Generation 3
Custom Color COB Arrays
LED Specialty Lighting

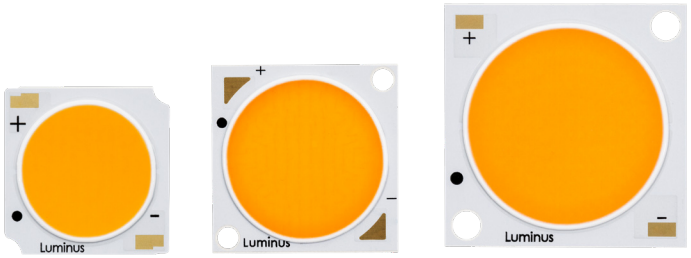


Table of Contents

Features:

- High Contast, Vivid Colors
  - Red Meat Light, <1,000 lm to over 2,500lm @ Tj = 85ºC
  - Marbeled Meat Light, <1,000 lm to over 3,500lm @ Tj = 85ºC
- Extemely high Gamut Area Index
- Typical power range from ~15W to over 50W
- 3 SDCM color binning accuracy
- Excellent optical emission uniformity and color over angle consistency
- Exceptional long term color stability
- Package thermal conductivity more than the industry average
- Environmentally friendly: RoHS and REACH compliant
- UL Recognized, File # E465703

Applications

- Grocery Retail Specialty Lighting
- Spotlights/Track Lights
- Red Meat Lighting
- Marbled Meat Lighting

PDS-002911 Rev 05

Technology Overview

Luminus Chip-on-Board (COB) LED series offers a complete lighting class solution designed for high performance illumination applications. The Custom Color LED series has been specially design for retail shop lighting where enhanced red coloring is a preferred lighting standard. The selection covers a wide lumen range from less than 1,000lm to over 3,000lm. Intense color saturation characterizes these specialty LEDs. These breakthroughs allow illumination engineers and designers to develop beautifully lit spaces without sacrificing efficacy, brightness and overall quality.

Reliability

Designed from the ground up, the Luminus COB LED is one of the most reliable light sources in the world today. Having passed a rigorous suite of environmental and mechanical stress tests, including mechanical shock, vibration, temperature cycling and humidity. Only then are the devices qualified for use in a wide range of lighting application including some of the most demanding commercial applications. Delivered with fully qualified LM-80 test data and TM-21 lifetime results that certify lumen maintenance at 35,000 hours or more, Luminus COB LEDs are ready for the toughest challenges.

UL Recognized Compliance

Luminus COB arrays are tested in accordance with ANSI/UL 8750 to ensure safe operation for their intended applications.

REACH & RoHS Compliance

All LED products manufactured by Luminus are REACH and RoHS compliant and free of hazardous materials, including lead and mercury.

Understanding Luminus COB LED Test Specifications

Every Luminus LED is fully tested to ensure it meets the high quality standards customers have come to expect from Luminus' products.

Traceability

Each Luminus COB LED is marked with a 2D bar code that contains a unique serial number. With this serial number, Luminus has the ability to provide customers with actual test data measurements for a specific LED. In addition, the 2D bar code is linked to manufacturing date codes that enables traceability of production processes and materials.

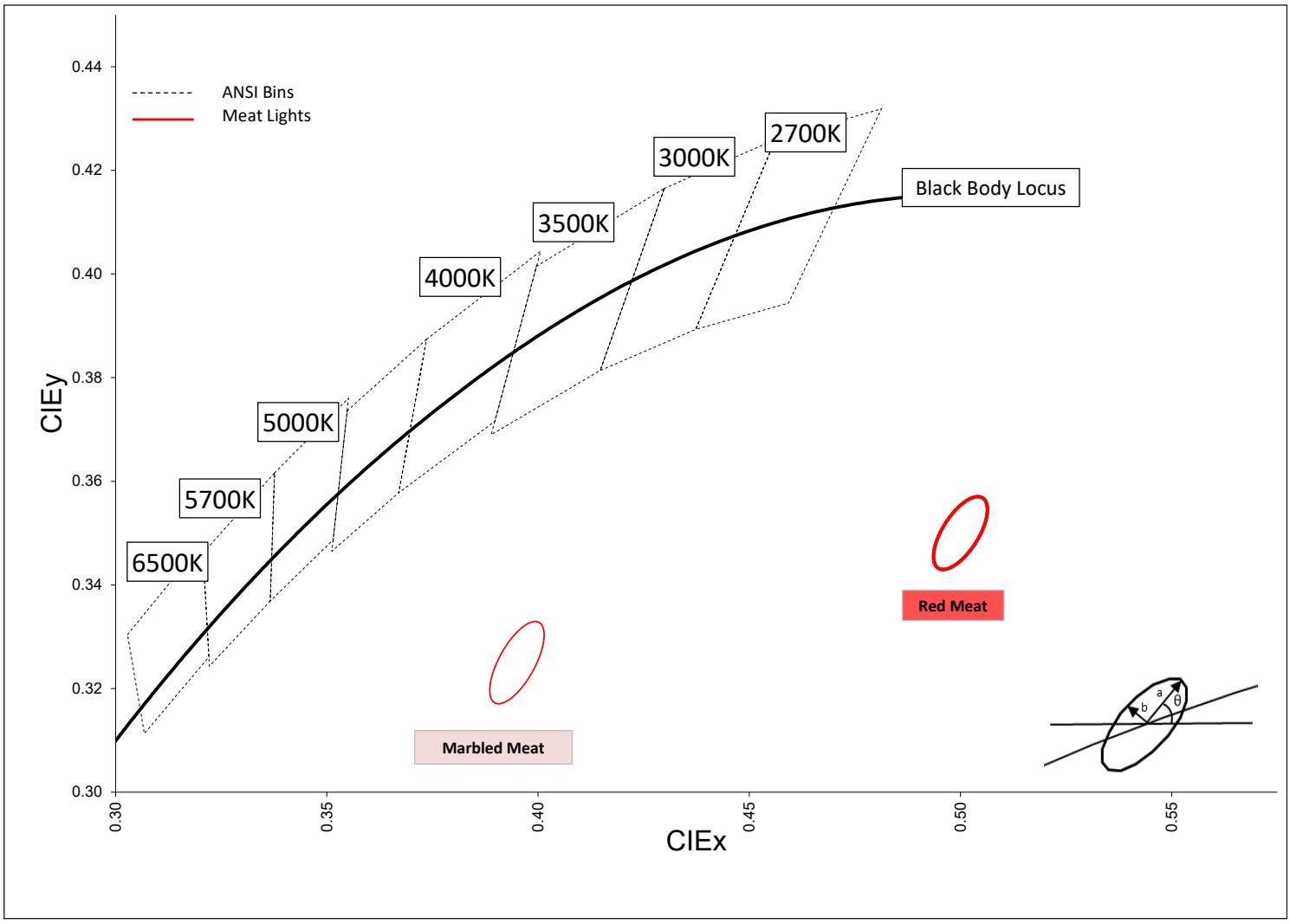
Testing Temperature

Luminus COB products are measured at temperatures typical for the LED operating in the fixture. Each device is tested at 85°C junction temperature eliminating the need to scale datasheet specifications to real world situations.

Chromaticity Bin Range

Chromaticity binning delivers color consistency for every order. Standard products are delivered with a 3-step MacAdam ellipse. This ensures color performance matching in the application. For the most demanding application, Luminus is one of only a few companies that can provide a 2 SDCM. These tightly controlled, small distribution bins provide customers predictable, repeatable colors.

Chromaticity Bin Structure



Custom Color White Chromaticity Bins

The following tables describe the chromaticity bin center points, the orientation angle for the MacAdam ellipse (θ °), and the maximum radii for the ellipses. The ANSI Bin is provided for reference.

	Center Point		Angle	3-step Bin	
Description	CIEx	CIEy	θ (°)	a	b
Red Meat	0.5000	0.3500	49.3	0.00862	0.00397
Marbled Meat	0.3950	0.3250	53.7	0.00939	0.00402

*Note: Luminus maintains a +/- 0.005 tolerance on chromaticity (CIEx and CIEy) measurements.

Product Ordering and Shipping Part Number Nomenclature

All Custom Color LED products are packaged and labeled with part numbers as outlined in the table on page 5. When shipped, each package will contain only a single flux and chromaticity bin. The part number designation is as follows:

CXM — XX — 30 — 70 — 36 — QQPP — FG — W

Product Family	Light Emitting Surface Diameter[1]	Color Temperature[2]	Color Rendering Index (CRI)[3]	Voltage (typical)	Package Configurator	Flux Bin	Chromaticity Bin
CLM/CXM: Chip on Board	XX: LES Diameter (mm) Approximate	CT	XX	V	AC38 (Basic package)	Lumens	See page 3 for bins

Note 1 : XX nomenclature corresponds to the following:
9 = 9.6 mm
14 = 14.3 mm
18 = 17.5 mm
22 = 22 mm

Note 2: CT Nomenclature corresponds to the following
30 is 3000K
18 is 1800K

Note 3: XX Color Rendering nomenclature corresponds to the following
70 = min. 70 CRI

Note 4: AC38 is the Standard Custom Color and a standard substrate size
AA38 and XD28 is the Standard Custom Color and alternative substrate size

Note: Luminus part numbers may be accompanied by prefixes or suffixes. The most common is the "Rev01" suffix indicating a part is fully released and carries a full warranty. These additional characters may appear on shipping labels, packing slips and invoices. In all cases the basic part number described above will always be included.

Custom Color Series Part Numbers

The following tables describe products with typical flux and minimum flux measured at typical currents and specified at 85°C. The values at 25°C are calculated and shown for reference only. All product is measured and specified at 85°C junction temperature.

Output Flux (lm)			Description	LES Diameter (mm)	Typ. Current (mA)	Ordering Part Number
Typ. (85°C)	Min. (85°C)	Typ. (calculated) (25°C)				3 SDCM
565	530	620	Red Meat	9.6	240	CLM-9-18-70-36-AC38-F4-3
715	670	790	Marbled Meat			CLM-9-30-70-36-AC38-F4-3
760	710	815	Red Meat	9.6	360	CHM-9-18-70-36-XD28-F4-3
985	920	1,055	Marbled Meat			CHM-9-30-70-36-XD28-F4-3
1,185	1,100	1,300	Red Meat	14.3	500	CLM-14-18-70-36-AC38-F4-3
1,500	1,395	1,650	Marbled Meat			CLM-14-30-70-36-AC38-F4-3
1,640	1,525	1,805	Red Meat	14.3	720	CXM-14-18-70-36-AC38-F4-3
2,135	1,985	2,345	Marbled Meat			CXM-14-30-70-36-AC38-F4-3
2,120	1,970	2,330	Red Meat	17.5	900	CXM-18-18-70-36-AA38-F4-3
2,655	2,470	2,920	Marbled Meat			CXM-18-30-70-36-AA38-F4-3
2,565	2,385	2,820	Red Meat	22	1,100	CLM-22-18-70-36-AC38-F4-3
3,320	3,085	3,650	Marbled Meat			CLM-22-30-70-36-AC38-F4-3

*Note: Luminus maintains a +/- 6% tolerance on flux measurements.

Luminus maintains a +/- 2% tolerance on CRI measurements.

