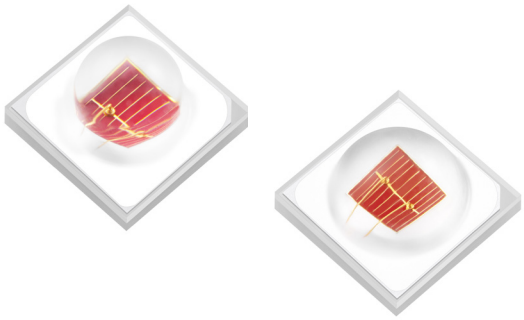
SST-10-R

Red LED



Features

- High Power Red LED with Peak Wavelength of 630 nm
- Wall-Plug Efficiency: typ. 49% @350 mA
- 80° or 120° viewing angle at 50% Iv
- Low Thermal Resistance
- 6 kV HBM ESD rating per ANSI/ESDA/JEDEC JS-001

Applications

- Horticulture / Growlights
- Architectural lighting
- Accent and effect lighting
- Stage lighting

Table of Contents

Ordering Information

Ordering Part Numbers[1]

Color	Radiometric Flux		Wavelength Bins	Ordering Part Number
	Minimum Flux Bin[1]	Minimum Flux[2]		
Red	G	270 mW	615, 620, 625	SST-10-R-B90-G630
				SST-10-R-B130-G630
	H	310 mW	615, 620, 625	SST-10-R-B90-H630
				SST-10-R-B130-H630
	J	350 mW	615, 620, 625	SST-10-R-B90-J630
				SST-10-R-B130-J630

Part Number Nomenclature

SST **10** **R** **<B###>** **<ffwww>**

Product Family	Chip Area	Color	Package Configuration	Bin Kit
S: Surface Mount **S**: Dome Lensed **T**: Single Emitter	**10**: 1.0 mm^2	**R**: Red	<**B**> Solder Pad Configuration **B**: type B - see page 9 <**#**> Viewing Angle **90**: 80° **130**: 120°	<**ff**> Minimum Flux Bin, see 'Binning structure' on page 3 for details <**www**> Wavelength Bin Kit, see 'Binning structure' on page 3 for details

Notes:

1. The Ordering Part Number specifies the Minimum Flux Bin in shipment; higher flux bins may be shipped without advance notice. Please refer to 'Binning structure' on page 3 for details of all flux bins.
2. Product test condition: I_f=350 mA, T_c=25°C.

Binning Structure

Luminous Radiometric Flux Bins[1]

Flux Bin	Binning @ 350 mA, T_c=25°C	
	Minimum Flux (mW)	Maximum Flux (mW)
G	270	310
H	310	350
J	350	390
K	390	430

Forward Voltage Bins[2]

Voltage Bin	Binning @ 350 mA, T_c= 25°C	
	Minimum Voltage (V)	Maximum Voltage (V)
V1	1.8	2.6

Dominant Wavelength Bins[2]

Wavelength Bin	Binning @ 350 mA, T_c= 25°C	
	Minimum Wavelength (nm)	Maximum Wavelength (nm)
615	615	620
620	620	625
625	625	630

Radiometric Power to Lumens Conversion[2]

Radiometric Power to Lumens			Dominant Wavelength (nm)			
			615 nm	620 nm	625 nm	630 nm
Flux Bin	G	270 mW	66 lm	53 lm	41 lm	31 lm
	H	310 mW	76 lm	60 lm	47 lm	35 lm
	J	350 mW	86 lm	68 lm	53 lm	40 lm
	K	390 mW	96 lm	76 lm	59 lm	44 lm

Notes:

