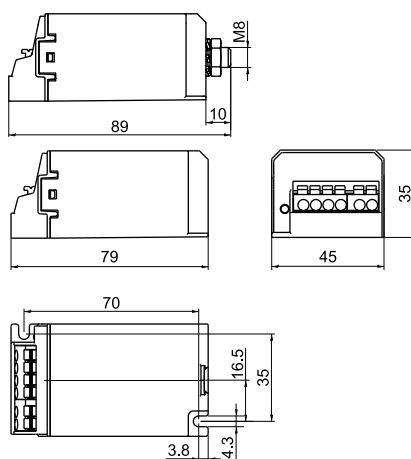
For electronic devices

These protective components are fitted with internal thermal fuses. The protective component will be disconnect from the mains at the end of the internal varistors' life or if there is a permanently overvoltage.
In that case the green LED goes out and the protective component has to be replaced.

AC-system: TT-TN-IT
Temporary overvoltage
(TOV)-LV: 443 V AC (5 sec.) / 443 V (120 min.)
(TOV)-MV/HV: 1200 V AC (200 msec.)
 I_{scrr} : 1000 A
With integrated thermal fuse
Dimensions (LxWxH): 79x45x35 mm

SP3/230/10K/i

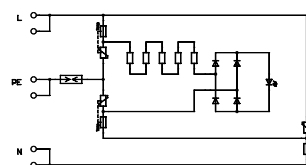
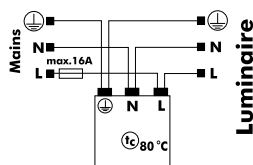
Suitable for luminaires of protection class I
Push-in terminals: 0.5–2.5 mm²
Degree of protection: IP20
DEKRA approved acc. to EN 61643-11
Weight: 67/72 g
Ref. No.: 142743 without fixing threaded bolt
Ref. No.: 142744 with fixing threaded bolt



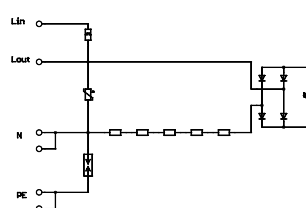
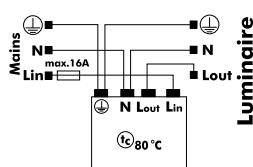
SPC3/230/20K/i

Suitable for luminaires of protection class I
Push-in terminals: 0.75–2.5 mm²
Degree of protection: IP20
Comply with the requirements of EN 61643-11
Weight: 55/60 g
Ref. No.: 142752 without fixing threaded bolt
Ref. No.: 142751 with fixing threaded bolt

SP3 230/10K/i



SPC3/230/10K/i



Type	Ref. No.	Voltage 50/60 Hz V ±10 %	Max. load current (A)	Protection level			Ipe µA	Max. impulse voltage Uoc (V)	Discharge current* (8/20 µs)		Safety max. A	Max. permitted casing temp. °C	Fixing threaded bolt
				L-N (V)	L-PE (V)	N-PE (V)			IN (A)	I _{max} (A)			
SP3/230/10K/i	142743	100–277	16	< 1500	< 1800	< 1800	1	10000	5000	10000	16	–35 to 80	without
SP3/230/10K/i	142744	100–277	16	< 1500	< 1800	< 1800	1	10000	5000	10000	16	–35 to 80	with
SPC3/230/20K/i	142751	100–277	16	< 1500	< 2200	–	1	20000	10000	20000	16	–35 to 80	with
SPC3/230/20K/i	142752	100–277	16	< 1500	< 2200	–	1	20000	10000	20000	16	–35 to 80	without

* Discharge current: at I_N min. 15 strikes; at I_{max}. 1 strike

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One-phase Luminaire Protection Devices – Type 3 with Protection of Control Phase or DALI Interface

For electronic devices

These protective components are fitted with internal thermal fuses. The protective component will be disconnect from the mains at the end of the internal varistors' life or if there is a permanently overvoltage.
In that case the green LED goes out and the protective component has to be replaced.

Suitable for luminaires of protection class I
Dimensions (LxWxH): 79x45x35 mm
Fixing threaded bolt on request
Push-in terminals: 0.2–2.5 mm²
Permitted casing temperature: –35 to 80 °C
With integrated thermal fuse
Fuse: max. 16 A
Max. residual current (I_{PE}): 1 µA
Degree of protection: IP20

AC-system: TT-TN-IT
Temporary overvoltage
• (TOV)-LV: 443 V AC (5 sec.) / 443 V (120 min.)
• (TOV)-MV/HV: 1200 V AC (200 msec.)
I_{scrr}: 1000 A

SPC3/230/10K/i LS

One-phase overvoltage protection for control phase
Comply with the requirements of EN 61643-11
Weight: 69/79 g

Ref. No.: 142755

SPC3/230/10K/i LS DI

With integrated coordination circuit

Ref. No.: 142756

SPC3/230/10K/i DALI

One-phase overvoltage protection for L, N, PE and for protection of DALI signal
Comply with the requirements of EN 61643-11 and EN 61643-21

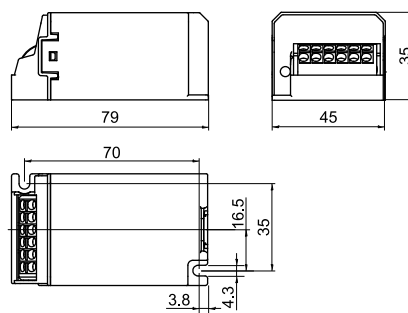
Weight: 57/67 g

Ref. No.: 142753

SPC3/230/10K/i DALI DI

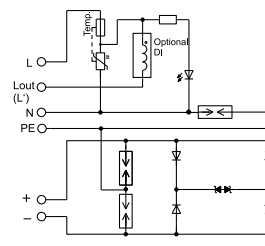
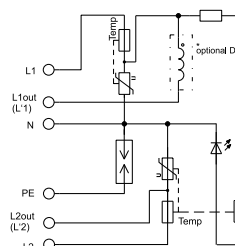
With integrated coordination circuit

Ref. No.: 142754



SPC3/230/10K/i LS

SPC3/230/10K/i DALI DI



Type	Ref. No.	Voltage 50/60 Hz V ± 10 %	Max. load current A	Protection level			Max. impulse voltage U _{OC} (V)	Discharge current* (8/20 µs)		Protection voltage DALI		
				L-N (V)	L-PE (V)	L2-N (V)		I _N (A)	I _{max} (A)	d+ to d- Channel 1	d1/d2 to PE Channel 2	Capacity d+ to d- pF
SPC3/230/10K/i LS	142755	100–277	5	< 1500	< 1900	< 1600	10000	5000	10000	–	–	–
SPC3/230/10K/i LS DI	142756	100–277	2.5	< 1500	< 1900	< 1600	10000	5000	10000	–	–	–
SPC3/230/10K/i DALI	142753	100–277	5	< 1500	< 1900	–	10000	5000	10000	< 70	< 1000	< 20
SPC3/230/10K/i DALI DI	142754	100–277	2.5	< 1500	< 1900	–	10000	5000	10000	< 70	< 1000	< 20

* Discharge current: at I_N min. 15 strikes; at I_{max}. 1 strike

Integrated Coordination Circuit

In contrast to standard protective components, the SPC3...DI components feature an integrated coordination circuit. Coordination means that the highest share of the energy applied to luminaires in the form of high-voltage pulses is discharged, which in turn ensures the protective components within the LED driver are subjected to only minimal voltage loads. This coordination can be checked by carrying out a high-voltage test on the luminaires. A decoupling inductor is also available as a separate product, which must be wired in between the protective component and the LED driver.

Type: DI-5A

Ref. No.: 149830



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Luminaire Protection Device – Type 2 and 3

For electronic devices

These protective components are fitted with an LED indicator. Once the end of the component's life has been reached, the green LED goes out and the protective component has to be replaced. If the protective luminaire component overloads, the connected lighting circuit will be interrupted.

This cut-out function makes it easier to detect the end of life of the protective component, facilitates quick replacement by maintenance staff and provides reliable protection for lighting components.
 Dimensions (LxWxH): 76x34x27 mm
 Weight: 100 g, with integrated thermal fuse
 DEKRA approved acc. to EN 61643-11

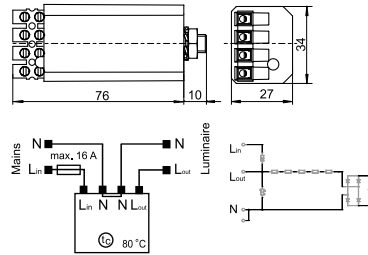
AC system: TT-TN-IT
 Temporary overvoltage
 • (TOV)-LV: 443 V AC (5 sec.) / 443 V (120 min.)
 • (TOV)-MV/HV: 1200 V AC (200 msec.)
 I_{SCR} : 4500 A



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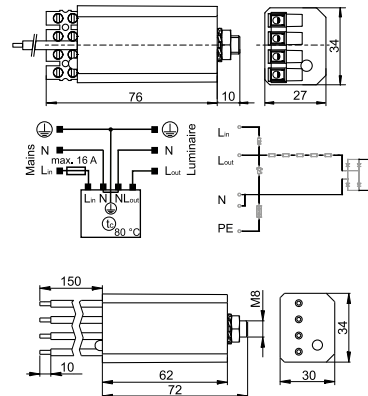
SPC 230/10 K/i

Suitable for luminaires of protection class II
 Screw terminals: 0.75–2.5 mm²
 Degree of protection: IP20
Ref. No.: 142737



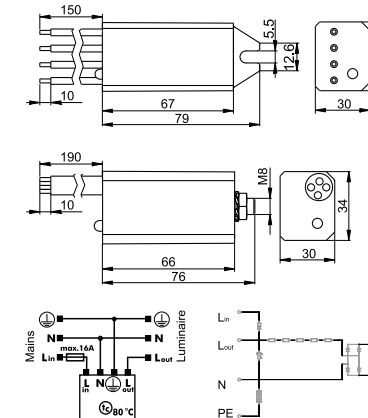
SPC 3/230/10 K/i

Suitable for luminaires of protection class I
 Screw terminals: 0.75–2.5 mm²
 Lead ground terminal: stranded conductors, 2.5 mm²,
 silicone insulation, length: 150 mm
 Degree of protection: IP20
Ref. No.: 142738
Ref. No.: 142742
 Earthing wire with M4 ring-tongue
Ref. No.: 142746



SPC 3/230/10 K/i-IP66

4 leads: stranded conductors, 2.5 mm²,
 silicone insulation, length: 150 mm
 Degree of protection: IP66
Ref. No.: 142748
Ref. No.: 142746 casing with fixing lug (no KEMA approval)
Ref. No.: 142747 with isolated cable with outer diameter approx. 12 mm (no KEMA approval)



142737 / 142738, 142742



142748, 142746



142747

Type	Ref. No.	Voltage 50/60 Hz V ±10 %	Max. load current (A)	Protection level		Ipe µA	Max. impulse voltage Uoc (V)	Discharge current* (8/20 µs)		Safety max. A	Max. permitted casing temp. °C	Fixation
				L-N (V)	L-PE (V)			IN (A)	I _{max} (A)			
SPC 230/10 K/i	142737	100–277	16	< 1500	–	–	10000	5000	10000	16	–35 to 80	M8x10
SPC 3/230/10 K/i	142738	100–277	16	< 1500	< 1800	1	10000	5000	10000	16	–35 to 80	M8x10
SPC 3/230/10 K/i	142742	100–277	16	< 1500	< 1800	1	10000	5000	10000	16	–35 to 80	M8x10
SPC 3/230/10 K/i-IP66	142748	100–277	16	< 1500	< 1800	1	10000	5000	10000	16	–35 to 80	M8x10
SPC 3/230/10 K/i-IP66	142746	100–277	16	< 1500	< 1800	1	10000	5000	10000	16	–35 to 80	lug
SPC 3/230/10 K/i-IP66	142747	100–277	16	< 1500	< 1800	1	10000	5000	10000	16	–35 to 80	M8x10

* Discharge current: at 5000 A min. 15 strikes; at 10,000 A min. 1 strike

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Luminaire Protection Device

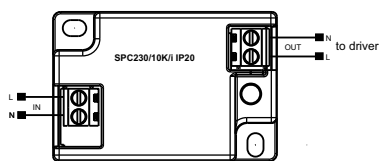
For electronic devices

These protective components are fitted with internal thermal fuses. The protective component will be disconnect from the mains at the end of the internal varistors' life or if there is a permanently overvoltage.

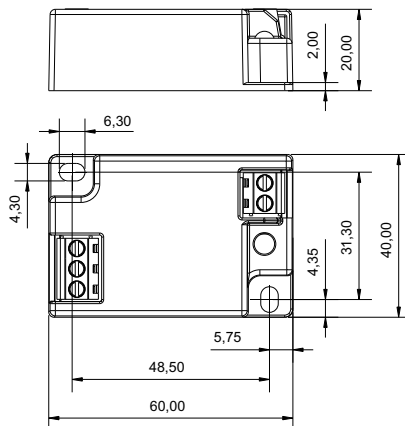
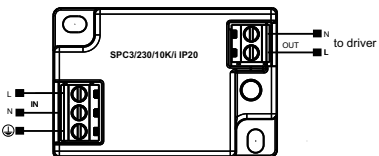
In that case the green LED goes out and the protective component has to be replaced.

Un: 100–277 V ± 10 %, 50/60 Hz
 Max. operating voltage: 305 V AC
 AC-system: TT-TN-IT
 Temporary overvoltage
 (TOV)-LV: 403 V AC (5 sec.) / 528 V (120 min.)
 (TOV)-MV/HV: 1200 V AC (200 msec.)
 I_{scr} : 300 A
 With integrated thermal fuse
 Dimensions (LxWxH): 60x40x20 mm
 Protection class: IP20

SPC230/10K/i-IP20



SPC3/230/10K/i-IP20



Packaging unit: 81 pieces



Powered by DEKRA

Type	Ref. No.	SPD Type according to EN 61643-11	Connection terminal	Max. load current (A)	Protection level		Max. impulse voltage U_{OC} (V)	Discharge current* (8/20 μ s) I_N (A)	Suitable for luminaire protection class
					L-N (V)	L-PE (V)			
SPC3/230/10K/i-IP20	142721	T3	Screw (1.0–2.5 mm ²)	3.5	< 1500	< 1800	< 12000	5000	I
SPC3/230/10K/i-IP20	142711	T3	Push-in (0.2–1.5 mm ²)	3.5	< 1500	< 1800	< 12000	5000	I
SPC3/230/12K/i-IP20	142702	T3	Push-in (0.2–1.5 mm ²)	3.5	< 1500	< 1800	< 12000	5000	I
SPC3/230/10K/i-IP20	142775	T2 + T3	Push-in (0.2–1.5 mm ²)	3.5	< 1500	< 1800	< 12000	5000	I
SPC3/230/10K/i-IP20	143777	T2 + T3	Screw (1.0–2.5 mm ²)	3.5	< 1500	< 1800	< 12000	5000	I
SPC230/10K/i-IP20	142722	T2 + T3	Screw (1.0–2.5 mm ²)	3.5	< 1500	-	< 12000	5000	II
SPC230/10K/i-IP20	142710	T2 + T3	Push-in (0.2–1.5 mm ²)	3.5	< 1500	-	< 12000	5000	II
SPC/230/12K/i-IP20	142701	T2 + T3	Push-in (0.2–1.5 mm ²)	3.5	< 1500	-	< 12000	5000	II

* Discharge current: at I_N min. 15 strikes

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Inrush Current Limiter ESB

Limits capacitive inrush currents of electronic ballasts and LED drivers and converters

Due to their capacitive nature, electronic operating devices generate high inrush currents. By temporarily activating a limiting resistor, the inrush current is reduced to an uncritical value (see graph below).

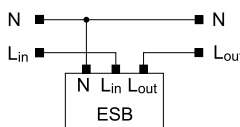
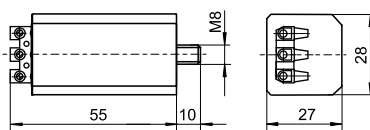
Several electronic devices can be connected downstream under consideration of the maximum permissible continuous current of the inrush current limiter. As a result, the load per circuit breaker (MCB) can be increased by at least 2.5 fold.

The ESB thus prevents any automatic circuit breakers from being triggered or any damage from being caused to upstream relay contacts.
Switching cycles: > 10,000

ESB-6K

Casing: PC
Dimensions (LxWxH): 55x28x27 mm
Weight: 61 g
Screw terminals: 0.5–1.5 mm²
AC-Types VDE approved

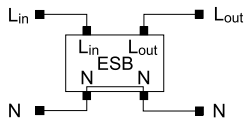
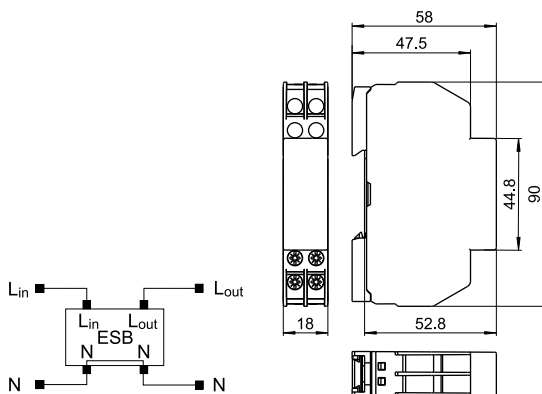
Ref. No.: 149820
Ref. No.: 149822
Ref. No.: 149823



ESB-16HS

Casing: PC
Dimensions (LxWxH): 90x18x58 mm
Weight: 75 g
Screw terminals: 0.5–2.5 mm²

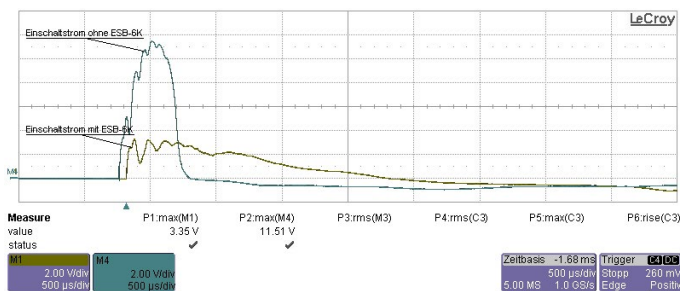
Ref. No.: 149821



Type	Ref. No.	Nominal voltage		Power consumption W	Max. direct current A	Limiting resistor Ω	Period of limitation		Max. permitted casing temperature (°C)	Min. permitted ambient temperature (°C)	Fixation
		50–60 Hz V ± 10.0 %	DC V ± 10.0 %				ms	ms			
ESB-6K	149820	220–240	–	0.25	6	20	approx. 18	–	80	–30	M8x10
ESB-16HS	149821	220–240	–	0.6	16	11.2	approx. 18	–	80	–30	DIN-rail
ESB-6K_1A	149822	220–240	–	0.25	6	440	approx. 160	–	80	–30	M8x10
ESB-6K-DC	149823	220–240	225–250	0,25	6	20	approx. 18	approx. 30	80	–30	M8x10

Example using a 150 W LED driver

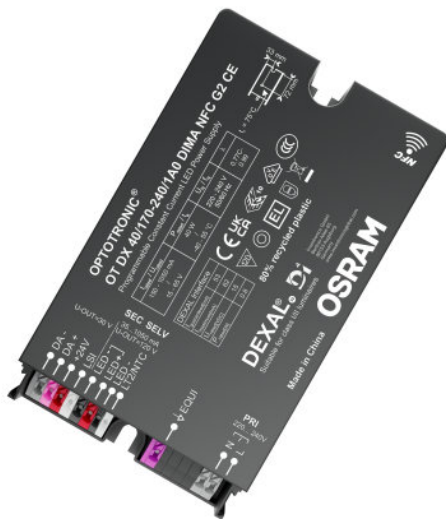
Brown: with ICL (ESB)
Blue: without ICL (ESB)
1 V = 1 A



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OPTOTRONIC - DEXAL NFC IP20 G2

D4i, DEXAL, AstroDIM, StepDIM - constant current LED drivers



Product family features

- DEXAL interface based on DALI-2 communication
- Current output range: 35...1,050 mA
- Available with different wattage: 40 W, 75 W, 110 W, 165 W and 200 W
- AstroDIM for autonomous dimming with five independent levels (astro, time mode)
- Standby power consumption: < 0.35 W
- Integrated customizable thermal management (Driver Guard)
- Constant Lumen Output (CLO)
- Easy and fast wireless luminaire programming via NFC
- Flexible current setting with one additional wire (LEDset2)

Product family benefits

- For Zhaga Book18 Luminaires and D4i certified incl. Parts 25x + AUX
- Electrical interface and data communication fully based on open standards
- Fully programmable via software (DALI Interface, NFC)
- Low luminous efficacy tolerance through low output current tolerance of $\pm 1,5 \%$
- High surge protection: up to 10 kV in protection class I or II
- Lifetime: up to 100,000 h (depending on T_c temperature, max. 10 % failure rate)
- Mains input undervoltage protection
- Fulfill safety requirement due to overload, overtemperature, Hot Plug protection
- DEXAL interface (with 15V current supply on DALI-2 lines - DALI Part 250)
- SELV DEXAL and 24V AUX interface (DALI Part 150) up to 6W
- Standardized DALI-2 communication (incl. monitoring data, energy metering)
- Integrated ESD protection: more robust for installation on non-conductive poles
- Optimized NFC for programming from the top: easy accessibility in luminaires
- Surge and overvoltage protection on DALI interface for DALI installations
- Full compatibility with Tuner4TRONIC and T4T Field App
- BOX Programming: all drivers in one BOX can be programmed in one step



Product family datasheet

Areas of application

- Street and urban lighting
- Industry
- Suitable for outdoor applications in luminaires with IP > 54
- Suitable for use in outdoor luminaires of protection class I and II

Product family datasheet

Technical data

Product description	Electrical data					
	Nominal voltage	Input voltage AC	Nominal current	Mains frequency	Power factor λ	Total harmonic distortion
OT DX 40/170-240/1A0 DIMA NFC G2 CE	220...240 V	170...264 V ¹⁾	0.22 A	0/50/60 Hz ²⁾	0.77C...0.99 ³⁾	< 5 % ⁴⁾
OT DX 75/170-240/1A0 DIMA NFC G2 CE	220...240 V	170...264 V ¹⁾	0.39 A	0/50/60 Hz ²⁾	0.98/0.95 ³⁾	< 5 % ⁴⁾
OT DX 110/170-240/1A0 DIMA NFC G2 CE	220...240 V	170...264 V ¹⁾	0.53 A	0/50/60 Hz ²⁾	0.99/0.95 ³⁾	< 5 % ⁴⁾
OT DX 165/170-240/1A0 DIMA NFC G2 CE	220...240 V	170...264 V ¹⁾	0.78 A	0/50/60 Hz ²⁾	0.98/0.95 ³⁾	< 5 % ⁴⁾
OT DX 200/170-240/1A0 DIMA NFC G2 CE	220...240 V	170...264 V		0/50/60 Hz ²⁾	0.99/0.95 ³⁾	< 5 % ⁴⁾

Product description	Device power loss	Inrush current	Max. ECG no. on circuit breaker 10 A (B)	Max. ECG no. on circuit breaker 16 A (B)	Max. ECG no. on circuit breaker 25 A (B)	Surge capability (L/N-Ground)
OT DX 40/170-240/1A0 DIMA NFC G2 CE	4.5 W ⁵⁾	27 A ⁶⁾	18 ⁷⁾	30 ⁷⁾	46 ⁷⁾	10 kV ⁸⁾
OT DX 75/170-240/1A0 DIMA NFC G2 CE	5.3 W ⁵⁾	3.3 A ²⁴⁾	21 ⁷⁾	33 ⁷⁾	52 ⁷⁾	10 kV ⁸⁾
OT DX 110/170-240/1A0 DIMA NFC G2 CE	7.7 W ⁵⁾	3.3 A ²⁴⁾	18 ⁷⁾	29 ⁷⁾	45 ⁷⁾	10 kV ⁸⁾
OT DX 165/170-240/1A0 DIMA NFC G2 CE	9.9 W ⁵⁾	3.3 A ²⁴⁾	12 ⁷⁾	20 ⁷⁾	30 ⁷⁾	10 kV ⁸⁾
OT DX 200/170-240/1A0 DIMA NFC G2 CE	14 W ⁵⁾	3.3 A ²⁷⁾	6	10	16	10 kV

Product description	Surge capability (L-N)	Nominal output power	Maximum output power	Efficiency in full-load	Networked standby power
OT DX 40/170-240/1A0 DIMA NFC G2 CE	6 kV ⁹⁾	40 W ¹⁰⁾	40 W	90 % ¹¹⁾	0.35 W ¹²⁾
OT DX 75/170-240/1A0 DIMA NFC G2 CE	6 kV ⁹⁾	75 W ¹⁰⁾	75 W	93 % ¹¹⁾	0.35 W ¹²⁾
OT DX 110/170-240/1A0 DIMA NFC G2 CE	6 kV ⁹⁾	110 W ¹⁰⁾	110 W	93 % ¹¹⁾	0.35 W ¹²⁾
OT DX 165/170-240/1A0 DIMA NFC G2 CE	6 kV ⁹⁾	165 W ¹⁰⁾	165 W	94 % ¹¹⁾	0.35 W ¹²⁾
OT DX 200/170-240/1A0 DIMA NFC G2 CE	6 kV	200 W	200 W	93% ¹¹⁾	0.38 W ¹²⁾

Product family datasheet

Product description	Input voltage DC	Nominal output current	Default output current	Output current tolerance	Output ripple current (100 Hz)
OT DX 40/170-240/1A0 DIMA NFC G2 CE	170...276 V ²⁾	150...1050 mA	700 mA	±1.5 % ¹³⁾	4 %
OT DX 75/170-240/1A0 DIMA NFC G2 CE	170...276 V ²⁾	150...1050 mA	700 mA	±1.5 % ¹³⁾	4 %
OT DX 110/170-240/1A0 DIMA NFC G2 CE	170...276 V ²⁾	150...1050 mA	700 mA	±1.5 % ¹³⁾	4 %
OT DX 165/170-240/1A0 DIMA NFC G2 CE	170...276 V ²⁾	150...1050 mA	700 mA	±1.5 % ¹³⁾	4 %
OT DX 200/170-240/1A0 DIMA NFC G2 CE	170...276 V ²⁾	150...1050 mA	700 mA	±1.5 % ¹³⁾	4 %

Product description	Output PSTLM	Output SVM	Minimum output current	Galvanic isolation
OT DX 40/170-240/1A0 DIMA NFC G2 CE	≤1	≤0.4	35 mA	Double
OT DX 75/170-240/1A0 DIMA NFC G2 CE	≤1	≤0.4	35 mA	Double
OT DX 110/170-240/1A0 DIMA NFC G2 CE	≤1	≤0.4	35 mA	Double
OT DX 165/170-240/1A0 DIMA NFC G2 CE	≤1	≤0.4	35 mA	Double
OT DX 200/170-240/1A0 DIMA NFC G2 CE	≤1	≤0.4	35 mA	Double

Product description	Nominal output voltage	Output current LEDset shorted	Auxiliary Power Supply	U-OUT (working voltage)
OT DX 40/170-240/1A0 DIMA NFC G2 CE	15...65 V	Not allowed	24 V ¹⁴⁾	60 V
OT DX 75/170-240/1A0 DIMA NFC G2 CE	35...150 V	Not allowed	24 V ¹⁴⁾	120 V
OT DX 110/170-240/1A0 DIMA NFC G2 CE	65...230 V	Not allowed	24 V ¹⁴⁾	250 V
OT DX 165/170-240/1A0 DIMA NFC G2 CE	90...260 V	Not allowed	24 V ¹⁴⁾	300 V
OT DX 200/170-240/1A0 DIMA NFC G2 CE	140...300 V	Not allowed	24 V ¹⁴⁾	375 V

Product description	Dimensions & weight					
	Length	Width	Height	Mounting hole spacing, length	Product weight	Cable cross-section, input side
OT DX 40/170-240/1A0 DIMA NFC G2 CE	133.0 mm	77.0 mm	40.0 mm	122.5 mm	230.00 g	0.2...1.5 mm ² ¹⁵⁾
OT DX 75/170-240/1A0 DIMA NFC G2 CE	150.0 mm	85.0 mm	40.0 mm	134.0 mm	315.00 g	0.2...1.5 mm ² ¹⁵⁾

Product family datasheet

Product description	Dimensions & weight					
	Length	Width	Height	Mounting hole spacing, length	Product weight	Cable cross-section, input side
OT DX 110/170-240/1A0 DIMA NFC G2 CE	150.0 mm	85.0 mm	40.0 mm	134.0 mm	790.00 g	0.2...1.5 mm ^{2 15)}
OT DX 165/170-240/1A0 DIMA NFC G2 CE	150.0 mm	85.0 mm	40.0 mm	134.0 mm	790.00 g	0.2...1.5 mm ^{2 15)}
OT DX 200/170-240/1A0 DIMA NFC G2 CE	170.0 mm	100.0 mm	40.0 mm	160.0 mm	980.00 g	0.2...1.5 mm ^{2 15)}

Product description	Cable cross-section, output side	Wire preparation length, input side	Mounting hole spacing, width	Temperatures & operating conditions	
				Ambient temperature range	Temperature range at storage
OT DX 40/170-240/1A0 DIMA NFC G2 CE	0.2...1.5 mm ^{2 16)}	8.5...9.5 mm		-40...+55 °C	-40...+85 °C
OT DX 75/170-240/1A0 DIMA NFC G2 CE	0.2...1.5 mm ^{2 16)}	8.5...9.5 mm		-40...+55 °C	-40...+85 °C
OT DX 110/170-240/1A0 DIMA NFC G2 CE	0.2...1.5 mm ^{2 16)}	8.5...9.5 mm		-40...+55 °C	-40...+85 °C
OT DX 165/170-240/1A0 DIMA NFC G2 CE	0.2...1.5 mm ^{2 16)}	8.5...9.5 mm		-40...+55 °C	-40...+85 °C
OT DX 200/170-240/1A0 DIMA NFC G2 CE	0.2...1.5 mm ^{2 16)}	8.5...9.5 mm	90.0 mm	-40...+55 °C	-40...+85 °C

Product description	Maximum temperature at tc test point	Max.housing temperature in case of fault	Permitted rel. humidity during operation	Lifespan
				ECG lifetime
OT DX 40/170-240/1A0 DIMA NFC G2 CE	75 °C	110 °C	5...95 % ¹⁷⁾	50000 / 100000 h ¹⁸⁾
OT DX 75/170-240/1A0 DIMA NFC G2 CE	85 °C	110 °C	5...95 % ¹⁷⁾	50000 / 100000 h ²⁵⁾
OT DX 110/170-240/1A0 DIMA NFC G2 CE	85 °C	110 °C	5...95 % ¹⁷⁾	50000 / 100000 h ²⁵⁾
OT DX 165/170-240/1A0 DIMA NFC G2 CE	95 °C	110 °C	5...95 % ¹⁷⁾	50000 / 100000 h ²⁶⁾
OT DX 200/170-240/1A0 DIMA NFC G2 CE	90 °C	110 °C	5...95 % ¹⁷⁾	50000 / 100000 h ²⁸⁾

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Product description	Additional product data	Capabilities			
	Predecessor EAN	Dimmable	Dimming interface	Dimming range	Suitable for fixtures with prot. class
OT DX 40/170-240/1A0 DIMA NFC G2 CE	4052899999664	Yes	AstroDIM / DALI/DEXAL/D4i / StepDIM ¹⁹⁾	3...100 %	I / II
OT DX 75/170-240/1A0 DIMA NFC G2 CE	4052899999671	Yes	AstroDIM / DALI/DEXAL/D4i / StepDIM ¹⁹⁾	3...100 %	I / II
OT DX 110/170-240/1A0 DIMA NFC G2 CE	4052899999688	Yes	AstroDIM / DALI/DEXAL/D4i / StepDIM ¹⁹⁾	3...100 %	I / II
OT DX 165/170-240/1A0 DIMA NFC G2 CE	4052899999695	Yes	AstroDIM / DALI/DEXAL/D4i / StepDIM ¹⁹⁾	3...100 %	I / II
OT DX 200/170-240/1A0 DIMA NFC G2 CE		Yes	AstroDIM / DALI/DEXAL/D4i / StepDIM ¹⁹⁾	3...100 %	I / II

Product description	Constant lumen function	NTC input	Short-circuit protection	No-load proof
OT DX 40/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes	Yes
OT DX 75/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes	Yes
OT DX 110/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes	Yes
OT DX 165/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes	Yes
OT DX 200/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes	Yes

Product description	Intended for no-load operation	Max. cable length to lamp/LED module	LEDset	Overload protection
OT DX 40/170-240/1A0 DIMA NFC G2 CE	No	2.0 m ²⁰⁾	Yes	Yes
OT DX 75/170-240/1A0 DIMA NFC G2 CE	No	2.0 m ²⁰⁾	Yes	Yes
OT DX 110/170-240/1A0 DIMA NFC G2 CE	No	2.0 m ²⁰⁾	Yes	Yes
OT DX 165/170-240/1A0 DIMA NFC G2 CE	No	2.0 m ²⁰⁾	Yes	Yes
OT DX 200/170-240/1A0 DIMA NFC G2 CE	No	2.0 m ²⁰⁾	Yes	Yes

Product family datasheet

Product description	Number of channels	DALI-2 Diagnostic Data	DALI-2 Energy Data	Programming
				Box programming
OT DX 40/170-240/1A0 DIMA NFC G2 CE	1	Yes ²¹⁾	Yes ²²⁾	Yes
OT DX 75/170-240/1A0 DIMA NFC G2 CE	1	Yes ²¹⁾	Yes ²²⁾	Yes
OT DX 110/170-240/1A0 DIMA NFC G2 CE	1	Yes ²¹⁾	Yes ²²⁾	Yes
OT DX 165/170-240/1A0 DIMA NFC G2 CE	1	Yes ²¹⁾	Yes ²²⁾	Yes
OT DX 200/170-240/1A0 DIMA NFC G2 CE	1	Yes ²¹⁾	Yes ²²⁾	Yes

Product description	Tuner4TRONIC	Programming device	Programmable features	
			Constant Lumen	Thermal Protection
OT DX 40/170-240/1A0 DIMA NFC G2 CE	Yes	DALI / NFC	Yes	Yes
OT DX 75/170-240/1A0 DIMA NFC G2 CE	Yes	DALI / NFC	Yes	Yes
OT DX 110/170-240/1A0 DIMA NFC G2 CE	Yes	DALI / NFC	Yes	Yes
OT DX 165/170-240/1A0 DIMA NFC G2 CE	Yes	DALI / NFC	Yes	Yes
OT DX 200/170-240/1A0 DIMA NFC G2 CE	Yes	DALI / NFC	Yes	Yes

Product description	Driver Guard	AstroDIM	StepDIM	MainsDIM
OT DX 40/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes ¹⁹⁾	No
OT DX 75/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes ¹⁹⁾	No
OT DX 110/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes ¹⁹⁾	No
OT DX 165/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes ¹⁹⁾	No
OT DX 200/170-240/1A0 DIMA NFC G2 CE	Yes	Yes	Yes ¹⁹⁾	No

Product description	Emergency Mode	DALI-2 Luminaire Data	Configuration Lock	Certificates & standards
				Type of protection
OT DX 40/170-240/1A0 DIMA NFC G2 CE	Yes	Yes ²³⁾	Yes	IP20
OT DX 75/170-240/1A0 DIMA NFC G2 CE	Yes	Yes ²³⁾	Yes	IP20
OT DX 110/170-240/1A0 DIMA NFC G2 CE	Yes	Yes ²³⁾	Yes	IP20

Product family datasheet

				Certificates & standards
Product description	Emergency Mode	DALI-2 Luminaire Data	Configuration Lock	Type of protection
OT DX 165/170-240/1A0 DIMA NFC G2 CE	Yes	Yes ²³⁾	Yes	IP20
OT DX 200/170-240/1A0 DIMA NFC G2 CE	Yes	Yes ²³⁾	Yes	IP20

			Logistical data	Environmental information according Art. 33 of EU Regulation (EC) 1907/2006 (REACH)
Product description	Standards	Approval marks – approval	Commodity code	Date of Declaration
OT DX 40/170-240/1A0 DIMA NFC G2 CE	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to FCC 47 part 15 class B/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207/Acc. to IEC 62386-150/Acc. to IEC 62386-250/Acc. to IEC 62386-251, -252, -253	CCC / CE / D4i / DALI-2 / EL / ENEC / RCM / VDE	85044083900	14-11-2023
OT DX 75/170-240/1A0 DIMA NFC G2 CE	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to FCC 47 part 15 class B/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207/Acc. to IEC 62386-150/Acc. to IEC 62386-250/Acc. to IEC 62386-251, -252, -253	CCC / CE / D4i / DALI-2 / EL / ENEC / RCM / VDE	85044083900	14-11-2023

Product family datasheet

Product description	Standards	Approval marks – approval	Logistical data	Environmental information according Art. 33 of EU Regulation (EC) 1907/2006 (REACH)
			Commodity code	Date of Declaration
OT DX 110/170-240/1A0 DIMA NFC G2 CE	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to FCC 47 part 15 class B/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207/Acc. to IEC 62386-150/Acc. to IEC 62386-250/Acc. to IEC 62386-251, -252, -253	CCC / CE / D4i / DALI-2 / EL / ENEC / RCM / VDE	85044083900	14-11-2023
OT DX 165/170-240/1A0 DIMA NFC G2 CE	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to FCC 47 part 15 class B/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207/Acc. to IEC 62386-150/Acc. to IEC 62386-250/Acc. to IEC 62386-251, -252, -253	CCC / CE / D4i / DALI-2 / EL / ENEC / RCM / VDE	85044083900	14-11-2023
OT DX 200/170-240/1A0 DIMA NFC G2 CE	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to FCC 47 part 15 class B/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207/Acc. to IEC 62386-150/Acc. to IEC 62386-250/Acc. to IEC 62386-251, -252, -253	CCC / CE / D4i / DALI-2 / EL / ENEC / RCM / VDE	85044083900	14-11-2023

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Product description	Primary Article Identifier	Candidate List Substance 1	CAS No. of substance 1	Safe Use Instruction
OT DX 40/170-240/1A0 DIMA NFC G2 CE	4052899631649	Lead	7439-92-1	The identification of the Candidate List substance is sufficient to allow safe use of the article.
OT DX 75/170-240/1A0 DIMA NFC G2 CE	4052899631663	Lead	7439-92-1	The identification of the Candidate List substance is sufficient to allow safe use of the article.
OT DX 110/170-240/1A0 DIMA NFC G2 CE	4052899631694	Lead	7439-92-1	The identification of the Candidate List substance is sufficient to allow safe use of the article.
OT DX 165/170-240/1A0 DIMA NFC G2 CE	4052899631717	Lead	7439-92-1	The identification of the Candidate List substance is sufficient to allow safe use of the article.
OT DX 200/170-240/1A0 DIMA NFC G2 CE	4052899631731	Lead	7439-92-1	The identification of the Candidate List substance is sufficient to allow safe use of the article.