CLM-9 Operating Characteristics[1]

Optical and Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Forward Current[2]	I_f		240	540	mA
Forward Voltage[3]	V_f	31	33.8	37	V
Power			8.16	20	W
Operating Case Temperature[4]	T_c			105	°C
Light Emitting Surface Diameter	LES		9.6		mm
Thermal Resistance (junction-to-case)	Θ_{jc}		0.65		°C/W
Junction Temperature	T_j			140	°C
Viewing Angle			120		Degree

CHM-9 Operating Characteristics[1]

Optical and Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Forward Current[2]	I_f		360	960	mA
Forward Voltage[3]	V_f	31	34	37	V
Power			12.2	37.4	W
Operating Case Temperature[4]	T_c			105	°C
Light Emitting Surface Diameter	LES		9.6		mm
Thermal Resistance (junction-to-case)	Θ_{jc}		0.85		°C/W
Junction Temperature	T_j			140	°C
Viewing Angle			120		Degree

CLM-14 Operating Characteristics[1]

Optical and Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Forward Current[2]	I_f		500	1,260	mA
Forward Voltage[3]	V_f	31	33.8	37	V
Power			17	47	W
Operating Case Temperature[4]	T_c			105	ºC
Light Emitting Surface Diameter	LES		14.3		mm
Thermal Resistance (junction-to-case)	Θ_{jc}		0.31		ºC/W
Junction Temperature	T_j			140	ºC
Viewing Angle			120		Degree

CXM-14 Operating Characteristics[1]

Optical and Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Forward Current[2]	I_f		720	1,440	mA
Forward Voltage[3]	V_f	31	34	37	V
Power			24.5	54	W
Operating Case Temperature	T_c			105	ºC
Light Emitting Surface Diameter	LES		14.3		mm
Thermal Resisitance (junction-to-case)	Θjc		0.27		ºC/W
Junction Temperature	Tj			140	ºC
Viewing Angle			120		Degree

CXM-18 Operating Characteristics[1]

Optical and Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Forward Current[2]	I_f		900	1,800	mA
Forward Voltage[3]	V_f	31	34	37	V
Power			30.6	64	W
Operating Case Temperature[4]	T_c			105	ºC
Light Emitting Surface Diameter	LES		17.5		mm
Thermal Resistance (junction-to-case)	Θjc		0.21		ºC/W
Junction Temperature	Tj			140	ºC
Viewing Angle			120		Degree

CLM-22 Operating Characteristics[1]

Optical and Electrical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Forward Current[2]	I_f		1,100	2,200	mA
Forward Voltage[3]	V_f	31	33.8	37	V
Power			37.2	82	W
Operating Case Temperature[4]	T_c			105	ºC
Light Emitting Surface Diameter	LES		22		mm
Thermal Resistance (junction-to-case)	Θ_{jc}		0.19		ºC/W
Junction Temperature	T_j			140	ºC
Viewing Angle			120		Degree

Operating Characteristics Notes

Note 1: Ratings are based on operation at a constant junction temperature Tj = 85ºC.

Note 2: To prevent damage refer to operating conditions and derating curves for appropriate maximum operating conditions

Note 3: Forward voltage is rated at typical forward current. For voltage at different forward currents, refer to the voltage versus current performance graphs.

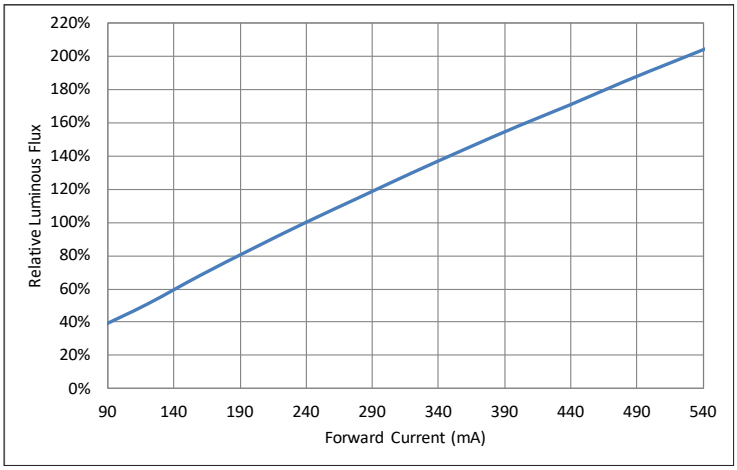
Note 4: COB LEDs are designed for operation to a minimum of 20% of the typical forward current value. Operation at currents lower than this value will not harm the device but may result in uneven light emission across the LES surface.

Note 5: Luminus may change any specifications without prior notice. Please refer to the company web site for the latest datasheet revision

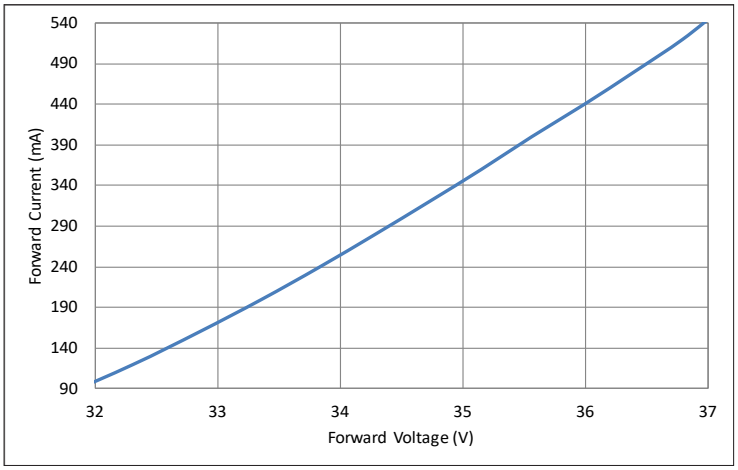
Note 6: Caution must be taken not to stare at the light emitted from these LEDs. Under special circumstances, the high intensity could damage the eye.

CLM-9 Optical & Electrical Characteristics

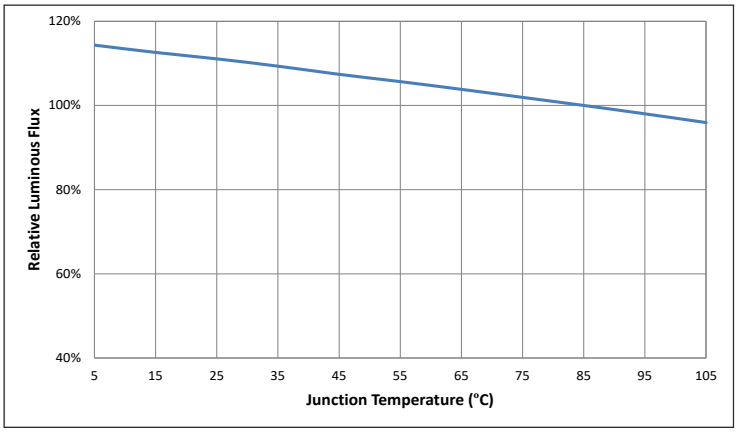
Relative Output Flux vs. Forward Current @ 85°C



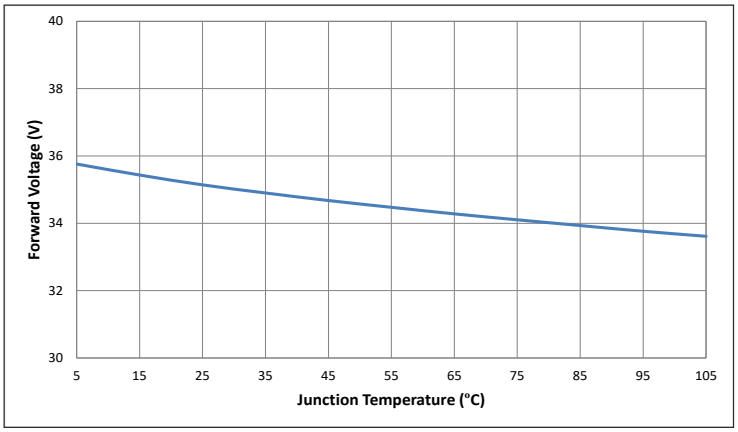
Forward Current vs. Forward Voltage @ 85°C



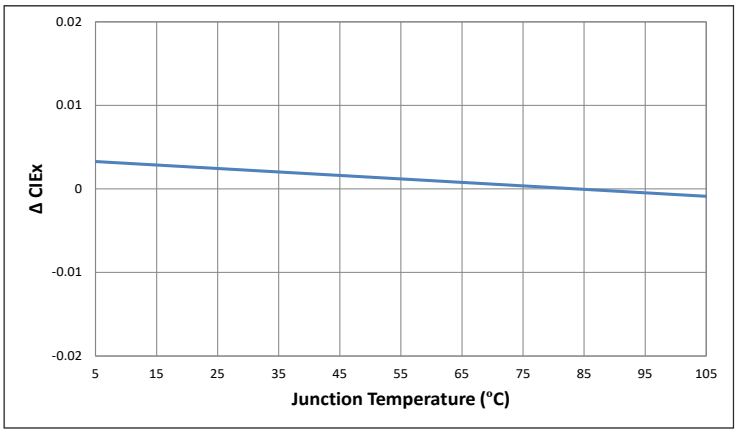
Relative Output Flux vs. Junction Temperature



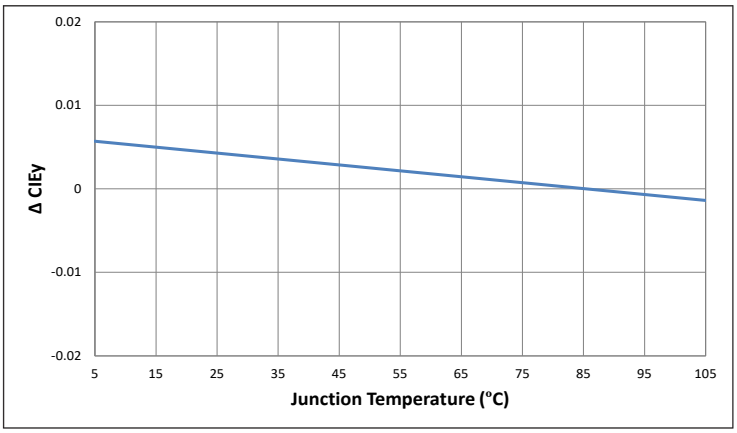
Change in Voltage vs. Junction Temperature



Change in CIEx vs. Junction Temp. (3000K, 80CRI)

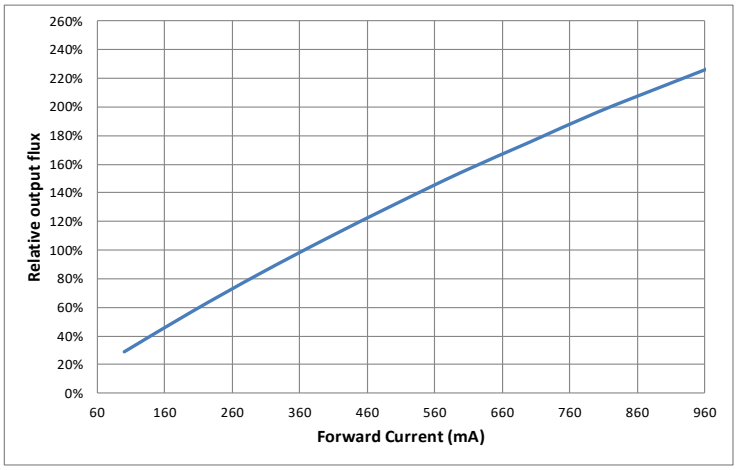


Change in CIEy vs. Junction Temp. (3000K, 80CRI)