1. Luminus maintains a +/- 6% tolerance on flux measurements.

2. Individual bins are not orderable.

Characteristics

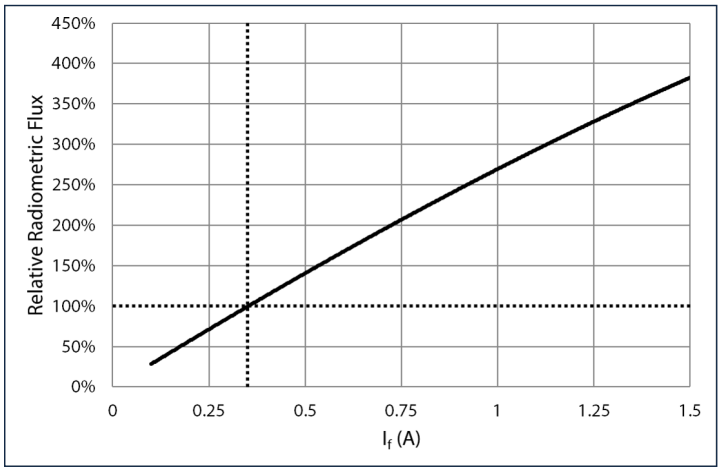
Parameter (I_f=350 mA, T_c=25°C)		Symbol	Value	Unit
Forward Voltage	Minimum	$V_{f\ min}$	1.8	V
	Typical	$V_{f\ typ}$	2.1	
	Maximum	$V_{f\ max}$	2.6	
Forward Current		I_f	350	mA
Output Power		Φ_r	360	mW
Wall-Plug Efficiency		WPE	49	%
FWHM	Minimum	$\Delta\lambda_{1/2\ min}$	16	nm
	Typical	$\Delta\lambda_{1/2\ typ}$	20	
	Maximum	$\Delta\lambda_{1/2\ max}$	24	
Viewing Angle		$2\theta_{1/2}$	80 or 120	°
Dominant Wavelength	Minimum	$\lambda_{d\ min}$	615	nm
	Typical	$\lambda_{d\ typ}$	621	
	Maximum	$\lambda_{d\ max}$	627	
Temperature Coefficient of Voltage		∂_{Vf}/∂_T	-2.0	mV/°C
Temperature Coefficient of Radiometric Flux		∂_{mW}/∂_T	-0.8	%/°C
Temperature Coefficient of Wavelength		$\partial_{WLD}/\partial_T$	0.07	nm/°C
Electrical Thermal Resistance (Junction to Solder Point)[1]		$R_{th\ JS\ elec}$	4.3	°C/W

Note:

1. Thermal measurements are in accordance with JEDEC 51-14.

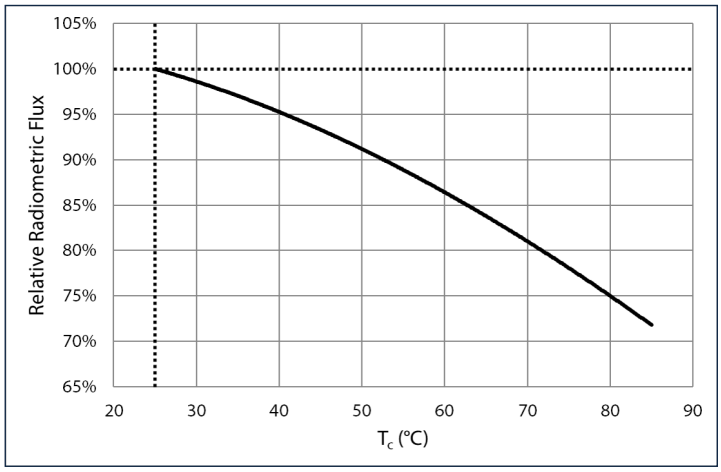
Relative Radiometric Flux vs Forward Current

T_c = 25°C



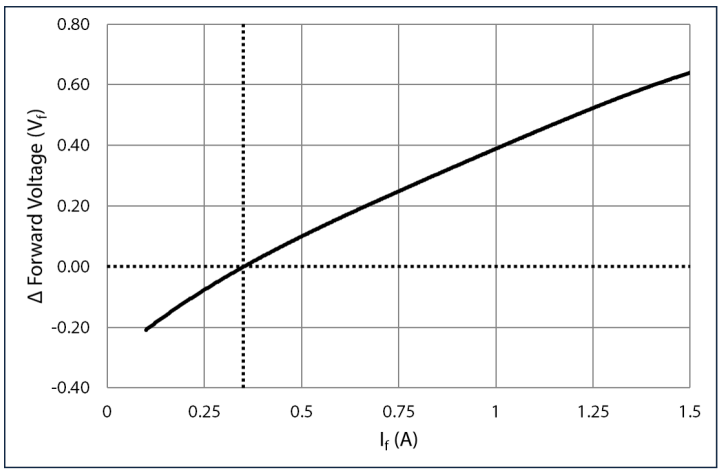
Relative Radiometric Flux vs Temperature