Product description	Declaration No. in SCIP database
OT DX 40/170-240/1A0 DIMA NFC G2 CE	3b2b8cb6-2c90-4bef-9300-d8824c39ddba
OT DX 75/170-240/1A0 DIMA NFC G2 CE	a491a4e3-3cf5-482f-92dc-a23244e90f0d
OT DX 110/170-240/1A0 DIMA NFC G2 CE	aeed06a2-bcf3-4ba6-a628-eab37c4ebf9c
OT DX 165/170-240/1A0 DIMA NFC G2 CE	89248295-e9cb-44da-8e61-77b2e68ce845
OT DX 200/170-240/1A0 DIMA NFC G2 CE	820f27c6-b566-48e6-9204-65e3f2bc1fe0

- 1) Permitted voltage range
- 2) Additional fuse needed in DC operation
- 3) Within the full operating window
- 4) Full load, 230V, 50 Hz
- 5) Maximum

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- 6) At 217 μ s
- 7) Type B
- 8) Single pulse 10kV / 12 Ohm (1.2/50 μ s)
- 9) @ 2 Ohm, acc. to EN61547
- 10) Max. 75% in DC operating mode
- 11) at 230 V, 50 Hz
- 12) DEXAL power supply disabled
- 13) \pm 3% for Output current lower than 150 mA
- 14) 3W average, 6W peak power
- 15) Solid/ Flexible Leads
- 16) Wire cross section for LT2/NTC and LED-: 0.2...1.0 mm²
- 17) The luminaire manufacturer must ensure that condensation water cannot be created within the fixture.
- 18) At maximum $T_c = 75^\circ\text{C} / 10\%$ failure rate / At $T_c = 65^\circ\text{C} / 10\%$ failure rate
- 19) StepDIM functionality with external component 'OT DX SD BOX' only
- 20) Output wires must be routed as close as possible to each other
- 21) Acc. DALI part 253
- 22) Acc. DALI part 252
- 23) Acc. DALI part 251
- 24) At 3 ms
- 25) At maximum $T_c = 85^\circ\text{C} / 10\%$ failure rate / At $T_c = 75^\circ\text{C} / 10\%$ failure rate
- 26) At maximum $T_c = 95^\circ\text{C} / 10\%$ failure rate / At $T_c = 85^\circ\text{C} / 10\%$ failure rate
- 27) At 3.15 ms
- 28) At maximum $T_c = 90^\circ\text{C} / 10\%$ failure rate / At $T_c = 80^\circ\text{C} / 10\%$ failure rate

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Application advice

For more detailed application information and graphics please see product datasheet.

Product family datasheet

Additional product information


- Default output current is 700 mA without any resistor connected to the LEDset port. As soon as the driver detects one time a resistor value within the resistor range of 33.3 kOhm (1050 mA) and 24.9 kOhm (150 mA) for more than 3 s, the driver activates the LEDset2 mode.
- The driver withstands an input voltage of up to 350 V AC for a maximum of two hours. An output load shutdown can occur in case the supply voltage exceeds the input voltage range defined.
- Shut down of output load happens if the input voltage of the load is below the allowed minimum output voltage of the driver. The driver automatically tries to switch on the load cyclically.
- The driver automatically reduces the output current in case the maximum allowed output power is exceeded, as long as the input voltage of the load is within the declared output voltage range of the driver. In all other cases the driver may shut down the load.
- The driver is protected against temporary overheating by automatically reduction of the output current.
- Several external NTCs are supported for temperature protection of the LED module or luminaire. The type of NTC can be selected in the programming software in the temperature based mode. By default the resistor based mode is activated with following values: start derating: 6.3 kOhm, end derating 5.0 kOhm, shut off: 4.3 kOhm, derating level 50 %.
- If the dimming mode is changed via NFC while the driver is not powered, one additional power on/off cycle is needed before the dimming mode becomes active.
- The constant lumen feature is disabled by default.
- If any output level is below the physical min level, the physical min level will be used.
- The driver is intended for luminaire built-in use.
- Mind the polarity of the DALI lines. DA+ to DA+, DA- to DA- only.
- The DEXAL interface is polarity sensitive, even if the DEXAL bus power supply in the driver is turned off. Therefore the polarity of all connected drivers should not be mixed.
- For efficiency and standby power measurement, the D4i bus power supply shall be switched off by using Tuner4TRONIC. Refer to www.tuner4tronic.com.
- To ensure an optimal communication during the NFC programming, the NFC antenna should be placed on the top of the LED Driver, above the NFC marking. This improves the accessibility to the NFC tag also in application, for instance within Luminaires.
- In order to ensure an optimal NFC programming of the Led Driver during the luminaire production, the luminaire maker shall not place any metal parts in proximity of the NFC reader, at least within a distance of 10 cm.
- Default output current is supplied without any resistor connected to the LEDset port. As soon as the driver detects one time a resistor value within the allowed resistor range for more than 3 s, the driver activates the LEDset2 mode.
- The driver withstands an input voltage of up to 320 Vac with unlimited time. Shut down of output load might occur in case the supply voltage exceeds (270 Vac). Under operation conditions in which overvoltage level > 264 Vac occur, the product shall be additionally protected by an external fuse (400V 4A, time lag, $12 \tau > 160 \text{ 160 A2s}$).
- The maximum number of units per circuit breaker is an indicative value due mainly to high tolerance for the tripping current for narrow pulses.
- The EQUI pin should be connected to the heat sink of the LED module to improve the surge withstand capability of the system and EMI in critical luminaires.
- The dimming mode feature is disabled by default. If the dimming mode is changed via NFC while the driver is not powered, one additional power on/off cycle is needed before the new dimming mode becomes active.
- For input voltage of 170...190 Vac, the maximum allowed output power is linear limited starting from 100 % at 190 Vac down to 85 % at 170 Vac.
- LEDset and NTC functionality share the same connection terminal; both features are not simultaneously available.
- LEDset functionalities are limited only to the current setting, via codified resistor, and thermal protection via PTC (5V supply, miswiring protection, thermal protection with NTC are not available).
- All functionalities are ensured for output cables up to 10 m. For cable length more than 2 m, EMI compliance has to be checked in the application.
- The luminaire manufacturer must ensure that condensation water cannot be created within the fixture and, in particular, cannot affect the functionality of the product. Failing to comply with this requirement will make invalid any warranty claim

Product family datasheet

Sales and Technical Support

Sales and Technical Support www.osram.com

Download Data

File
 Certificates OT VDE ENEC 40050684 290923

Ecodesign regulation information:

Intended for use with LED modules.

The forward voltage of the LED light source shall be within the defined operating window of the control gear in all operating conditions including dimming if applicable.

Separate control gear and light sources must be disposed of at certified disposal companies in accordance with Directive 2012/19/EU (WEEE) in the EU and with Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 in the UK. For this purpose, collection points for recycling centres and take-back systems (CRSO) are available from retailers or private disposal companies, which accept separate control gear and light sources free of charge. In this way, raw materials are conserved and materials are recycled.

Logistical Data

Product code	Product description	Packaging unit (Pieces/Unit)	Dimensions (length x width x height)	Volume	Gross weight
4052899631649	OT DX 40/170-240/1A0 DIMA NFC G2 CE	Shipping carton box 18	285 mm x 268 mm x 156 mm	11.92 dm ³	4616.00 g
4052899631663	OT DX 75/170-240/1A0 DIMA NFC G2 CE	Shipping carton box 12	319 mm x 210 mm x 156 mm	10.45 dm ³	4168.00 g
4052899631694	OT DX 110/170-240/1A0 DIMA NFC G2 CE	Shipping carton box 12	319 mm x 210 mm x 156 mm	10.45 dm ³	9868.00 g
4052899631717	OT DX 165/170-240/1A0 DIMA NFC G2 CE	Shipping carton box 12	319 mm x 210 mm x 156 mm	10.45 dm ³	9868.00 g
4052899631731	OT DX 200/170-240/1A0 DIMA NFC G2 CE	Shipping carton box 8	443 mm x 303 mm x 115 mm	15.44 dm ³	8485.00 g

The mentioned product code describes the smallest quantity unit which can be ordered. One shipping unit can contain one or more single products. When placing an order, for the quantity please enter single or multiples of a shipping unit.

Product family datasheet

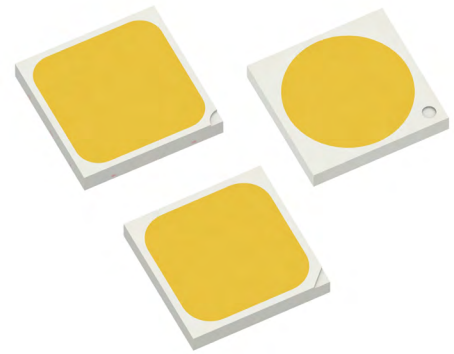
Disclaimer

Subject to change without notice. Errors and omission excepted. Always make sure to use the most recent release.

LUXEON 5050

High efficacy and superior robustness in a high power package, enabling cost-effective system design

LUXEON 5050 is a high power package that provides high luminance from a super robust package to enable cost effective and reliable fixture designs. LUXEON 5050 uses an industry standard 5050 surface mount package with a fairly small Light Emitting Surface (LES). LUXEON 5050 product family includes LUXEON 5050 Round LES, LUXEON 5050 Square LES and LUXEON 5050 HE, three product lines. LUXEON 5050 comes in 70CRI, 80CRI and 90CRI with a wide range of CCTs, and offers hot-color targeting to ensure that the LEDs are within color target at application conditions of 85°C. Furthermore, with the latest NightScape Technology, LUXEON 5050 enabled revolutionary environmental friendly outdoor solutions with blue content below 2%,



Now With NightScape Technology

NightScape Technology enables white light with blue light content that is less than 2%.

FEATURES AND BENEFITS

- Superior lm/W enables outstanding efficacy in end application
- Extremely reliable package design affirms long lifetime in harsh environments^[1]
- Robust coating design for enhanced sulfur protection capability (LUXEON 5050 Square LES)^[1]
- Two voltage configurations are compatible with low cost high efficacy drivers
- Low R_{th} enables effective thermal dissipation design for higher efficiency
- Hot-color targeting ensures color is within ANSI bin at 85°C
- 3-step and 5-step MacAdam ellipse binning structure ensures excellent color uniformity

1. Refer to reliability datasheet for more details.

PRIMARY APPLICATIONS

- Street Lights
- High Bay
- Low Bay
- Flood Lights
- Wall Pack
- Landscape Lighting
- Downlights

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General Product Information

Product Test Conditions

LUXEON 5050 LEDs are tested with a 20ms monopulse specified below at a junction temperature, T_j , of 25°C. Forward voltage and luminous flux are binned at a T_j of 25°C, while color is hot-targeted at a T_j of 85°C.

- 160mA – LUXEON 5050 Round LES/LUXEON 5050 HE – 24V and LUXEON 5050 Square LES – 30V
- 640mA – LUXEON 5050 Round LES/LUXEON 5050 HE – 6V
- 800mA – LUXEON 5050 (Square LES) – 6V

Part Number Nomenclature

Part numbers for LUXEON 5050 follow the convention below:

L 1 5 0 – **A A A A** 5 0 **B B C C C C C**

Where:

- A A A A** – designates nominal CCT and CRI (2780=2700K, 80CRI; 3090 =3000K, 90CRI, etc., and NSC1 = Nightscape)
- B B** – designates voltage (06=6V, 24=24V, 30=30V)
- C C C C C** – designates options for product specification (00000= 5050 Round LES base part, 000S0= 5050 Square LES base part, 000H0=5050 HE base part, Besides, there would be custom part numbers that are derived from base part number for kitting purpose etc., and those would take the last five digits to differentiate from base part number)

Therefore, the following part number is used for a custom part number that derived from LUXEON 5050 Round LES, 4000K 70CRI, 24V:

L 1 5 0 – **4 0 7 0** 5 0 **2 4 L K H G 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 5050 is compliant to the European Union directives on the restriction of hazardous substances in electronic equipment, namely the RoHS Directive 2011/65/EU including amendments 2015/863/EU & 2017/2102/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 5050 at rated current, $T_j=25^{\circ}\text{C}$.

PRODUCT	NOMINAL CCT ⁽¹⁾	MINIMUM CRI ^(2, 3)	LUMINOUS FLUX ^(2, 3) (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	LUMINOUS FLUX ^(2, 3) (lm)	TYPICAL LUMINOUS EFFICACY (lm/W)	PART NUMBER	
			MINIMUM	TYPICAL		TYPICAL			
			RATED CURRENT ⁽⁴⁾				50% OF RATED CURRENT ⁽⁴⁾		
LUXEON 5050 Round LES 24V	2200K	70	515	587	150	309	169	L150-2270502400000	
	2700K	70	535	640	164	336	184	L150-2770502400000	
	3000K	70	553	667	171	351	192	L150-3070502400000	
	3500K	70	600	686	176	361	197	L150-3570502400000	
	4000K	70	580	693	178	364	199	L150-4070502400000	
	5000K	70	580	693	178	364	199	L150-5070502400000	
	5700K	70	570	683	175	359	196	L150-5770502400000	
	6500K	70	570	677	173	356	195	L150-6570502400000	
	2200K	80	440	500	128	263	144	L150-2280502400000	
	2700K	80	500	572	147	301	164	L150-2780502400000	
	3000K	80	516	595	152	313	171	L150-3080502400000	
	3500K	80	527	605	155	318	174	L150-3580502400000	
	4000K	80	539	630	161	331	181	L150-4080502400000	
	5000K	80	539	630	161	331	181	L150-5080502400000	
	5700K	80	539	617	158	324	177	L150-5780502400000	
	6500K	80	539	615	158	323	177	L150-6580502400000	
	2700K	90	414	475	122	250	137	L150-2790502400000	
	3000K	90	428	490	126	258	141	L150-3090502400000	
	3500K	90	445	510	131	268	147	L150-3590502400000	
	4000K	90	456	530	136	279	152	L150-4090502400000	
	5000K	90	456	530	136	279	152	L150-5090502400000	
	5700K	90	456	530	136	279	152	L150-5790502400000	
	LUXEON 5050 Round LES 6V	2200K	70	515	587	150	309	169	L150-2270500600000
		2700K	70	535	640	164	336	184	L150-2770500600000
		3000K	70	553	667	171	351	192	L150-3070500600000
		3500K	70	600	686	176	361	197	L150-3570500600000
		4000K	70	580	693	178	364	199	L150-4070500600000
		5000K	70	580	693	178	364	199	L150-5070500600000
5700K		70	570	683	175	359	196	L150-5770500600000	
6500K		70	570	677	173	356	195	L150-6570500600000	
2200K		80	440	500	128	263	144	L150-2280500600000	
2700K		80	500	572	147	301	164	L150-2780500600000	
3000K		80	516	595	152	313	171	L150-3080500600000	
3500K		80	527	605	155	318	174	L150-3580500600000	
4000K		80	539	630	161	331	181	L150-4080500600000	
5000K		80	539	630	161	331	181	L150-5080500600000	
5700K		80	539	617	158	324	177	L150-5780500600000	
6500K		80	539	615	158	323	177	L150-6580500600000	
2700K		90	414	475	122	250	137	L150-2790500600000	
3000K		90	428	490	126	258	141	L150-3090500600000	
3500K		90	445	510	131	268	147	L150-3590500600000	
4000K		90	456	530	136	279	152	L150-4090500600000	
5000K		90	456	530	136	279	152	L150-5090500600000	
5700K		90	456	530	136	279	152	L150-5790500600000	

Table 1 continued on next page:

1. Correlated color temperature is hot targeted at $T_j=85^{\circ}\text{C}$.
2. Luminous flux and CRI are based upon mounted package on highly reflective surface at $T_j=25^{\circ}\text{C}$. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. Lumileds maintains a tolerance of ± 2 on CRI and $\pm 7\%$ on luminous flux measurements.
4. Rated current of LUXEON 5050 Round LES/LUXEON 5050 HE: 6V - 640mA, 24V - 160mA. Rated current of LUXEON 5050 Square LES: 6V - 800mA, 30V - 160mA.
5. Referred as LUXEON 5050 Square LES - Nightscape; which constrains the typical output of blue light from 400nm to 500nm to be within 2% at rated condition.

Table 1. Product performance of LUXEON 5050 at rated current, T_j=25°C, Continued.

PRODUCT	NOMINAL CCT ^[1]	MINIMUM CRI ^[2, 3]	LUMINOUS FLUX ^[2, 3] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	LUMINOUS FLUX ^[2, 3] (lm)	TYPICAL LUMINOUS EFFICACY (lm/W)	PART NUMBER
			MINIMUM	TYPICAL		TYPICAL		
			RATED CURRENT ^[4]				50% OF RATED CURRENT ^[4]	
LUXEON 5050 Square LES 30V	1850K ^[5]	50	645	693	142	365	159	L150-NSC15030000S0
	1800K	70	556	598	123	315	137	L150-18705030000S0
	2200K	70	621	717	147	378	165	L150-22705030000S0
	2700K	70	693	792	162	418	182	L150-27705030000S0
	3000K	70	720	813	167	429	187	L150-30705030000S0
	3500K	70	729	838	172	442	193	L150-35705030000S0
	4000K	70	743	850	174	448	195	L150-40705030000S0
	5000K	70	743	850	174	448	195	L150-50705030000S0
	5700K	70	738	840	172	443	193	L150-57705030000S0
	6500K	70	720	825	169	435	190	L150-65705030000S0
	2200K	80	586	630	130	332	145	L150-22805030000S0
	2700K	80	650	695	143	366	160	L150-27805030000S0
	3000K	80	665	730	150	385	168	L150-30805030000S0
	3500K	80	679	735	151	388	169	L150-35805030000S0
	4000K	80	700	768	158	405	177	L150-40805030000S0
	5000K	80	702	768	158	405	177	L150-50805030000S0
	5700K	80	700	768	158	405	177	L150-57805030000S0
	6500K	80	688	740	152	390	170	L150-65805030000S0
	2700K	90	558	600	123	316	138	L150-27905030000S0
	3000K	90	586	630	130	332	145	L150-30905030000S0
3500K	90	600	640	132	337	147	L150-35905030000S0	
4000K	90	609	655	135	345	151	L150-40905030000S0	
5000K	90	618	665	137	351	153	L150-50905030000S0	
5700K	90	605	650	134	343	149	L150-57905030000S0	
LUXEON 5050 Square LES 6V	1850K ^[5]	50	645	693	142	365	159	L150-NSC15006000S0
	1800K	70	556	598	123	315	137	L150-18705006000S0
	2200K	70	621	717	147	378	165	L150-22705006000S0
	2700K	70	693	792	162	418	182	L150-27705006000S0
	3000K	70	720	813	167	429	187	L150-30705006000S0
	3500K	70	729	838	172	442	193	L150-35705006000S0
	4000K	70	743	850	174	448	195	L150-40705006000S0
	5000K	70	743	850	174	448	195	L150-50705006000S0
	5700K	70	738	840	172	443	193	L150-57705006000S0
	6500K	70	720	825	169	435	190	L150-65705006000S0
	2200K	80	586	630	130	332	145	L150-22805006000S0
	2700K	80	650	695	143	366	160	L150-27805006000S0
	3000K	80	665	730	150	385	168	L150-30805006000S0
	3500K	80	679	735	151	388	169	L150-35805006000S0
	4000K	80	700	768	158	405	177	L150-40805006000S0
	5000K	80	702	768	158	405	177	L150-50805006000S0
	5700K	80	700	768	158	405	177	L150-57805006000S0
	6500K	80	688	740	152	390	170	L150-65805006000S0
	2700K	90	558	600	123	316	138	L150-27905006000S0
	3000K	90	586	630	130	332	145	L150-30905006000S0
3500K	90	600	640	132	337	147	L150-35905006000S0	
4000K	90	609	655	135	345	151	L150-40905006000S0	
5000K	90	618	665	137	351	153	L150-50905006000S0	
5700K	90	605	650	134	343	149	L150-57905006000S0	

Table 1 continued on next page:

1. Correlated color temperature is hot targeted at T_j=85°C.
2. Luminous flux and CRI are based upon mounted package on highly reflective surface at T_j=25°C. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. Lumileds maintains a tolerance of ±2 on CRI and ±7% on luminous flux measurements.
4. Rated current of LUXEON 5050 Round LES/LUXEON 5050 HE: 6V - 640mA, 24V - 160mA. Rated current of LUXEON 5050 Square LES: 6V - 800mA, 30V - 160mA.
5. Referred as LUXEON 5050 Square LES - Nightscape; which constrains the typical output of blue light from 400nm to 500nm to be within 2% at rated condition.

Table 1. Product performance of LUXEON 5050 at rated current, T_J=25°C, Continued.

PRODUCT	NOMINAL CCT ^[1]	MINIMUM CRI ^[2, 3]	LUMINOUS FLUX ^[2, 3] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	LUMINOUS FLUX ^[2, 3] (lm)	TYPICAL LUMINOUS EFFICACY (lm/W)	PART NUMBER	
			MINIMUM	TYPICAL		TYPICAL			
			RATED CURRENT ^[4]				50% OF RATED CURRENT ^[4]		
LUXEON 5050 HE 24V	1800K	70	455	498	129	265	145	L150-18705024000H0	
	2200K	70	544	608	157	324	177	L150-22705024000H0	
	2700K	70	602	675	174	359	197	L150-27705024000H0	
	3000K	70	623	694	179	369	202	L150-30705024000H0	
	3500K	70	632	707	183	376	206	L150-35705024000H0	
	4000K	70	651	725	187	386	211	L150-40705024000H0	
	5000K	70	651	724	187	385	211	L150-50705024000H0	
	5700K	70	640	713	184	380	208	L150-57705024000H0	
	6500K	70	637	711	184	379	207	L150-65705024000H0	
	2200K	80	474	510	132	272	149	L150-22805024000H0	
	2700K	80	539	580	150	309	169	L150-27805024000H0	
	3000K	80	563	605	156	322	176	L150-30805024000H0	
	3500K	80	586	637	165	339	186	L150-35805024000H0	
	4000K	80	597	654	169	348	191	L150-40805024000H0	
	5000K	80	597	655	169	349	191	L150-50805024000H0	
	5700K	80	595	652	168	347	190	L150-57805024000H0	
	6500K	80	586	650	168	346	190	L150-65805024000H0	
	2700K	90	465	503	130	268	147	L150-27905024000H0	
	3000K	90	485	525	136	280	153	L150-30905024000H0	
	3500K	90	502	544	140	290	159	L150-35905024000H0	
	4000K	90	512	558	144	297	163	L150-40905024000H0	
	5000K	90	512	560	145	298	163	L150-50905024000H0	
	5700K	90	512	560	145	298	163	L150-57905024000H0	
	LUXEON 5050 HE 6V	1800K	70	455	498	129	265	145	L150-18705006000H0
		2200K	70	544	608	157	324	177	L150-22705006000H0
		2700K	70	602	675	174	359	197	L150-27705006000H0
		3000K	70	623	694	179	369	202	L150-30705006000H0
		3500K	70	632	707	183	376	206	L150-35705006000H0
4000K		70	651	725	187	386	211	L150-40705006000H0	
5000K		70	651	724	187	385	211	L150-50705006000H0	
5700K		70	640	713	184	380	208	L150-57705006000H0	
6500K		70	637	711	184	379	207	L150-65705006000H0	
2200K		80	474	510	132	272	149	L150-22805006000H0	
2700K		80	539	580	150	309	169	L150-27805006000H0	
3000K		80	563	605	156	322	176	L150-30805006000H0	
3500K		80	586	637	165	339	186	L150-35805006000H0	
4000K		80	597	654	169	348	191	L150-40805006000H0	
5000K		80	597	655	169	349	191	L150-50805006000H0	
5700K		80	595	652	168	347	190	L150-57805006000H0	
6500K		80	586	650	168	346	190	L150-65805006000H0	
2700K		90	465	503	130	268	147	L150-27905006000H0	
3000K		90	485	525	136	280	153	L150-30905006000H0	
3500K		90	502	544	140	290	159	L150-35905006000H0	
4000K		90	512	558	144	297	163	L150-40905006000H0	
5000K		90	512	560	145	298	163	L150-50905006000H0	
5700K		90	512	560	145	298	163	L150-57905006000H0	

Notes for Table 1:

1. Correlated color temperature is not targeted at T_J=85°C.
2. Luminous flux and CRI are based upon mounted package on highly reflective surface at T_J=25°C. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. Lumileds maintains a tolerance of ±2 on CRI and ±7% on luminous flux measurements.
4. Rated current of LUXEON 5050 Round LES/LUXEON 5050 HE: 6V - 640mA, 24V - 160mA. Rated current of LUXEON 5050 Square LES: 6V - 800mA, 30V - 160mA.
5. Referred as LUXEON 5050 Square LES - Nightscape; which constrains the typical output of blue light from 400nm to 500nm to be within 2% at rated condition.

Optical Characteristics

Table 2. Optical characteristics for LUXEON 5050 at test current, $T_j=25^\circ\text{C}$.

PART NUMBER	TYPICAL TOTAL INCLUDED ANGLE ^[1]	TYPICAL VIEWING ANGLE ^[2]
L150-xxxx50xx000x0	138°	116°

Notes for Table 2:

- Total angle at which 90% of total luminous flux is captured.
- Viewing angle is the off axis angle from the LED centerline where the luminous intensity is ½ of the peak value.

Electrical and Thermal Characteristics

Table 3. Electrical and thermal characteristics for LUXEON 5050 at test current, $T_j=25^\circ\text{C}$.

PART NUMBER	FORWARD VOLTAGE ^[1] (V_f)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE ^[2] (mV/°C)	TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD (°C/W)
	MINIMUM	TYPICAL	MAXIMUM		
L150-xxxx502400000	23.5	24.4	26.5	-12	2.4
L150-xxxx500600000	5.8	6.1	6.6	-3	2.4
L150-xxxx5030000S0	29.0	30.5	32.0	-15	1.4
L150-xxxx5006000S0	5.8	6.1	6.6	-3	1.4
L150-xxxx5024000H0	22.7	24.2	25.8	-12	2.2
L150-xxxx5006000H0	5.6	6.05	6.4	-3	2.2

Notes for Table 3:

- Lumileds maintains a tolerance of $\pm 0.1\text{V}$ on forward voltage measurements.
- Measured between 25°C and 85°C .

Absolute Maximum Ratings

Table 4. Absolute maximum ratings for LUXEON 5050.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current ^[1,2]	240mA for L150-xxxx502400000 800mA for L150-xxxx500600000 240mA for L150-xxxx5030000S0 1000mA for L150-xxxx5006000S0 240mA for L150-xxxx5024000H0 800mA for L150-xxxx5006000H0
Peak Pulsed Forward Current ^[1,3]	300mA for L150-xxxx502400000 1000mA for L150-xxxx500600000 300mA for L150-xxxx5030000S0 1250mA for L150-xxxx5006000S0 300mA for L150-xxxx5024000H0 1000mA for L150-xxxx5006000H0
LED Junction Temperature ^[1] (DC & Pulse)	125°C
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2
Operating Case Temperature ^[1]	-40°C to 105°C
LED Storage Temperature	-40°C to 105°C
Allowable Reflow Cycles	3
Reverse Voltage (V_{reverse})	LUXEON LEDs are not designed to be driven in reverse bias

Notes for Table 4:

- Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature.
- 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 $\leq 50\%$ duty cycle with pulse width of 5ms.

Characteristic Curves

Spectral Power Distribution Characteristics

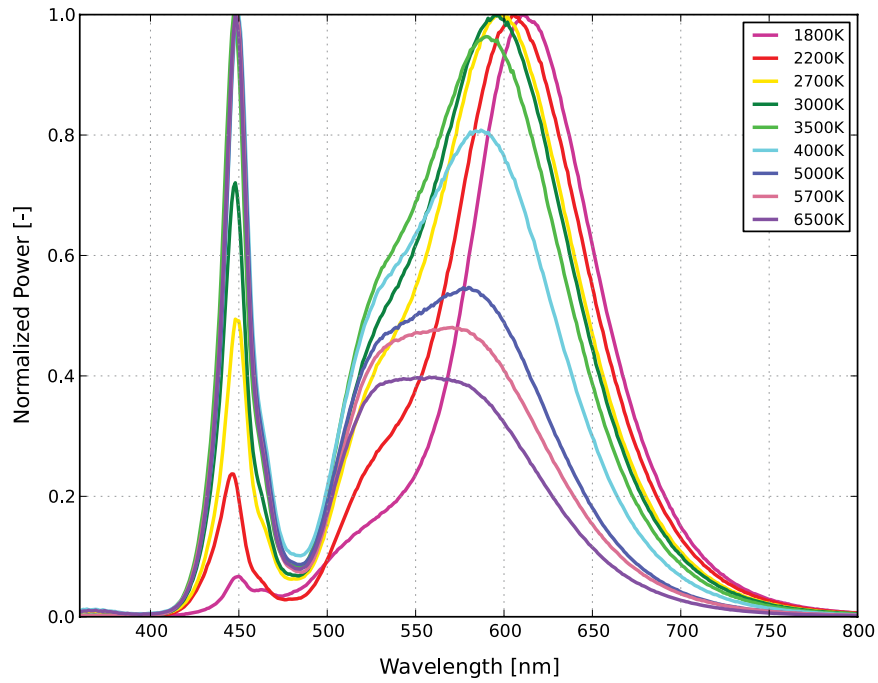


Figure 1a. Typical normalized power vs. wavelength for L150-xx7050xx000x0 at test current, $T_j=25^\circ\text{C}$.

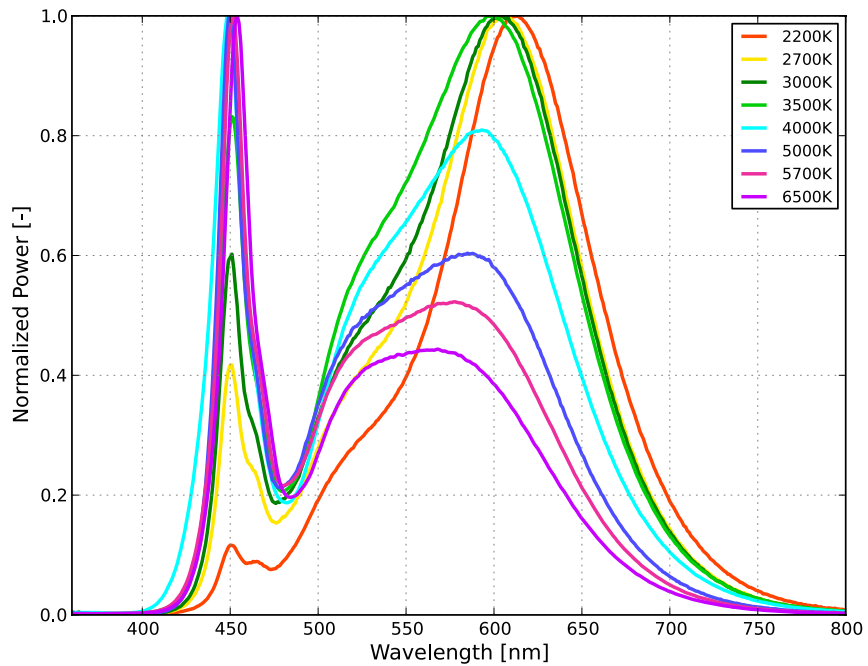


Figure 1b. Typical normalized power vs. wavelength for L150-xx8050xx000x0 at test current, $T_j=25^\circ\text{C}$.

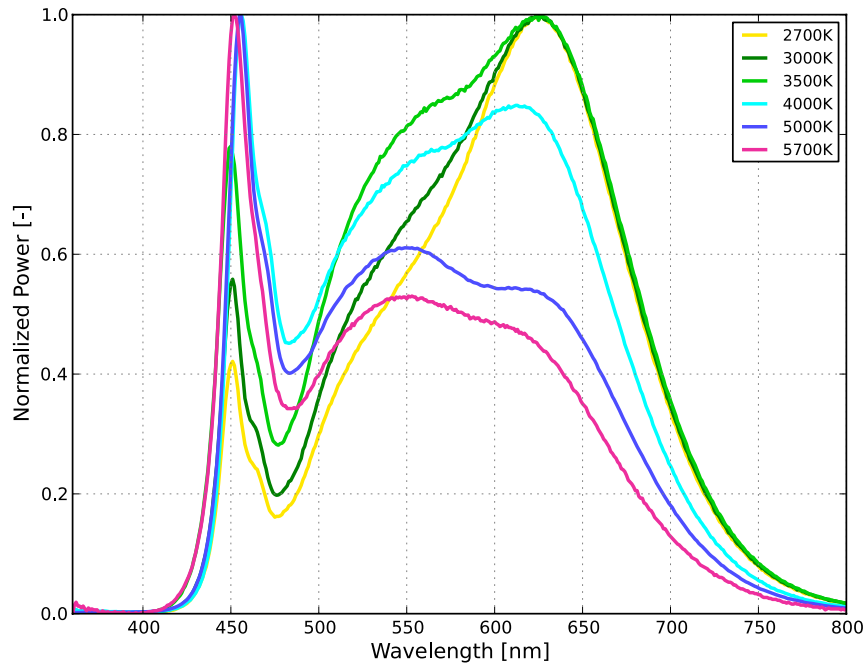


Figure 1c. Typical normalized power vs. wavelength for L150-xx9050xx000x0 at test current, $T_j=25^\circ\text{C}$.

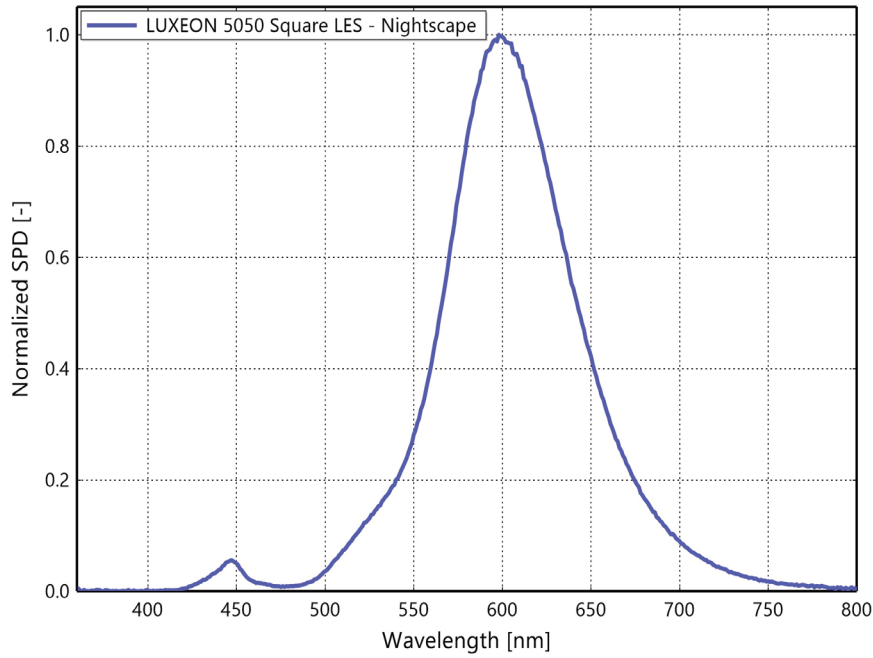


Figure 1d. Typical normalized power vs. wavelength for L150-NSC150xx000x0 at test current, $T_j=25^\circ\text{C}$.

Light Output Characteristics

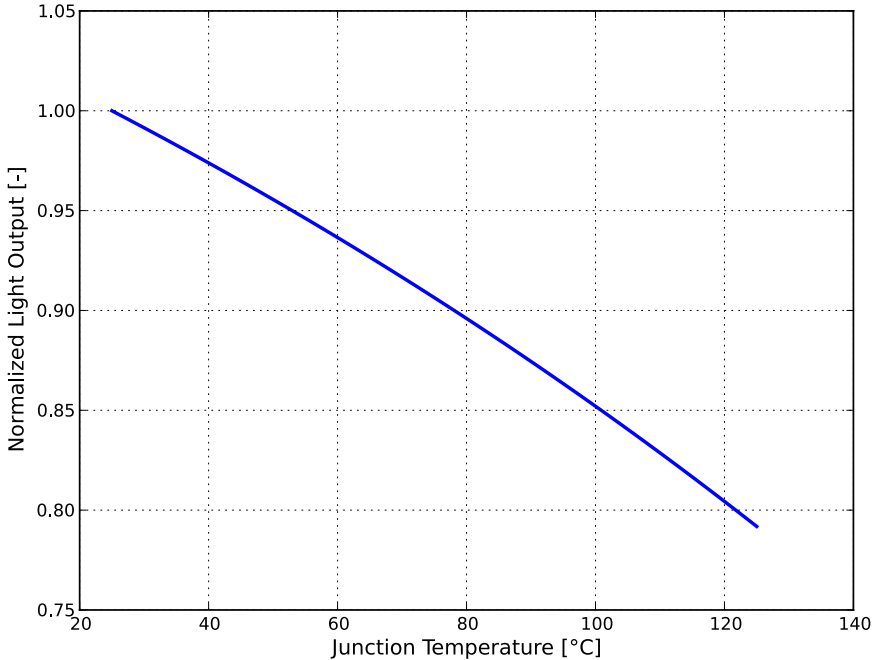


Figure 2. Typical normalized light output vs. junction temperature for L150-xxxx50xx000x0 at specified test current.