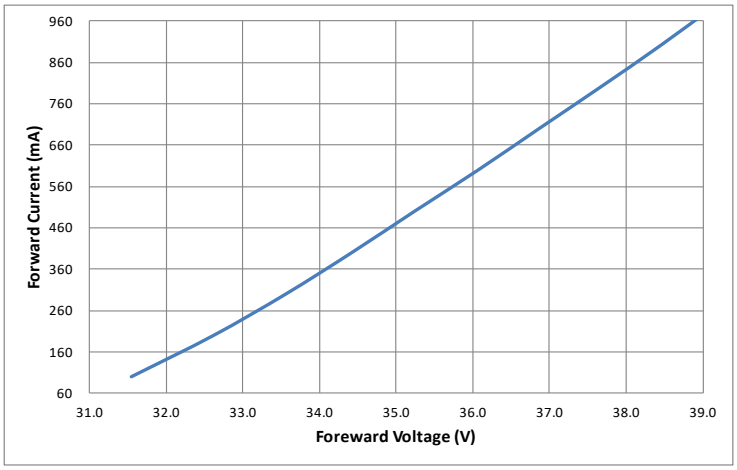


CHM-9 Optical & Electrical Characteristics

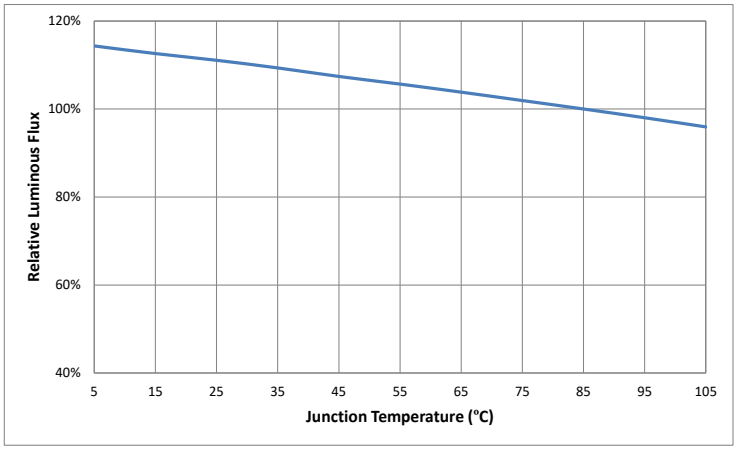
Relative Output Flux vs. Forward Current @ 85°C



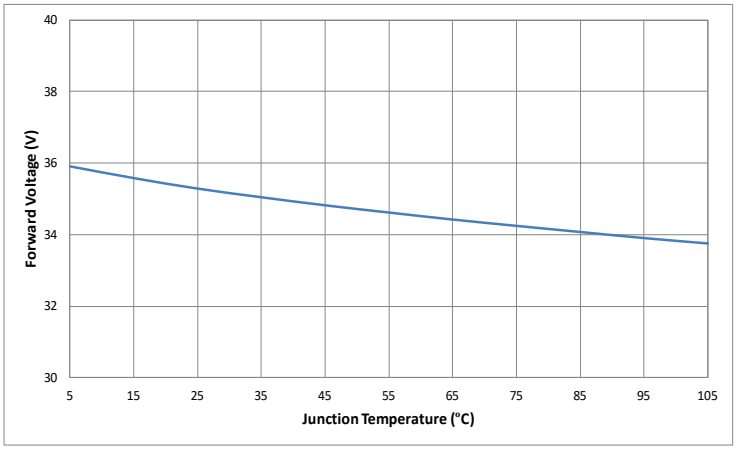
Forward Current vs. Forward Voltage @ 85°C



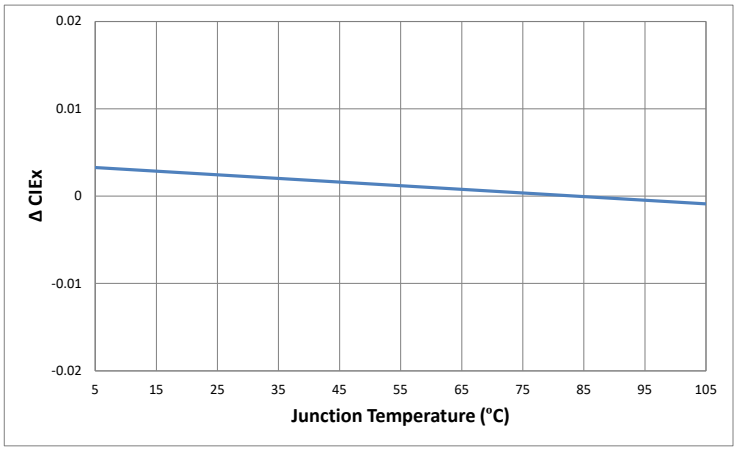
Relative Output Flux vs. Junction Temperature



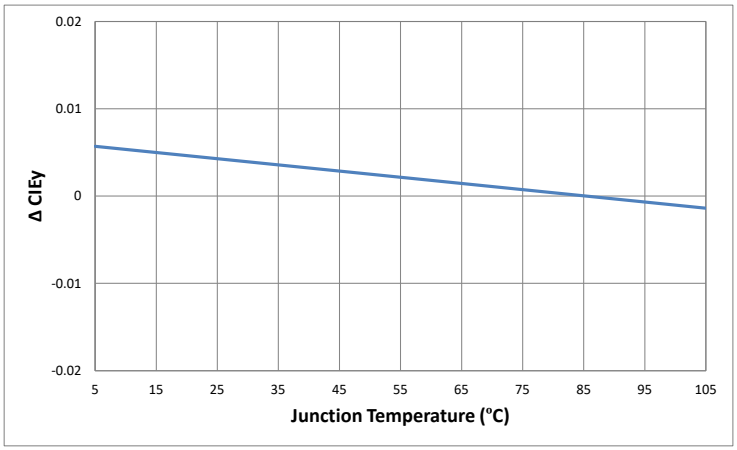
Change in Voltage vs. Junction Temperature



Change in CIEx vs. Junction Temp. (3000K, 80CRI)

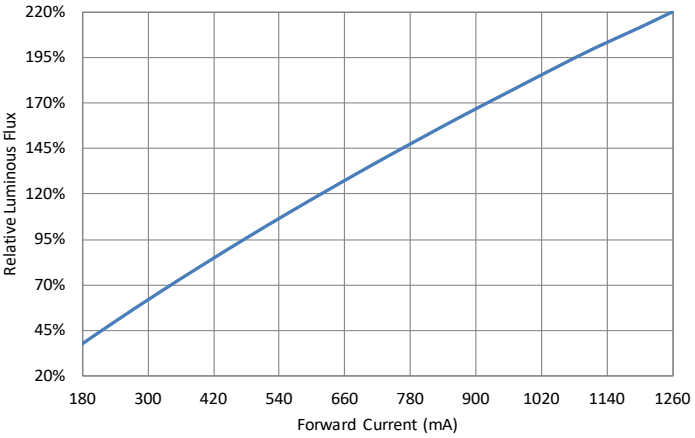


Change in CIEy vs. Junction Temp. (3000K, 80CRI)

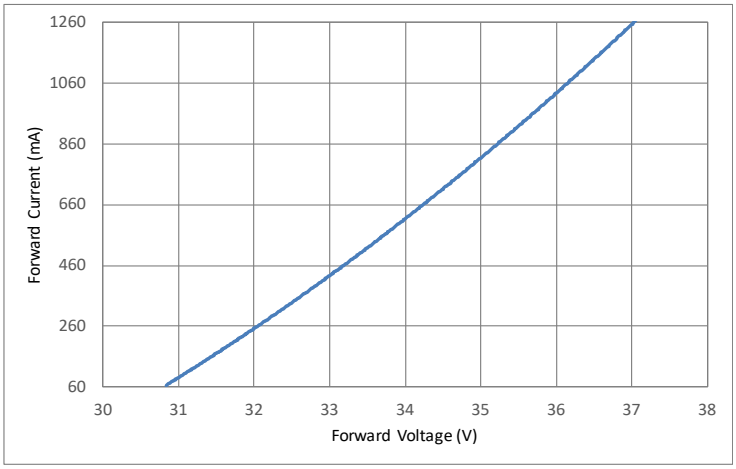


CLM-14 Optical & Electrical Characteristics

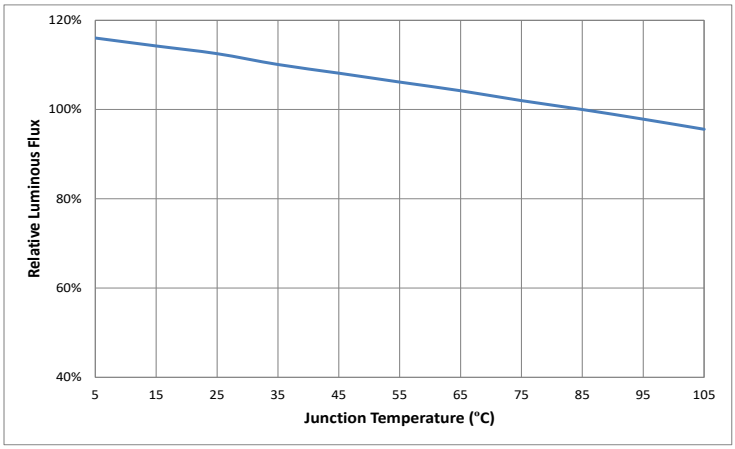
Relative Output Flux vs. Forward Current @ 85°C



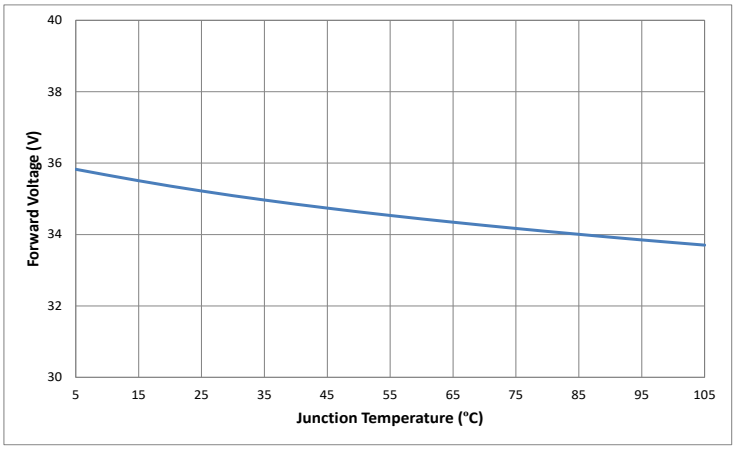
Forward Current vs. Forward Voltage @ 85°C