I_f = 350 mA



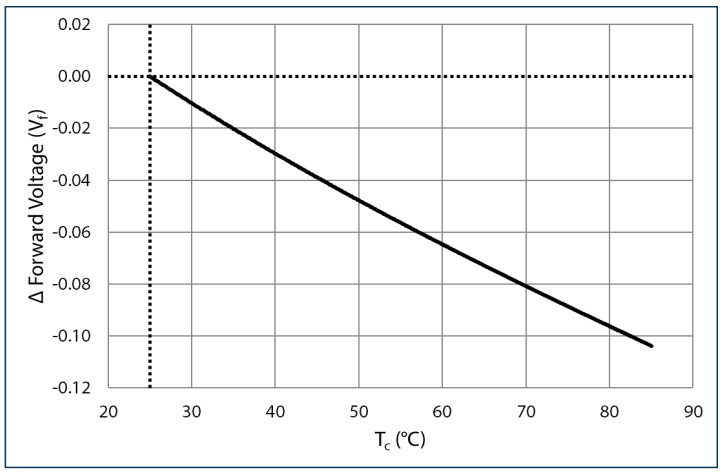
Forward Voltage vs Forward Current

T_c = 25°C



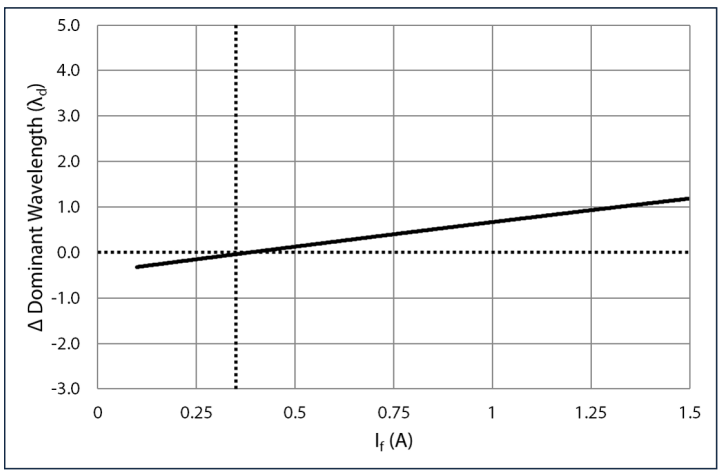
Forward Voltage vs Temperature

I_f = 350 mA



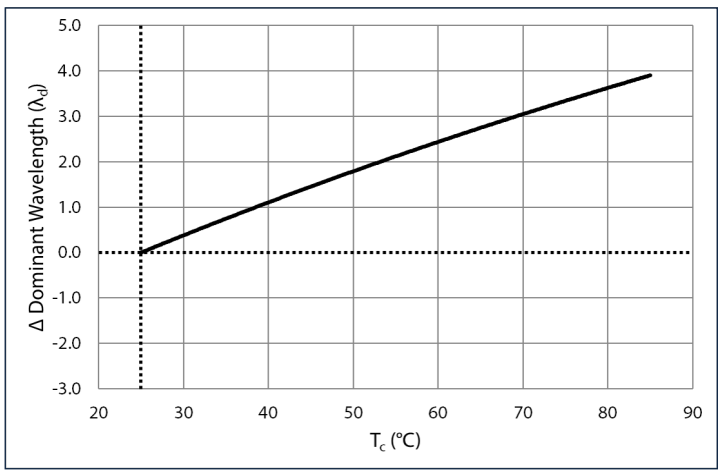