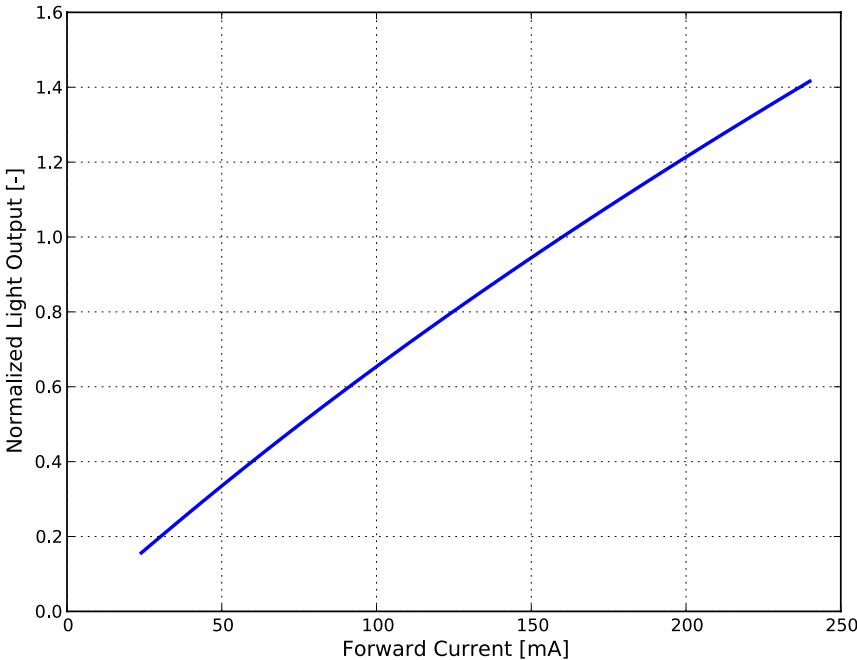


Figure 3a. Typical normalized light output vs. forward current for L150-xxxx5024000x0 and L150-xxxx5030000x0, $T_j=25^{\circ}\text{C}$.

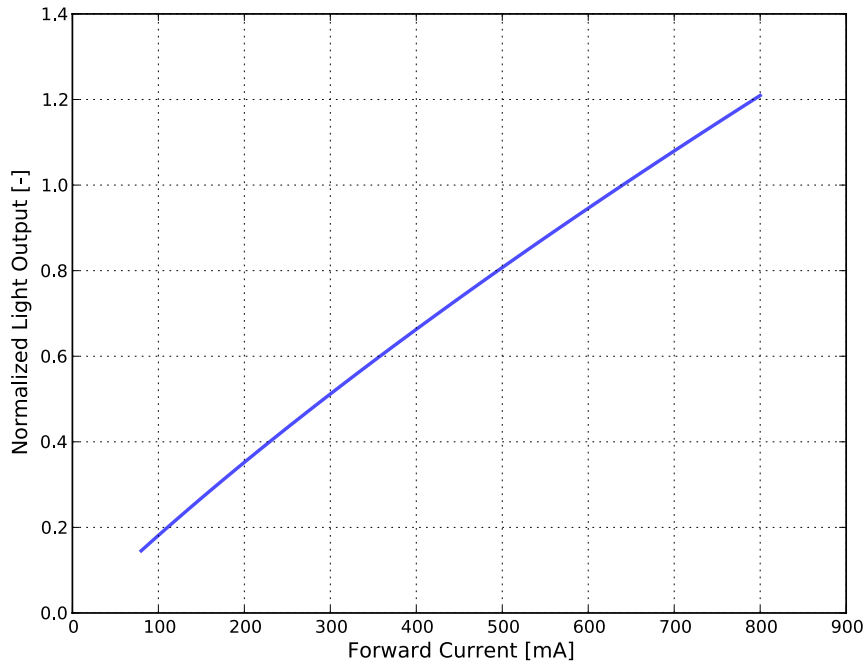


Figure 3b. Typical normalized light output vs. forward current for L150-xxxx500600000 and L150-xxxx5006000H0, $T_j=25^\circ\text{C}$.

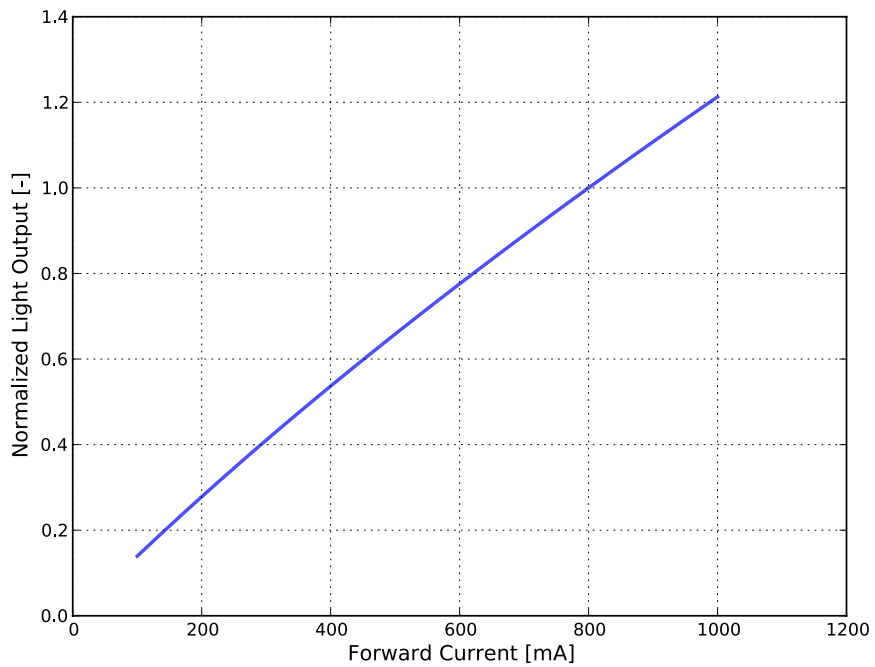


Figure 3c. Typical normalized light output vs. forward current for L150-xxxx5006000S0, $T_j=25^\circ\text{C}$.

Forward Current Characteristics

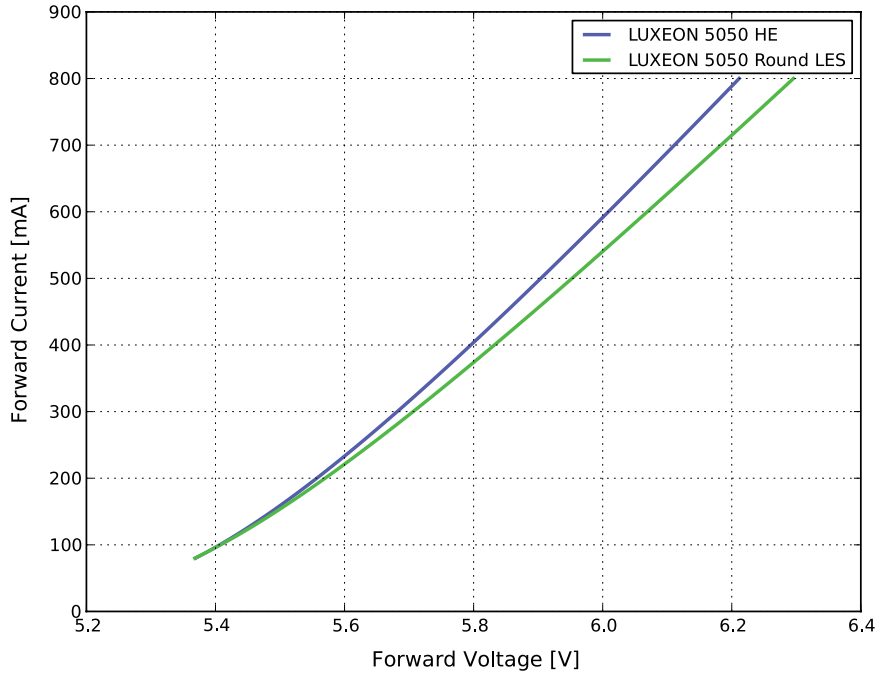


Figure 4a. Typical forward current vs. forward voltage for L150-xxxx500600000 and L150-xxxx5006000H0, $T_j=25^{\circ}\text{C}$.

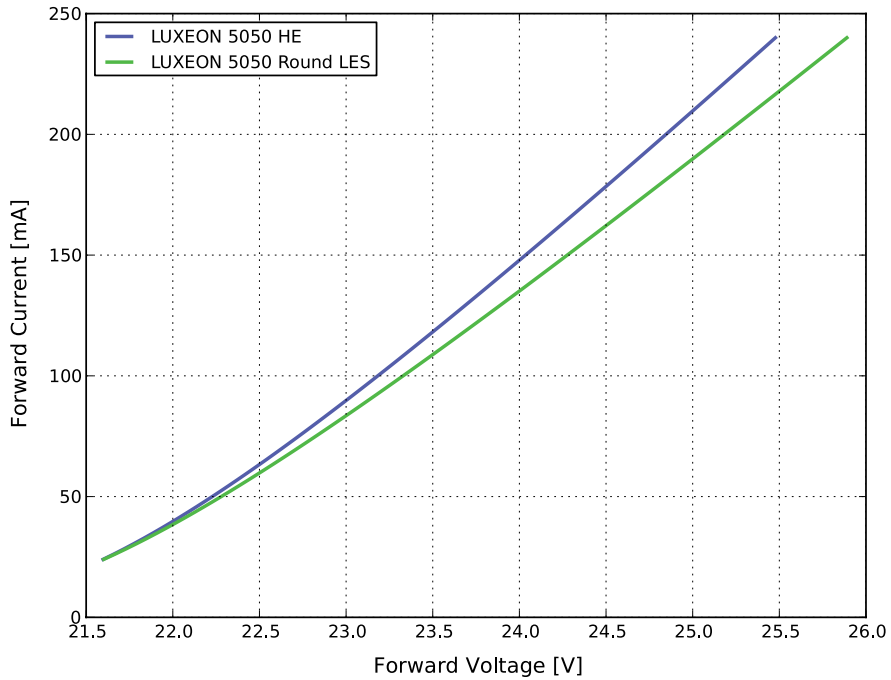


Figure 4b. Typical forward current vs. forward voltage for L150-xxxx502400000 and L150-xxxx5024000H0, $T_j=25^{\circ}\text{C}$.

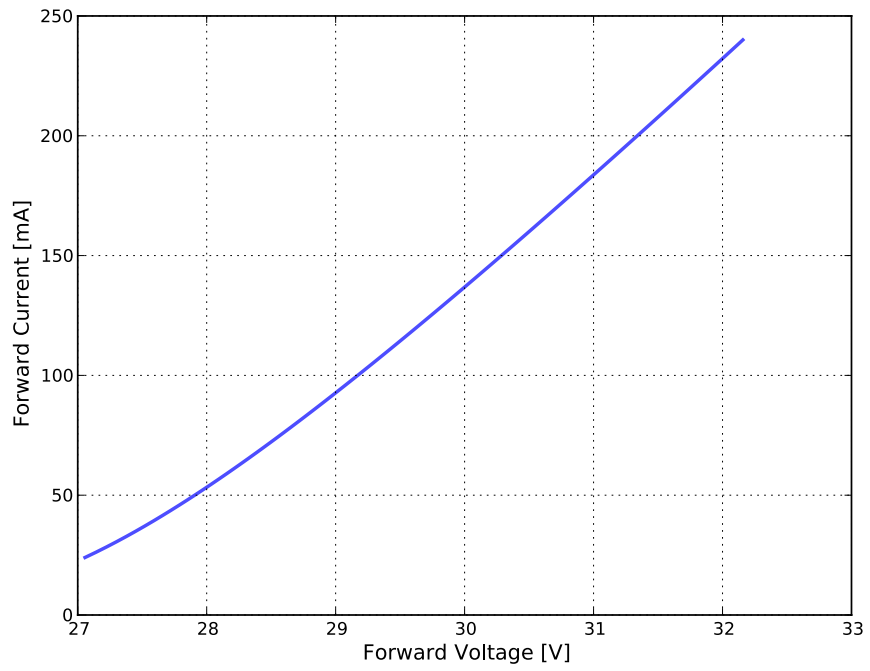


Figure 4c. Typical forward current vs. forward voltage for L150-xxxx5030000S0, $T_j=25^\circ\text{C}$.

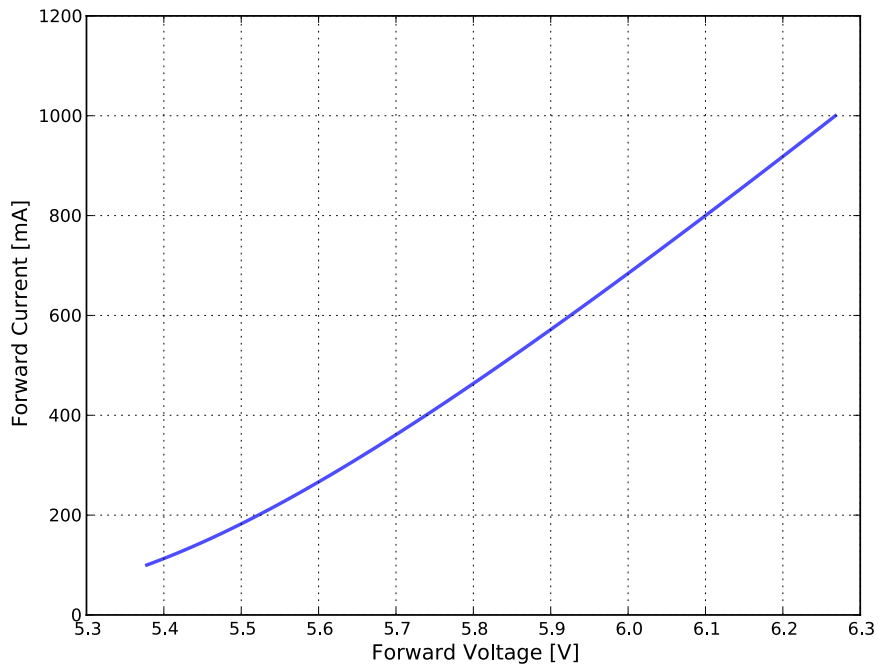


Figure 4d. Typical forward current vs. forward voltage for L150-xxxx5006000S0, $T_j=25^\circ\text{C}$.

Radiation Pattern Characteristics

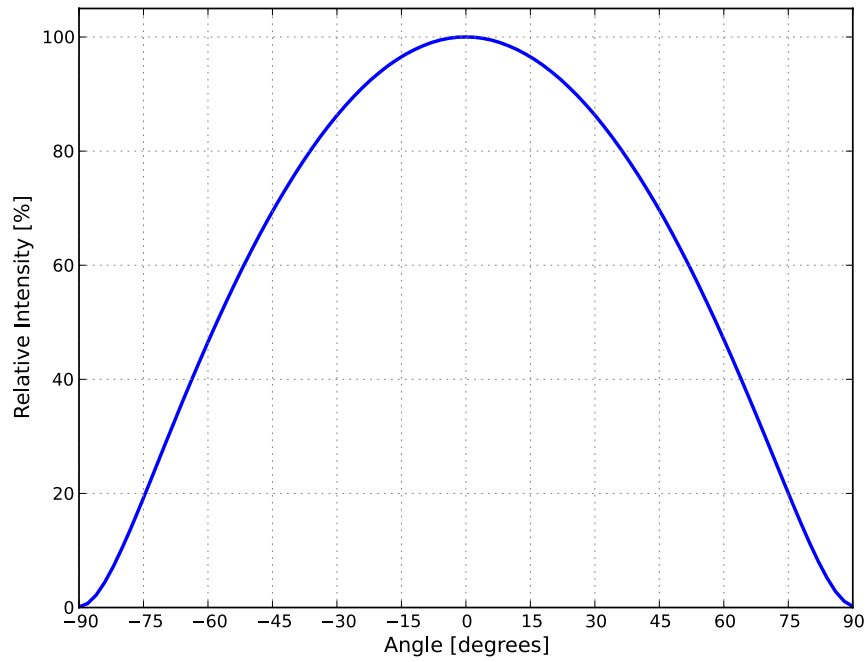


Figure 5. Typical radiation pattern for L150-xxxx50xx000x0 at test current, $T_j=25^{\circ}\text{C}$.

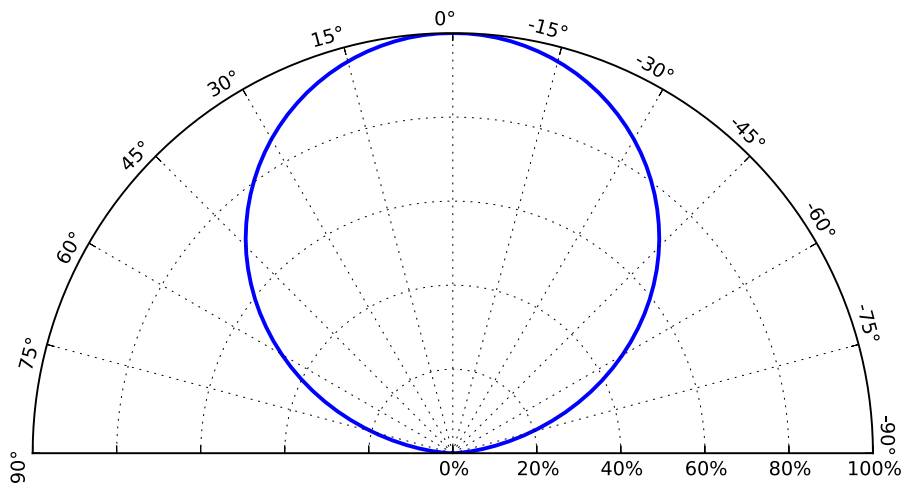


Figure 6. Typical polar radiation pattern for L150-xxxx50xx000x0 at test current, $T_j=25^{\circ}\text{C}$.

Product Bin and Labeling Definitions

Decoding Product Bin Labeling

In the manufacturing of semiconductor products, there are variations in performance around the average values given in the technical datasheet. For this reason, Lumileds bins LED components for luminous flux or radiometric power, color point, peak or dominant wavelength and forward voltage.

LUXEON 5050 (Round LES) and LUXEON 5050 HE LEDs are labeled using a 4-digit alphanumeric CAT code following the format below:

A B C C

Where:

- A** – designates luminous flux bin (example: L=600 to 650lm in LUXEON 5050 (Round LES) and M=675 to 700lm in LUXEON 5050 HE)
- B** – designates color bin (example: 3=3 SDCM, 5=5 SDCM parts)
- C C** – designates forward voltage bin (example: A1, A2, B1, B2)

Therefore, a LUXEON 5050 (Round LES) with a lumen range of 600 to 650 lm, color bin of 3 and forward voltage range of 23.5 to 24.2V has the following CAT code:

L 3 A 1

LUXEON 5050 (Square LES) LEDs are labeled using a 4-digit alphanumeric CAT code following the format below:

A B B C

Where:

- A** – designates luminous flux bin (example: L=600 to 650 lm, M=650 to 700 lm)
- B B** – designates color bin: (example: 83=2700K and 3 SDCM, 35=5000K and 5 SDCM)
- C** – designates forward voltage bin (example: A, B, C, D)

Therefore, a LUXEON 5050 (Square LES) with a lumen range of 600 to 650 lm, color bin of 83 and forward voltage range of 29.0 to 30.0V has the following CAT code:

L 8 3 A

Luminous Flux Bins

Table 5 lists the standard luminous flux bins for LUXEON 5050 LEDs. Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all CCTs.

Table 5a. Luminous flux bin definitions for LUXEON 5050 Round LES and Square LES, $T_j=25^\circ\text{C}$.

BIN	LUMINOUS FLUX ^[1] (lm)	
	MINIMUM	MAXIMUM
G	400	450
H	450	500
J	500	550
K	550	600
L	600	650
M	650	700
N	700	750
P	750	800
Q	800	850
R	850	900
S	900	950
T	950	1000

Notes for Table 5a:

1. Lumileds maintains a tolerance of $\pm 7\%$ on luminous flux measurements.

Table 5b. Luminous flux bin definitions for LUXEON 5050 HE, $T_j=25^\circ\text{C}$.

BIN	LUMINOUS FLUX ^[1] (lm)	
	MINIMUM	MAXIMUM
B	425	450
C	450	475
D	475	500
E	500	525
F	525	550
G	550	575
H	575	600
J	600	625
K	625	650
L	650	675
M	675	700
N	700	725
P	725	750
Q	750	775

Notes for Table 5b:

1. Lumileds maintains a tolerance of $\pm 7\%$ on luminous flux measurements.

Color Bin Definitions

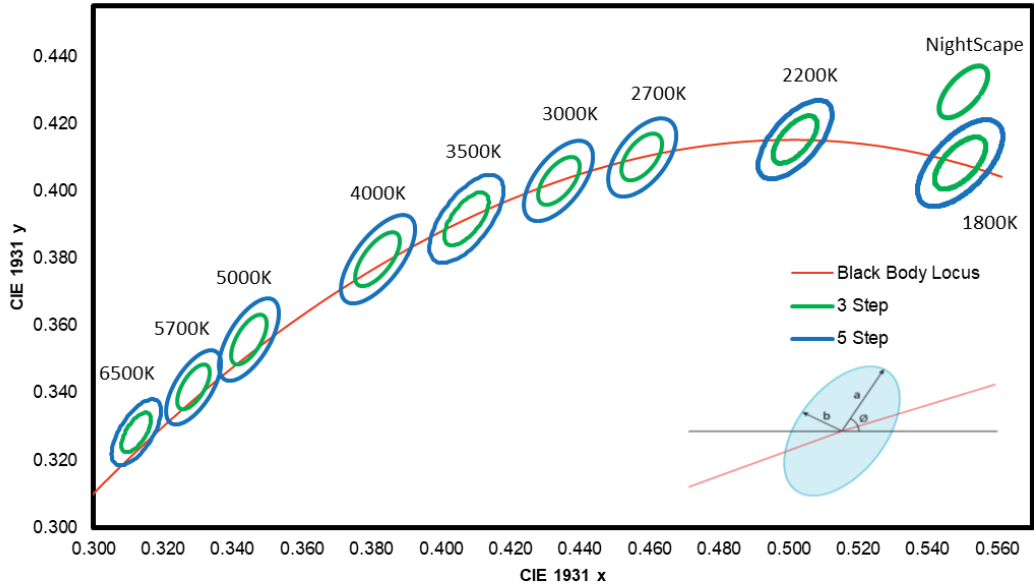


Figure 7. 3- and 5-step MacAdam ellipse illustration for hot-color targeting expected at 85°C.

Table 6. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 5050 at test current, hot-color targeted at $T_j=85^\circ\text{C}$.

NOMINAL CCT	COLOR SPACE	CENTER POINT ⁽¹⁾ (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, θ	LUXEON 5050 ROUND LES AND LUXEON 5050 HE COLOR BIN CODE	LUXEON 5050 SQUARE LES COLOR BIN CODE
1850K ⁽²⁾	Single 3-step MacAdam ellipse	(0.5510, 0.4300)	0.0096	0.0046	49.27	-	N3
1800K	Single 3-step MacAdam ellipse	(0.5493, 0.4083)	0.00962	0.00462	47.34°	3	B3
2200K	Single 3-step MacAdam ellipse	(0.5018, 0.4153)	0.00863	0.00398	49.27°	3	A3
2700K	Single 3-step MacAdam ellipse	(0.4578, 0.4101)	0.00810	0.00420	53.70°	3	83
3000K	Single 3-step MacAdam ellipse	(0.4338, 0.4030)	0.00834	0.00408	53.22°	3	73
3500K	Single 3-step MacAdam ellipse	(0.4073, 0.3917)	0.00927	0.00414	54.00°	3	63
4000K	Single 3-step MacAdam ellipse	(0.3818, 0.3797)	0.00939	0.00402	53.72°	3	53
5000K	Single 3-step MacAdam ellipse	(0.3447, 0.3558)	0.00822	0.00354	59.62°	3	33
5700K	Single 3-step MacAdam ellipse	(0.3287, 0.3417)	0.00745	0.00320	59.09°	3	23
6500K	Single 3-step MacAdam ellipse	(0.3123, 0.3282)	0.00669	0.00285	58.57°	3	13
1800K	Single 5-step MacAdam ellipse	(0.5493, 0.4083)	0.00962	0.00462	47.34°	5	B5
2200K	Single 5-step MacAdam ellipse	(0.5018, 0.4153)	0.01438	0.00663	49.27°	5	A5
2700K	Single 5-step MacAdam ellipse	(0.4578, 0.4101)	0.01350	0.00700	53.70°	5	85
3000K	Single 5-step MacAdam ellipse	(0.4338, 0.4030)	0.01390	0.00680	53.22°	5	75
3500K	Single 5-step MacAdam ellipse	(0.4073, 0.3917)	0.01545	0.00690	54.00°	5	65
4000K	Single 5-step MacAdam ellipse	(0.3818, 0.3797)	0.01565	0.00670	53.72°	5	55
5000K	Single 5-step MacAdam ellipse	(0.3447, 0.3558)	0.01370	0.00590	59.62°	5	35
5700K	Single 5-step MacAdam ellipse	(0.3287, 0.3417)	0.01243	0.00533	59.09°	5	25
6500K	Single 5-step MacAdam ellipse	(0.3123, 0.3282)	0.01115	0.00475	58.57°	5	15

Notes for Table 6:

- Lumileds maintains a tolerance of ± 0.005 on x and y coordinates in the CIE 1931 color space.
- Also referred as LUXEON 5050 Square LES - Nightscape (L150-NSC150xx00050).

Forward Voltage Bins

Table 7. Forward voltage bin definitions for LUXEON 5050, $T_j=25^\circ\text{C}$.

PART NUMBER	BIN	FORWARD VOLTAGE ⁽¹⁾ (V_f)	
		MINIMUM	MAXIMUM
L150-xxxx502400000	A1	23.5	24.2
	A2	24.2	25.0
	B1	25.0	25.8
	B2	25.8	26.5
L150-xxxx500600000	A1	5.8	6.0
	A2	6.0	6.2
	B1	6.2	6.4
	B2	6.4	6.6
L150-xxxx5030000S0	A	29.0	30.0
	B	30.0	31.0
	C	31.0	32.0
L150-xxxx5006000S0	A	5.8	6.0
	B	6.0	6.2
	C	6.2	6.4
	D	6.4	6.6
L150-xxxx5024000H0	A0	22.7	23.5
	A1	23.5	24.2
	A2	24.2	25.0
	B1	25.0	25.8
L150-xxxx5006000H0	A0	5.6	5.8
	A1	5.8	6.0
	A2	6.0	6.2
	B1	6.2	6.4

Notes for Table 7:

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

Mechanical Dimensions

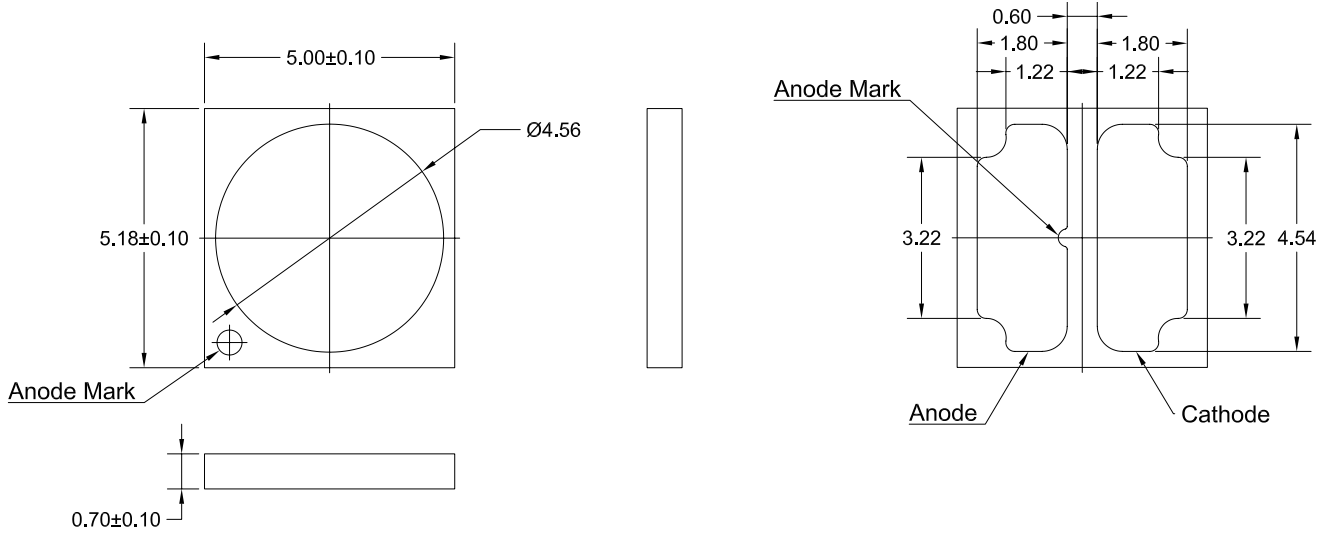


Figure 8a. Mechanical dimensions for LUXEON 5050 Round LES.

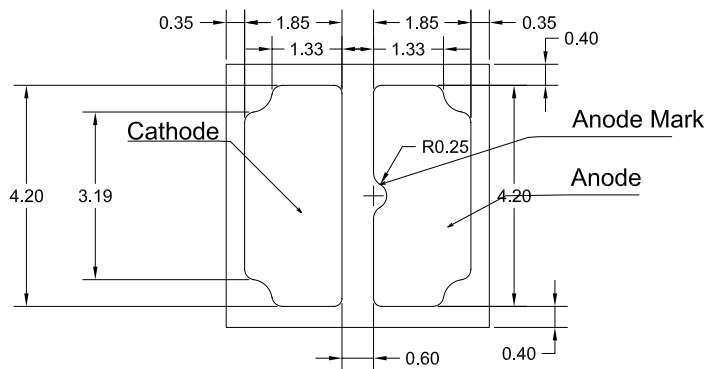
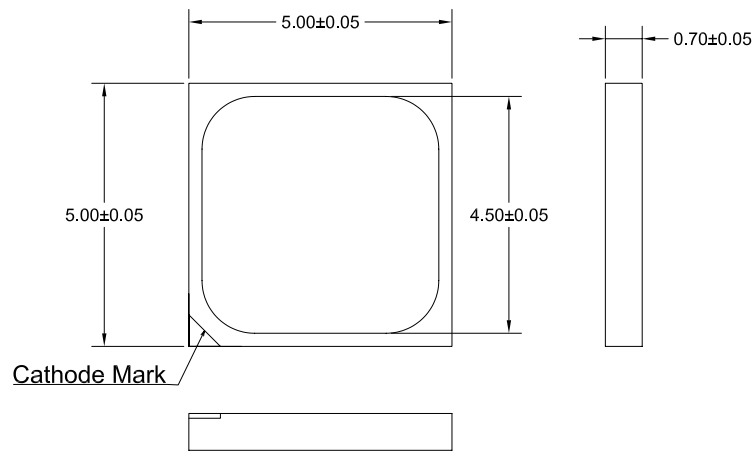


Figure 8b. Mechanical dimensions for LUXEON 5050 Square LES.

- Notes for Figures 8a and 8b:
1. Drawings are not to scale.
 2. All dimensions are in millimeters.

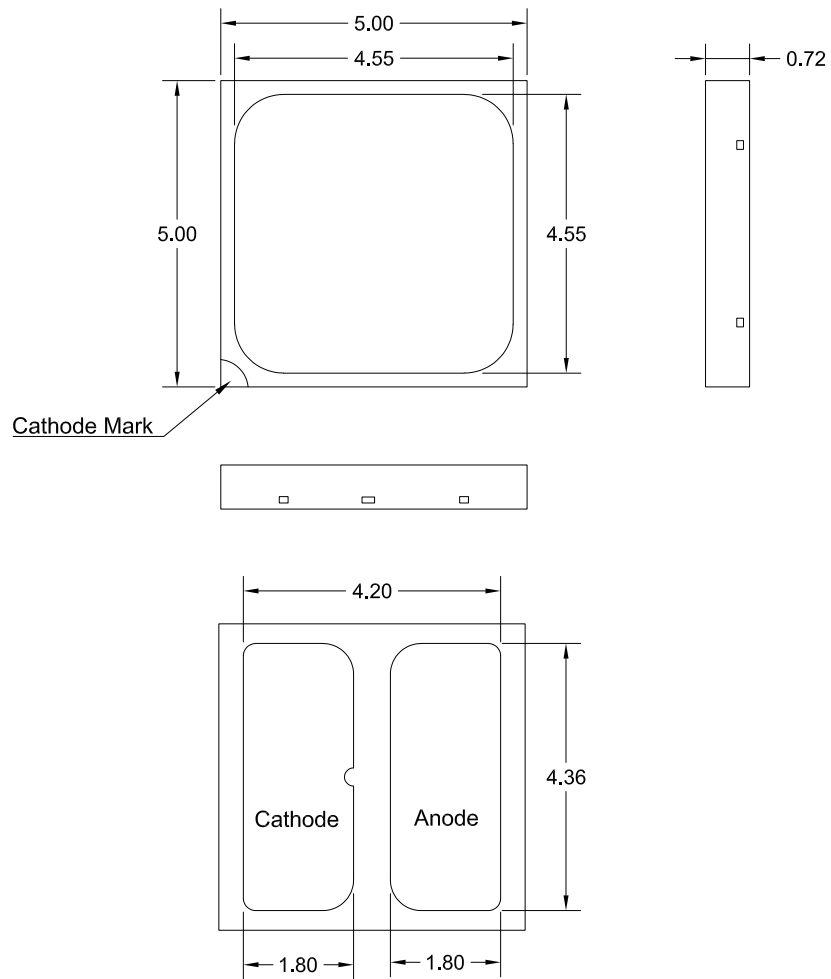


Figure 8c. Mechanical dimensions for LUXEON 5050 HE.

Notes for Figure 8c:

1. Drawings are not to scale.
2. All dimensions are in millimeters.

Reflow Soldering Guidelines

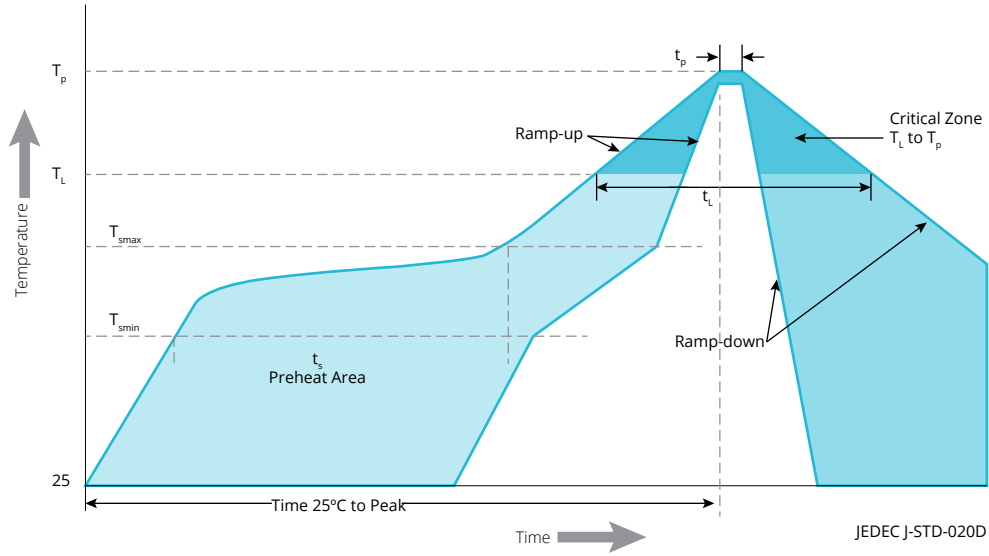


Figure 9. Visualization of the acceptable reflow temperature profile as specified in Table 8.

Table 8. Reflow profile characteristics for LUXEON 5050.

PROFILE FEATURE	LEAD-FREE ASSEMBLY
Preheat Minimum Temperature (T_{smin})	150°C
Preheat Maximum Temperature (T_{smax})	200°C
Preheat Time (t_{smin} to t_{smax})	60 to 180 seconds
Ramp-Up Rate (T_L to T_p)	3°C / second maximum
Liquidous Temperature (T_L)	217°C
Time Maintained Above Temperature T_L (t_t)	60 to 150 seconds
Peak / Classification Temperature (T_p)	260°C
Time Within 5°C of Actual Peak Temperature (t_p)	20 to 40 seconds
Ramp-Down Rate (T_p to T_L)	6°C / second maximum
Time 25°C to Peak Temperature	8 minutes maximum

JEDEC Moisture Sensitivity

Table 9. Moisture sensitivity levels for LUXEON 5050.