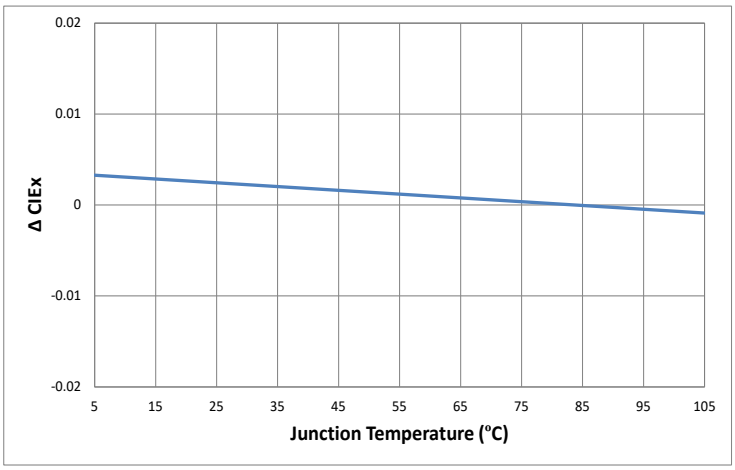
Relative Output Flux vs. Junction Temperature



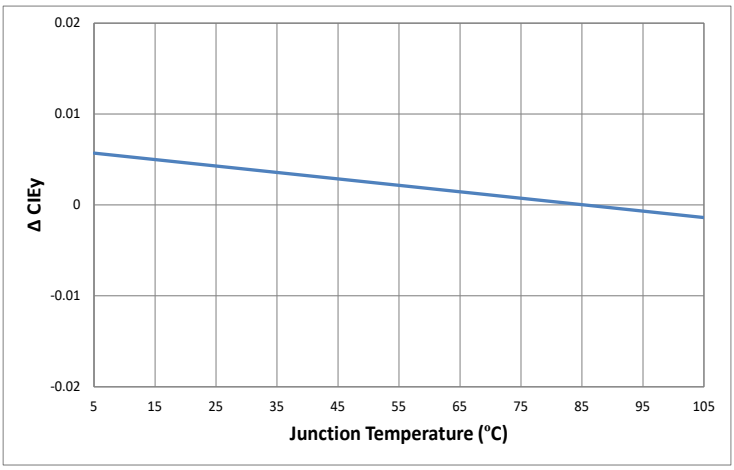
Change in Voltage vs. Junction Temperature



Change in CIEx vs. Junction Temp. (3000K, 80CRI)

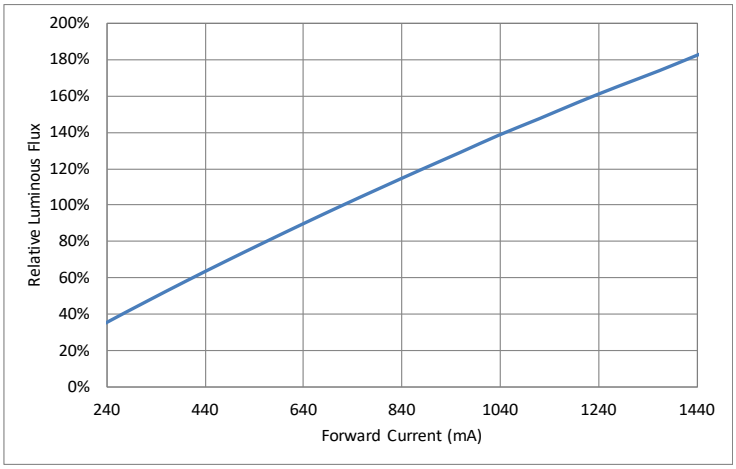


Change in CIEy vs. Junction Temp. (3000K, 80CRI)

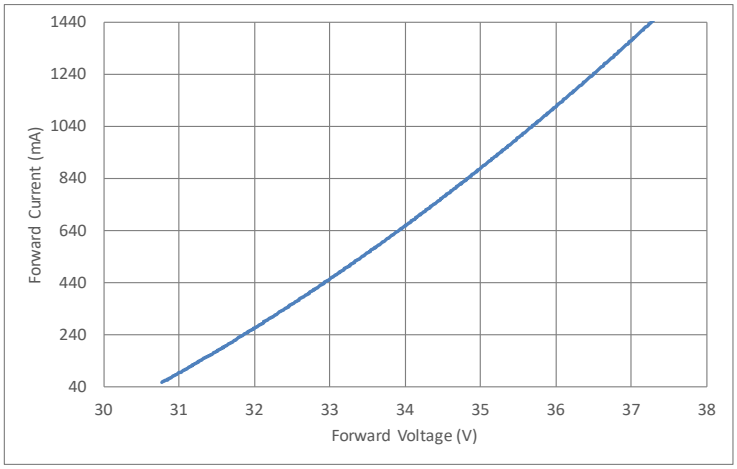


CXM-14 Optical & Electrical Characteristics

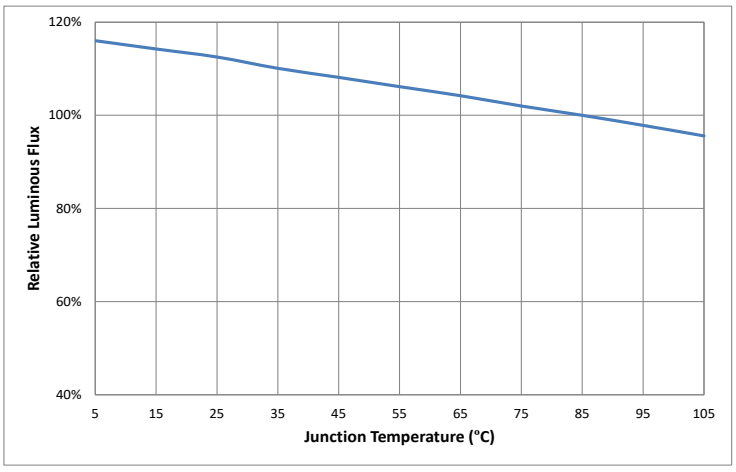
Relative Output Flux vs. Forward Current @ 85°C



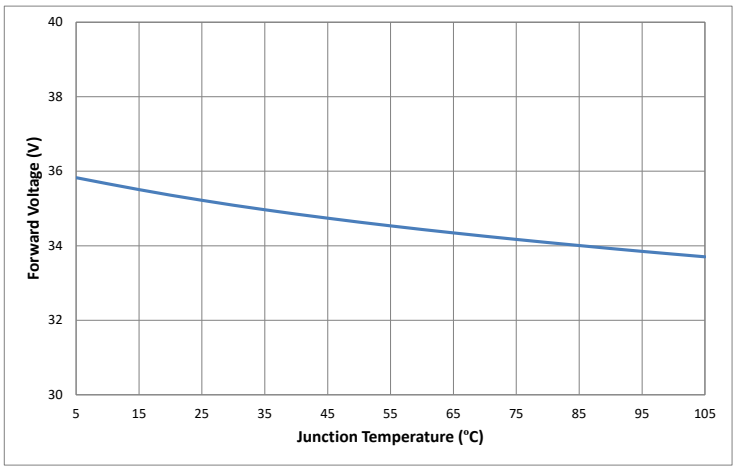
Forward Current vs. Forward Voltage @ 85°C



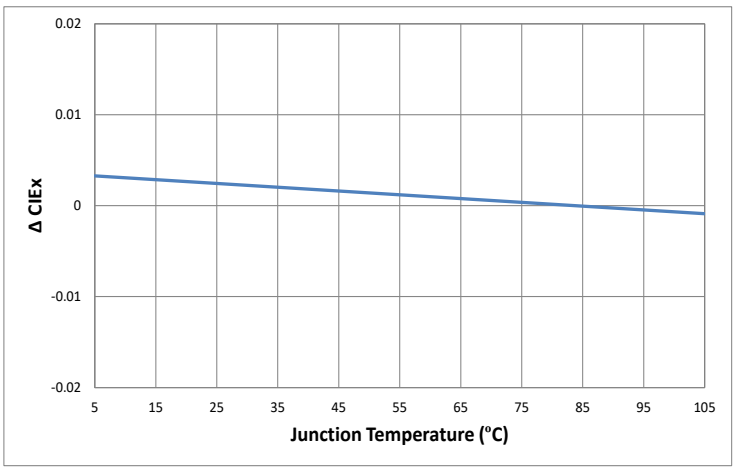
Relative Output Flux vs. Junction Temperature



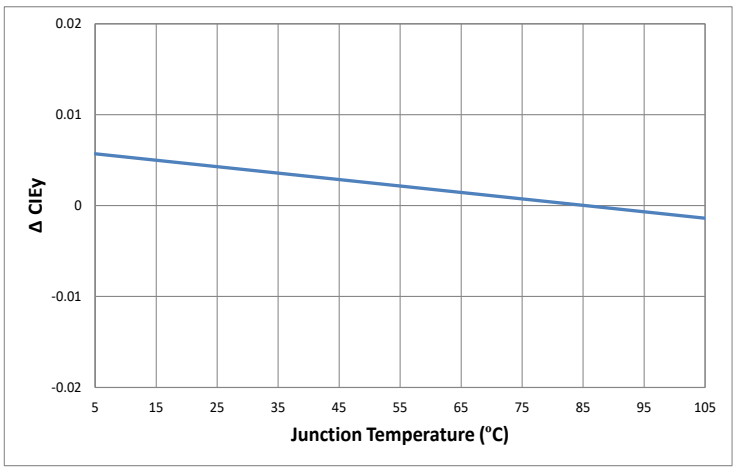
Change in Voltage vs. Junction Temperature



Change in CIEx vs. Junction Temp. (3000K, 80CRI)

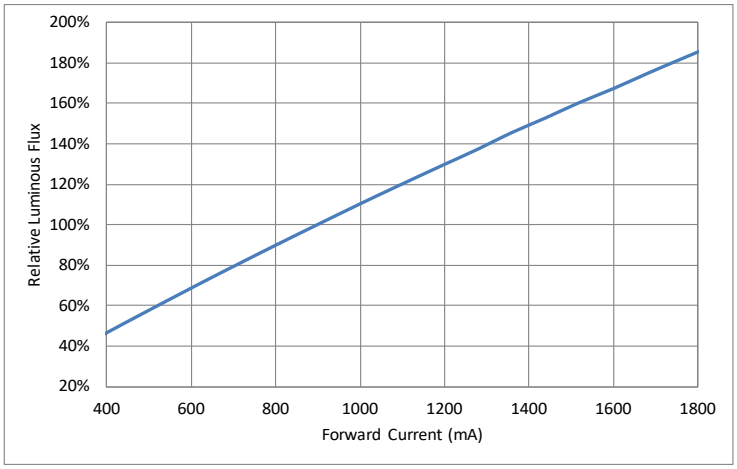


Change in CIEy vs. Junction Temp. (3000K, 80CRI)