Dominant Wavelength vs Forward Current

T_c = 25°C



Dominant Wavelength vs Temperature

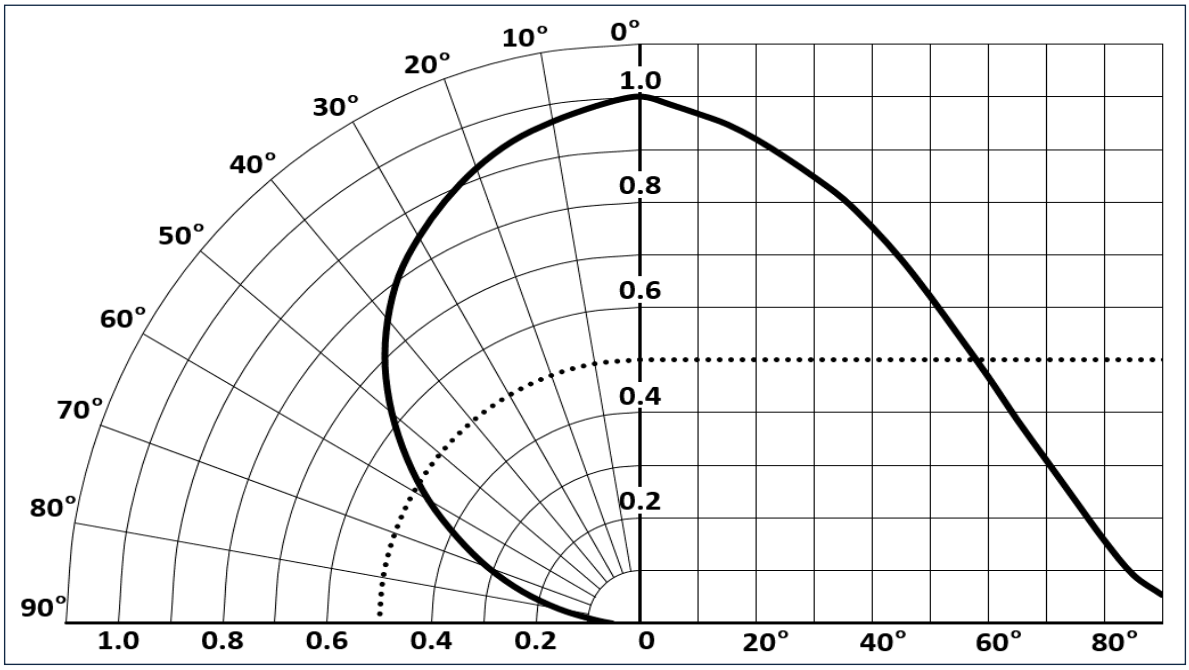
I_f = 350 mA



Angular Distribution and Typical Spectrum

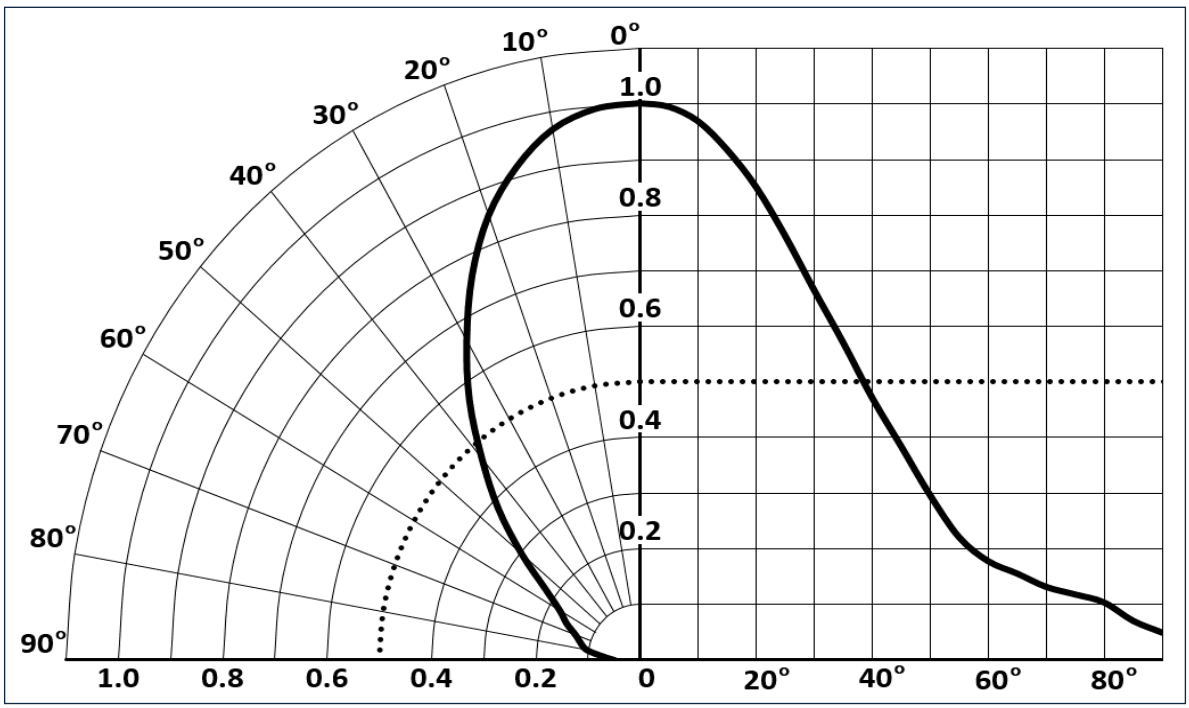
Angular Distribution - B130