LEVEL	FLOOR LIFE		SOAK REQUIREMENTS STANDARD	
	TIME	CONDITIONS	TIME	CONDITIONS
3	168 Hours	≤30°C / 60% RH	192 Hours +5 / -0	30°C / 60% RH

Reel Dimensions

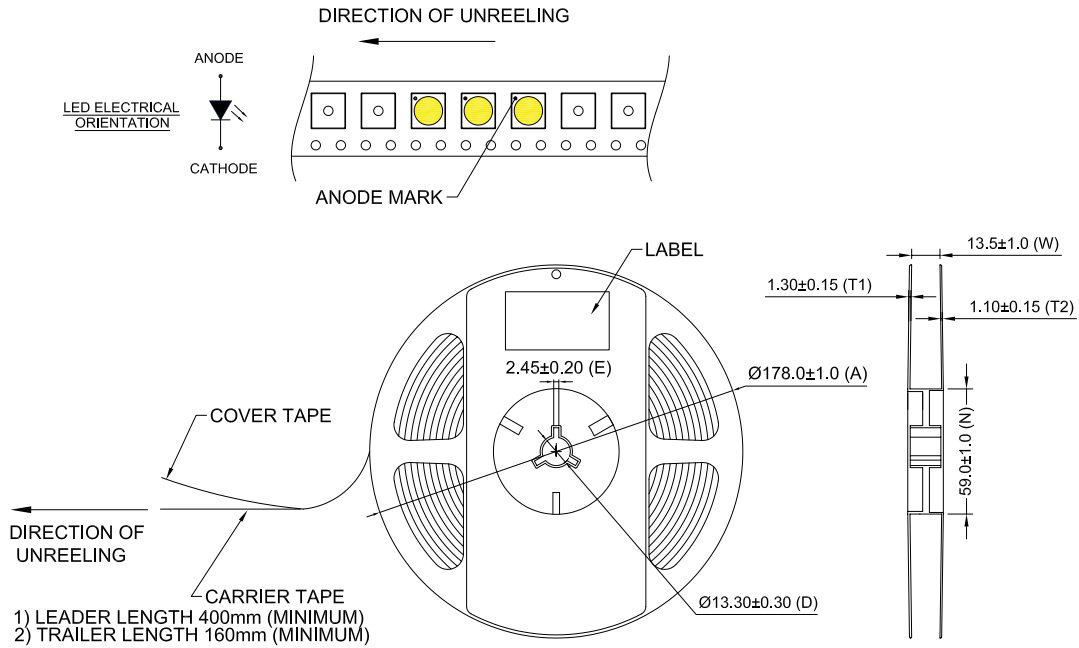


Figure 12a. Reel dimensions for LUXEON 5050 Round LES.

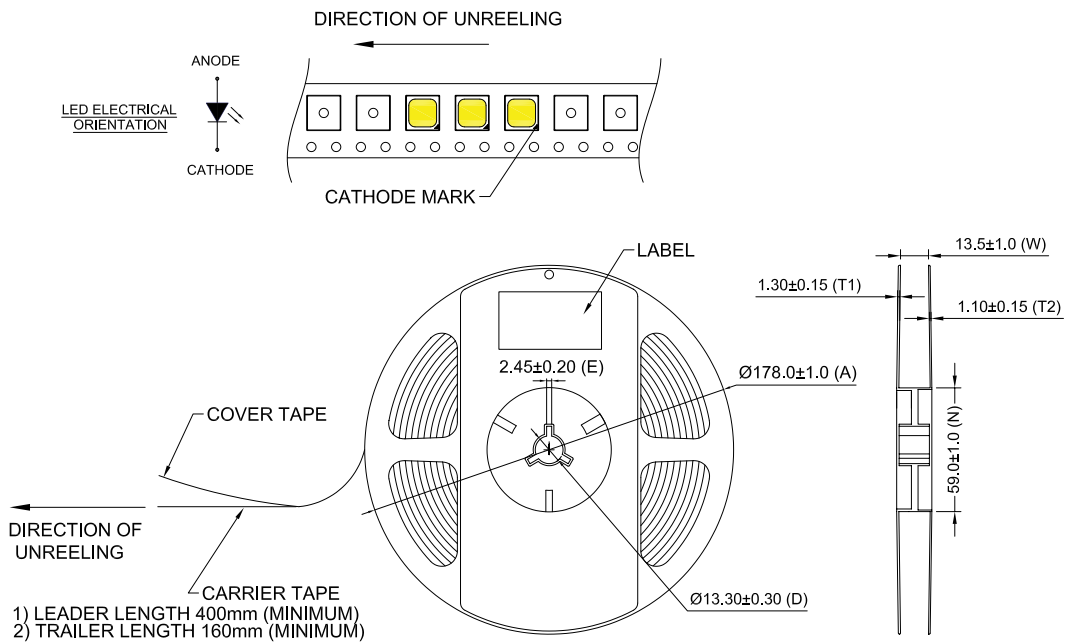


Figure 12b. Reel dimensions for LUXEON 5050 Square LES.

Notes for Figures 12a and 12b:
 1. Drawings are not to scale.
 2. All dimensions are in millimeters.

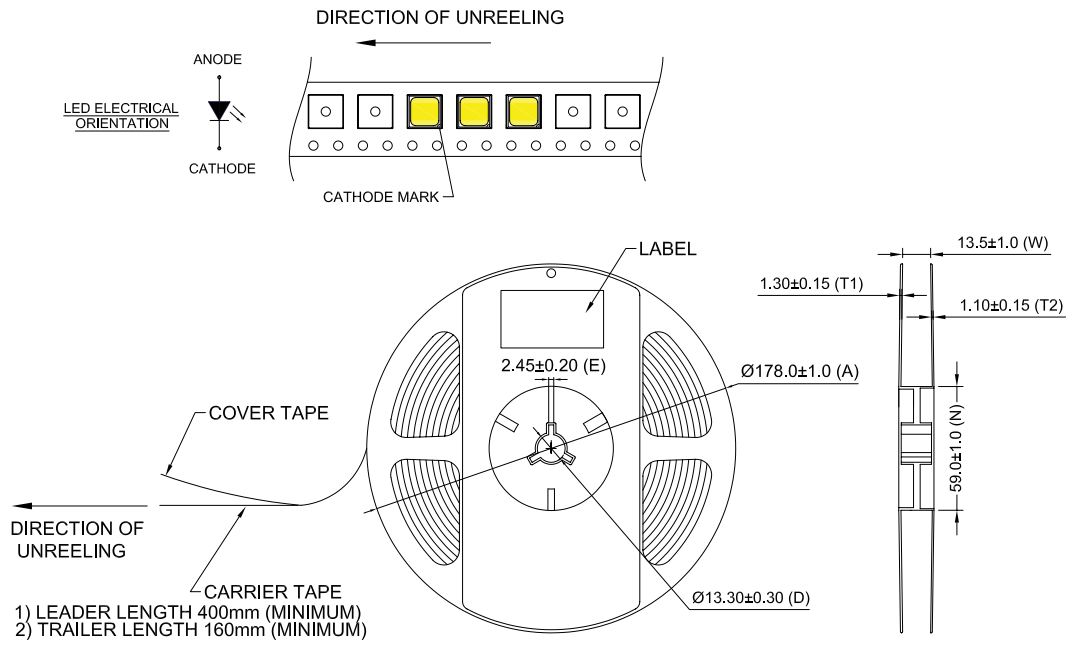


Figure 12c. Reel dimensions for LUXEON 5050 HE.

Notes for Figure 12c:

1. Drawings are not to scale.
2. All dimensions are in millimeters.

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.

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OSRAM GW P9LR35.PM

Datasheet

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DURIS® S 8

GW P9LR35.PM

The latest Duris® S 8 generation of LEDs offers an impressive efficacy performance combined with DLC Premium Lifetime achievement. This 5050 leadframe package offers customers a perfect solution for High Efficacy and Compact Luminaire designs for Outdoor Professional lighting; High-Bays, Streetlights, Area Lights, Flood Lights.



Applications

- Indoor Lighting
- Outdoor & Industrial Lighting

Features

- Package: white SMT package, colored diffused silicone resin
- Typ. Radiation: 120° (Lambertian emitter)
- Color temperature: 2200K - 6500K
- CRI: 70 (min.), 72 (typ.), R9: -50 (min.)
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- Luminous Flux: typ. 216 lm @ 4000 K
- Luminous efficacy: typ. 216 lm @ 4000 K

Ordering Information

Type	Color temperature	Luminous Flux ¹⁾ $I_F = 180 \text{ mA}$ Φ_V	Ordering Code
GW P9LR35.PM-L9M5-XX510-1	2200 K	170 ... 230 lm	Q65113A5355
GW P9LR35.PM-M1M5-XX58-1	2700 K	180 ... 230 lm	Q65112A8726
GW P9LR35.PM-M3M8-XX57-1	3000 K	200 ... 260 lm	Q65112A9860
GW P9LR35.PM-M3M8-XX56-1	3500 K	200 ... 260 lm	Q65113A5373
GW P9LR35.PM-M4M8-XX55-1	4000 K	210 ... 260 lm	Q65113A5237
GW P9LR35.PM-M4M8-XX53-1	5000 K	210 ... 260 lm	Q65113A5241
GW P9LR35.PM-M3M4-XX52-1	5700 K	200 ... 220 lm	Q65112A6819
GW P9LR35.PM-M3M8-XX51-1	6500 K	200 ... 260 lm	Q65112A9861

Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	T_{op}	min.	-40 °C
		max.	100 °C
Storage Temperature	T_{stg}	min.	-40 °C
		max.	100 °C
Junction Temperature	T_j	max.	125 °C
Forward Current $T_j = 25\text{ °C}$	I_F	min.	40 mA
		max.	800 mA
Surge Current $t \leq 10\ \mu\text{s}$; $D = 0.005$; $T_j = 25\text{ °C}$	I_{FS}	max.	1200 mA
Reverse voltage ²⁾	V_R		Not designed for reverse operation
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM)	V_{ESD}		2 kV

Characteristics

$I_F = 180 \text{ mA}$; $T_J = 25 \text{ }^\circ\text{C}$

Parameter	Symbol		Values
Viewing angle at 50% I_V	2ϕ	typ.	120°
Forward Voltage ³⁾ $I_F = 180 \text{ mA}$	V_F	min. typ. max.	5.20 V 5.50 V 5.80 V
Reverse current ²⁾	I_R		Not designed for reverse operation
Color Rendering Index ⁴⁾ (2200K - 6500K)	CRI	min. typ.	70 72
Color Rendering Index (R9) ⁴⁾	CRI (R9)	min.	-50
Electrical thermal resistance junction/solderpoint with efficiency $\eta_e = 59 \%$	$R_{thJS \text{ elec.}}$	typ.	1.5 K / W

Electro - Optical Characteristics ⁵⁾

$T_J = 25 \text{ }^\circ\text{C}$; CRI = 70; 4000 K

Forward Current I_F	Forward Voltage typ. V_F	Power typ. P	Luminous Flux typ. Φ_V	Luminous efficacy typ. η
180 mA	5.50 V	1.0 W	216 lm	218 lm/W
360 mA	5.75 V	2.1 W	416 lm	201 lm/W
600 mA	6.03 V	3.6 W	664 lm	183 lm/W
640 mA	6.07 V	3.9 W	703 lm	181 lm/W
800 mA	6.22 V	5.0 W	853 lm	171 lm/W

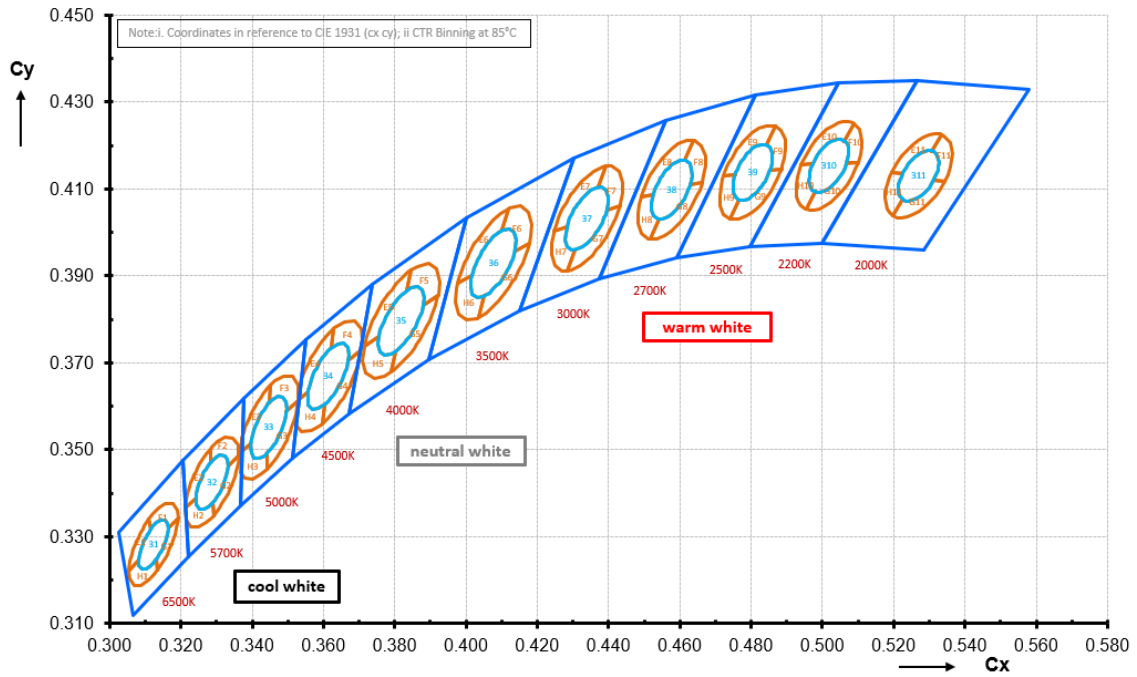
Brightness Groups

Group	Luminous Flux ¹⁾ $I_F = 180 \text{ mA}$ min. Φ_V	Luminous Flux ¹⁾ $I_F = 180 \text{ mA}$ max. Φ_V
L9	170 lm	180 lm
M1	180 lm	190 lm
M2	190 lm	200 lm
M3	200 lm	210 lm
M4	210 lm	220 lm
M5	220 lm	230 lm
M6	230 lm	240 lm
M7	240 lm	250 lm
M8	250 lm	260 lm

Forward Voltage Groups

Group	Forward Voltage ³⁾ $I_F = 180 \text{ mA}$ min. V_F	Forward Voltage ³⁾ $I_F = 180 \text{ mA}$ max. V_F
Z	5.20 V	5.40 V
A	5.40 V	5.60 V
B	5.60 V	5.80 V

Chromaticity Coordinate Groups ⁶⁾



Chromaticity Coordinate Groups

CCT	Center Cx	Center Cy	3step a	3step b	5step a	5step b	∅
2200 K	0.5020	0.4156	0.0072	0.0040	0.0120	0.0067	39.9
2700 K	0.4577	0.4098	0.0080	0.0041	0.0133	0.0068	54.1
3000 K	0.4339	0.4032	0.0086	0.0042	0.0142	0.0069	53.7
3500 K	0.4077	0.3929	0.0093	0.0042	0.0155	0.0069	53.9
4000 K	0.3818	0.3796	0.0094	0.0041	0.0157	0.0068	53.4
5000 K	0.3446	0.3551	0.0081	0.0035	0.0135	0.0059	59.8
5700 K	0.3287	0.3425	0.0072	0.0032	0.0119	0.0052	58.8
6500 K	0.3123	0.3282	0.0066	0.0027	0.0110	0.0045	58.1

CCT	Group	1		2		3		4		5	
		Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
2200 K	E	0.5088	0.4249	0.4941	0.4156	0.4973	0.4157	0.5061	0.4210		
	F	0.5088	0.4249	0.5101	0.4161	0.5068	0.4160	0.5061	0.4210		
	G	0.5101	0.4161	0.4955	0.4054	0.4981	0.4093	0.5068	0.4158		
	H	0.4981	0.4093	0.4973	0.4157	0.4941	0.4156	0.4955	0.4054		
2700 K	E	0.4637	0.4212	0.4491	0.4081	0.4526	0.4088	0.4613	0.4166		
	F	0.4637	0.4212	0.4663	0.4115	0.4628	0.4108	0.4613	0.4166		
	G	0.4663	0.4115	0.4517	0.3984	0.4541	0.4030	0.4628	0.4108		
	H	0.4541	0.4030	0.4526	0.4088	0.4491	0.4081	0.4517	0.3984		
3000 K	E	0.4393	0.4153	0.4246	0.4002	0.4283	0.4014	0.4371	0.4105		
	F	0.4393	0.4153	0.4432	0.4062	0.4395	0.4050	0.4371	0.4105		
	G	0.4432	0.4062	0.4285	0.3911	0.4307	0.3960	0.4395	0.4050		
	H	0.4307	0.3960	0.4283	0.4014	0.4246	0.4002	0.4285	0.3911		
3500 K	E	0.4118	0.4054	0.3977	0.3883	0.4017	0.3902	0.4102	0.4004		
	F	0.4118	0.4054	0.4177	0.3975	0.4137	0.3957	0.4102	0.4004		
	G	0.4177	0.3975	0.4036	0.3804	0.4052	0.3854	0.4137	0.3957		
	H	0.4052	0.3854	0.4017	0.3902	0.3977	0.3883	0.4036	0.3804		
4000 K	E	0.3845	0.3913	0.3714	0.3737	0.3756	0.3760	0.3834	0.3866		
	F	0.3845	0.3913	0.3922	0.3855	0.3880	0.3832	0.3834	0.3866		
	G	0.3922	0.3855	0.3791	0.3679	0.3802	0.3726	0.3880	0.3832		
	H	0.3802	0.3726	0.3756	0.3760	0.3714	0.3737	0.3791	0.3679		
5000 K	E	0.3451	0.3648	0.3372	0.3528	0.3371	0.3496	0.3396	0.3514	0.3449	0.3609
	F	0.3451	0.3648	0.3530	0.3612	0.3496	0.3588	0.3449	0.3609		
	G	0.3530	0.3612	0.3441	0.3454	0.3443	0.3493	0.3496	0.3588		
	H	0.3443	0.3493	0.3396	0.3514	0.3371	0.3496	0.3369	0.3445	0.3441	0.3454
5700 K	E	0.3283	0.3502	0.3212	0.3373	0.3213	0.3365	0.3242	0.3388	0.3284	0.3471
	F	0.3283	0.3502	0.3363	0.3486	0.3332	0.3462	0.3284	0.3471		
	G	0.3363	0.3486	0.3291	0.3348	0.3290	0.3379	0.3332	0.3462		
	H	0.3291	0.3348	0.3215	0.3337	0.3213	0.3365	0.3242	0.3388	0.3290	0.3379
6500 K	E	0.3110	0.3340	0.3054	0.3220	0.3082	0.3245	0.3115	0.3317		
	F	0.3110	0.3340	0.3192	0.3344	0.3165	0.3319	0.3115	0.3317		
	G	0.3192	0.3344	0.3136	0.3224	0.3131	0.3247	0.3165	0.3319		
	H	0.3136	0.3224	0.3054	0.3220	0.3082	0.3245	0.3131	0.3247		

Group Name on Label

Example: L9-A

Brightness

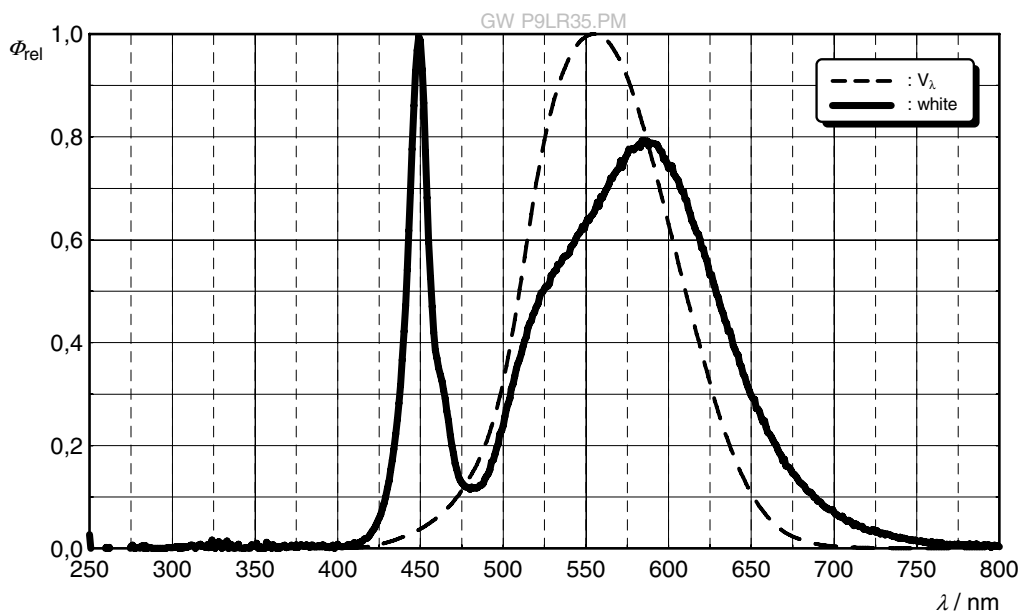
Forward Voltage

L9

A

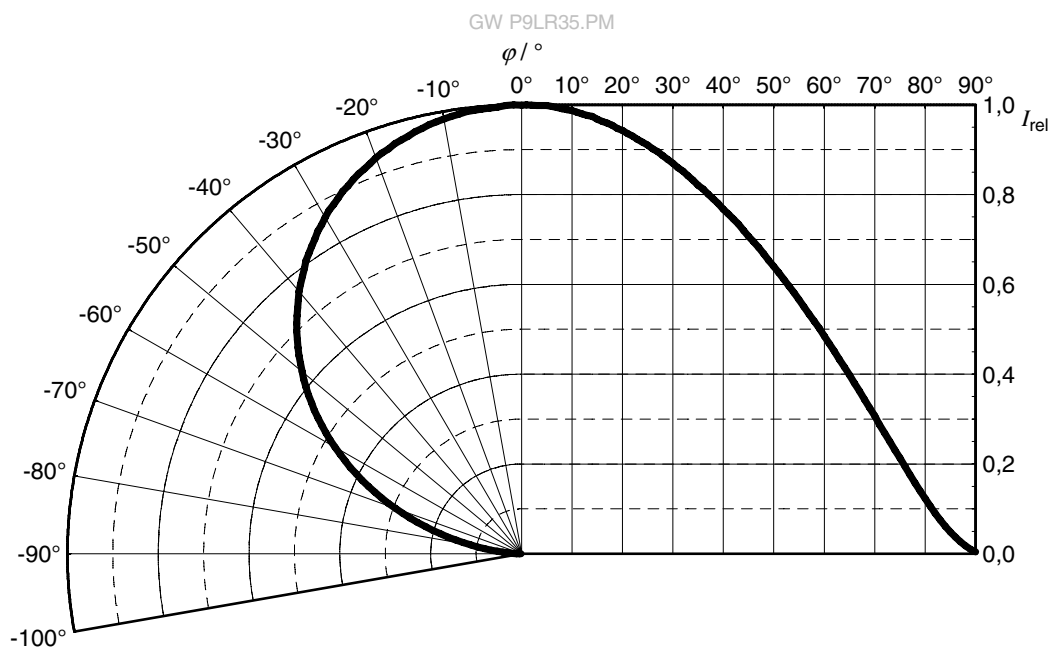
Relative Spectral Emission ⁵⁾

$\Phi_{rel} = f(\lambda)$; $I_F = 180 \text{ mA}$; $T_J = 25 \text{ }^\circ\text{C}$



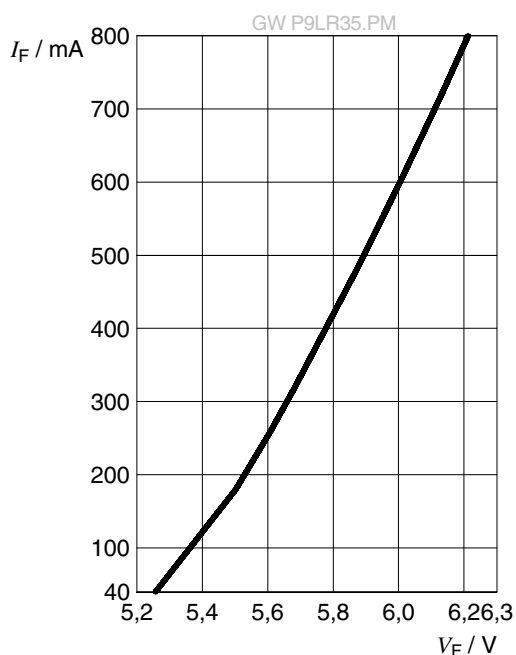
Radiation Characteristics ⁵⁾

$I_{rel} = f(\phi)$; $T_J = 25 \text{ }^\circ\text{C}$



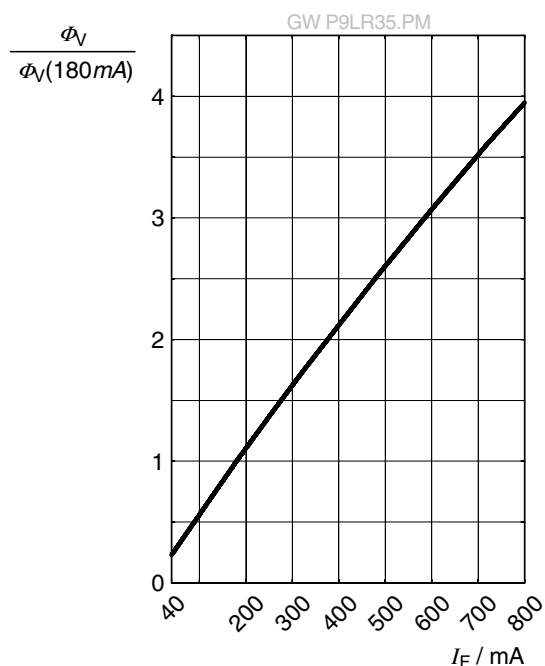
Forward current ⁵⁾

$$I_F = f(V_F); T_J = 25\text{ °C}$$



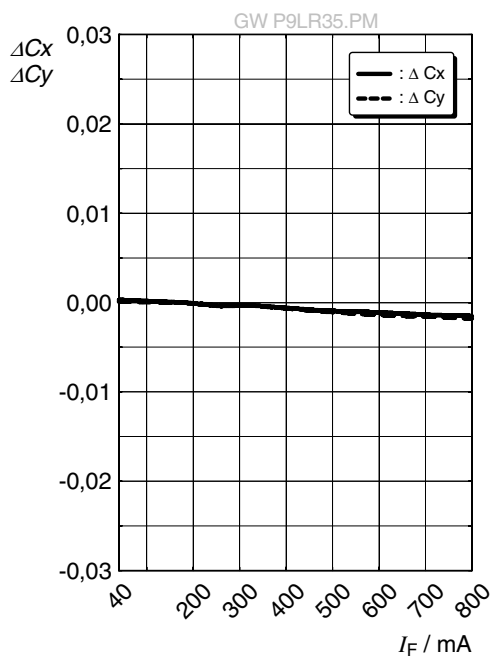
Relative Luminous Flux ^{5), 7)}

$$\Phi_V / \Phi_V(180\text{ mA}) = f(I_F); T_J = 25\text{ °C}$$



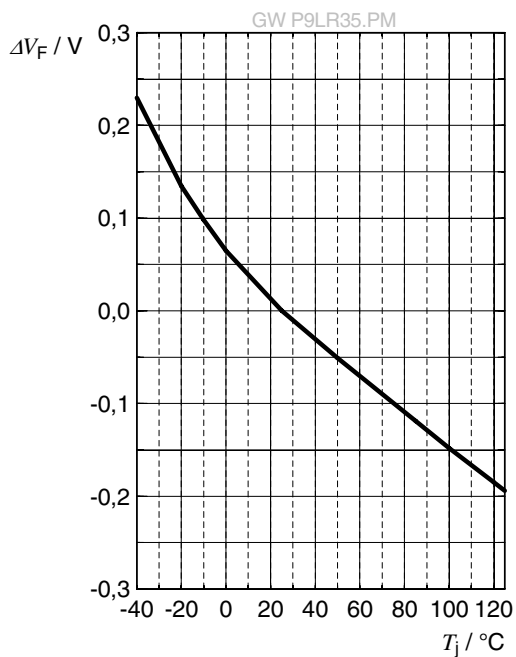
Chromaticity Coordinate Shift ⁵⁾

$$\Delta C_x, \Delta C_y = f(I_F); T_J = 25\text{ °C}$$



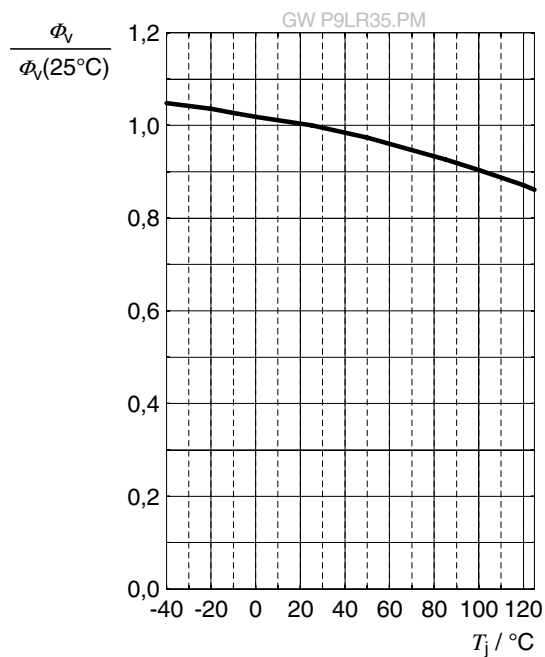
Forward Voltage ⁵⁾

$$\Delta V_F = V_F - V_F(25\text{ }^\circ\text{C}) = f(T_j); I_F = 180\text{ mA}$$



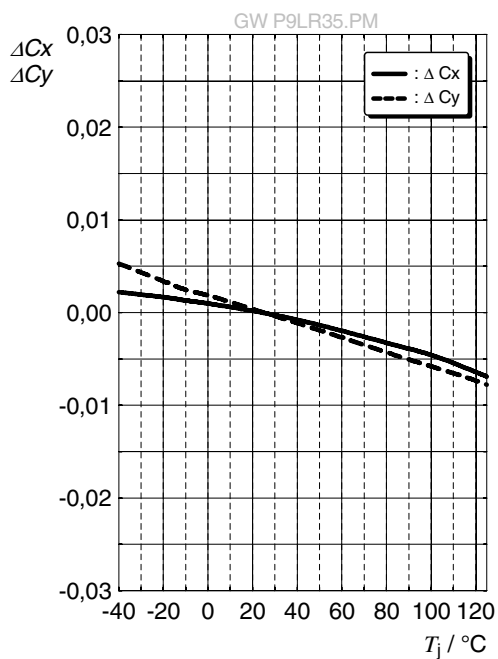
Relative Luminous Flux ⁵⁾

$$\Phi_v / \Phi_v(25\text{ }^\circ\text{C}) = f(T_j); I_F = 180\text{ mA}$$



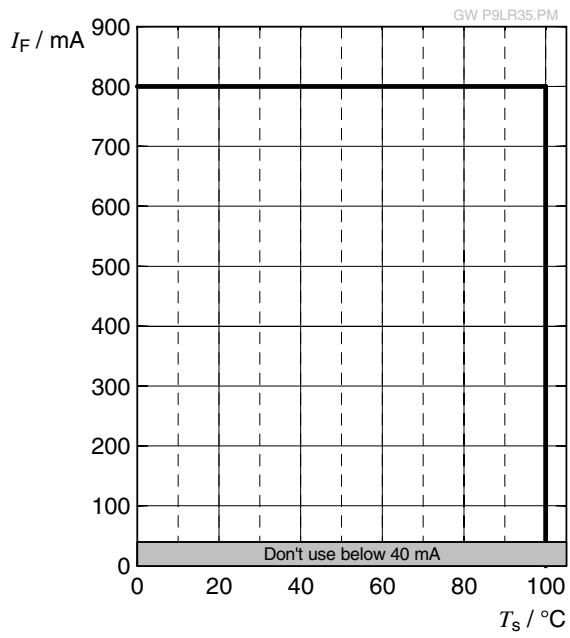
Chromaticity Coordinate Shift ⁵⁾

$$\Delta C_x, \Delta C_y = f(T_j); I_F = 180\text{ mA}$$

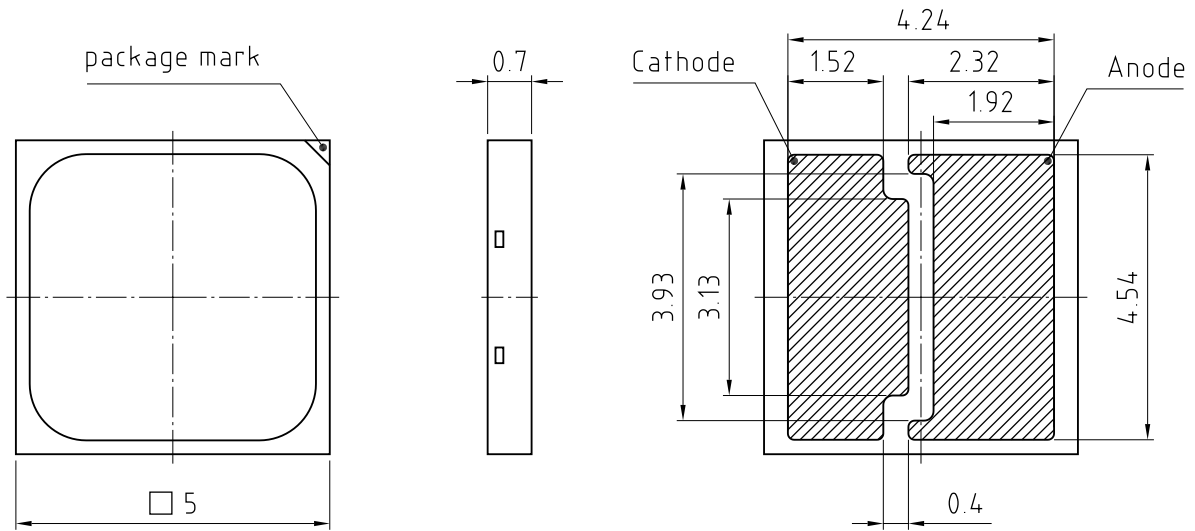


Max. Permissible Forward Current

$$I_F = f(T)$$



Dimensional Drawing ⁸⁾



general tolerance ± 0.1
lead finish Ag 

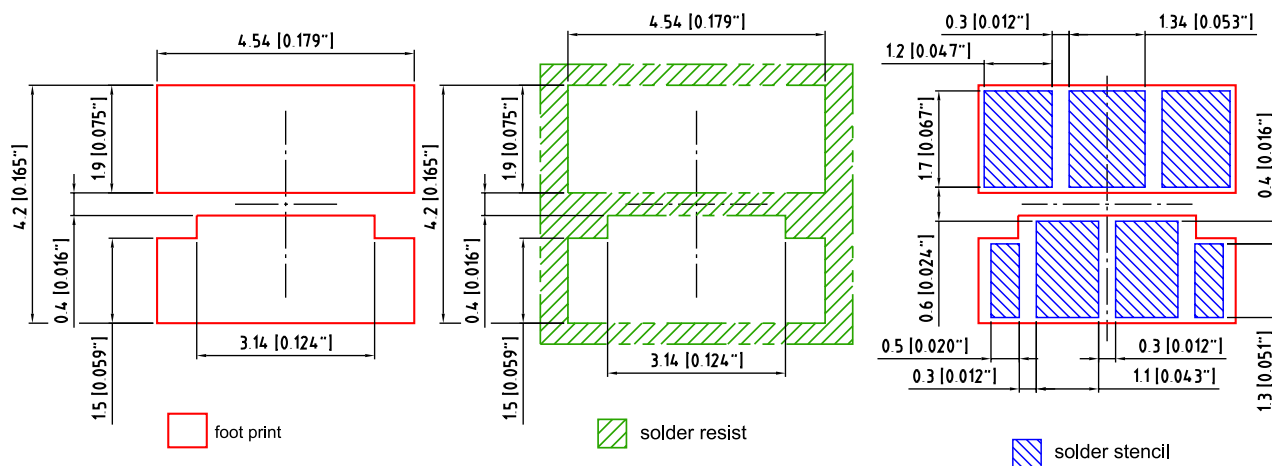
C63062-A4274-A1..-02

Further Information:

Approximate Weight: 63.0 mg

Package marking: Cathode

Recommended Solder Pad ⁸⁾

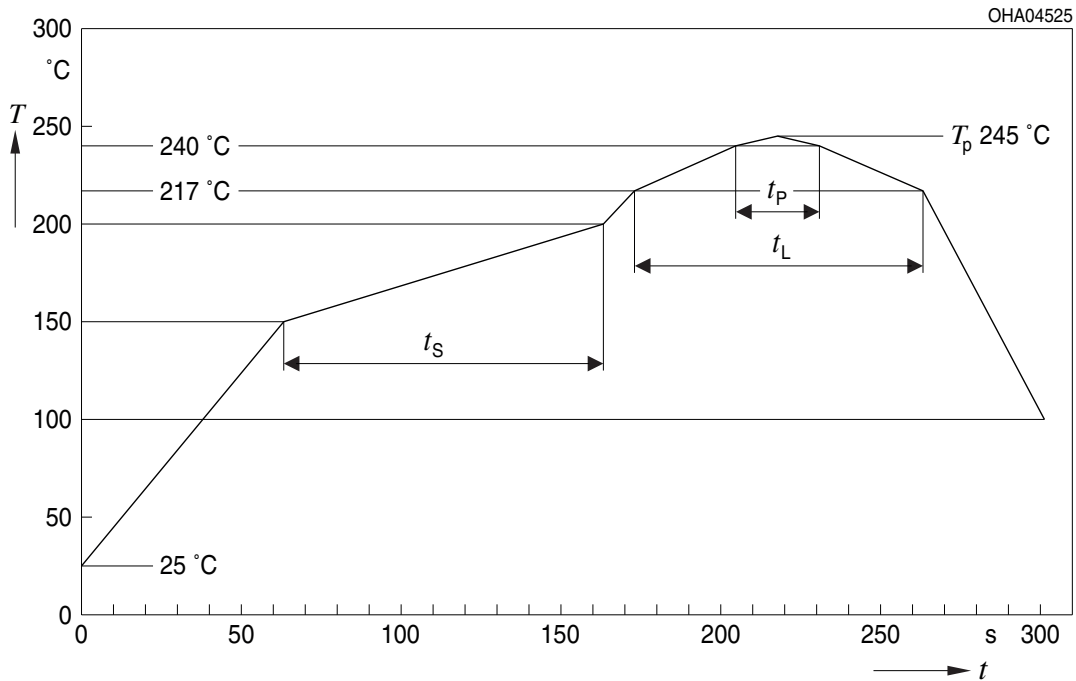


E062.3010.146 -01

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for ultra sonic cleaning.