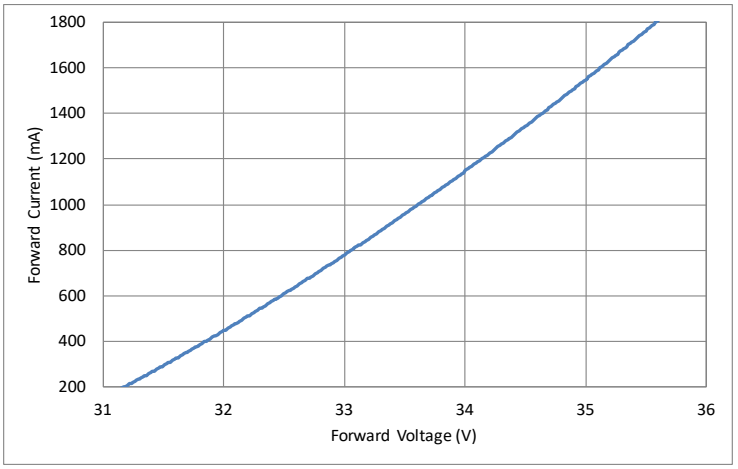


CXM-18 Optical & Electrical Characteristics

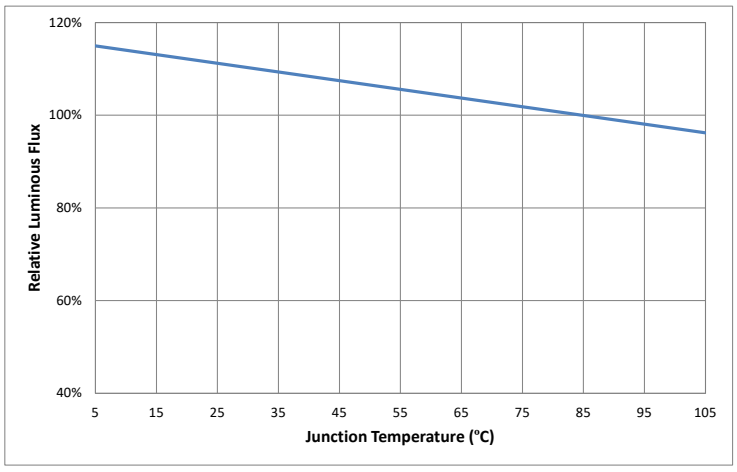
Relative Output Flux vs. Forward Current @ 85°C



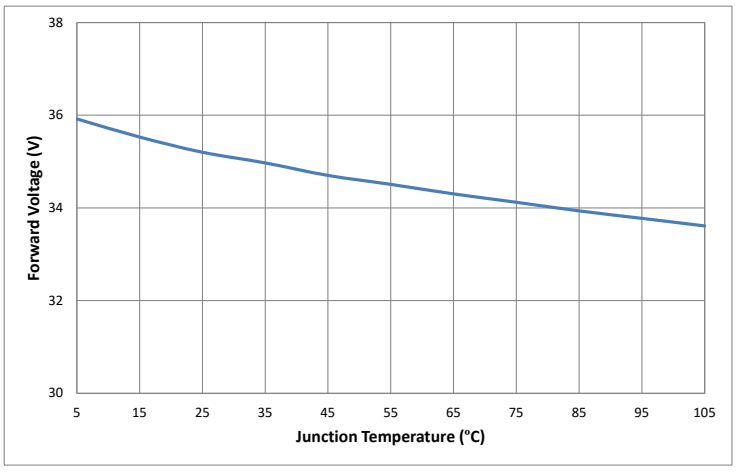
Forward Current vs. Forward Voltage @ 85°C



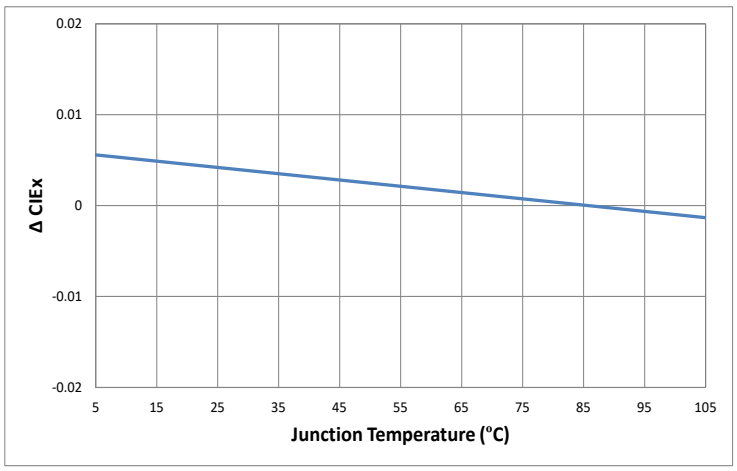
Relative Output Flux vs. JunctionTemperature



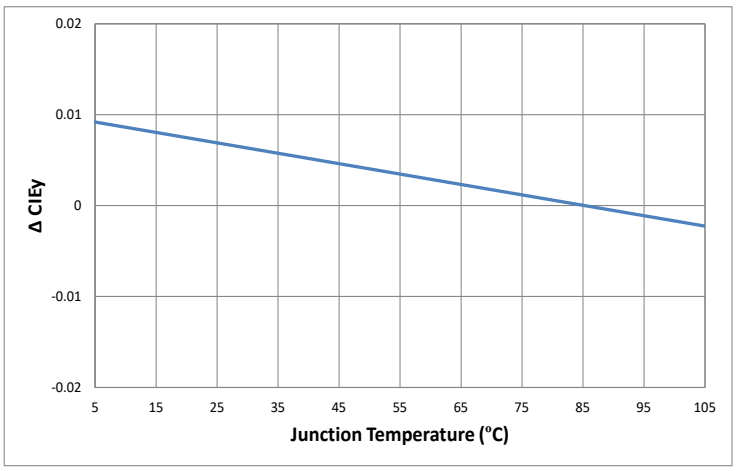
Change in Voltage vs. Junction Temperature



Change in CIEx vs. Junction Temp. (3000K, 80CRI)

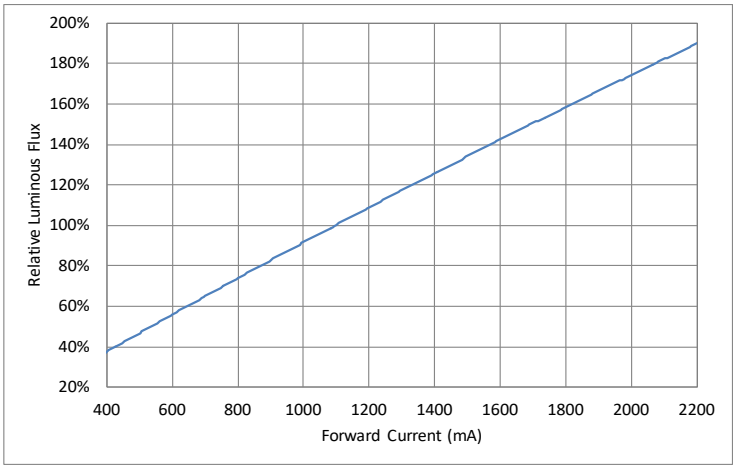


Change in CIEy vs. Junction Temp. (3000K, 80CRI)

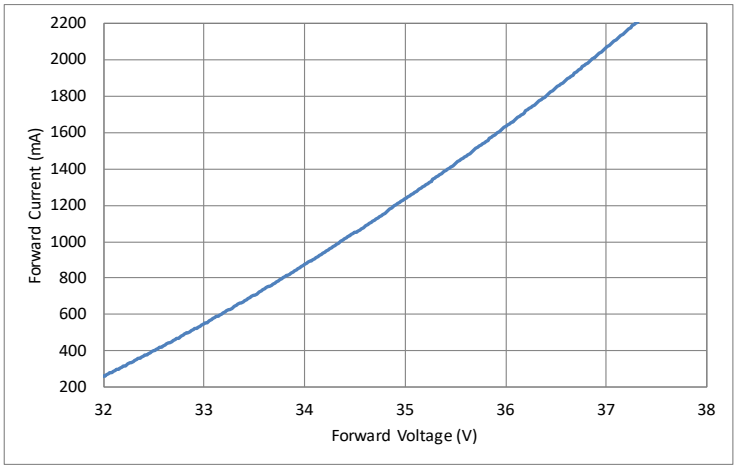


CLM-22 Optical & Electrical Characteristics

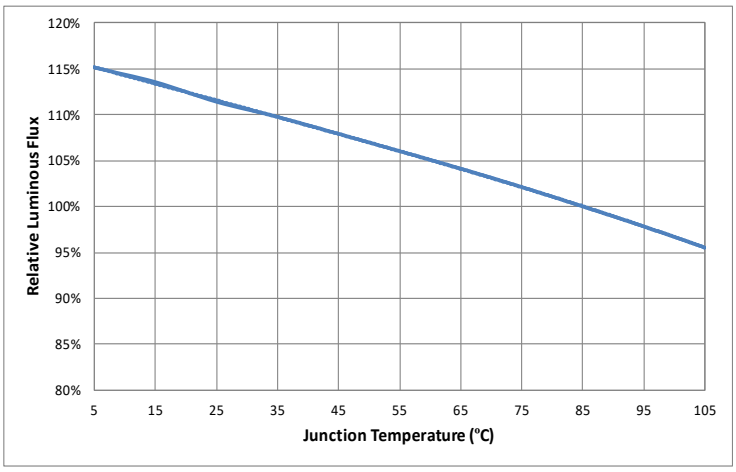
Relative Output Flux vs. Forward Current @ 85°C



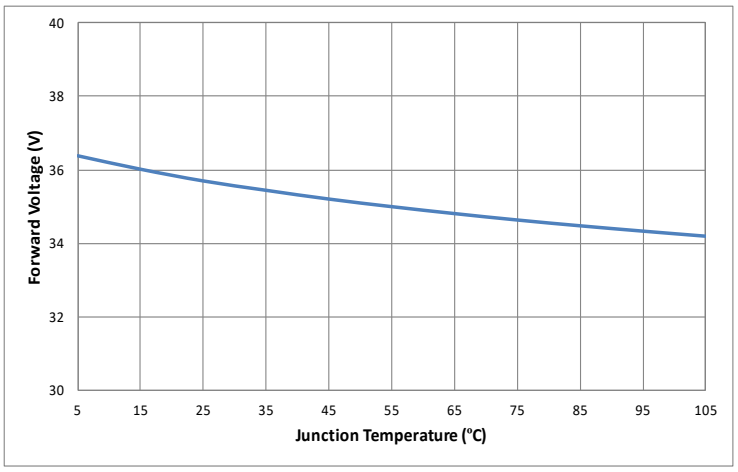
Forward Current vs. Forward Voltage @ 85°C



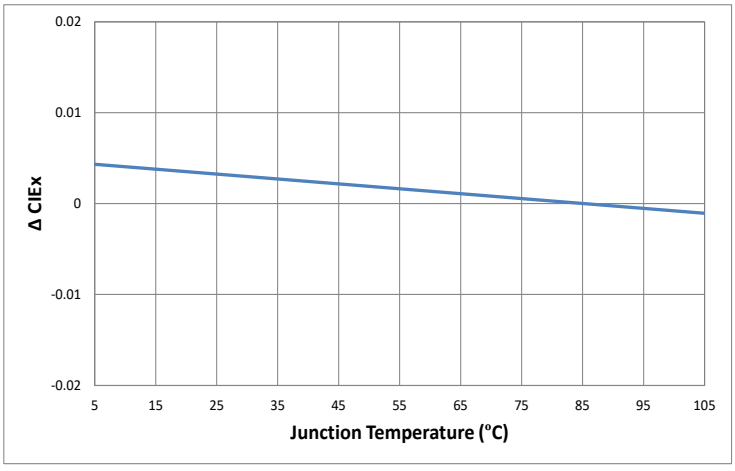
Relative Output Flux vs. Junction Temperature



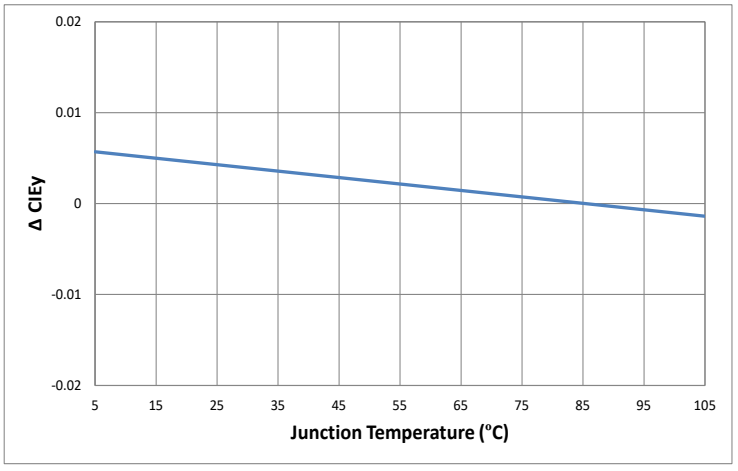
Change in Voltage vs. Junction Temperature



Change CIEx vs. Junction Temperature (3000K, 80CRI)



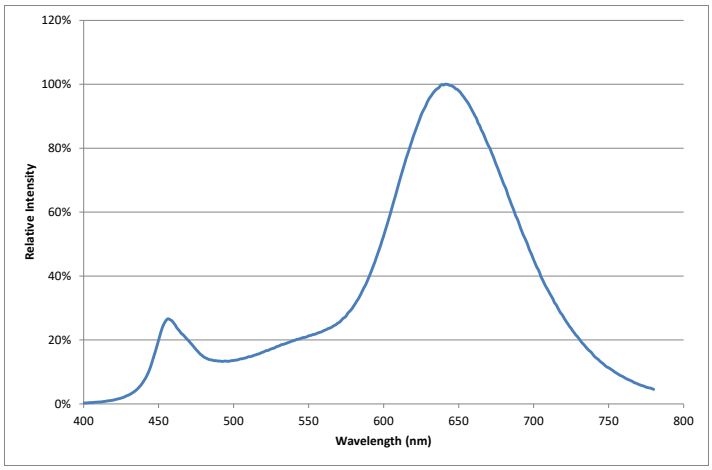
Change CIEy vs. Junction Temperature (3000K, 80CRI)



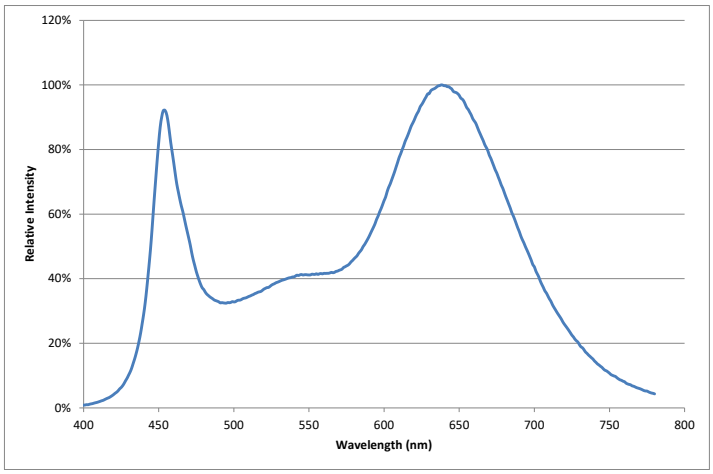
Optical & Electrical Characteristics

Typical Spectrum

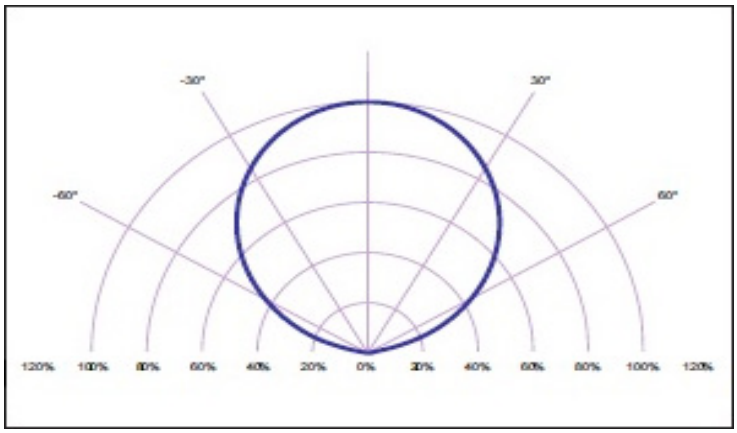
Red Meat Spectrum



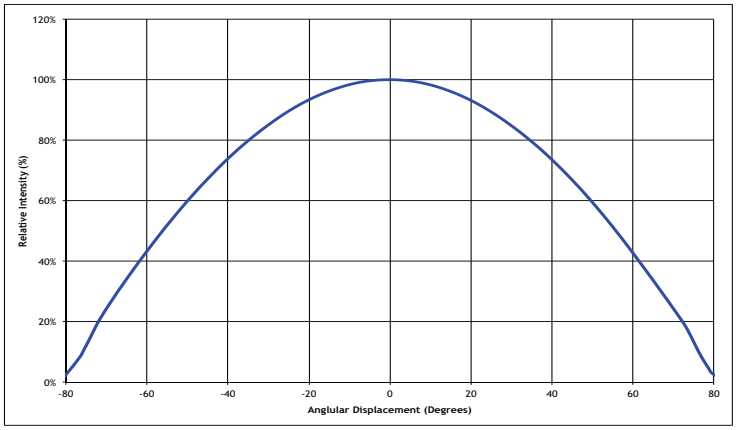
Marbled Meat Spectrum



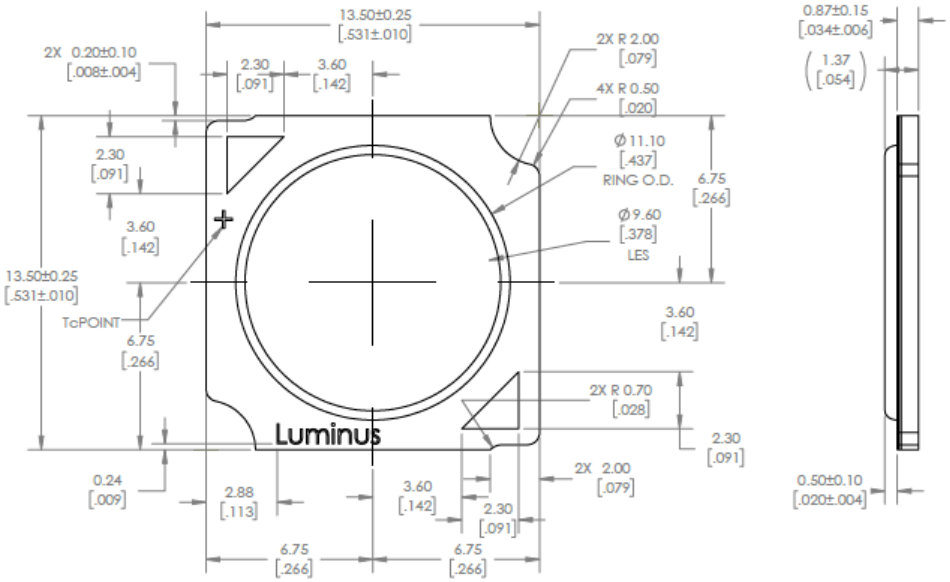
Typical Polar Radiation Pattern

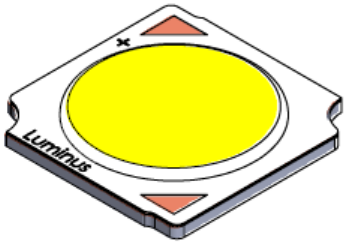


Typical Angular Radiation Pattern

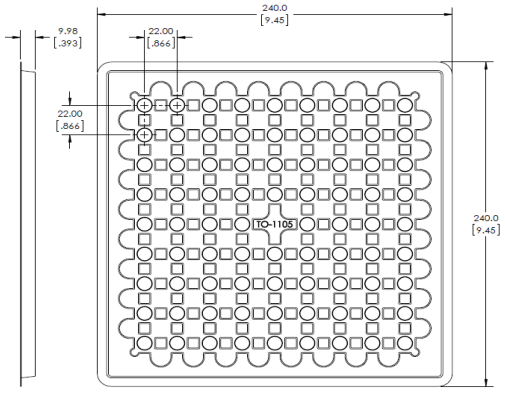


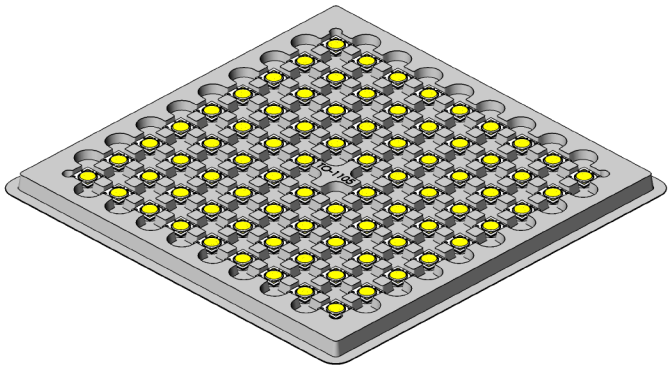
Mechanical Dimensions (CLM-9)





Shipping Container (CLM-9)

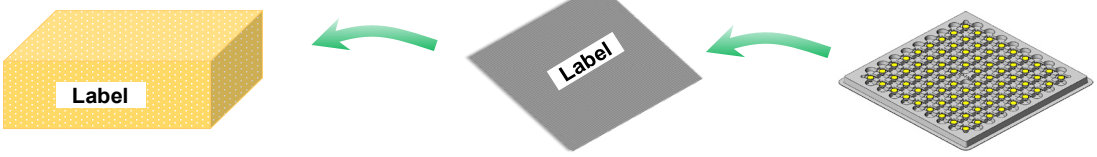




400 pcs per box
Each bag is boxed for easier storage/ stacking

Trays are sealed in an anti-static bag

80 pcs per tray
5 trays are stacked together with separate cover



Luminus Label Model:

LUMINUS — Luminus Devices Inc

XXXXXX-XX-XX (Manufacturer Part Number & Bin Kits) — Rev XX

Bar code — Bar code

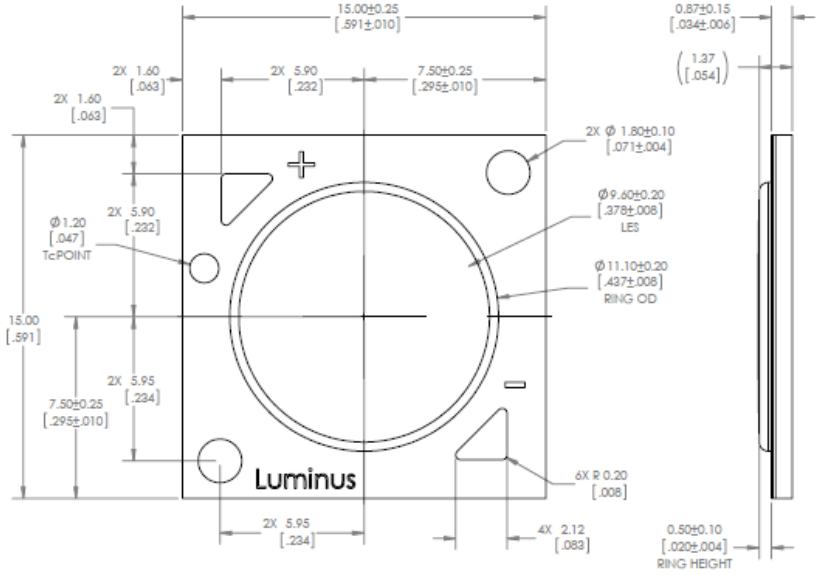
XXX-XX-XX-XX-XX-XXXX-XX-X (Customer Part Number)