Reflow Soldering Profile

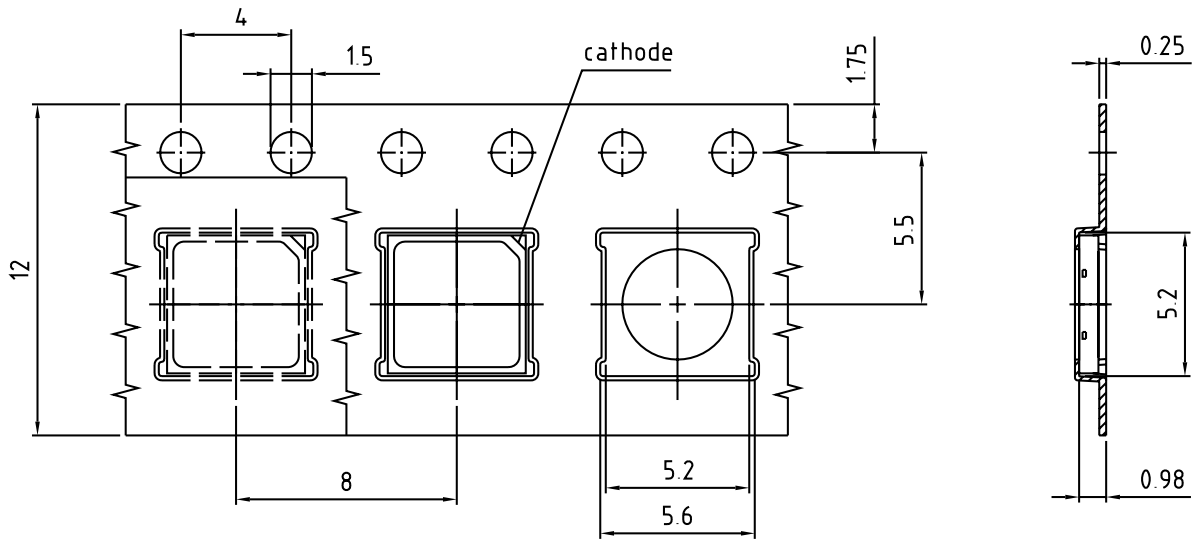
Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat ^{*)} 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak ^{*)} T_{Smax} to T_p			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_p		245	260	°C
Time within 5 °C of the specified peak temperature $T_p - 5$ K	t_p	10	20	30	s
Ramp-down rate* T_p to 100 °C			3	6	K/s
Time 25 °C to T_p				480	s

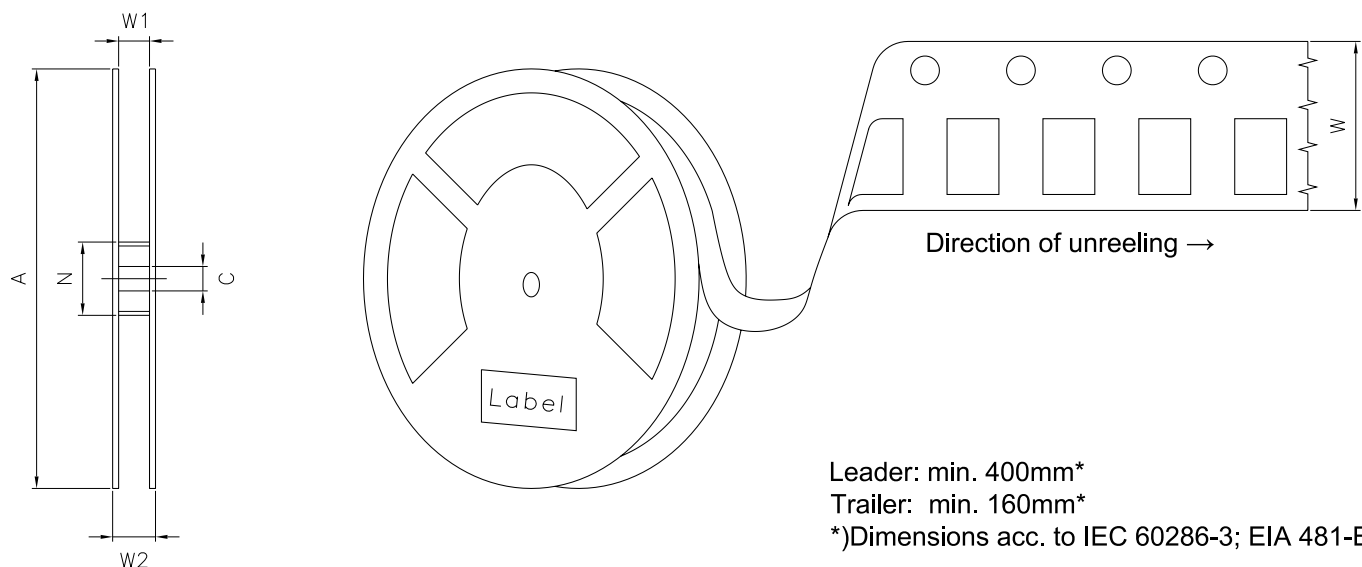
All temperatures refer to the center of the package, measured on the top of the component
^{*} slope calculation DT/Dt : Dt max. 5 s; fulfillment for the whole T-range

Taping ⁸⁾



C67062-A0343-B4-01

Tape and Reel ⁹⁾



Reel Dimensions

A	W	N_{\min}	W_1	$W_{2\max}$	Pieces per PU
180 mm	$12 + 0.3 / - 0.1$ mm	60 mm	$12.4 + 2$ mm	18.4 mm	1500

Barcode-Product-Label (BPL)

OSRAM Opto Semiconductors LX XXXX BIN1: XX-XX-X-XXX-X






RoHS Compliant

(6P) BATCH NO: 1234567890 ML Temp ST
X XXX °C X

(1T) LOT NO: 1234567890 (9D) D/C: 1234

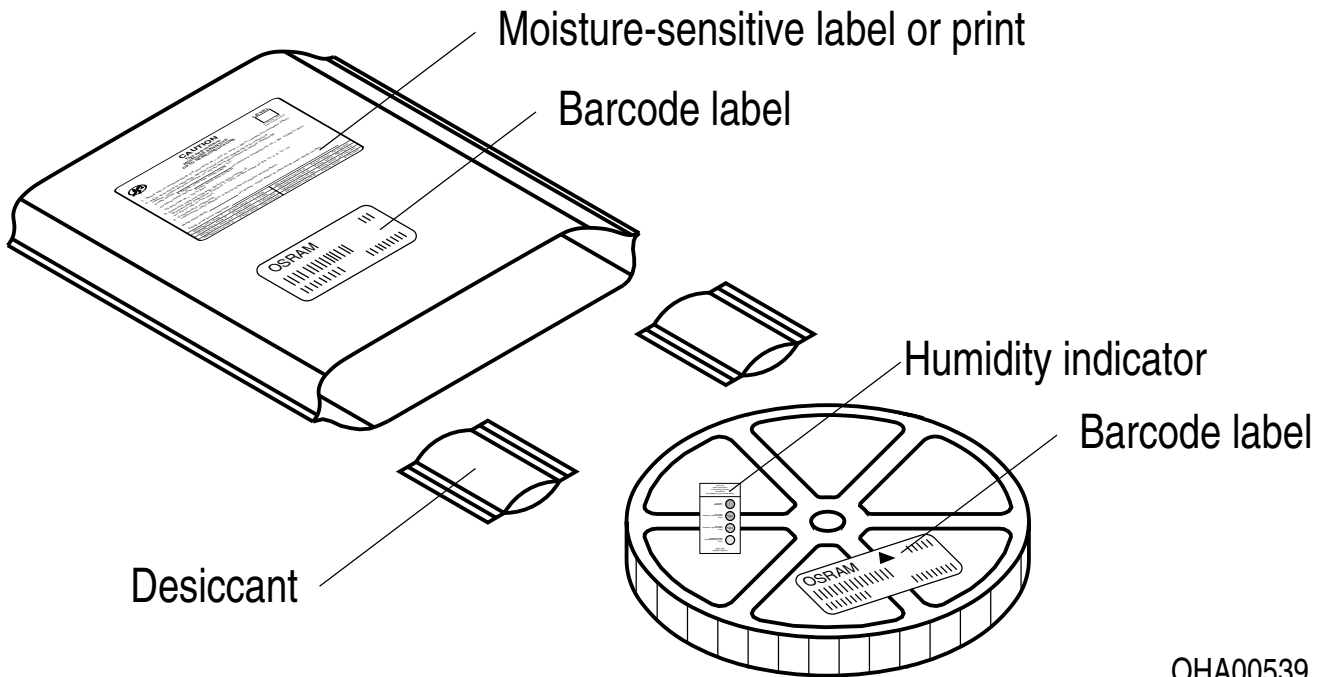
Pack: RXX
DEMY XXX
X_X123_1234.1234 X

(X) PROD NO: 123456789(Q)QTY: 9999 (G) GROUP: XX-XX-X-X

OHA04563

Dry Packing Process and Materials ⁸⁾



OHA00539

Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the device specified in this data sheet fall into the class **moderate risk (exposure time 0.25 s)**. Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

This device is designed for specific/recommended applications only. Please consult OSRAM Opto Semiconductors Sales Staff in advance for detailed information on other non-recommended applications (e.g. automotive).

Change management for this component is aligned with the requirements of the lighting market.

For further application related information please visit www.osram-os.com/appnotes

Disclaimer

Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version on our website.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Product and functional safety devices/applications or medical devices/applications

Our components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

Our products are not qualified at module and system level for such application.

In case buyer – or customer supplied by buyer – considers using our components in product safety devices/ applications or medical devices/applications, buyer and/or customer has to inform our local sales partner immediately and we and buyer and /or customer will analyze and coordinate the customer-specific request between us and buyer and/or customer.

Glossary

- 1) **Brightness:** Brightness values are measured during a current pulse of typically 10 ms, with a tolerance of +/- 7%.
- 2) **Reverse Operation:** Not designed for reverse operation. Continuous reverse operation can cause migration and damage of the device.
- 3) **Forward Voltage:** The Forward voltage is measured during a current pulse duration of typically 1 ms with a tolerance of $\pm 0.05V$.
- 4) **Color reproduction index:** Color reproduction index values (CRI-RA) are measured during a current pulse of typically 10 ms and with a tolerance of ± 2 .
- 5) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 6) **Chromaticity coordinate groups:** Chromaticity coordinate groups are measured during a current pulse duration of typically 10ms with a tolerance of ± 0.005 .
- 7) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single devices within one packing unit.
- 8) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.
- 9) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

Revision History

Version	Date	Change
1.2	2018-12-13	Ordering Information
1.3	2018-12-28	Electro - Optical Characteristics (Diagrams)
1.4	2019-05-07	Ordering Information
1.5	2019-06-17	Ordering Information
1.6	2020-01-21	Ordering Information Schematic Transportation Box Dimensions of Transportation Box
1.7	2020-07-08	Derating (Diagrams)
1.9	2022-08-12	Features Characteristics Electro - Optical Characteristics (Diagrams) New Layout Applications
1.10	2022-09-21	Ordering Information



EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，
不含有毒有害物质或元素。

Published by ams-OSRAM AG

Tobelbader Strasse 30, 8141 Premstaetten, Austria

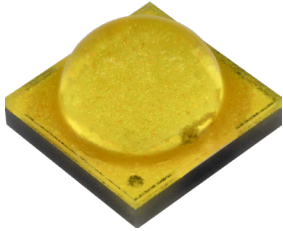
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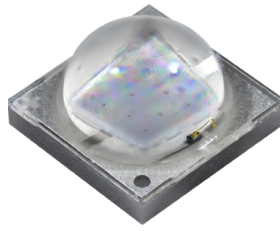
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am  **OSRAM**

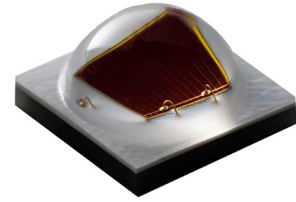
XLamp® XP-G3 LEDs



XP-G3 White



XP-G3 Royal Blue



XP-G3 Photo Red

PRODUCT DESCRIPTION

XLamp® XP-G3 LEDs are optimized for directional, high-lumen lighting applications where efficacy and optical control are critical, such as roadway, portable and horticulture. The compact and proven 3.45-mm XP platform has an excellent ecosystem of optics and system solutions available, enabling lighting manufacturers to simplify their design process and shorten time-to-market.

XP-G3 LEDs are available in and two different White, Royal Blue and Photo Red versions: Standard & S Line. The White Standard version delivers best-in-class TM-21 lifetimes and color stability over time. The S Line versions of White, Royal Blue and Photo Red deliver improved efficiency, best-in-class sulfur resistance and better system-level reliability through switching and dimming cycles. With these S Line versions, Cree LED delivers high-power LED technology that is optimized for both general and horticulture lighting applications where sensors and switching are becoming common.

In this document, the terms White, Royal Blue and Photo Red denote the white, royal blue or photo red XP-G3 LED without regard to its Standard or S Line features. The terms Standard and S Line are used when necessary to differentiate the performance of the Standard XP-G3 LED from the XP-G3 LED with the S Line option.

FEATURES

- Available in no CRI minimum white, 70-, 80- and 90-CRI white, royal blue & photo red
- Broadcast color option at 5700 K
- ANSI-compatible chromaticity bins
- 3-step and 5-step options
- White binned at 85 °C, royal blue & photo red binned at 25 °C
- Maximum drive current: white, royal blue: 2000 mA, photo red: 1500 mA
- Low thermal resistance: white: 1.1 °C/W, royal blue: 0.9 °C/W, photo red: 1.2 °C/W
- Wide viewing angle: 123°–130°
- Unlimited floor life at ≤ 30 °C/85% RH
- Reflow solderable - JEDEC J-STD-020C
- Electrically neutral thermal path
- RoHS and REACH compliant
- UL® recognized component (E349212)



Cree LED / 4001 E. Hwy. 54, Suite 2000 / Durham, NC 27709 USA / +1.919.313.5330 / www.cree-led.com

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CHARACTERISTICS

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point - white [Ⓟ]	°C/W		1.1	
Thermal resistance, junction to solder point - royal blue [Ⓟ]	°C/W		0.9	
Thermal resistance, junction to solder point - photo red [Ⓟ]	°C/W		1.2	
Viewing angle (FWHM) - white	degrees		125	
Viewing angle (FWHM) - royal blue	degrees		130	
Viewing angle (FWHM) - photo red	degrees		123	
Temperature coefficient of voltage - royal blue	mV/°C		-1.6	
Temperature coefficient of voltage - photo red	mV/°C		-0.9	
ESD withstand voltage (HBM per Mil-Std-883D)			Class 3B	
DC forward current - white, royal blue	mA			2000
DC forward current - photo red	mA			1500
Reverse voltage	V			1
Forward voltage (@ 350 mA, 85 °C) - white	V		2.70	2.90
Forward voltage (@ 350 mA, 25 °C) - royal blue	V		2.79	3.0
Forward voltage (@ 350 mA, 25 °C) - photo red (Standard)	V		1.99	2.2
Forward voltage (@ 350 mA, 25 °C) - photo red (S Line)	V		1.87	2.2
Forward voltage (@ 700 mA, 85 °C) - white	V		2.80	
Forward voltage (@ 700 mA, 25 °C) - royal blue	V		2.90	
Forward voltage (@ 700 mA, 25 °C) - photo red (Standard)	V		2.18	
Forward voltage (@ 700 mA, 25 °C) - photo red (S Line)	V		1.98	
Forward voltage (@ 1000 mA, 85 °C) - white	V		2.87	
Forward voltage (@ 1000 mA, 25 °C) - royal blue	V		2.99	
Forward voltage (@ 1000 mA, 25 °C) - photo red (Standard)	V		2.36	
Forward voltage (@ 1000 mA, 25 °C) - photo red (S Line)	V		2.06	
Forward voltage (@ 1500 mA, 85 °C) - white	V		2.97	
Forward voltage (@ 1500 mA, 25 °C) - royal blue	V		3.11	
Forward voltage (@ 1500 mA, 25 °C) - photo red (Standard)	V		2.65	
Forward voltage (@ 1500 mA, 25 °C) - photo red (S Line)	V		2.19	
Forward voltage (@ 2000 mA, 85 °C) - white	V		3.06	
Forward voltage (@ 2000 mA, 25 °C) - royal blue	V		3.20	
LED junction temperature	°C			150

Note:

- Ⓟ Thermal resistance measurement was performed per the JEDEC JESD51-14 standard. See the [Thermal Resistance Measurement application note](#) for more details.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (STANDARD) - $T_j = 85\text{ }^\circ\text{C}$

The following table provides order codes for XLamp XP-G3 White (Standard) LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 36). For definitions of the chromaticity kits, please see the Standard Chromaticity Kits section (page 35).

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
DT	7000 K	S6	180	196		XPGDWT-B1-0000-00NDT		
		S5	172	187	XPGDWT-01-0000-00MDT	XPGDWT-B1-0000-00MDT		
		S4	164	179	XPGDWT-01-0000-00LDT	XPGDWT-B1-0000-00LDT	XPGDWT-H1-0000-00LDT	
		S3	156	170	XPGDWT-01-0000-00KDT	XPGDWT-B1-0000-00KDT	XPGDWT-H1-0000-00KDT	
		S2	148	161	XPGDWT-01-0000-00JDT			
CB	6500 K	S4	164	179			XPGDWT-H1-0000-00LCB	
		S3	156	170			XPGDWT-H1-0000-00KCB	
E0	>6500 K	S5	172	187	XPGDWT-01-0000-00ME0	XPGDWT-B1-0000-00ME0		
		S4	164	179	XPGDWT-01-0000-00LE0	XPGDWT-B1-0000-00LE0		
		S3	156	170		XPGDWT-B1-0000-00KE0	XPGDWT-H1-0000-00KE0	
E1	6500 K	S5	172	187	XPGDWT-01-0000-00ME1	XPGDWT-B1-0000-00ME1		
		S4	164	179	XPGDWT-01-0000-00LE1	XPGDWT-B1-0000-00LE1	XPGDWT-H1-0000-00LE1	
		S3	156	170		XPGDWT-B1-0000-00KE1	XPGDWT-H1-0000-00KE1	
DV	6000 K	S6	180	196		XPGDWT-B1-0000-00NDV		
		S5	172	187	XPGDWT-01-0000-00MDV	XPGDWT-B1-0000-00MDV		
		S4	164	179	XPGDWT-01-0000-00LDV	XPGDWT-B1-0000-00LDV	XPGDWT-H1-0000-00LDV	
		S3	156	170		XPGDWT-B1-0000-00KDV	XPGDWT-H1-0000-00KDV	
		S2	148	161				XPGDWT-U1-0000-00JDV
		R5	139	152				XPGDWT-U1-0000-00HDV
		R4	130	142				XPGDWT-U1-0000-00GDV
50	6000 K	S5	172	187	XPGDWT-01-0000-00M50	XPGDWT-B1-0000-00M50		
		S4	164	179	XPGDWT-01-0000-00L50	XPGDWT-B1-0000-00L50	XPGDWT-H1-0000-00L50	
		S3	156	170		XPGDWT-B1-0000-00K50	XPGDWT-H1-0000-00K50	
		S2	148	161				XPGDWT-U1-0000-00J50
		R5	139	152				XPGDWT-U1-0000-00H50
		R4	130	142				XPGDWT-U1-0000-00G50

Notes

- Cree LED maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ± 2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (STANDARD) - T_j = 85 °C (CONTINUED)

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
E2	5700 K	S6	180	196	XPGDWT-01-0000-00NE2	XPGDWT-B1-0000-00NE2		
		S5	172	187	XPGDWT-01-0000-00ME2	XPGDWT-B1-0000-00ME2		
		S4	164	179	XPGDWT-01-0000-00LE2	XPGDWT-B1-0000-00LE2	XPGDWT-H1-0000-00LE2	
		S3	156	170		XPGDWT-B1-0000-00KE2	XPGDWT-H1-0000-00KE2	
		S2	148	161				XPGDWT-U1-0000-00JE2
		R5	139	152				XPGDWT-U1-0000-00HE2
		R4	130	142				XPGDWT-U1-0000-00GE2
2E	5700 K	S6	180	196		XPGDWT-B1-0000-00N2E		
		S5	172	187		XPGDWT-B1-0000-00M2E		
		S4	164	179		XPGDWT-B1-0000-00L2E	XPGDWT-H1-0000-00L2E	
		S3	156	170		XPGDWT-B1-0000-00K2E	XPGDWT-H1-0000-00K2E	
		S2	148	161				XPGDWT-U1-0000-00J2E
		R5	139	152				XPGDWT-U1-0000-00H2E
		R4	130	142				XPGDWT-U1-0000-00G2E
3E	5000 K	S6	180	196		XPGDWT-B1-0000-00N3E		
		S5	172	187		XPGDWT-B1-0000-00M3E		
		S4	164	179		XPGDWT-B1-0000-00L3E	XPGDWT-H1-0000-00L3E	
		S3	156	170		XPGDWT-B1-0000-00K3E	XPGDWT-H1-0000-00K3E	
		S2	148	161				XPGDWT-U1-0000-00J3E
		R5	139	152				XPGDWT-U1-0000-00H3E
		R4	130	142				XPGDWT-U1-0000-00G4E
E3	5000 K	S6	180	196	XPGDWT-01-0000-00NE3	XPGDWT-B1-0000-00NE3		
		S5	172	187	XPGDWT-01-0000-00ME3	XPGDWT-B1-0000-00ME3		
		S4	164	179	XPGDWT-01-0000-00LE3	XPGDWT-B1-0000-00LE3	XPGDWT-H1-0000-00LE3	
		S3	156	170			XPGDWT-H1-0000-00KE3	
		S2	148	161				XPGDWT-U1-0000-00EJE3
		R5	139	152				XPGDWT-U1-0000-00HE3
		R4	130	142				XPGDWT-U1-0000-00GE3

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (STANDARD) - T_j = 85 °C (CONTINUED)

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
F4	4750 K	S6	180	196	XPGDWT-01-0000-00NF4	XPGDWT-B1-0000-00NF4		
		S5	172	187	XPGDWT-01-0000-00MF4	XPGDWT-B1-0000-00MF4		
		S4	164	179	XPGDWT-01-0000-00LF4	XPGDWT-B1-0000-00LF4	XPGDWT-H1-0000-00LF4	
		S3	156	170			XPGDWT-H1-0000-00KF4	
		S2	148	161			XPGDWT-H1-0000-00JF4	XPGDWT-U1-0000-00JF4
		R5	139	152				XPGDWT-U1-0000-00HF4
		R4	130	142				XPGDWT-U1-0000-00GF4
4E	4500 K	S6	180	196		XPGDWT-B1-0000-00N4E		
		S5	172	187		XPGDWT-B1-0000-00M4E		
		S4	164	179		XPGDWT-B1-0000-00L4E	XPGDWT-H1-0000-00L4E	
		S3	156	170			XPGDWT-H1-0000-00K4E	
		S2	148	161			XPGDWT-H1-0000-00J4E	XPGDWT-U1-0000-00J4E
		R5	139	152				XPGDWT-U1-0000-00H4E
		R4	130	142				XPGDWT-U1-0000-00G4E
E4	4500 K	S6	180	196	XPGDWT-01-0000-00NE4	XPGDWT-B1-0000-00NE4		
		S5	172	187	XPGDWT-01-0000-00ME4	XPGDWT-B1-0000-00ME4		
		S4	164	179	XPGDWT-01-0000-00LE4	XPGDWT-B1-0000-00LE4	XPGDWT-H1-0000-00LE4	
		S3	156	170			XPGDWT-H1-0000-00KE4	
		S2	148	161			XPGDWT-H1-0000-00JE4	XPGDWT-U1-0000-00JE4
		R5	139	152				XPGDWT-U1-0000-00HE4
		R4	130	142				XPGDWT-U1-0000-00GE4
F5	4200 K	S6	180	196		XPGDWT-B1-0000-00NF5		
		S5	172	187	XPGDWT-01-0000-00MF5	XPGDWT-B1-0000-00MF5		
		S4	164	179	XPGDWT-01-0000-00LF5	XPGDWT-B1-0000-00LF5	XPGDWT-H1-0000-00LF5	
		S3	156	170		XPGDWT-B1-0000-00KF5	XPGDWT-H1-0000-00KF5	
		S2	148	161			XPGDWT-H1-0000-00JF5	XPGDWT-U1-0000-00JF5
		R5	139	152				XPGDWT-U1-0000-00HF5
		R4	130	142				XPGDWT-U1-0000-00GF5

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (STANDARD) - T_j = 85 °C (CONTINUED)

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
5E	4000 K	S6	180	196		XPGDWT-B1-0000-00N5E		
		S5	172	187		XPGDWT-B1-0000-00M5E		
		S4	164	179		XPGDWT-B1-0000-00L5E	XPGDWT-H1-0000-00L5E	
		S3	156	170		XPGDWT-B1-0000-00K5E	XPGDWT-H1-0000-00K5E	
		S2	148	161			XPGDWT-H1-0000-00J5E	XPGDWT-U1-0000-00J5E
		R5	139	152				XPGDWT-U1-0000-00H5E
		R4	130	142				XPGDWT-U1-0000-00G5E
E5	4000 K	S6	180	196		XPGDWT-B1-0000-00NE5		
		S5	172	187	XPGDWT-01-0000-00ME5	XPGDWT-B1-0000-00ME5		
		S4	164	179	XPGDWT-01-0000-00LE5	XPGDWT-B1-0000-00LE5	XPGDWT-H1-0000-00LE5	
		S3	156	170		XPGDWT-B1-0000-00KE5	XPGDWT-H1-0000-00KE5	
		S2	148	161			XPGDWT-H1-0000-00JE5	XPGDWT-U1-0000-00JE5
		R5	139	152				XPGDWT-U1-0000-00HE5
		R4	130	142				XPGDWT-U1-0000-00GE5
F6	3700 K	S5	172	187		XPGDWT-B1-0000-00MF6		
		S4	164	179	XPGDWT-01-0000-00LF6	XPGDWT-B1-0000-00LF6		
		S3	156	170	XPGDWT-01-0000-00KF6	XPGDWT-B1-0000-00KF6	XPGDWT-H1-0000-00KF6	
		S2	148	161			XPGDWT-H1-0000-00JF6	
		R5	139	152			XPGDWT-H1-0000-00HF6	XPGDWT-U1-0000-00HF6
		R4	130	142				XPGDWT-U1-0000-00GF6
6E	3500 K	S5	172	187		XPGDWT-B1-0000-00M6E		
		S4	164	179		XPGDWT-B1-0000-00L6E		
		S3	156	170		XPGDWT-B1-0000-00K6E	XPGDWT-H1-0000-00K6E	
		S2	148	161			XPGDWT-H1-0000-00J6E	
		R5	139	152			XPGDWT-H1-0000-00H6E	XPGDWT-U1-0000-00H6E
		R4	130	142				XPGDWT-U1-0000-00G6E
6G	3500 K	R5	139	152				XPGDWT-U1-0000-00H6G
		R4	130	142				XPGDWT-U1-0000-00G6G

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (STANDARD) - T_J = 85 °C (CONTINUED)

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
E6	3500 K	S5	172	187		XPGDWT-B1-0000-00ME6		
		S4	164	179	XPGDWT-01-0000-00LE6	XPGDWT-B1-0000-00LE6		
		S3	156	170	XPGDWT-01-0000-00KE6	XPGDWT-B1-0000-00KE6	XPGDWT-H1-0000-00KE6	
		S2	148	161			XPGDWT-H1-0000-00JE6	
		R5	139	152			XPGDWT-H1-0000-00HE6	XPGDWT-U1-0000-00HE6
		R4	130	142				XPGDWT-U1-0000-00GE6
F7	3200 K	S5	172	187		XPGDWT-B1-0000-00MF7		
		S4	164	179	XPGDWT-01-0000-00LF7	XPGDWT-B1-0000-00LF7		
		S3	156	170	XPGDWT-01-0000-00KF7	XPGDWT-B1-0000-00KF7	XPGDWT-H1-0000-00KF7	
		S2	148	161	XPGDWT-01-0000-00JF7	XPGDWT-B1-0000-00JF7	XPGDWT-H1-0000-00JF7	
		R5	139	152			XPGDWT-H1-0000-00HF7	
		R4	130	142				XPGDWT-U1-0000-00GF7
		R3	122	133				XPGDWT-U1-0000-00FF7
7E	3000 K	S5	172	187		XPGDWT-B1-0000-00M7E		
		S4	164	179		XPGDWT-B1-0000-00L7E		
		S3	156	170		XPGDWT-B1-0000-00K7E	XPGDWT-H1-0000-00K7E	
		S2	148	161		XPGDWT-B1-0000-00J7E	XPGDWT-H1-0000-00J7E	
		R5	139	152			XPGDWT-H1-0000-00H7E	
		R4	130	142				XPGDWT-U1-0000-00G7E
		R3	122	133				XPGDWT-U1-0000-00F7E
7G	3000 K	R4	130	142				XPGDWT-U1-0000-00G7G
		R3	122	133				XPGDWT-U1-0000-00F7G
E7	3000 K	S5	172	187		XPGDWT-B1-0000-00ME7		
		S4	164	179	XPGDWT-01-0000-00LE7	XPGDWT-B1-0000-00LE7		
		S3	156	170	XPGDWT-01-0000-00KE7	XPGDWT-B1-0000-00KE7	XPGDWT-H1-0000-00KE7	
		S2	148	161	XPGDWT-01-0000-00JE7	XPGDWT-B1-0000-00JE7	XPGDWT-H1-0000-00JE7	
		R5	139	152			XPGDWT-H1-0000-00HE7	
		R4	130	142				XPGDWT-U1-0000-00GE7
		R3	122	133				XPGDWT-U1-0000-00FE7

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (STANDARD) - T_J = 85 °C (CONTINUED)

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
F8	2850 K	S2	148	161			XPGDWT-H1-0000-00JF8	
		R5	139	152			XPGDWT-H1-0000-00HF8	
		R4	130	142			XPGDWT-H1-0000-00GF8	
		R3	122	133				XPGDWT-U1-0000-00FF8
		R2	114	124				XPGDWT-U1-0000-00EF8
8E	2700 K	S4	164	179		XPGDWT-B1-0000-00L8E		
		S3	156	170		XPGDWT-B1-0000-00K8E		
		S2	148	161		XPGDWT-B1-0000-00J8E	XPGDWT-H1-0000-00J8E	
		R5	139	152			XPGDWT-H1-0000-00H8E	
		R4	130	142			XPGDWT-H1-0000-00G8E	
		R3	122	133				XPGDWT-U1-0000-00F8E
		R2	114	124				XPGDWT-U1-0000-00E8E
8G	2700 K	R3	122	133				XPGDWT-U1-0000-00F8G
		R2	114	124				XPGDWT-U1-0000-00E8G
E8	2700 K	S4	164	179		XPGDWT-B1-0000-00LE8		
		S3	156	170		XPGDWT-B1-0000-00KE8		
		S2	148	161		XPGDWT-B1-0000-00JE8	XPGDWT-H1-0000-00JE8	
		R5	139	152			XPGDWT-H1-0000-00HE8	
		R4	130	142			XPGDWT-H1-0000-00GE8	
		R3	122	133				XPGDWT-U1-0000-00FE8
		R2	114	124				XPGDWT-U1-0000-00EE8
EA	2200 K	R5	139	152		XPGDWT-B1-0000-00HEA		
		R4	130	142		XPGDWT-B1-0000-00GEA		
BE	1800 K	R3	122	133	XPGDWT-01-0000-00FBE			
		R2	114	124	XPGDWT-01-0000-00EBE			

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (S LINE) - T_J = 85 °C

The following table provides order codes for XLamp XP-G3 White (S Line) LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 36). For definitions of the chromaticity kits, please see the Standard Chromaticity Kits section (page 35).

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Minimum
E1	6500 K	S6	180	196	XPGDWT-BS-0000-00NE1
		S5	172	187	XPGDWT-BS-0000-00ME1
		S4	164	179	XPGDWT-BS-0000-00LE1
DV	6000 K	S6	180	196	XPGDWT-BS-0000-00NDV
		S5	172	187	XPGDWT-BS-0000-00MDV
		S4	164	179	XPGDWT-BS-0000-00LDV
50	6000 K	S6	180	196	XPGDWT-BS-0000-00N50
		S5	172	187	XPGDWT-BS-0000-00M50
		S4	164	179	XPGDWT-BS-0000-00L50
E2	5700 K	S7	188	205	XPGDWT-BS-0000-00PE2
		S6	180	196	XPGDWT-BS-0000-00NE2
		S5	172	187	XPGDWT-BS-0000-00ME2
		S4	164	179	XPGDWT-BS-0000-00LE2
2E	5700 K	S7	188	205	XPGDWT-BS-0000-00P2E
		S6	180	196	XPGDWT-BS-0000-00N2E
		S5	172	187	XPGDWT-BS-0000-00M2E
		S4	164	179	XPGDWT-BS-0000-00L2E
3E	5000 K	S7	188	205	XPGDWT-BS-0000-00P3E
		S6	180	196	XPGDWT-BS-0000-00N3E
		S5	172	187	XPGDWT-BS-0000-00M3E
		S4	164	179	XPGDWT-BS-0000-00L3E
E3	5000 K	S7	188	205	XPGDWT-BS-0000-00PE3
		S6	180	196	XPGDWT-BS-0000-00NE3
		S5	172	187	XPGDWT-BS-0000-00ME3
		S4	164	179	XPGDWT-BS-0000-00LE3

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

ORDER CODES SUGGESTED FOR NEW DESIGNS - WHITE (S LINE) - T_j = 85 °C (CONTINUED)

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Minimum
4E	4500 K	S6	180	196	XPGDWT-BS-0000-00N4E
		S5	172	187	XPGDWT-BS-0000-00M4E
		S4	164	179	XPGDWT-BS-0000-00L4E
E4	4500 K	S6	180	196	XPGDWT-BS-0000-00NE4
		S5	172	187	XPGDWT-BS-0000-00ME4
		S4	164	179	XPGDWT-BS-0000-00LE4
5E	4000 K	S7	188	205	XPGDWT-BS-0000-00P5E
		S6	180	196	XPGDWT-BS-0000-00N5E
		S5	172	187	XPGDWT-BS-0000-00M5E
		S4	164	179	XPGDWT-BS-0000-00L5E
E5	4000 K	S7	188	205	XPGDWT-BS-0000-00PE5
		S6	180	196	XPGDWT-BS-0000-00NE5
		S5	172	187	XPGDWT-BS-0000-00ME5
		S4	164	179	XPGDWT-BS-0000-00LE5
6E	3500 K	S5	172	187	XPGDWT-BS-0000-00M6E
		S4	164	179	XPGDWT-BS-0000-00L6E
E6	3500 K	S5	172	187	XPGDWT-BS-0000-00ME6
		S4	164	179	XPGDWT-BS-0000-00LE6
F7	3200K	S5	172	187	XPGDWT-BS-0000-00MF7
		S4	164	179	XPGDWT-BS-0000-00LF7
7E	3000 K	S5	172	187	XPGDWT-BS-0000-00M7E
		S4	164	179	XPGDWT-BS-0000-00L7E
E7	3000 K	S5	172	187	XPGDWT-BS-0000-00ME7
		S4	164	179	XPGDWT-BS-0000-00LE7

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

FLUX CHARACTERISTICS - COLOR (STANDARD) - $T_j = 25\text{ }^\circ\text{C}$

The following tables provide the order codes for XLamp XP-G3 color (Standard) LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 36).

Color	PWL Kit Code	Peak Wavelength Range				Typical Dominant Wavelength (nm) @ 350 mA, $T_j=25\text{ }^\circ\text{C}$	Minimum Radiant Flux (mW) @ 350 mA,		Calculated Minimum PPF ($\mu\text{mol/s}$) @ 350 mA, $25\text{ }^\circ\text{C}$	Order Code
		Minimum		Maximum			Code	Flux (mW) @25 $^\circ\text{C}$		
		Group	PWL (nm)	Group	PWL (nm)					
Royal Blue (Standard)	01	H26	440	H47	455	451	E4	635	2.41	XPGDRY-L1-0000-00401
						451	F2	680	2.58	XPGDRY-L1-0000-00501
						451	F4	730	2.77	XPGDRY-L1-0000-00601

Color	PWL Kit Code	Peak Wavelength Range				Typical Dominant Wavelength (nm) @ 350 mA, $T_j=25\text{ }^\circ\text{C}$	Minimum Radiant Flux (mW) @ 350 mA,		Calculated Minimum PPF ($\mu\text{mol/s}$) @ 350 mA, $25\text{ }^\circ\text{C}$	Order Code
		Minimum		Maximum			Code	Flux (mW) @25 $^\circ\text{C}$		
		Group	PWL (nm)	Group	PWL (nm)					
Photo Red (Standard)	01	P2	650	P5	670	645	31	475	2.58	XPGDPR-L1-0000-00E01
						645	32	500	2.72	XPGDPR-L1-0000-00F01

Notes

- Cree LED maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ± 2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Dominant wavelengths are calculated based on peak wavelength specifications and are for reference only.
- Calculated Photosynthetic Photon Flux (PPF) values are for reference only.