XXXXXXXXXXXXXX (Box ID) — Qty: XX

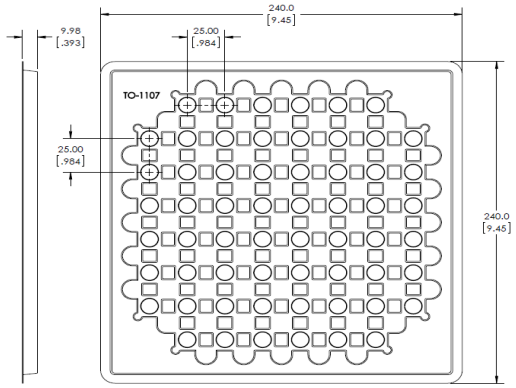
Bar code — Bar code

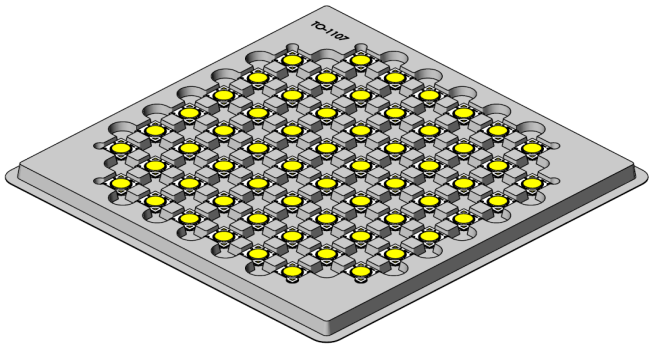
RoHS Compliant

Mechanical Dimensions (CHM-9)



Shipping Container (CHM-9)

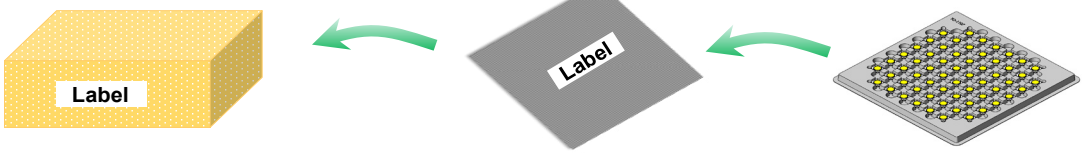




300 pcs per box
Each bag is boxed for easier storage/ stacking

Trays are sealed in an anti-static bag

60 pcs per tray
5 trays are stacked together with separate cover



Luminus Label Model:

LUMINUS — Luminus Devices Inc

XXXXXX-XX-XX (Manufacturer Part Number & Bin Kits) — Rev XX

Bar code — Bar code

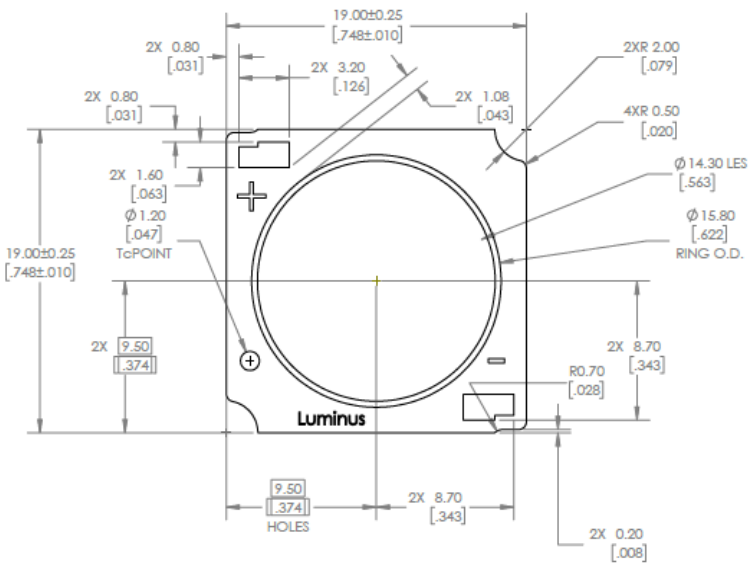
XXX-XX-XX-XX-XX-XXXX-XX-X (Customer Part Number)

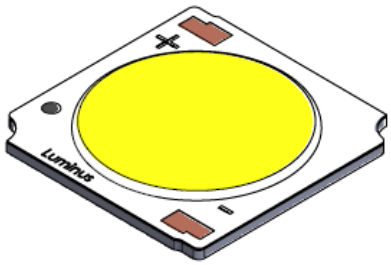
XXXXXXXXXXXXX (Box ID) — Qty: XX

Bar code — Bar code

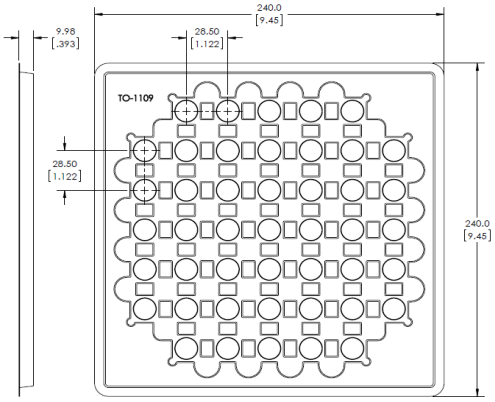
RoHS Compliant

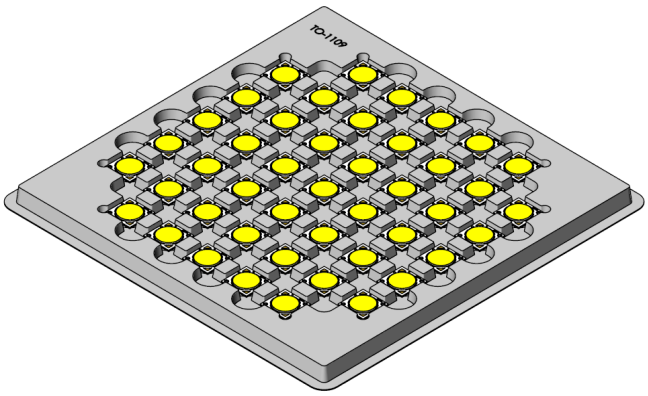
Mechanical Dimensions (CLM/CXM-14)





Shipping Container (CLM/CXM-14)

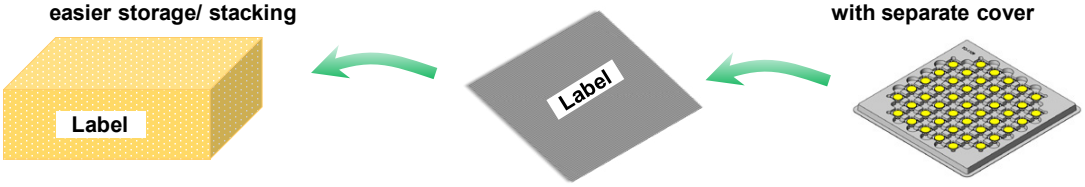




225 pcs per box
Each bag is boxed for easier storage/ stacking

Trays are sealed in an anti-static bag

45 pcs per tray
5 trays are stacked together with separate cover



Luminus Label Model:

LUMINUS — Luminus Devices Inc

XXXXXX-XX-XX (Manufacturer Part Number & Bin Kits) — Rev XX

Bar code — Bar code

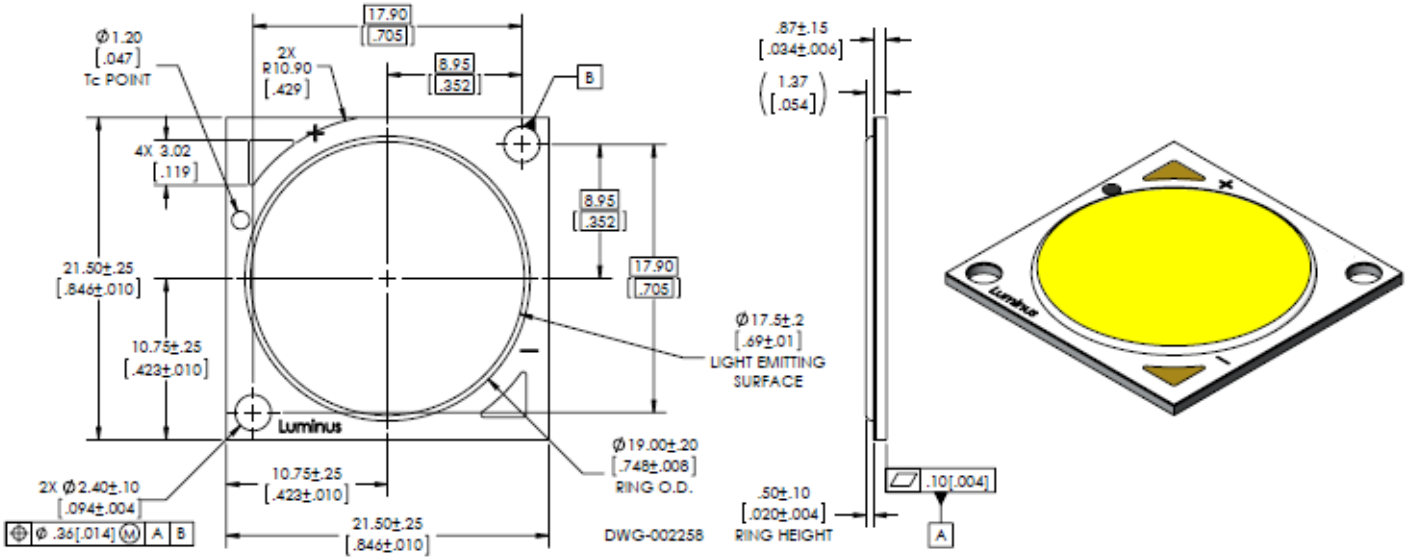
XXX-XX-XX-XX-XX-XXXX-XX-X (Customer Part Number)