FLUX CHARACTERISTICS - COLOR (S LINE) - T_j = 25 °C

The following tables provide the order codes for XLamp XP-G3 color (S Line) LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 36).

Color	PWL Kit Code	Peak Wavelength Range				Typical Dominant Wavelength (nm) @ 350 mA, T _j =25 °C	Minimum Radiant Flux (mW) @ 350 mA,		Calculated Minimum PPF (μmol/s) @ 350 mA, 25 °C	Order Code
		Minimum		Maximum			Code	Flux (mW) @25 °C		
		Group	PWL (nm)	Group	PWL (nm)					
Royal Blue (S Line)	01	H26	440	H47	455	451	F2	680	2.58	XPGDRY-LS-0000-00501
							F4	730	2.77	XPGDRY-LS-0000-00601

Color	PWL Kit Code	Peak Wavelength Range				Typical Dominant Wavelength (nm) @ 350 mA, T _j =25 °C	Minimum Radiant Flux (mW) @ 350 mA,		Calculated Minimum PPF (μmol/s) @ 350 mA, 25 °C	Order Code
		Minimum		Maximum			Code	Flux (mW) @25 °C		
		Group	PWL (nm)	Group	PWL (nm)					
Photo Red (S Line)	01	P2	650	P5	670	645	32	500	2.72	XPGDPR-LS-0000-00F01
						645	33	525	2.85	XPGDPR-LS-0000-00G01
						645	34	550	2.98	XPGDPR-LS-0000-00H01

FLUX CHARACTERISTICS - BROADCAST ORDER CODES AND BINS (T_j = 85 °C)

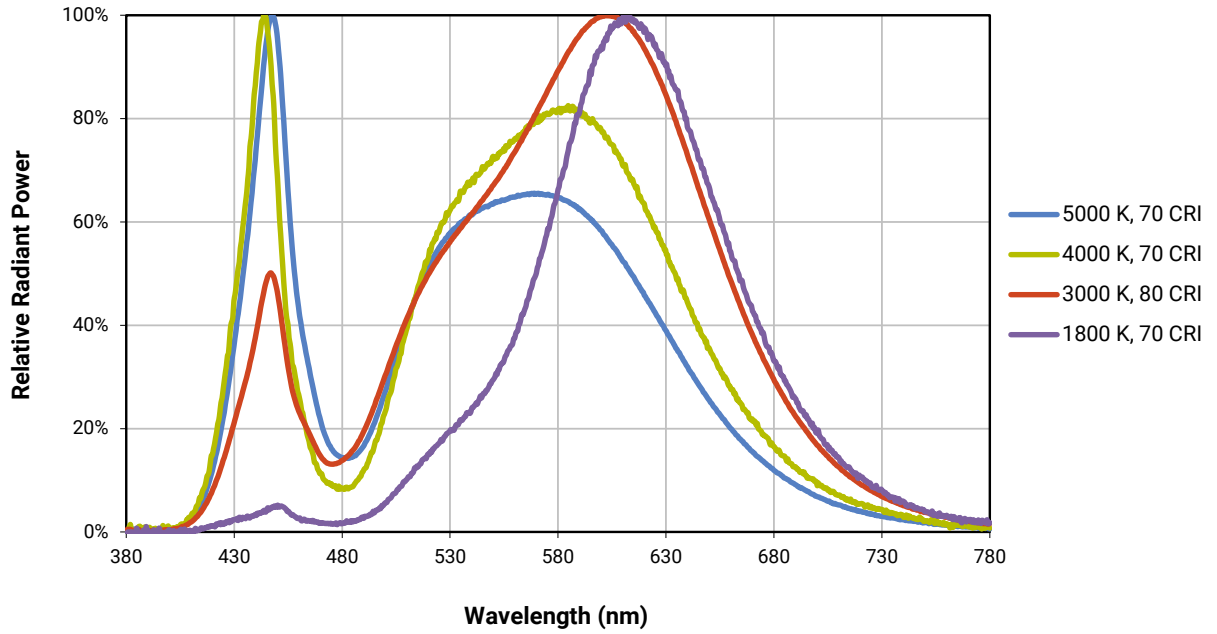
The following table provides order codes for XLamp XP-G3 Broadcast LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 36). For definitions of the chromaticity kits, please see the Standard Chromaticity Kits section (page 35).

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes	
Kit	CCT	Flux Bin	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	90 CRI Minimum 90 TLCI Minimum	95 CRI Minimum 95 TLCI Minimum
E2	5700 K	R5	139	152	XPGDWT-U1-B001-A0HE2	XPGDWT-Z1-B001-A0GE2
		R4	130	142		

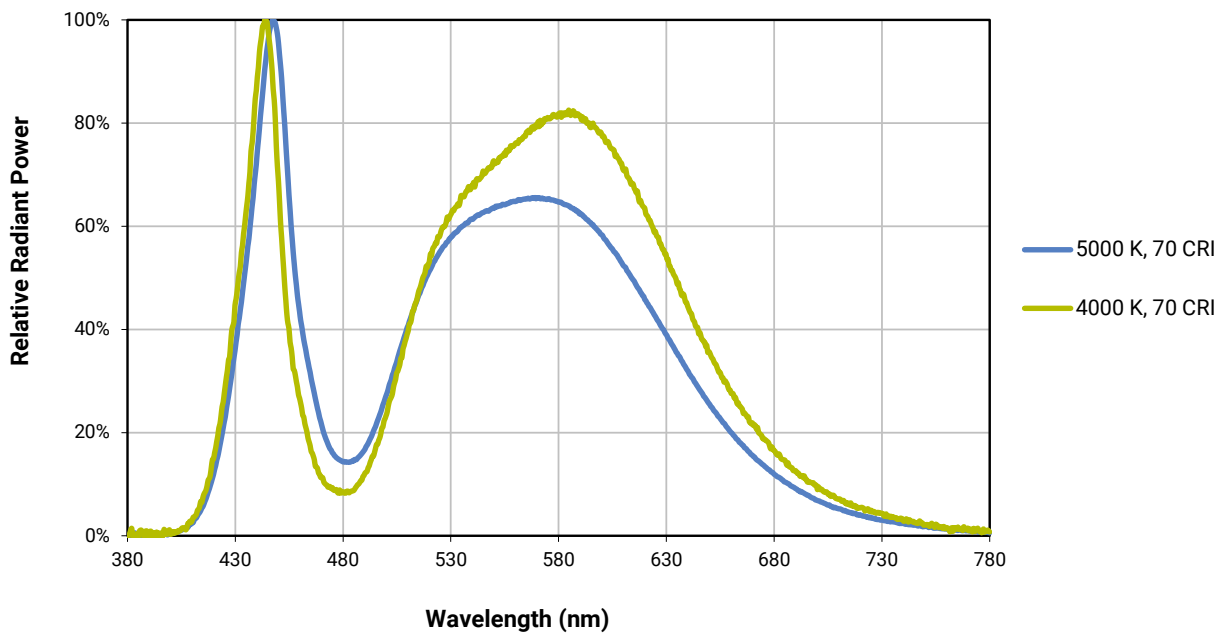
Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

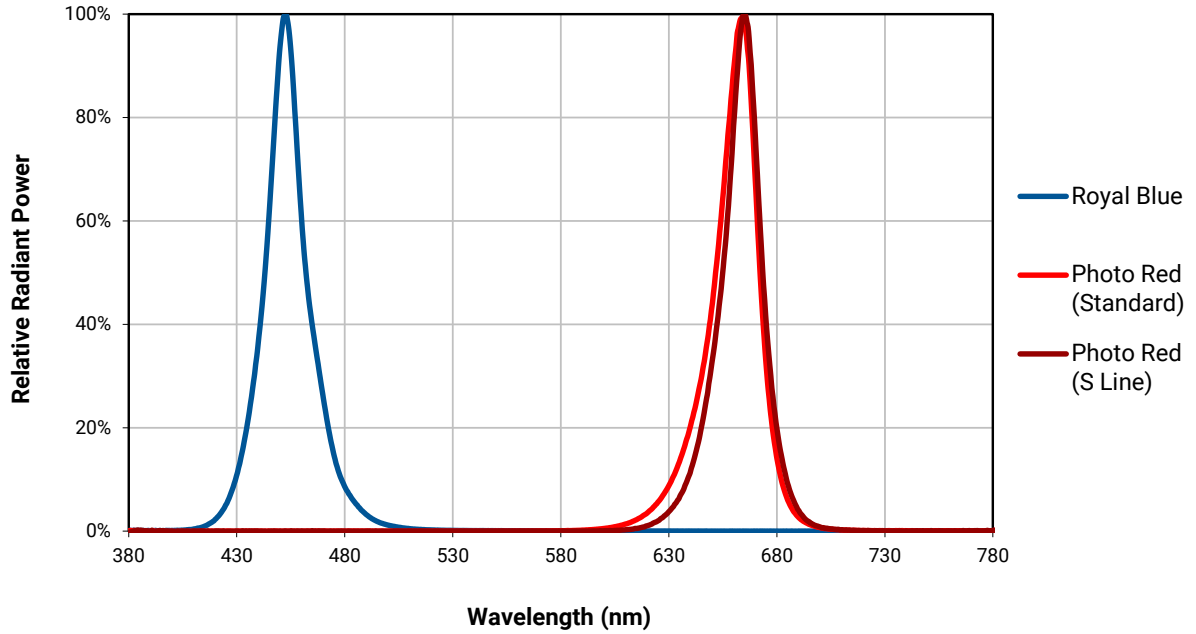
RELATIVE SPECTRAL POWER DISTRIBUTION - WHITE (STANDARD)



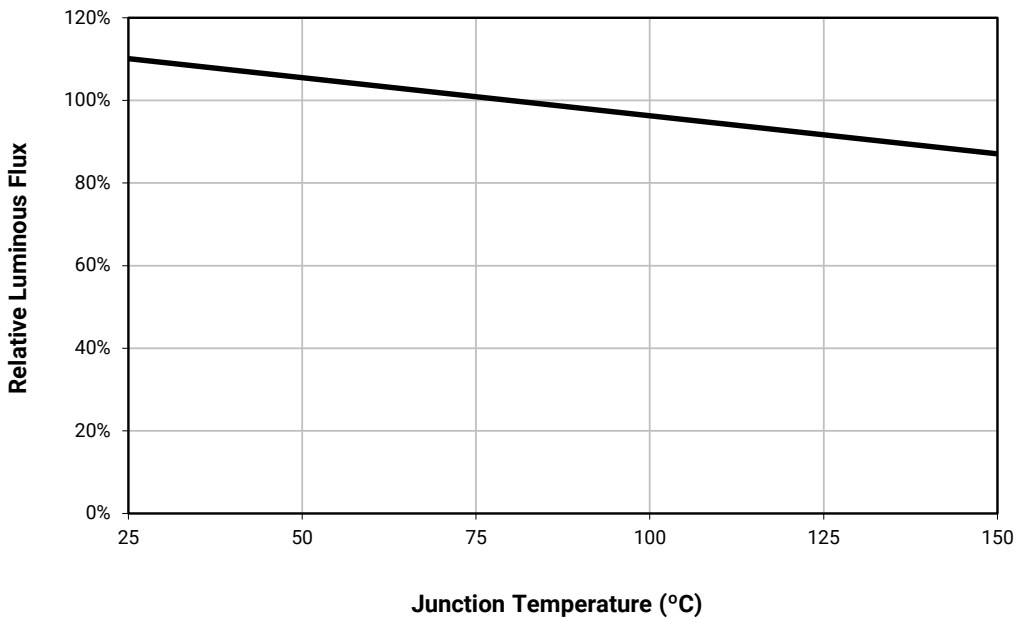
RELATIVE SPECTRAL POWER DISTRIBUTION - WHITE (S LINE)



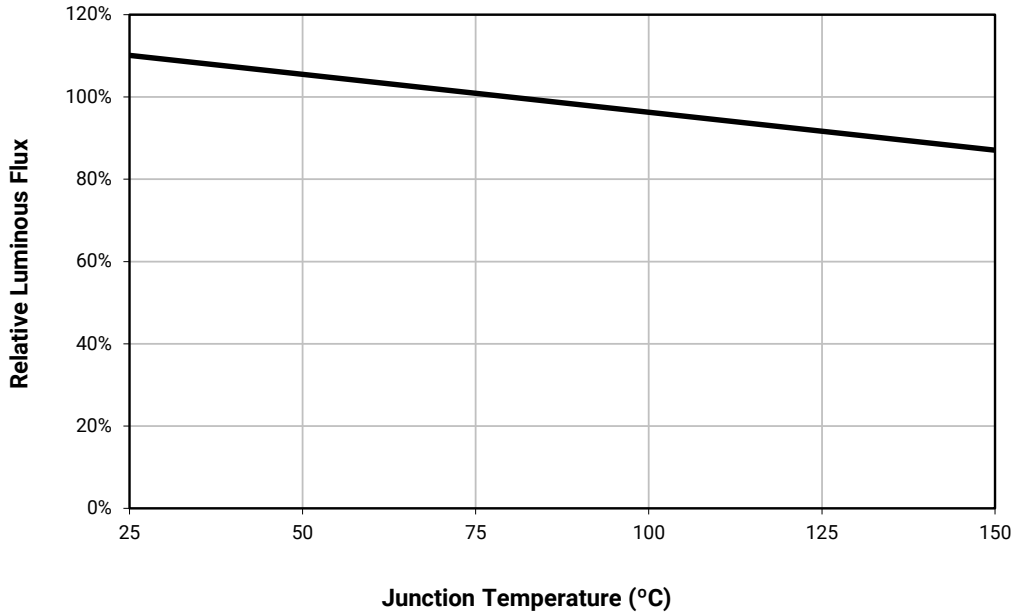
RELATIVE SPECTRAL POWER DISTRIBUTION - COLOR



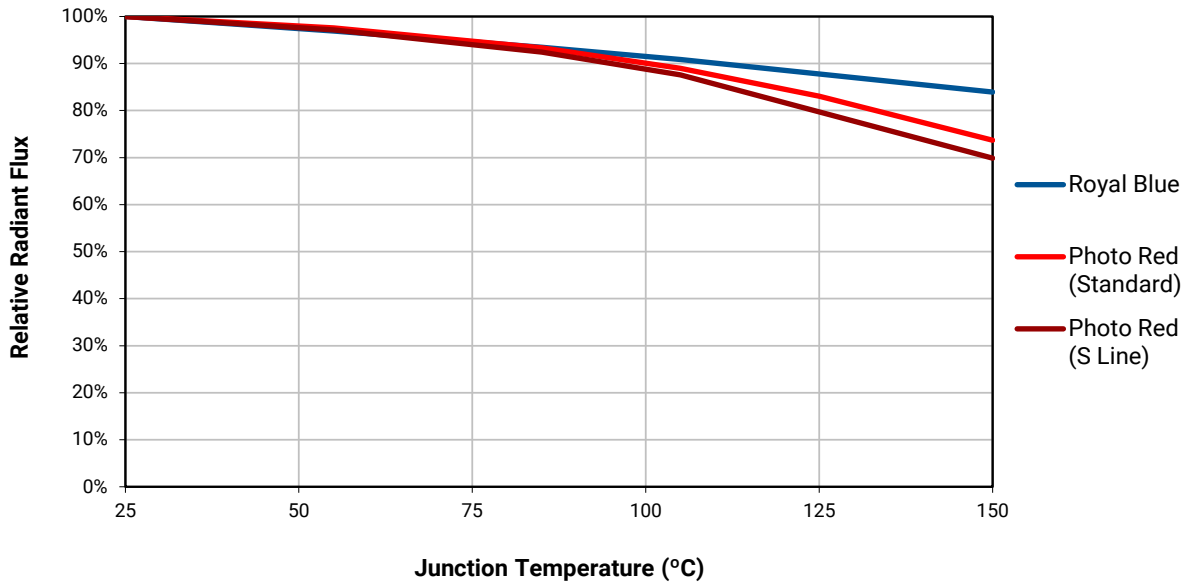
RELATIVE FLUX VS. JUNCTION TEMPERATURE - WHITE (STANDARD) - $I_f = 350$ mA



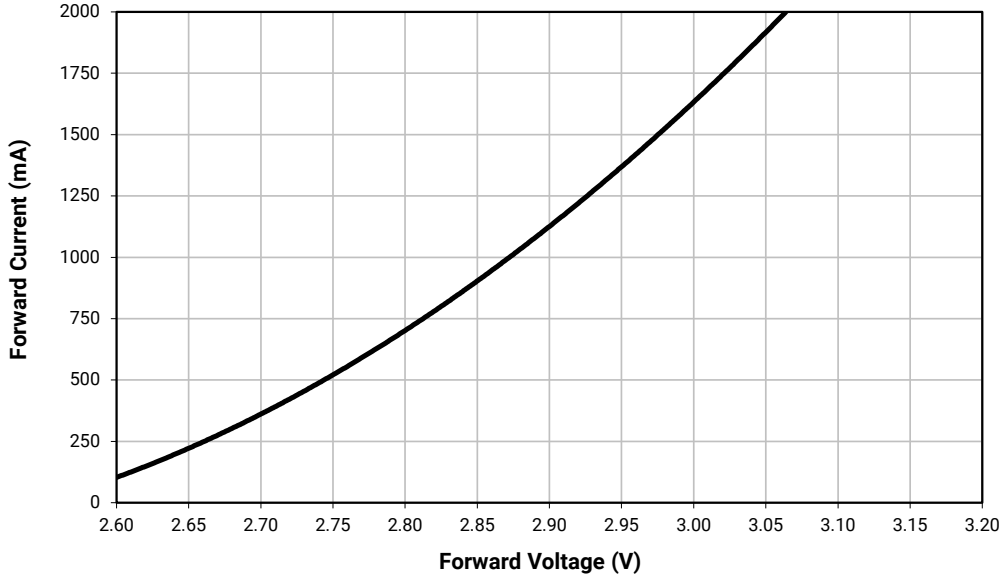
RELATIVE FLUX VS. JUNCTION TEMPERATURE - WHITE (S LINE) - $I_F = 350 \text{ mA}$



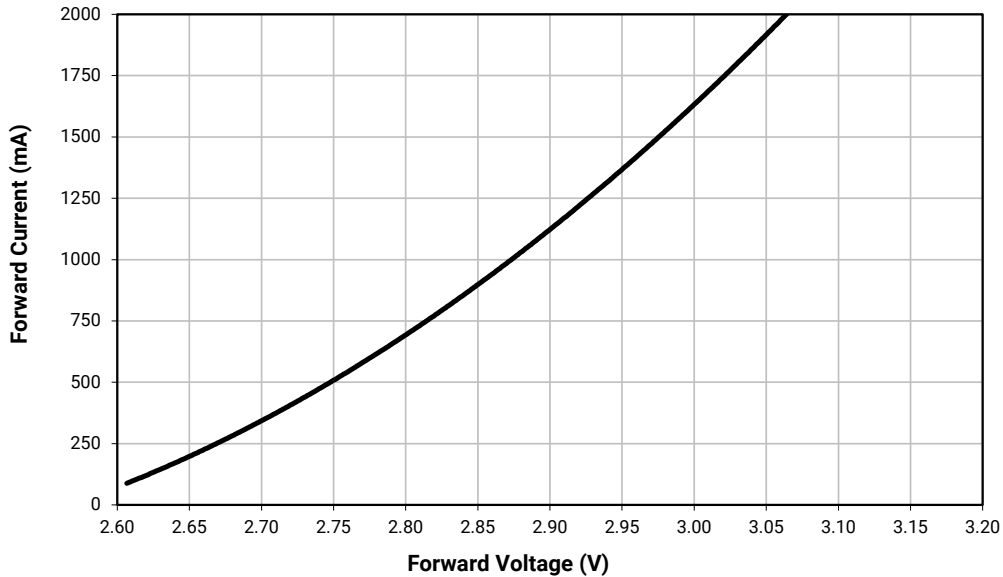
RELATIVE FLUX VS. JUNCTION TEMPERATURE - COLOR - $I_F = 350 \text{ mA}$



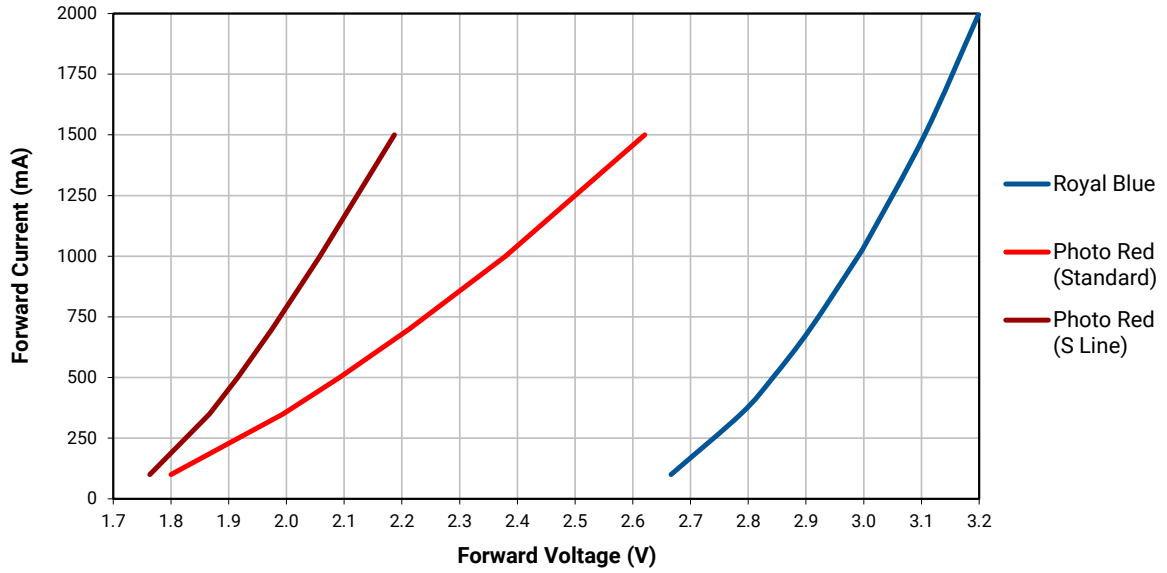
ELECTRICAL CHARACTERISTICS - WHITE (STANDARD) - $T_j = 85\text{ }^\circ\text{C}$



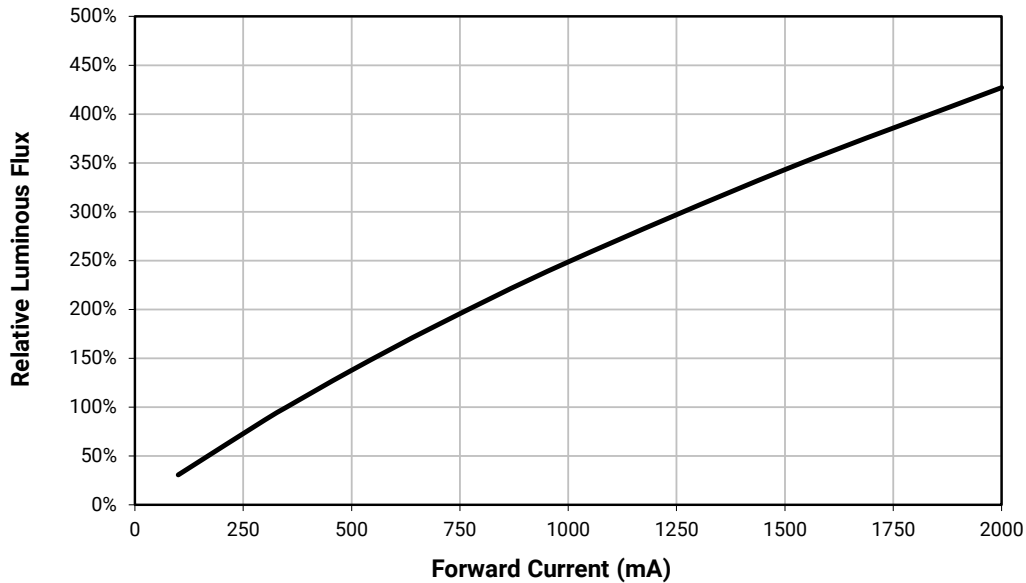
ELECTRICAL CHARACTERISTICS - WHITE (S LINE) - $T_j = 85\text{ }^\circ\text{C}$



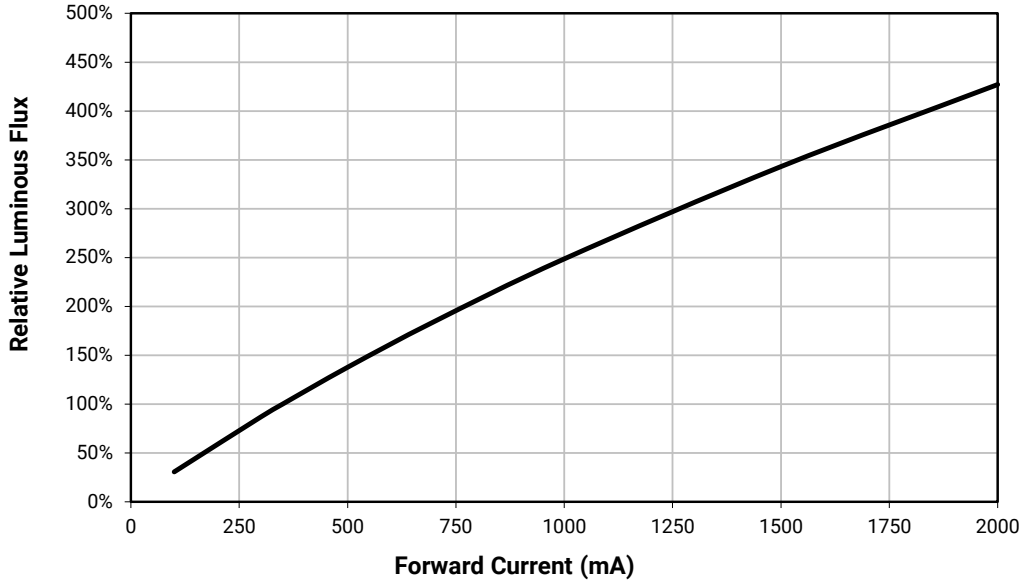
ELECTRICAL CHARACTERISTICS - COLOR ($T_j = 25\text{ }^\circ\text{C}$)



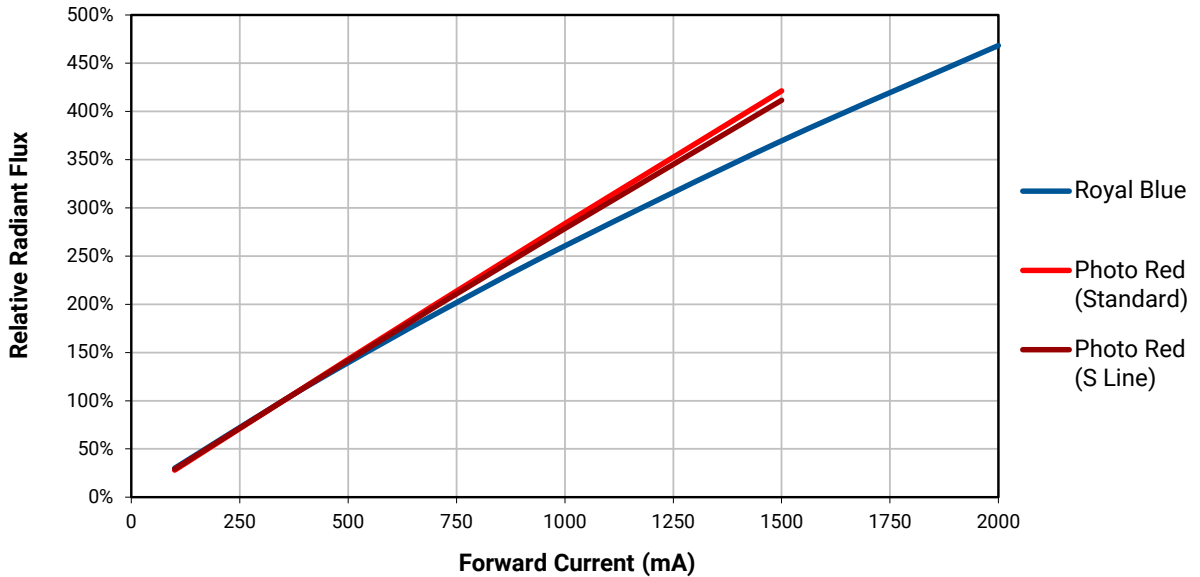
RELATIVE LUMINOUS FLUX VS. CURRENT - WHITE (STANDARD) - $T_j = 85\text{ }^\circ\text{C}$



RELATIVE LUMINOUS FLUX VS. CURRENT - WHITE (S LINE) - $T_j = 85\text{ }^\circ\text{C}$

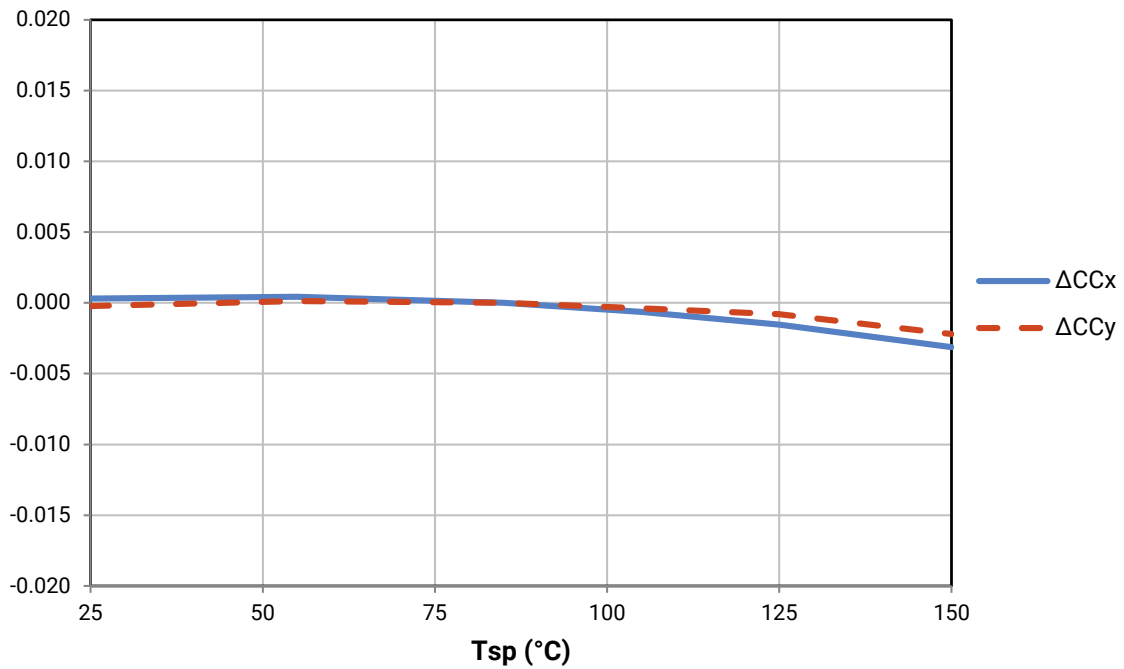
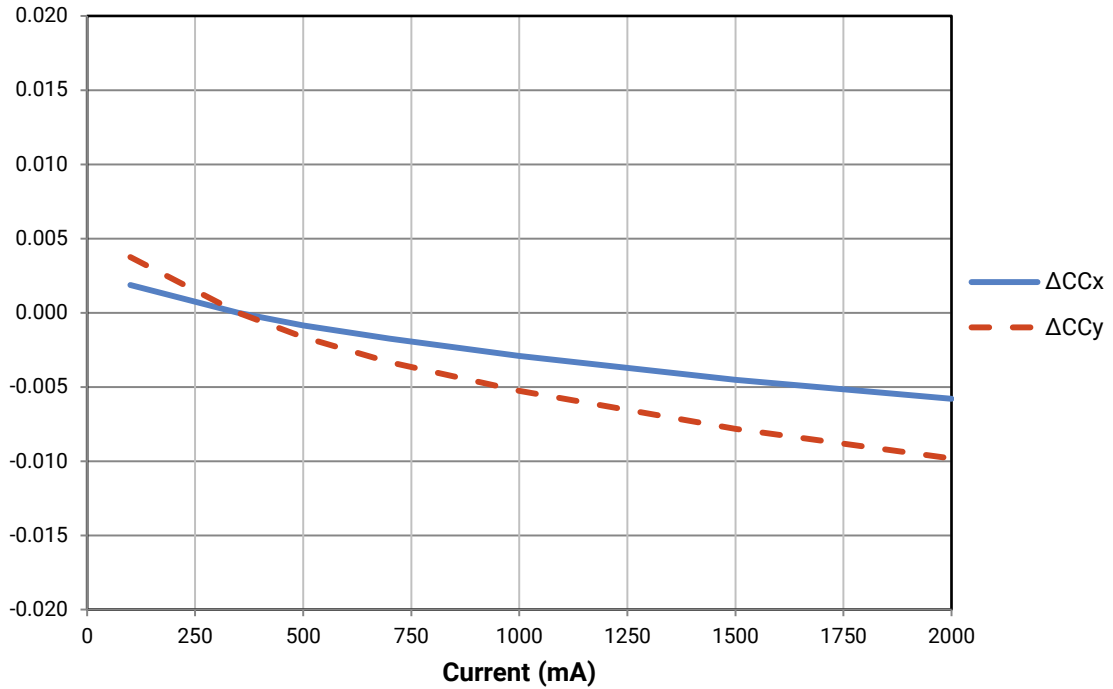


RELATIVE RADIANT FLUX VS. CURRENT - COLOR ($T_j = 25\text{ }^\circ\text{C}$)

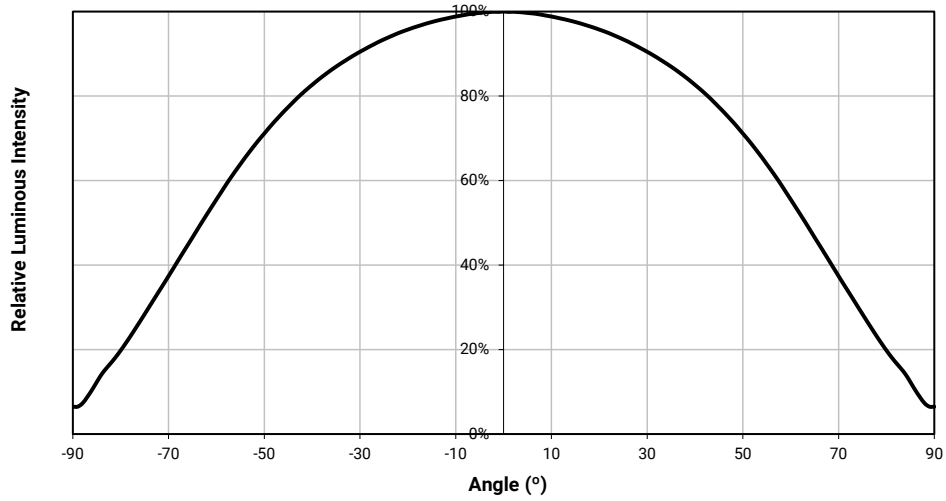


RELATIVE CHROMATICITY VS. CURRENT AND TEMPERATURE

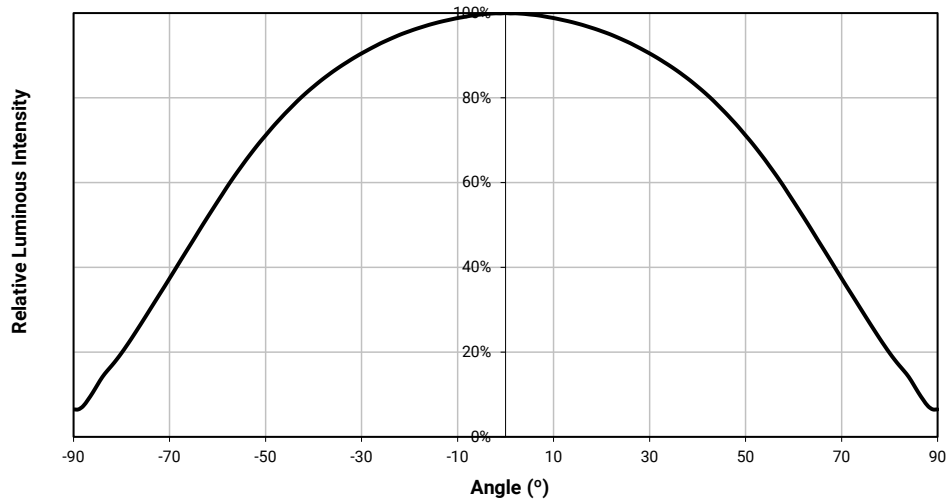
Data shown is representative of typical XP-G3 70 CRI performance.