XXXXXXXXXXXXXX (Box ID) — Qty: XX

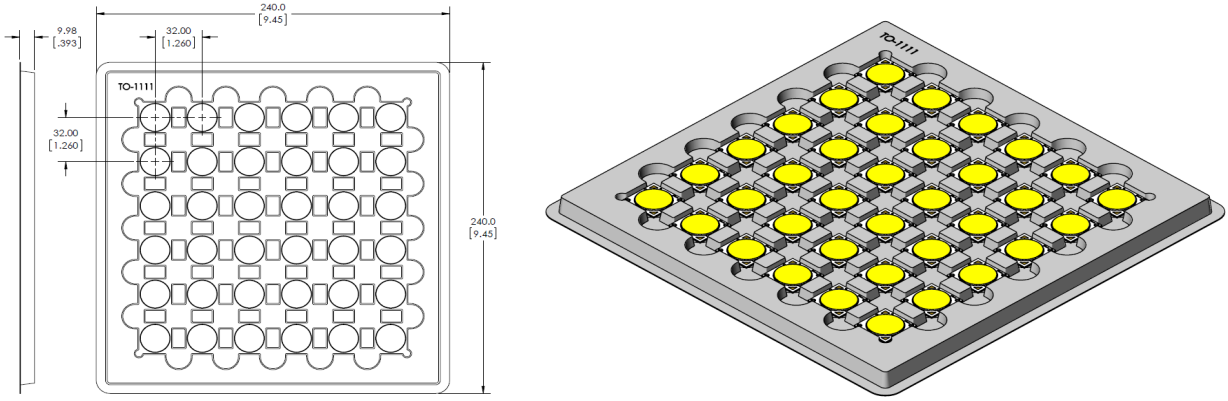
Bar code — Bar code

RoHS Compliant

Mechanical Dimensions (CXM-18)



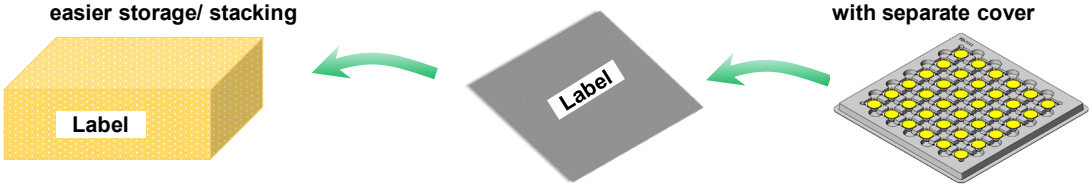
Shipping Container (CXM-18)



180 pcs per box
Each bag is boxed for easier storage/ stacking

Trays are sealed in an anti-static bag

36 pcs per tray
5 trays are stacked together with separate cover



Luminus Label Model:

LUMINUS — Luminus Devices Inc

XXXXXX-XX-XX (Manufacturer Part Number & Bin Kits) — Rev XX

Bar code — Bar code

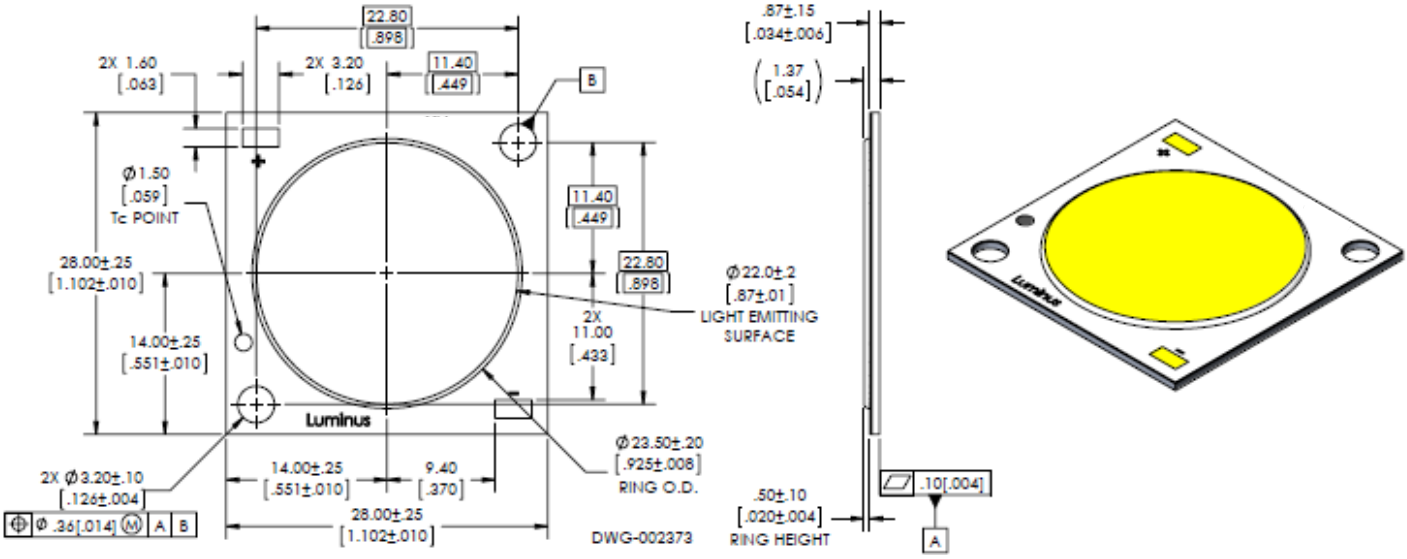
XXX-XX-XX-XX-XX-XXXX-XX-X (Customer Part Number)

XXXXXXXXXXXXXX (Box ID) — Qty: XX

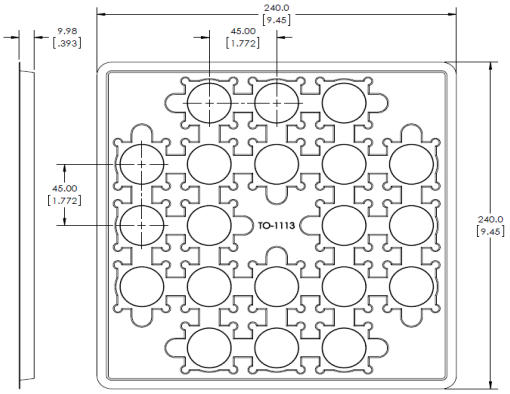
Bar code — Bar code

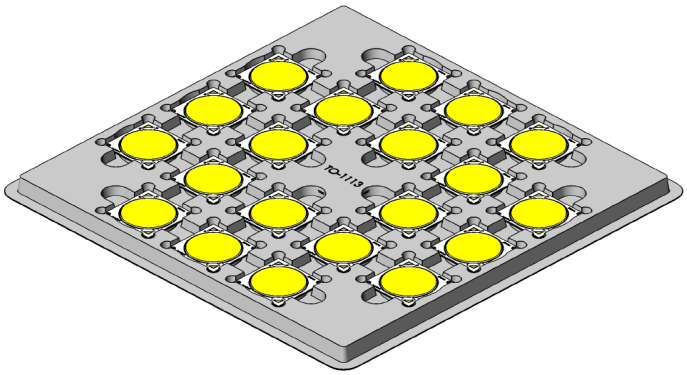
RoHS Compliant

Mechanical Dimensions (CLM-22)



Shipping Container (CLM-22)

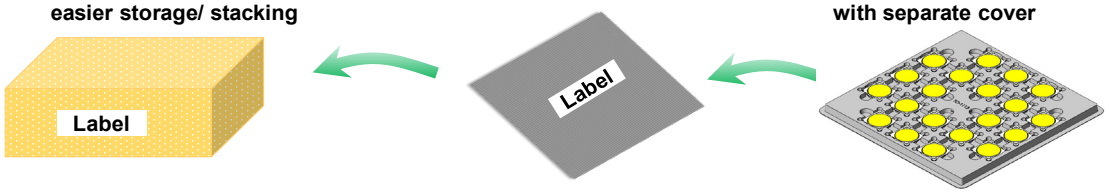




100 pcs per box
Each bag is boxed for easier storage/ stacking

Trays are sealed in an anti-static bag

20 pcs per tray
5 trays are stacked together with separate cover



Luminus Label Model:

LUMINUS — Luminus Devices Inc

XXXXXX-XX-XX (Manufacturer Part Number & Bin Kits) — Rev XX

Bar code — Bar code

XXX-XX-XX-XX-XX-XXXX-XX-X (Customer Part Number)

XXXXXXXXXXXXX (Box ID) — Qty: XX

Bar code — Bar code

RoHS Compliant

Handling Notes for Luminus COBs

Luminus products are designed for robust performance in general lighting application. However, care must be taken when handling and assembling the LEDs into their fixtures. To avoid damaging Luminus COBs please follow these guidelines.

The following is an overview of the application notes detailing some of the practices to follow when working with these devices. More detailed information is available on the Luminus web site at www.luminus.com.

General Handling

Devices are made to be lifted or carried with tweezers on two adjacent corners opposite the contact pads. At no time should the devices be handled by or should anything come in contact with the light emitting surface (LES) area. This area includes the yellow colored circular area and the ring surrounding it. There are electrical connections under the LES which if damaged will cause the device to fail.

In addition, the ring frame itself should not be used for moving, lifting or carrying the device. Also do not attach any optics or mechanical holders to the ring as it is not capable to handle the mechanical stress.

Static Electricity

Luminus COBs are electronic devices which can be damaged by electrostatic discharge (ESD). Please use appropriate measures to assure the devices do not experience ESD during their handling and or storage. ESD protection guidelines should be used at all times when working with Luminus COBs.

Storage: Luminus products are delivered in ESD shielded bags and should be stored in these bags until used.

Assembly: Individuals handling Luminus COBs during assembly should be trained in ESD protection practices. Assemblers should maintain constant conductive contact with a path to ground by means of a wrist strap, ankle straps, mat or other ESD protection system.

Transporting: When transporting the devices from one assembly area to another, ESD shielded carts and carriers should be used.

Electrical Contact

Luminus COBs are designed with contact pads on their top surface. These pads are clearly marked with + and – polarity. Wires can be soldered to the contact pads for electrical connections or other solderless connector products are available.

If wires are being soldered to the COB product, we recommend attaching these wires prior to mounting the devices to a heat sink. Please contact Luminus for specific recommendations on how to solder wires if not familiar with the standard practice. Luminus can also offer design recommendations for jigs to allow easily soldering multiple products in rapid succession.

Chemical Compatibility

The resin material used to form the LES can getter hydrocarbons from the surrounding environment. As a results, certain chemical compounds are not recommended for use with the Luminus products. Use of these compounds can cause damage to the light output of the device and may permanently damage the device. Please refer to www.luminus.com for a list of the compounds not recommended for use with the Luminus COB products.

Thermal Interface Material (TIM)

Proper thermal management is critical for successful operation of any LED system. Excess operating temperature can reduce the light output of the device. And excessive heating can cause permanent damage to the device. Proper TIM material is a crucial component for effective heat transfer away from the LED during normal operation. Please refer to www.luminus.com for specific recommendations for TIM solutions.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Luminus Devices:

CXM-18-30-75-36-AA38-F4-3 CLM-14-18-75-36-AC38-F4-3 CLM-22-18-75-36-AC38-F4-3 CXM-14-18-75-36-AC38-F4-3 CXM-14-30-75-36-AC38-F4-3 CXM-18-18-75-36-AA38-F4-3 CLM-22-30-75-36-AC38-F4-3 CLM-14-30-75-36-AC38-F4-3 CLM-22-30-70-36-AC38-F4-3 CXM-14-30-70-36-AC38-F4-3 CXM-18-30-70-36-AA38-F4-3 CLM-14-30-70-36-AC38-F4-3 CLM-14-18-70-36-AC38-F4-3 CLM-22-18-70-36-AC38-F4-3 CLM-9-18-70-36-AC38-F4-3 CLM-9-30-70-36-AC38-F4-3 CXM-14-18-70-36-AC38-F4-3 CXM-18-18-70-36-AA38-F4-3 CHM-9-18-70-36-XD28-F4-3 CHM-9-30-70-36-XD28-F4-3