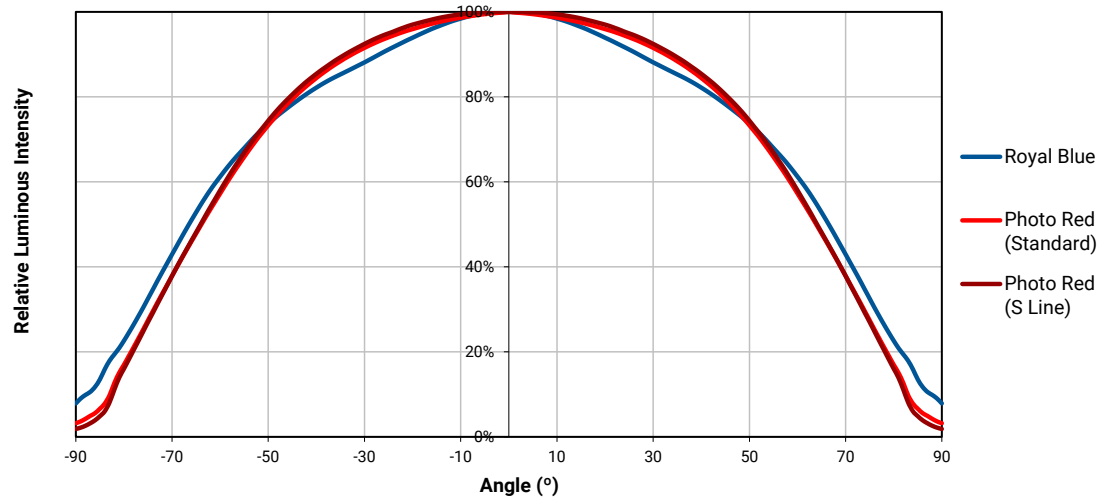
TYPICAL SPATIAL DISTRIBUTION - WHITE (STANDARD)



TYPICAL SPATIAL DISTRIBUTION - WHITE (S LINE)

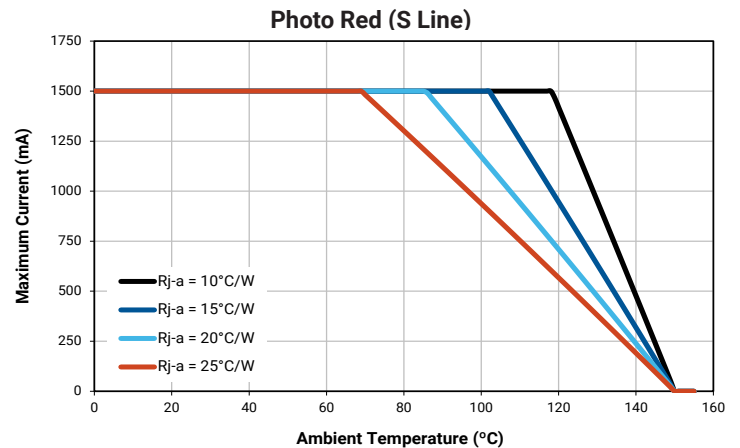
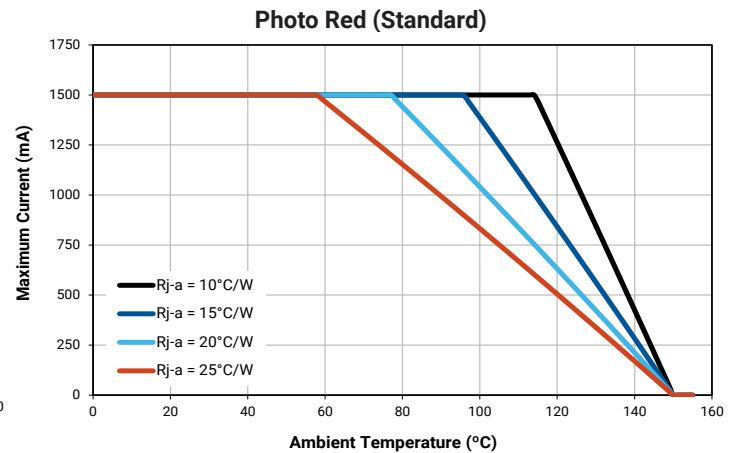
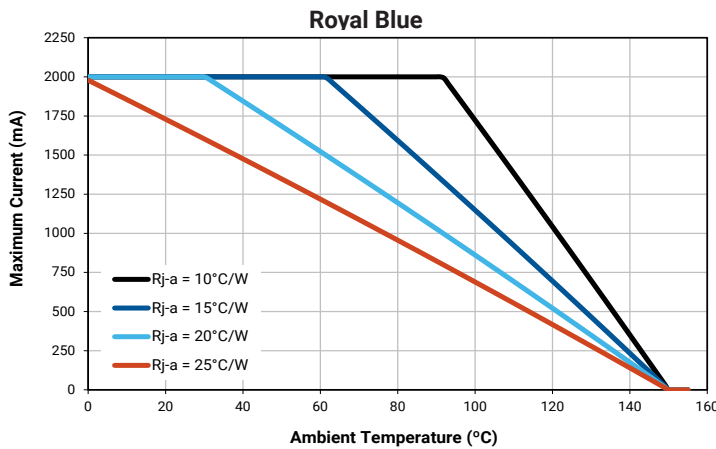
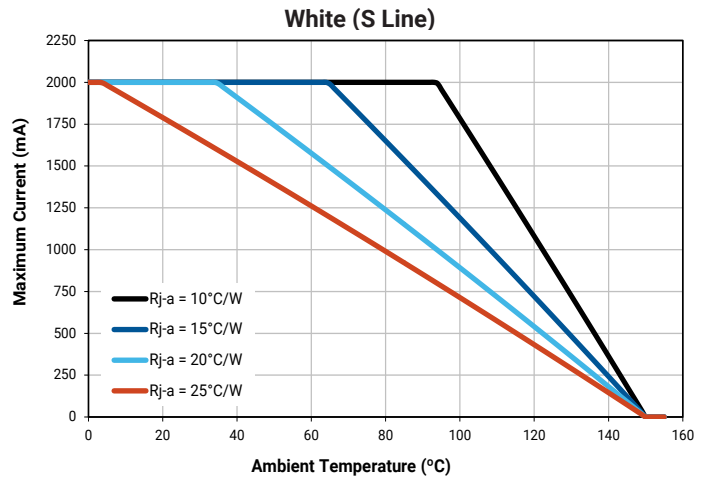
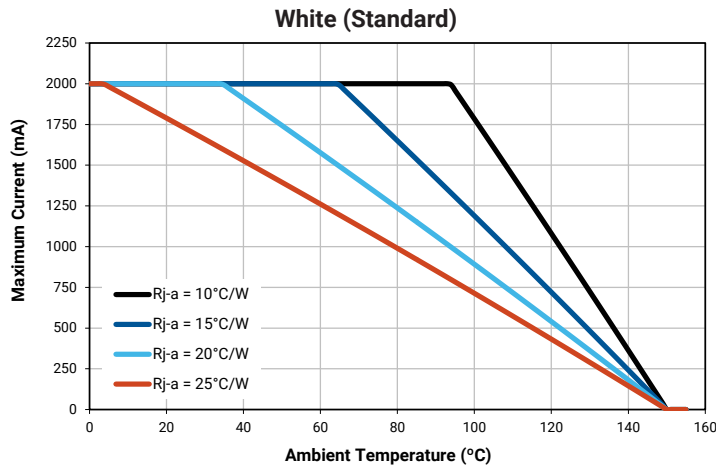


TYPICAL SPATIAL DISTRIBUTION - COLOR



THERMAL DESIGN

The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



PERFORMANCE GROUPS - LUMINOUS FLUX

XLamp XP-G3 White LEDs are tested for luminous flux and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux (lm) @ 350 mA	Maximum Luminous Flux (lm) @ 350 mA
Q4	100	107
Q5	107	114
R2	114	122
R3	122	130
R4	130	139
R5	139	148
S2	148	156
S3	156	164
S4	164	172
S5	172	180
S6	180	188
S7	188	196
S8	196	204

PERFORMANCE GROUPS - RADIANT FLUX ($T_j = 25\text{ }^\circ\text{C}$)

XLamp XP-G3 Royal Blue LEDs are tested for radiant flux and placed into one of the following bins.

Group Code	Minimum Radiant Flux (mW)	Maximum Radiant Flux (mW)	Calculated PPF ($\mu\text{mol/s}$)	
			Minimum	Maximum
E4	635	680	2.41	2.58
F2	680	730	2.58	2.77
F4	730	780	2.77	2.96

XLamp XP-G3 Photo Red (Standard) LEDs are tested for radiant flux and placed into one of the following bins.

Group Code	Minimum Radiant Flux (mW)	Maximum Radiant Flux (mW)	Calculated PPF ($\mu\text{mol/s}$)	
			Minimum	Maximum
31	475	500	2.58	2.72
32	500	525	2.72	2.85

XLamp XP-G3 Photo Red (S Line) LEDs are tested for radiant flux and placed into one of the following bins.

Group Code	Minimum Radiant Flux (mW)	Maximum Radiant Flux (mW)	Calculated PPF ($\mu\text{mol/s}$)	
			Minimum	Maximum
32	500	525	2.72	2.85
33	525	550	2.85	2.98
34	550	575	2.98	3.11

Note

- Calculated PPF values are for reference only.

PERFORMANCE GROUPS - PEAK WAVELENGTH ($T_j = 25\text{ }^\circ\text{C}$)

XLamp XP-G3 Royal Blue LEDs are tested for peak wavelength and sorted into one of the PWL bins defined below.

Group Code	Minimum Peak Wavelength (nm)	Maximum Peak Wavelength (nm)	Typical Dominant Wavelength (nm)
H26	440.0	442.5	446.5
H27	442.5	445.0	449.0
H36	445.0	447.5	451.5
H37	447.5	450.0	454.0
H46	450.0	452.5	456.5
H47	452.5	455.0	459.0

XLamp XP-G3 Photo Red LEDs are tested for peak wavelength and sorted into one of the PWL bins defined below.

Group Code	Minimum Peak Wavelength (nm)	Maximum Peak Wavelength (nm)	Typical Dominant Wavelength (nm)
P2	650	655	638
P3	655	660	643
P4	660	665	647
P5	665	670	652

Note

- Typical dominant wavelength values are calculated and for reference only.

PERFORMANCE GROUPS - FORWARD VOLTAGE

XLamp XP-G3 Photo Red LEDs are tested for forward voltage and sorted into one of the forward voltage bins defined below.

Forward Voltage Group	Minimum Forward Voltage (V) @ 350 mA	Maximum Forward Voltage (V) @ 350 mA
W	1.8	1.9
X	1.9	2.0
Y	2.0	2.1
Z	2.1	2.2

PERFORMANCE GROUPS - CHROMATICITY

Region	x	y	Region	x	y	Region	x	y	Region	x	y
0A	0.2950	0.2970	0B	0.2920	0.3060	0C	0.2984	0.3133	0D	0.2984	0.3133
	0.2920	0.3060		0.2895	0.3135		0.2962	0.3220		0.3048	0.3207
	0.2984	0.3133		0.2962	0.3220		0.3028	0.3304		0.3068	0.3113
	0.3009	0.3042		0.2984	0.3133		0.3048	0.3207		0.3009	0.3042
0R	0.2980	0.2880	0S	0.2895	0.3135	0T	0.2962	0.3220	0U	0.3037	0.2937
	0.2950	0.2970		0.2870	0.3210		0.2937	0.3312		0.3009	0.3042
	0.3009	0.3042		0.2937	0.3312		0.3005	0.3415		0.3068	0.3113
	0.3037	0.2937		0.2962	0.3220		0.3028	0.3304		0.3093	0.2993
1A	0.3048	0.3207	1B	0.3028	0.3304	1C	0.3115	0.3391	1D	0.3130	0.3290
	0.3130	0.3290		0.3115	0.3391		0.3205	0.3481		0.3213	0.3373
	0.3144	0.3186		0.3130	0.3290		0.3213	0.3373		0.3221	0.3261
	0.3068	0.3113		0.3048	0.3207		0.3130	0.3290		0.3144	0.3186
1R	0.3068	0.3113	1S	0.3005	0.3415	1T	0.3099	0.3509	1U	0.3144	0.3186
	0.3144	0.3186		0.3099	0.3509		0.3196	0.3602		0.3221	0.3261
	0.3161	0.3059		0.3115	0.3391		0.3205	0.3481		0.3231	0.3120
	0.3093	0.2993		0.3028	0.3304		0.3115	0.3391		0.3161	0.3059
2A	0.3215	0.3350	2B	0.3207	0.3462	2C	0.3290	0.3538	2D	0.3290	0.3417
	0.3290	0.3417		0.3290	0.3538		0.3376	0.3616		0.3371	0.3490
	0.3290	0.3300		0.3290	0.3417		0.3371	0.3490		0.3366	0.3369
	0.3222	0.3243		0.3215	0.3350		0.3290	0.3417		0.3290	0.3300
2R	0.3222	0.3243	2S	0.3196	0.3602	2T	0.3290	0.3690	2U	0.3290	0.3300
	0.3290	0.3300		0.3290	0.3690		0.3381	0.3762		0.3366	0.3369
	0.3290	0.3180		0.3290	0.3538		0.3376	0.3616		0.3361	0.3245
	0.3231	0.3120		0.3207	0.3462		0.3290	0.3538		0.3290	0.3180
3A	0.3371	0.3490	3B	0.3376	0.3616	3C	0.3463	0.3687	3D	0.3451	0.3554
	0.3451	0.3554		0.3463	0.3687		0.3551	0.3760		0.3533	0.3620
	0.3440	0.3427		0.3451	0.3554		0.3533	0.3620		0.3515	0.3487
	0.3366	0.3369		0.3371	0.3490		0.3451	0.3554		0.3440	0.3427
3R	0.3366	0.3369	3S	0.3381	0.3762						
	0.3440	0.3428		0.3480	0.3840						
	0.3429	0.3307		0.3463	0.3687						
	0.3361	0.3245		0.3376	0.3616						
4A	0.3530	0.3597	4B	0.3548	0.3736	4C	0.3641	0.3804	4D	0.3615	0.3659
	0.3615	0.3659		0.3641	0.3804		0.3736	0.3874		0.3702	0.3722
	0.3590	0.3521		0.3615	0.3659		0.3702	0.3722		0.3670	0.3578
	0.3512	0.3465		0.3530	0.3597		0.3615	0.3659		0.3590	0.3521

PERFORMANCE GROUPS - CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
5A1	0.3670	0.3578	5A2	0.3686	0.3649	5A3	0.3744	0.3685	5A4	0.3726	0.3612
	0.3686	0.3649		0.3702	0.3722		0.3763	0.3760		0.3744	0.3685
	0.3744	0.3685		0.3763	0.3760		0.3825	0.3798		0.3804	0.3721
	0.3726	0.3612		0.3744	0.3685		0.3804	0.3721		0.3783	0.3646
5B1	0.3702	0.3722	5B2	0.3719	0.3797	5B3	0.3782	0.3837	5B4	0.3763	0.3760
	0.3719	0.3797		0.3736	0.3874		0.3802	0.3916		0.3782	0.3837
	0.3782	0.3837		0.3802	0.3916		0.3869	0.3958		0.3847	0.3877
	0.3763	0.3760		0.3782	0.3837		0.3847	0.3877		0.3825	0.3798
5C1	0.3825	0.3798	5C2	0.3847	0.3877	5C3	0.3912	0.3917	5C4	0.3887	0.3836
	0.3847	0.3877		0.3869	0.3958		0.3937	0.4001		0.3912	0.3917
	0.3912	0.3917		0.3937	0.4001		0.4006	0.4044		0.3978	0.3958
	0.3887	0.3836		0.3912	0.3917		0.3978	0.3958		0.3950	0.3875
5D1	0.3783	0.3646	5D2	0.3804	0.3721	5D3	0.3863	0.3758	5D4	0.3840	0.3681
	0.3804	0.3721		0.3825	0.3798		0.3887	0.3836		0.3863	0.3758
	0.3863	0.3758		0.3887	0.3836		0.3950	0.3875		0.3924	0.3794
	0.3840	0.3681		0.3863	0.3758		0.3924	0.3794		0.3898	0.3716
6A1	0.3889	0.3690	6A2	0.3915	0.3768	6A3	0.3981	0.3800	6A4	0.3953	0.3720
	0.3915	0.3768		0.3941	0.3848		0.4010	0.3882		0.3981	0.3800
	0.3981	0.3800		0.4010	0.3882		0.4080	0.3916		0.4048	0.3832
	0.3953	0.3720		0.3981	0.3800		0.4048	0.3832		0.4017	0.3751
6B1	0.3941	0.3848	6B2	0.3968	0.3930	6B3	0.4040	0.3966	6B4	0.4010	0.3882
	0.3968	0.3930		0.3996	0.4015		0.4071	0.4052		0.4040	0.3966
	0.4040	0.3966		0.4071	0.4052		0.4146	0.4089		0.4113	0.4001
	0.4010	0.3882		0.4040	0.3966		0.4113	0.4001		0.4080	0.3916
6C1	0.4080	0.3916	6C2	0.4113	0.4001	6C3	0.4186	0.4037	6C4	0.4150	0.3950
	0.4113	0.4001		0.4146	0.4089		0.4222	0.4127		0.4186	0.4037
	0.4186	0.4037		0.4222	0.4127		0.4299	0.4165		0.4259	0.4073
	0.4150	0.3950		0.4186	0.4037		0.4259	0.4073		0.4221	0.3984
6D1	0.4017	0.3751	6D2	0.4048	0.3832	6D3	0.4116	0.3865	6D4	0.4082	0.3782
	0.4048	0.3832		0.4080	0.3916		0.4150	0.3950		0.4116	0.3865
	0.4116	0.3865		0.4150	0.3950		0.4221	0.3984		0.4183	0.3898
	0.4082	0.3782		0.4116	0.3865		0.4183	0.3898		0.4147	0.3814
7A1	0.4147	0.3814	7A2	0.4183	0.3898	7A3	0.4242	0.3919	7A4	0.4203	0.3833
	0.4183	0.3898		0.4221	0.3984		0.4281	0.4006		0.4242	0.3919
	0.4242	0.3919		0.4281	0.4006		0.4342	0.4028		0.4300	0.3939
	0.4203	0.3833		0.4242	0.3919		0.4300	0.3939		0.4259	0.3853

PERFORMANCE GROUPS - CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
7B1	0.4221	0.3984	7B2	0.4259	0.4073	7B3	0.4322	0.4096	7B4	0.4281	0.4006
	0.4259	0.4073		0.4299	0.4165		0.4364	0.4188		0.4322	0.4096
	0.4322	0.4096		0.4364	0.4188		0.4430	0.4212		0.4385	0.4119
	0.4281	0.4006		0.4322	0.4096		0.4385	0.4119		0.4342	0.4028
7C1	0.4342	0.4028	7C2	0.4385	0.4119	7C3	0.4449	0.4141	7C4	0.4403	0.4049
	0.4385	0.4119		0.4430	0.4212		0.4496	0.4236		0.4449	0.4141
	0.4449	0.4141		0.4496	0.4236		0.4562	0.4260		0.4513	0.4164
	0.4403	0.4049		0.4449	0.4141		0.4513	0.4164		0.4465	0.4071
7D1	0.4259	0.3853	7D2	0.4300	0.3939	7D3	0.4359	0.3960	7D4	0.4316	0.3873
	0.4300	0.3939		0.4342	0.4028		0.4403	0.4049		0.4359	0.3960
	0.4359	0.3960		0.4403	0.4049		0.4465	0.4071		0.4418	0.3981
	0.4316	0.3873		0.4359	0.3960		0.4418	0.3981		0.4373	0.3893
8A1	0.4373	0.3893	8A2	0.4418	0.3981	8A3	0.4475	0.3994	8A4	0.4428	0.3906
	0.4418	0.3981		0.4465	0.4071		0.4523	0.4085		0.4475	0.3994
	0.4475	0.3994		0.4523	0.4085		0.4582	0.4099		0.4532	0.4008
	0.4428	0.3906		0.4475	0.3994		0.4532	0.4008		0.4483	0.3919
8B1	0.4465	0.4071	8B2	0.4513	0.4164	8B3	0.4573	0.4178	8B4	0.4523	0.4085
	0.4513	0.4164		0.4562	0.4260		0.4624	0.4274		0.4573	0.4178
	0.4573	0.4178		0.4624	0.4274		0.4687	0.4289		0.4634	0.4193
	0.4523	0.4085		0.4573	0.4178		0.4634	0.4193		0.4582	0.4099
8C1	0.4582	0.4099	8C2	0.4634	0.4193	8C3	0.4695	0.4207	8C4	0.4641	0.4112
	0.4634	0.4193		0.4687	0.4289		0.4750	0.4304		0.4695	0.4207
	0.4695	0.4207		0.4750	0.4304		0.4813	0.4319		0.4756	0.4221
	0.4641	0.4112		0.4695	0.4207		0.4756	0.4221		0.4700	0.4126
8D1	0.4483	0.3919	8D2	0.4532	0.4008	8D3	0.4589	0.4021	8D4	0.4538	0.3931
	0.4532	0.4008		0.4582	0.4099		0.4641	0.4112		0.4589	0.4021
	0.4589	0.4021		0.4641	0.4112		0.4700	0.4126		0.4646	0.4034
	0.4538	0.3931		0.4589	0.4021		0.4646	0.4034		0.4593	0.3944
AA1	0.4822	0.3973	AA2	0.4884	0.4067	AA3	0.4942	0.4066	AA4	0.4879	0.3972
	0.4884	0.4067		0.4946	0.4162		0.5006	0.4160		0.4942	0.4066
	0.4942	0.4066		0.5006	0.4160		0.5066	0.4158		0.5001	0.4064
	0.4879	0.3972		0.4942	0.4066		0.5001	0.4064		0.4936	0.3970
AB1	0.4946	0.4162	AB2	0.5008	0.4256	AB3	0.5069	0.4254	AB4	0.5006	0.4160
	0.5008	0.4256		0.5070	0.4350		0.5133	0.4348		0.5069	0.4254
	0.5069	0.4254		0.5133	0.4348		0.5196	0.4346		0.5131	0.4252
	0.5006	0.4160		0.5069	0.4254		0.5131	0.4252		0.5066	0.4158

PERFORMANCE GROUPS - CHROMATICITY (CONTINUED)

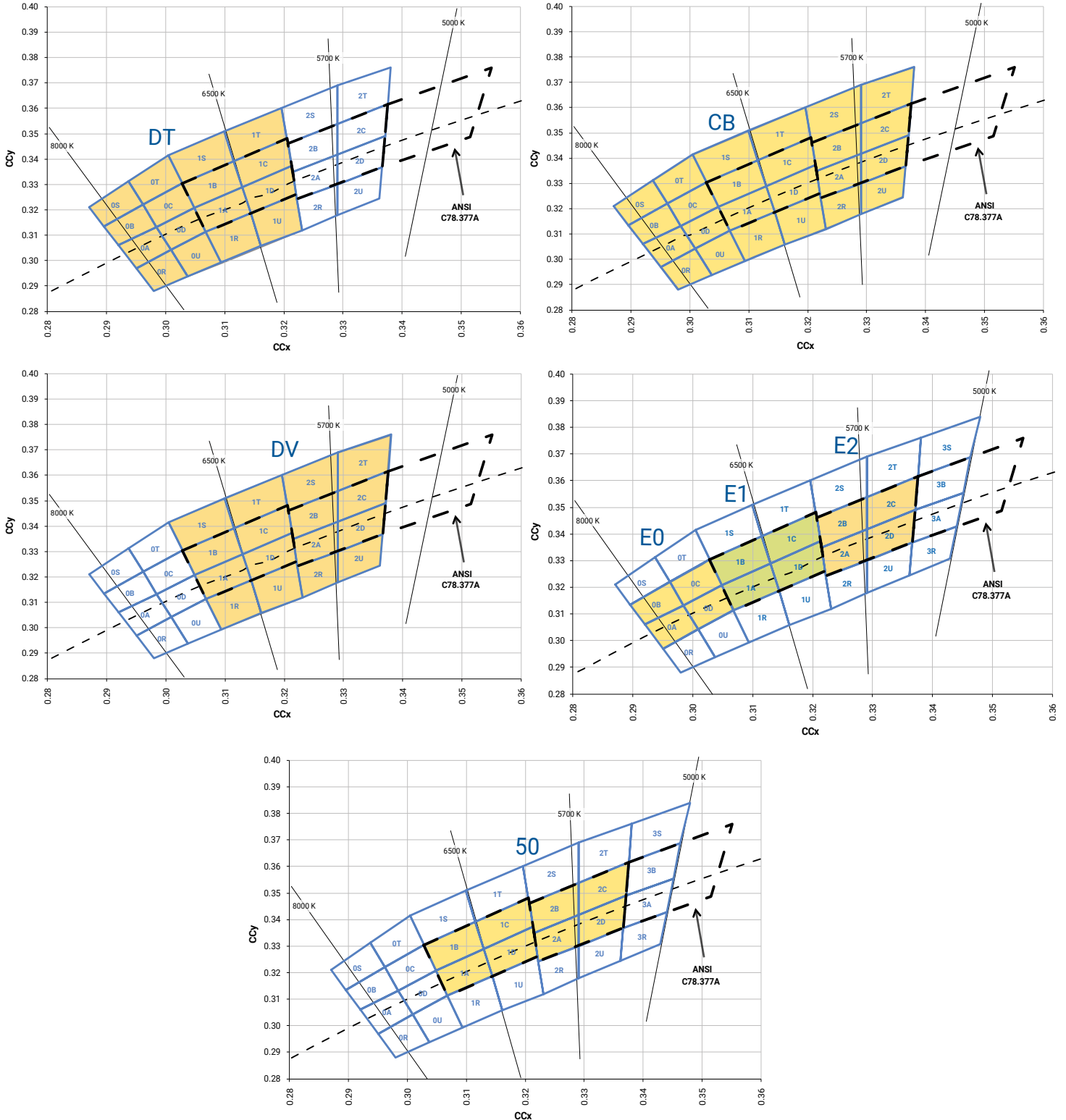
Region	x	y	Region	x	y	Region	x	y	Region	x	y
AC1	0.5066	0.4158	AC2	0.5131	0.4252	AC3	0.5192	0.4250	AC4	0.5126	0.4156
	0.5131	0.4252		0.5196	0.4346		0.5258	0.4343		0.5192	0.4250
	0.5192	0.4250		0.5258	0.4343		0.5321	0.4341		0.5253	0.4248
	0.5126	0.4156		0.5192	0.4250		0.5253	0.4248		0.5186	0.4154
AD1	0.4936	0.3970	AD2	0.5001	0.4064	AD3	0.5059	0.4062	AD4	0.4993	0.3969
	0.5001	0.4064		0.5066	0.4158		0.5126	0.4156		0.5059	0.4062
	0.5059	0.4062		0.5126	0.4156		0.5186	0.4154		0.5118	0.4061
	0.4993	0.3969		0.5059	0.4062		0.5118	0.4061		0.5050	0.3967

XLamp XP-G3 White LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

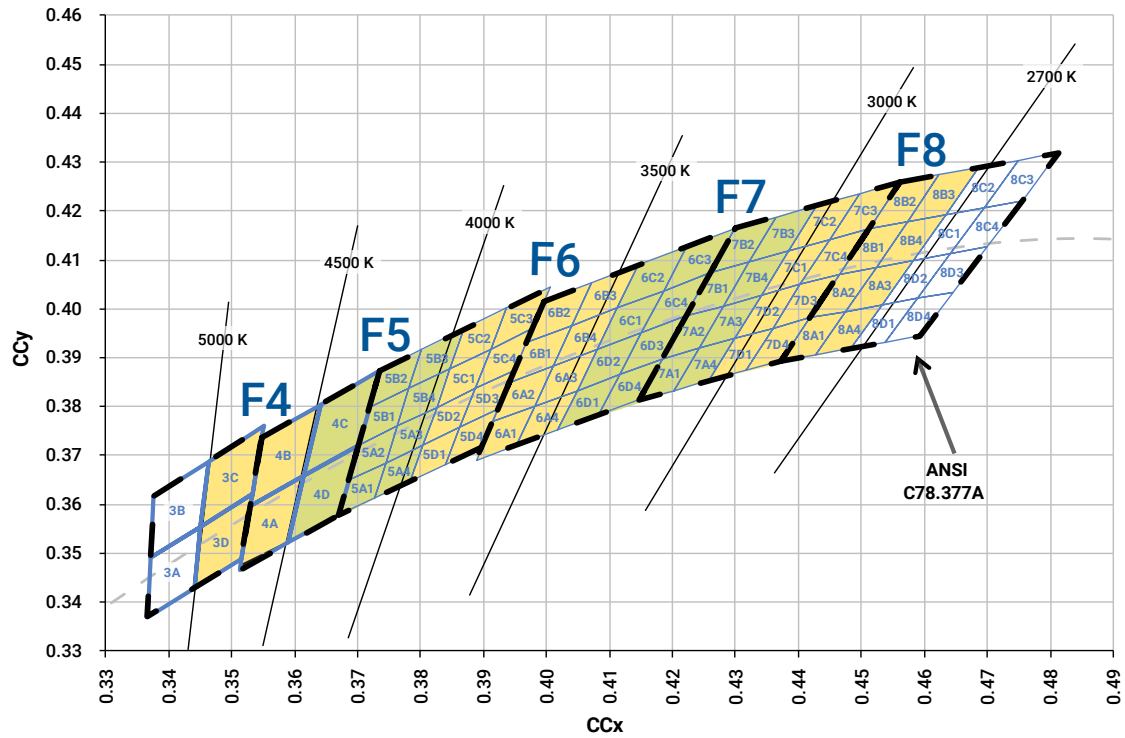
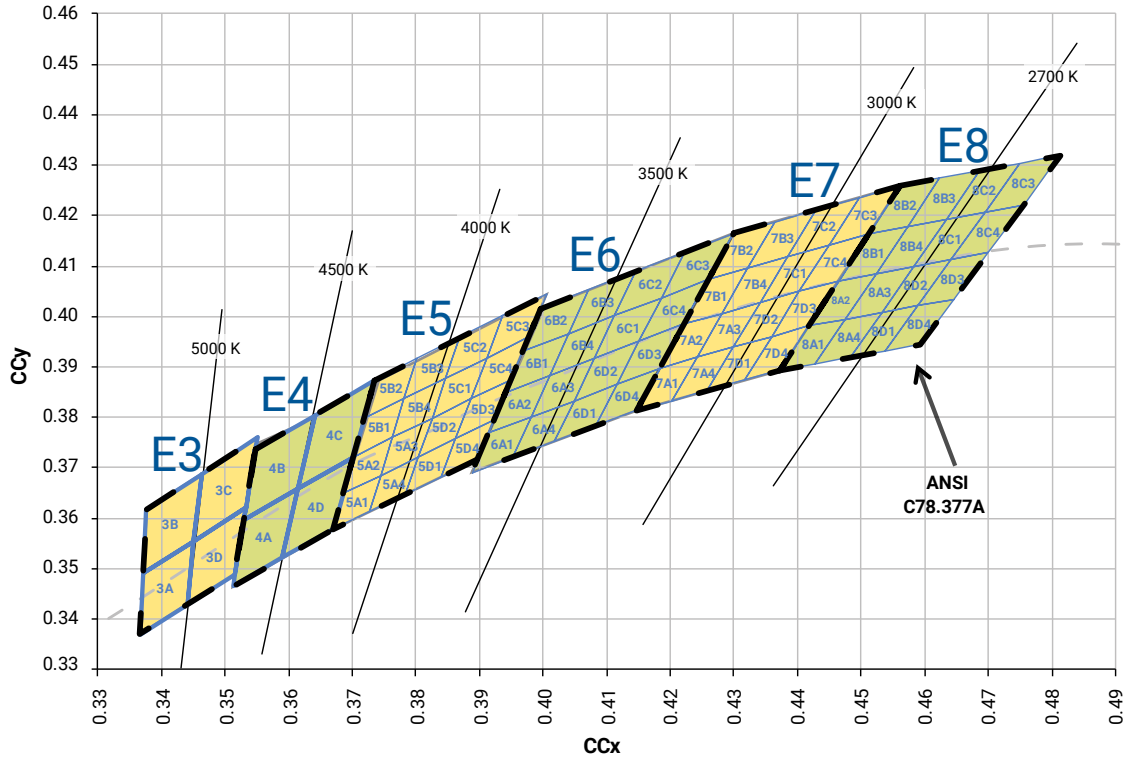
EasyWhite Color Temperatures – 3-Step Ellipse						
Bin Code	CCT	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
6G	3500 K	0.4073	0.3917	0.00927	0.00414	53.2
7G	3000 K	0.4338	0.4030	0.00834	0.00408	53.2
8G	2700 K	0.4577	0.4099	0.00834	0.00420	48.5

EasyWhite Color Temperatures – 5-Step Ellipse						
Bin Code	CCT	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
2E	5700 K	0.3287	0.3417	0.01230	0.00600	72.0
3E	5000 K	0.3447	0.3553	0.01400	0.00520	65.0
4E	4500 K	0.3611	0.3658	0.01420	0.00550	61.5
5E	4000 K	0.3818	0.3797	0.01565	0.00670	53.7
6E	3500 K	0.4073	0.3917	0.01545	0.00690	54.0
7E	3000 K	0.4338	0.4030	0.01390	0.00680	53.2
8E	2700 K	0.4577	0.4099	0.01350	0.00700	48.5
BE	1800 K	0.5492	0.4082	0.01546	0.00683	50.0

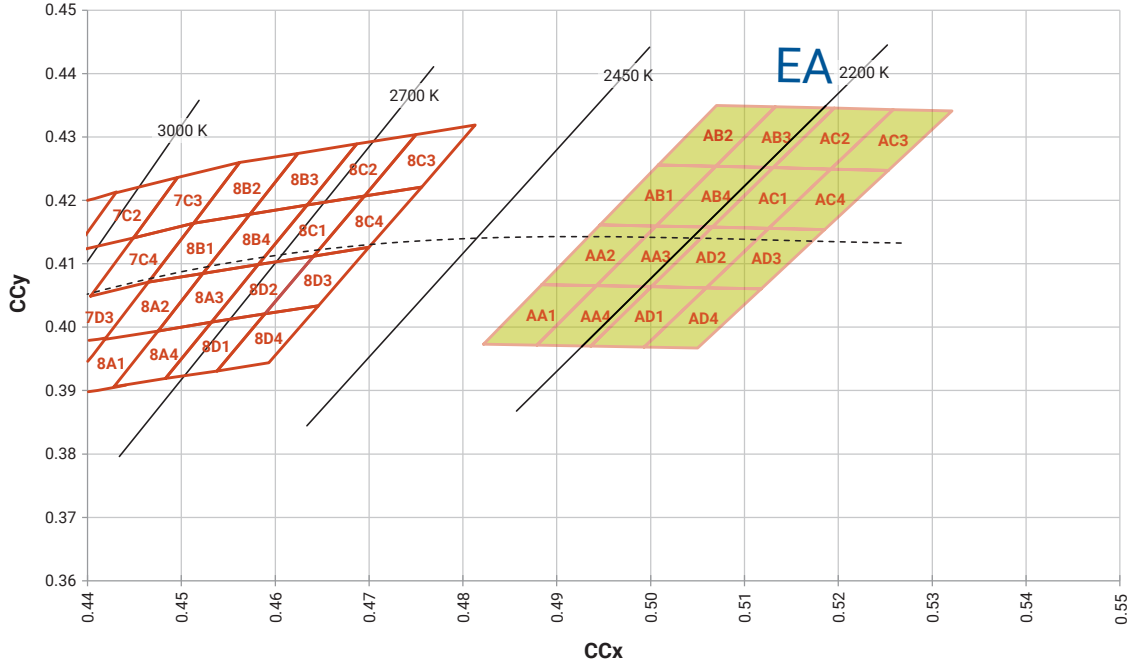
STANDARD COOL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS



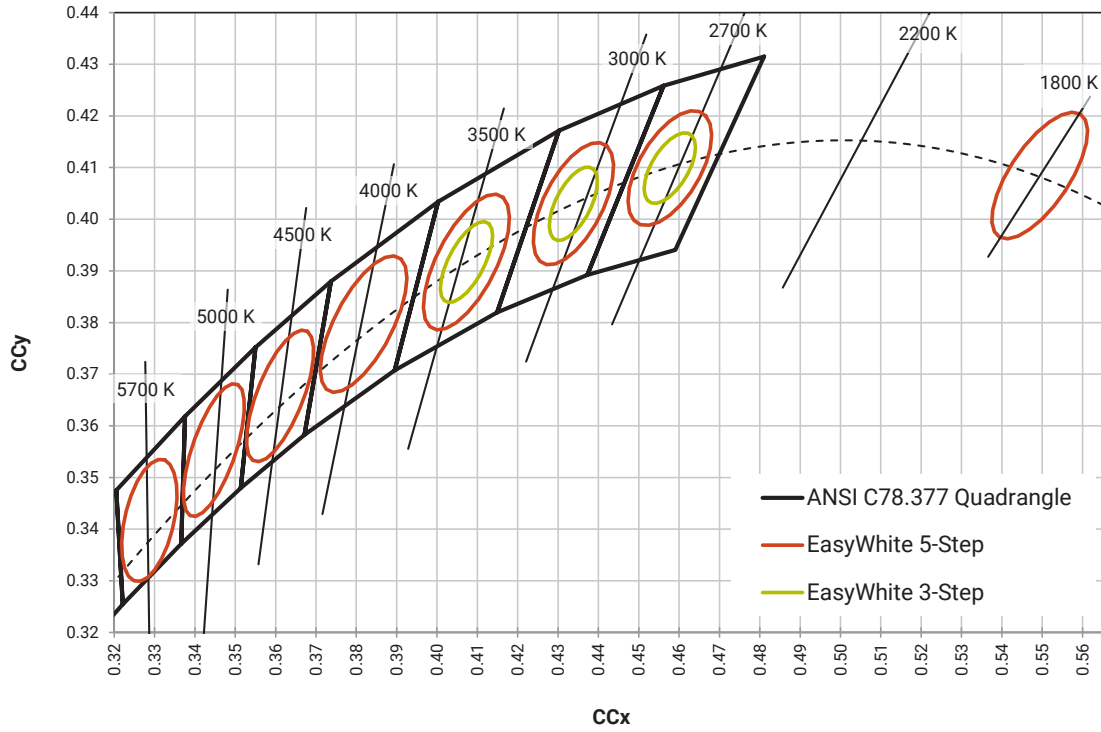
STANDARD WARM AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS



STANDARD WARM AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS - CONTINUED



EASYWHITE® WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS



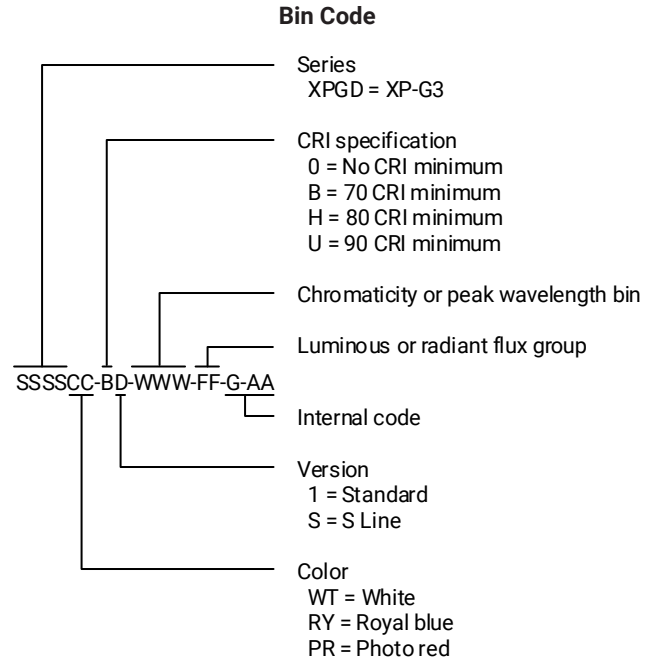
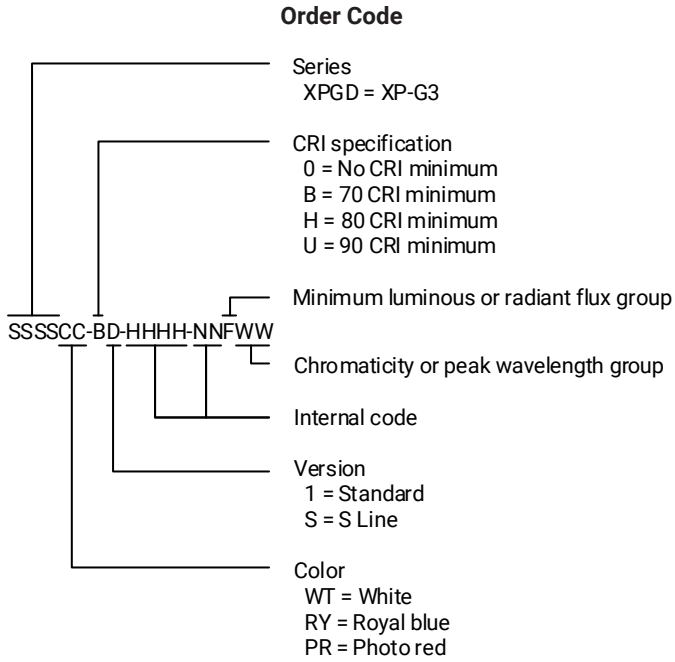
STANDARD CHROMATICITY KITS

The following table provides the chromaticity bins associated with chromaticity kits.

Color	CCT	Kit	Chromaticity Bins
Cool White	7000 K	DT	0A, 0B, 0C, 0D, 0R, 0S, 0T, 0U, 1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U
	6500 K	CB	0A, 0B, 0C, 0D, 0R, 0S, 0T, 0U, 1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U
	>6500 K	E0	0A, 0B, 0C, 0D
	6500 K	E1	1A, 1B, 1C, 1D
	6000 K	DV	1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U
	6200 K	50	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D
	5700 K	E2	2A, 2B, 2C, 2D
	5700 K	2E	57E
Neutral White	5000 K	3E	50E
	5000 K	E3	3A, 3B, 3C, 3D
	4750 K	F4	3C, 3D, 4A, 4B
	4500 K	4E	45E
	4500 K	E4	4A, 4B, 4C, 4D
	4250 K	F5	4C, 4D, 5A1, 5A2, 5A3, 5A4, 5B1, 5B2, 5B3, 5B4
	4000 K	5E	40E
	4000 K	E5	5A1, 5A2, 5A3, 5A4, 5B1, 5B2, 5B3, 5B4, 5C1, 5C2, 5C3, 5C4, 5D1, 5D2, 5D3, 5D4
Warm White	3750 K	F6	5C1, 5C2, 5C3, 5C4, 5D1, 5D2, 5D3, 5D4, 6A1, 6A2, 6A3, 6A4, 6B1, 6B2, 6B3, 6B4
	3500 K	6E	35E, 35G
	3500 K	6G	35G
	3500 K	E6	6A1, 6A2, 6A3, 6A4, 6B1, 6B2, 6B3, 6B4, 6C1, 6C2, 6C3, 6C4, 6D1, 6D2, 6D3, 6D4
	3250 K	F7	6C1, 6C2, 6C3, 6C4, 6D1, 6D2, 6D3, 6D4, 7A1, 7A2, 7A3, 7A4, 7B1, 7B2, 7B3, 7B4
	3000 K	7E	30E, 30G
	3000 K	7G	30G
	3000 K	E7	7A1, 7A2, 7A3, 7A4, 7B1, 7B2, 7B3, 7B4, 7C1, 7C2, 7C3, 7C4, 7D1, 7D2, 7D3, 7D4
	2850 K	F8	7C1, 7C2, 7C3, 7C4, 7D1, 7D2, 7D3, 7D4, 8A1, 8A2, 8A3, 8A4, 8B1, 8B2, 8B3, 8B4
	2700 K	8E	27E, 27G
	2700 K	8G	27G
	2700 K	E8	8A1, 8A2, 8A3, 8A4, 8B1, 8B2, 8B3, 8B4, 8C1, 8C2, 8C3, 8C4, 8D1, 8D2, 8D3, 8D4
	2200 K	EA	AA1, AA2, AA3, AA4, AB1, AB2, AB3, AB4, AC1, AC2, AC3, AC4, AD1, AD2, AD3, AD4
	1800 K	BE	18E

BIN AND ORDER CODE FORMATS

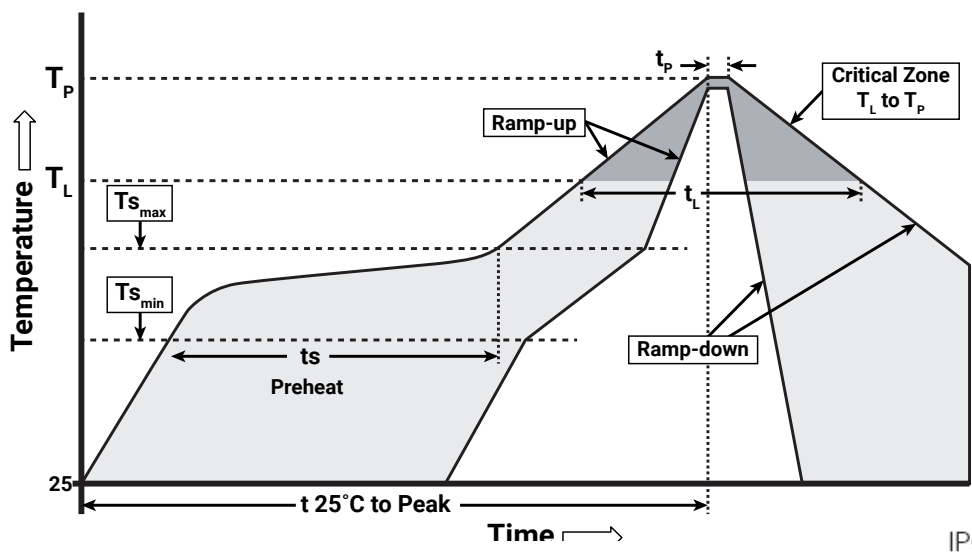
XP-G3 bin codes and order codes are configured in the following manner:



REFLOW SOLDERING CHARACTERISTICS

In testing, Cree LED has found XLamp XP-G3 LEDs to be compatible with JEDEC J-STD-020C, with the exception of the peak temperature requirements listed in the table below. As a general guideline, Cree LED recommends that users follow the recommended soldering profile provided by the manufacturer of the solder paste used, and therefore it is the lamp or luminaire manufacturer’s responsibility to determine applicable soldering requirements.

Note that this general guideline may not apply to all PCB designs and configurations of reflow soldering equipment.



IPC/JEDEC J-STD-020C

Profile Feature	Lead-Free Solder
Average Ramp-Up Rate ($T_{s_{max}}$ to T_P)	1.2 °C/second
Preheat: Temperature Min ($T_{s_{min}}$)	120 °C
Preheat: Temperature Max ($T_{s_{max}}$)	170 °C
Preheat: Time ($t_{s_{min}}$ to $t_{s_{max}}$)	65-150 seconds
Time Maintained Above: Temperature (T_L)	217 °C
Time Maintained Above: Time (t_L)	45-90 seconds
Peak/Classification Temperature (T_P)	235 - 245 °C
Time Within 5 °C of Actual Peak Temperature (t_p)	20-40 seconds
Ramp-Down Rate	1 - 6 °C/second
Time 25 °C to Peak Temperature	4 minutes max.

Note: All temperatures refer to topside of the package, measured on the package body surface.

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 informational purposes only and are not intended or provided as specifications.

Pre-Release Qualification Testing

Please read the [LED Reliability Overview](#) for details of the qualification process Cree LED applies to ensure long-term reliability for XLamp LEDs and details of Cree LED's pre-release qualification testing for XLamp LEDs. Cree LED did not perform Room Temperature Operating Life (RTOL) testing on the XP-G3 LED.

Lumen Maintenance

Cree LED now uses standardized IES LM-80-08 and TM-21-11 methods for collecting long-term data and extrapolating LED lumen maintenance. For information on the specific LM-80 data sets available for this LED, refer to the public [LM-80 results document](#).

Please read the [Long-Term Lumen Maintenance application note](#) for more details on Cree LED's lumen maintenance testing and forecasting. Please read the [Thermal Management application note](#) for details on how thermal design, ambient temperature, and drive current affect the LED junction temperature.

Moisture Sensitivity

Cree LED recommends keeping XLamp LEDs in the provided, resealable moisture-barrier packaging (MBP) until immediately prior to soldering. Unopened MBPs that contain XLamp LEDs do not need special storage for moisture sensitivity.

Once the MBP is opened, XLamp XP-G3 LEDs may be stored as MSL 1 per JEDEC J-STD-033, meaning they have unlimited floor life in conditions of ≤ 30 °C/85% relative humidity (RH). Regardless of the storage condition, Cree LED recommends sealing any unsoldered LEDs in the original MBP.

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. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Cree LED representative to insure you get the most up-to-date REACH Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

NOTES - CONTINUED

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.

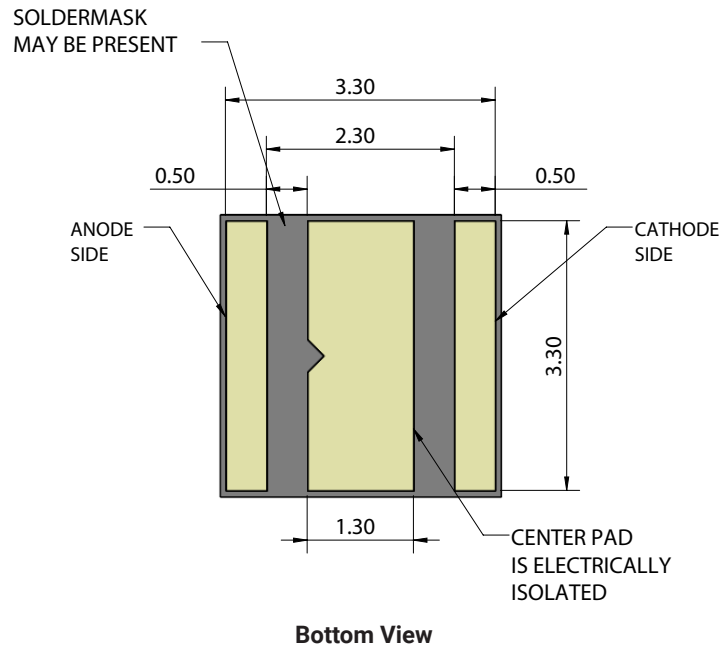
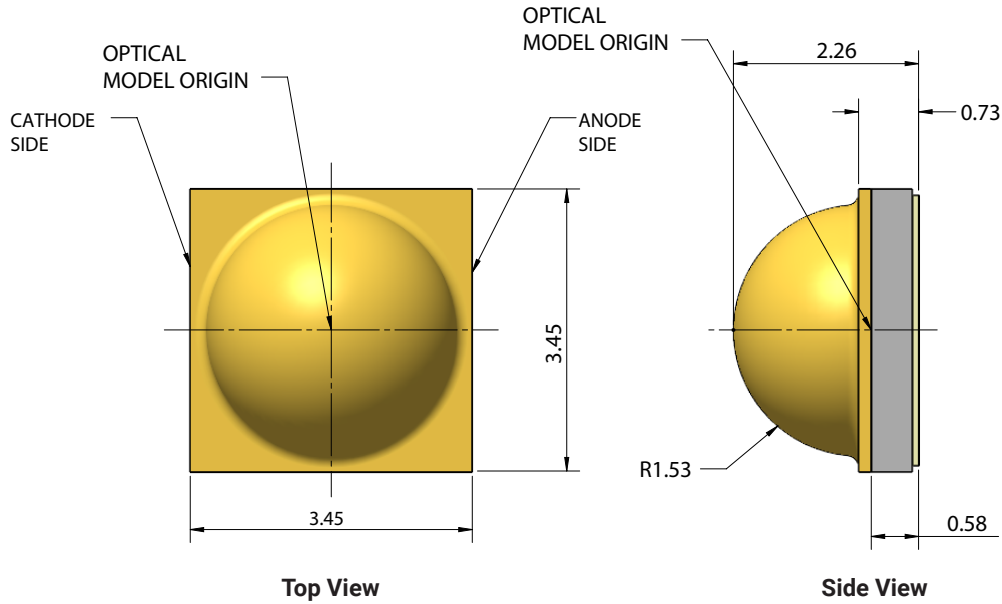
Vision Advisory

WARNING: Do not look at an exposed lamp in operation. Eye injury can result. For more information about LEDs and eye safety, please refer to the [LED Eye Safety application note](#).

MECHANICAL DIMENSIONS ($T_A = 25\text{ }^\circ\text{C}$)

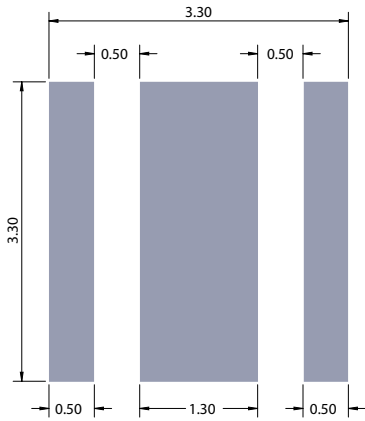
Thermal vias, if present, are not shown on these drawings.

All measurements are $\pm 0.13\text{ mm}$ unless otherwise indicated.

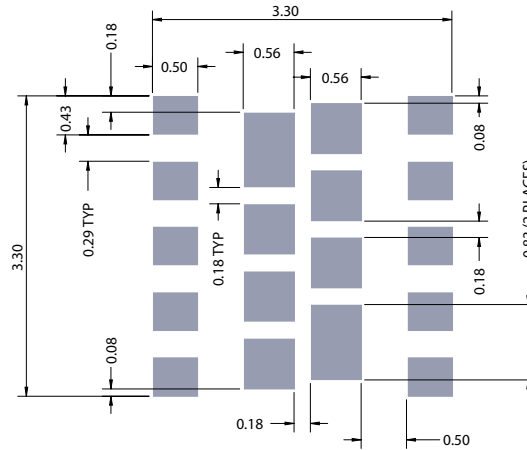


MECHANICAL DIMENSIONS (T_A = 25 °C) - CONTINUED

All measurements are ±.13 mm unless otherwise indicated.



Recommended PCB Footprint



Recommended Stencil Openings*

Notes:

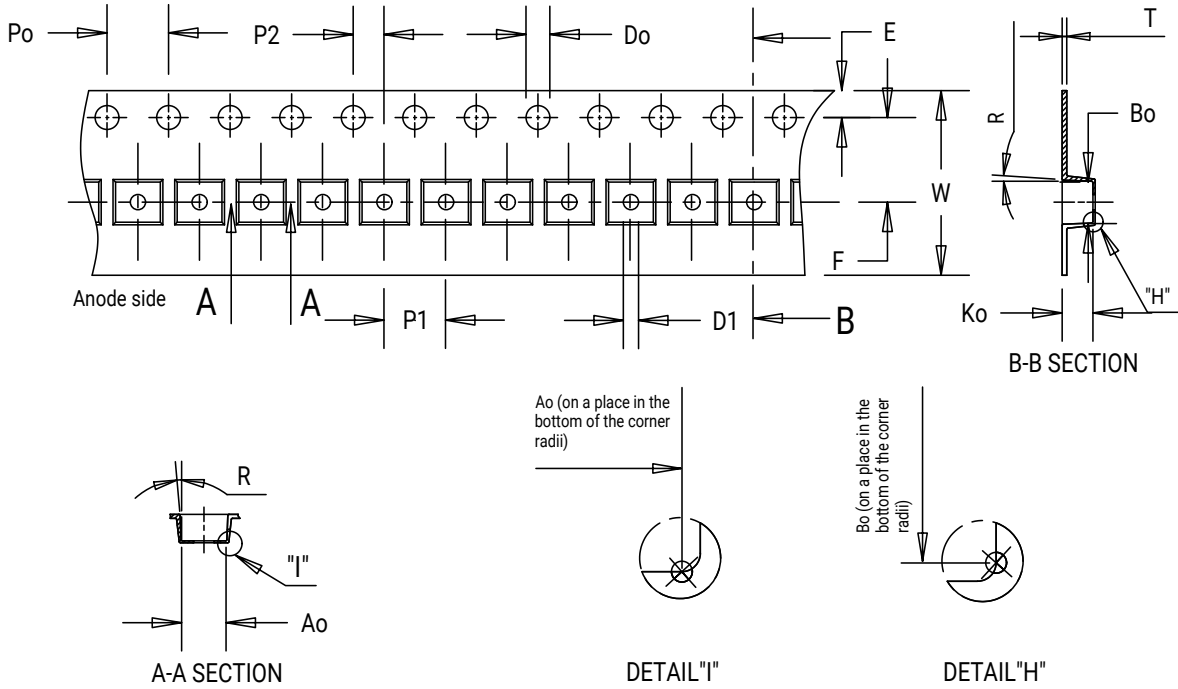
- Cree LED recommends using thermal pad kickouts to maximize component thermal performance.
- Cree LED recommends using white solder mask material to minimize system optical loss.
- * This stencil has been tested and optimized for the avoidance of voiding when using ALPHA® LUMET® P30 Maxrel solder paste. For other solder pastes, a “window pane” design for the thermal pad stencil may result in a lower voiding percentage. Contact your local Cree LED Field Applications Engineer for consultation regarding your specific application.

TAPE AND REEL

All Cree LED carrier tapes conform to EIA-481D, Automated Component Handling Systems Standard.

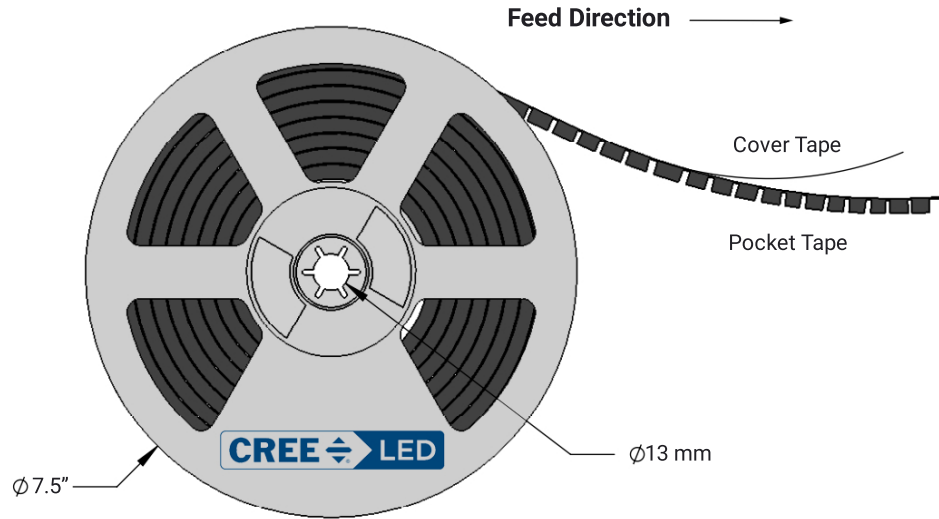
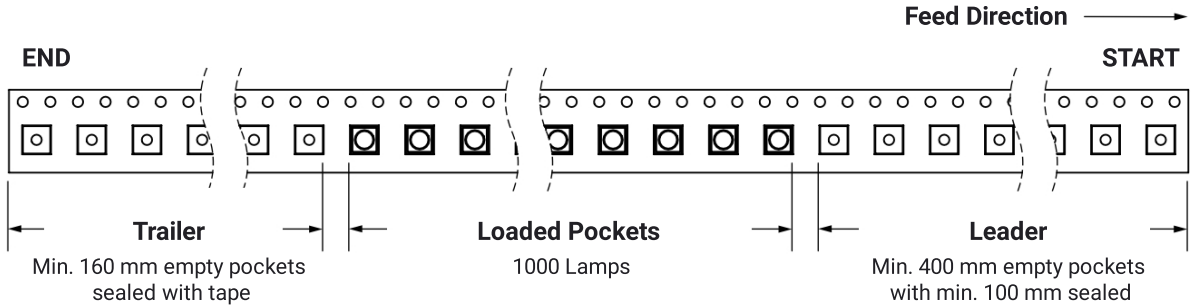
All dimensions in mm.

All measurements are ± 0.15 mm unless otherwise indicated.



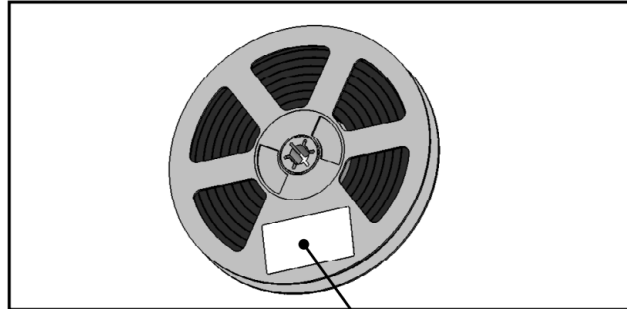
Item	Ao	Bo	Ko	Po	P1	P2	T	E	F	Do	D1	W	R
Dim.	3.70	3.70	2.40	4.00	8.00	2.00	0.30	1.75	5.50	1.55	1.50	12.00	5°

TAPE AND REEL - CONTINUED



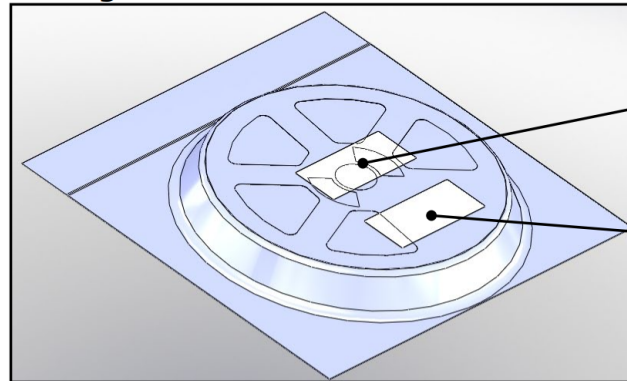
PACKAGING

Unpackaged Reel



Label with Cree LED Bin Code, Quantity, Reel ID

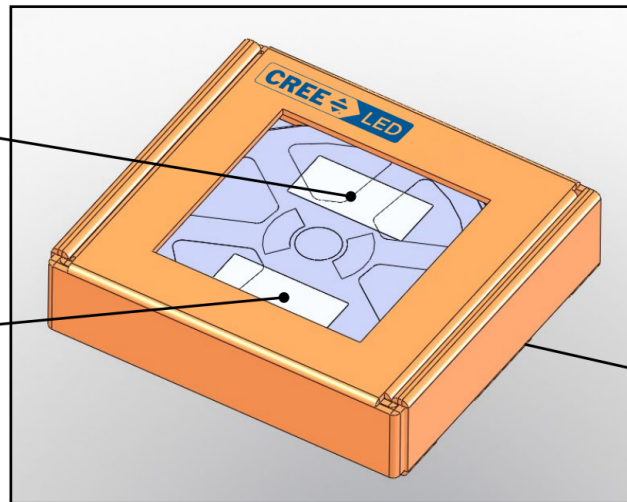
Packaged Reel



Label with Cree LED Order Code, Quantity, Reel ID, PO#

Label with Cree LED Bin Code, Quantity, Reel ID

Boxed Reel



Label with Cree LED Order Code, Quantity, Reel ID, PO#

Label with Cree LED Bin Code, Quantity, Reel ID

Patent Label (on bottom of box)

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS

The following order codes are active and valid order codes, but higher performance options are also available. Please see page 4 - page 9 for order codes of XLamp XP-G3 White (Standard) LEDs that could serve as alternatives for the order codes set forth below.

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
DT	7000 K	S2	148	161		XPGDWT-B1-0000-00JDT	XPGDWT-H1-0000-00JDT	
		R5	139	152			XPGDWT-H1-0000-00HDT	
CB	6500 K	S2	148	161			XPGDWT-H1-0000-00JCB	
		R5	139	152			XPGDWT-H1-0000-00HCB	
E0	>6500 K	S3	156	170	XPGDWT-01-0000-00KE0			
		S2	148	161	XPGDWT-01-0000-00JE0	XPGDWT-B1-0000-00JE0	XPGDWT-H1-0000-00JE0	
		R5	139	152			XPGDWT-H1-0000-00HE0	
E1	6500 K	S3	156	170	XPGDWT-01-0000-00KE1			
		S2	148	161	XPGDWT-01-0000-00JE1	XPGDWT-B1-0000-00JE1	XPGDWT-H1-0000-00JE1	
		R5	139	152			XPGDWT-H1-0000-00HE1	
DV	6000 K	S3	156	170	XPGDWT-01-0000-00KDV			
		S2	148	161	XPGDWT-01-0000-00JDV	XPGDWT-B1-0000-00JDV	XPGDWT-H1-0000-00JDV	
		R5	139	152			XPGDWT-H1-0000-00HDV	
		R4	130	142				
		R3	122	133				XPGDWT-U1-0000-00FDV
		R2	114	124				XPGDWT-U1-0000-00EDV
50	6000 K	S3	156	170	XPGDWT-01-0000-00K50			
		S2	148	161	XPGDWT-01-0000-00J50	XPGDWT-B1-0000-00J50	XPGDWT-H1-0000-00J50	
		R5	139	152			XPGDWT-H1-0000-00H50	
		R4	130	142				
		R3	122	133				XPGDWT-U1-0000-00F50
		R2	114	124				XPGDWT-U1-0000-00E50

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
E2	5700 K	S3	156	170	XPGDWT-01-0000-00KE2			
		S2	148	161	XPGDWT-01-0000-00JE2	XPGDWT-B1-0000-00JE2	XPGDWT-H1-0000-00JE2	
		R5	139	152			XPGDWT-H1-0000-00HE2	
		R4	130	142				
		R3	122	133				XPGDWT-U1-0000-00FE2
		R2	114	124				XPGDWT-U1-0000-00EE2
2E	5700 K	S2	148	161		XPGDWT-B1-0000-00J2E	XPGDWT-H1-0000-00J2E	
		R5	139	152			XPGDWT-H1-0000-00H2E	
		R4	130	142				
		R3	122	133				XPGDWT-U1-0000-00F2E
		R2	114	124				XPGDWT-U1-0000-00E2E
3E	5000 K	S2	148	161		XPGDWT-B1-0000-00J3E	XPGDWT-H1-0000-00J3E	
		R5	139	152			XPGDWT-H1-0000-00H3E	
		R4	130	142				
		R3	122	133				XPGDWT-U1-0000-00F3E
		R2	114	124				XPGDWT-U1-0000-00E3E
E3	5000 K	S3	156	170	XPGDWT-01-0000-00KE3	XPGDWT-B1-0000-00KE3		
		S2	148	161	XPGDWT-01-0000-00JE3	XPGDWT-B1-0000-00JE3	XPGDWT-H1-0000-00JE3	
		R5	139	152			XPGDWT-H1-0000-00HE3	
		R4	130	142				
		R3	122	133				XPGDWT-U1-0000-00FE3
		R2	114	124				XPGDWT-U1-0000-00EE3
F4	4750K	S3	156	170	XPGDWT-01-0000-00KF4	XPGDWT-B1-0000-00KF4		
		S2	148	161	XPGDWT-01-0000-00JF4	XPGDWT-B1-0000-00JF4		
		R5	139	152		XPGDWT-B1-0000-00HF4	XPGDWT-H1-0000-00HF4	
		R4	130	142			XPGDWT-H1-0000-00GF4	
		R3	122	133				XPGDWT-U1-0000-00FF4
		R2	114	124				XPGDWT-U1-0000-00EF4

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
4E	4500 K	S3	156	170		XPGDWT-B1-0000-00K4E		
		S2	148	161		XPGDWT-B1-0000-00J4E		
		R5	139	152			XPGDWT-H1-0000-00H4E	
		R4	130	142			XPGDWT-H1-0000-00G4E	
		R3	122	133				XPGDWT-U1-0000-00F4E
		R2	114	124				XPGDWT-U1-0000-00E4E
		Q5	107	117				XPGDWT-U1-0000-00D4E
E4	4500 K	S3	156	170	XPGDWT-01-0000-00KE4	XPGDWT-B1-0000-00KE4		
		S2	148	161	XPGDWT-01-0000-00JE4	XPGDWT-B1-0000-00JE4		
		R5	139	152		XPGDWT-B1-0000-00HE4	XPGDWT-H1-0000-00HE4	
		R4	130	142			XPGDWT-H1-0000-00GE4	
		R3	122	133				XPGDWT-U1-0000-00FE4
		R2	114	124				XPGDWT-U1-0000-00EE4
		Q5	107	117				XPGDWT-U1-0000-00DE4
F5	4200 K	S3	156	170	XPGDWT-01-0000-00KF5			
		S2	148	161	XPGDWT-01-0000-00JF5	XPGDWT-B1-0000-00JF5		
		R5	139	152		XPGDWT-B1-0000-00HF5	XPGDWT-H1-0000-00HF5	
		R4	130	142			XPGDWT-H1-0000-00GF5	
		R3	122	133				XPGDWT-U1-0000-00FF5
		R2	114	124				XPGDWT-U1-0000-00EF5
		Q5	107	117				XPGDWT-U1-0000-00DF5
5E	4000 K	S2	148	161		XPGDWT-B1-0000-00J5E		
		R5	139	152			XPGDWT-H1-0000-00H5E	
		R4	130	142			XPGDWT-H1-0000-00G5E	
		R3	122	133				XPGDWT-U1-0000-00F5E
		R2	114	124				XPGDWT-U1-0000-00E5E
		Q5	107	117				XPGDWT-U1-0000-00D5E

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
E5	4000 K	S3	156	170	XPGDWT-01-0000-00KE5			
		S2	148	161	XPGDWT-01-0000-00JE5	XPGDWT-B1-0000-00JE5		
		R5	139	152		XPGDWT-B1-0000-00HE5	XPGDWT-H1-0000-00HE5	
		R4	130	142			XPGDWT-H1-0000-00GE5	
		R3	122	133				XPGDWT-U1-0000-00FE5
		R2	114	124				XPGDWT-U1-0000-00EE5
		Q5	107	117				XPGDWT-U1-0000-00DE5
F6	3700 K	S2	148	161	XPGDWT-01-0000-00JF6	XPGDWT-B1-0000-00JF6		
		R5	139	152	XPGDWT-01-0000-00HF6	XPGDWT-B1-0000-00HF6		
		R4	130	142			XPGDWT-H1-0000-00GF6	
		R3	122	133				
		R2	114	124				XPGDWT-U1-0000-00EF6
		Q5	107	117				XPGDWT-U1-0000-00DF6
		Q4	100	109				XPGDWT-U1-0000-00CF6
6E	3500 K	S2	148	161		XPGDWT-B1-0000-00JE		
		R5	139	152		XPGDWT-B1-0000-00HE		
		R4	130	142			XPGDWT-H1-0000-00GE	
		R3	122	133				
		R2	114	124				XPGDWT-U1-0000-00EE
		Q5	107	117				XPGDWT-U1-0000-00DE
		Q4	100	109				XPGDWT-U1-0000-00CE
6G	3500 K	R2	114	124				XPGDWT-U1-0000-00EG
		Q5	107	117				XPGDWT-U1-0000-00DG
		Q4	100	109				XPGDWT-U1-0000-00CG

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
E6	3500 K	S2	148	161	XPGDWT-01-0000-00JE6	XPGDWT-B1-0000-00JE6		
		R5	139	152	XPGDWT-01-0000-00HE6	XPGDWT-B1-0000-00HE6		
		R4	130	142			XPGDWT-H1-0000-00GE6	
		R3	122	133				
		R2	114	124				XPGDWT-U1-0000-00EE6
		Q5	107	117				XPGDWT-U1-0000-00DE6
		Q4	100	109				XPGDWT-U1-0000-00CE6
F7	3200 K	R5	139	152	XPGDWT-01-0000-00HF7	XPGDWT-B1-0000-00HF7		
		R4	130	142			XPGDWT-H1-0000-00GF7	
		R3	122	133				
		R2	114	124				XPGDWT-U1-0000-00EF7
		Q5	107	117				XPGDWT-U1-0000-00DF7
		Q4	100	109				XPGDWT-U1-0000-00CF7
7E	3000 K	R5	139	152		XPGDWT-B1-0000-00H7E		
		R4	130	142			XPGDWT-H1-0000-00G7E	
		R3	122	133				
		R2	114	124				XPGDWT-U1-0000-00E7E
		Q5	107	117				XPGDWT-U1-0000-00D7E
		Q4	100	109				XPGDWT-U1-0000-00C7E
7G	3000 K	R2	114	124				XPGDWT-U1-0000-00E7G
		Q5	107	117				XPGDWT-U1-0000-00D7G
		Q4	100	109				XPGDWT-U1-0000-00C7G
E7	3000 K	R5	139	152	XPGDWT-01-0000-00HE7	XPGDWT-B1-0000-00HE7		
		R4	130	142			XPGDWT-H1-0000-00GE7	
		R3	122	133				
		R2	114	124				XPGDWT-U1-0000-00EE7
		Q5	107	117				XPGDWT-U1-0000-00DE7
		Q4	100	109				XPGDWT-U1-0000-00CE7

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Typical	70 CRI Minimum	80 CRI Minimum	90 CRI Minimum
F8	2850 K	R3	122	133			XPGDWT-H1-0000-00FF8	
		R2	114	124				
		Q5	107	117				XPGDWT-U1-0000-00DF8
		Q4	100	109				XPGDWT-U1-0000-00CF8
8E	2700 K	R3	122	133			XPGDWT-H1-0000-00F8E	
		R2	114	124				
		Q5	107	117				XPGDWT-U1-0000-00D8E
		Q4	100	109				XPGDWT-U1-0000-00C8E
8G	2700 K	Q5	107	117				XPGDWT-U1-0000-00D8G
		Q4	100	109				XPGDWT-U1-0000-00C8G
E8	2700 K	R3	122	133			XPGDWT-H1-0000-00FE8	
		R2	114	124				
		Q5	107	117				XPGDWT-U1-0000-00DE8
		Q4	100	109				XPGDWT-U1-0000-00CE8
EA	2200 K	R3	122	133		XPGDWT-B1-0000-00FEA		
		R2	114	124		XPGDWT-B1-0000-00EEA		

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.

APPENDIX - ORDER CODES NOT FOR NEW DESIGNS - CONTINUED

The following order codes are active and valid order codes, but higher performance options are also available. Please see page 10 - page 11 for order codes of XLamp XP-G3 White (S Line) LEDs that could serve as alternatives for the order codes set forth below.

Chromaticity		Minimum Luminous Flux (lm) @ 350 mA			Order Codes
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	70 CRI Minimum
E1	6500 K	S3	156	170	XPGDWT-BS-0000-00KE1
DV	6000 K	S3	156	170	XPGDWT-BS-0000-00KDV
50	6000 K	S3	156	170	XPGDWT-BS-0000-00K50
E2	5700 K	S3	156	170	XPGDWT-BS-0000-00KE2
2E	5700 K	S3	156	170	XPGDWT-BS-0000-00K2E
3E	5000 K	S3	156	170	XPGDWT-BS-0000-00K3E
E3	5000 K	S3	156	170	XPGDWT-BS-0000-00KE3
4E	4500K	S3	156	170	XPGDWT-BS-0000-00K4E
E4	4500 K	S3	156	170	XPGDWT-BS-0000-00KE4
5E	4000 K	S3	156	170	XPGDWT-BS-0000-00K5E
E5	4000 K	S3	156	170	XPGDWT-BS-0000-00KE5
6E	3500 K	S3	156	170	XPGDWT-BS-0000-00K6E
		S2	148	161	XPGDWT-BS-0000-00J6E
E6	3500 K	S3	156	170	XPGDWT-BS-0000-00KE6
		S2	148	161	XPGDWT-BS-0000-00JE6
F7	3200K	S3	156	170	XPGDWT-BS-0000-00KF7
		S2	148	161	XPGDWT-BS-0000-00JF7
7E	3000 K	S3	156	170	XPGDWT-BS-0000-00K7E
		S2	148	161	XPGDWT-BS-0000-00J7E
E7	3000 K	S3	156	170	XPGDWT-BS-0000-00KE7
		S2	148	161	XPGDWT-BS-0000-00JE7

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 38).
- XLamp XP-G3 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- * Flux values @ 25 °C are calculated and for reference only.