I_f = 350 mA; T_c = 25°C



Angular Distribution - B90

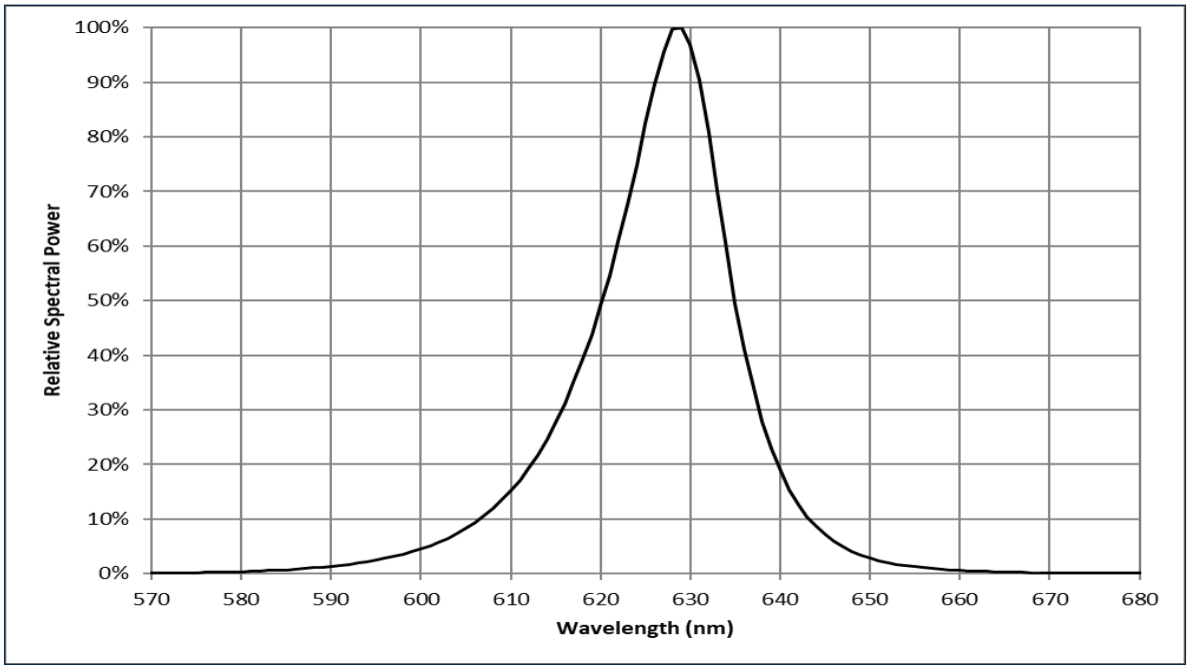
I_f = 350 mA; T_c = 25°C



Angular Distribution and Typical Spectrum

Relative Spectral Power Distribution

I_f = 350 mA; T_c = 25°C



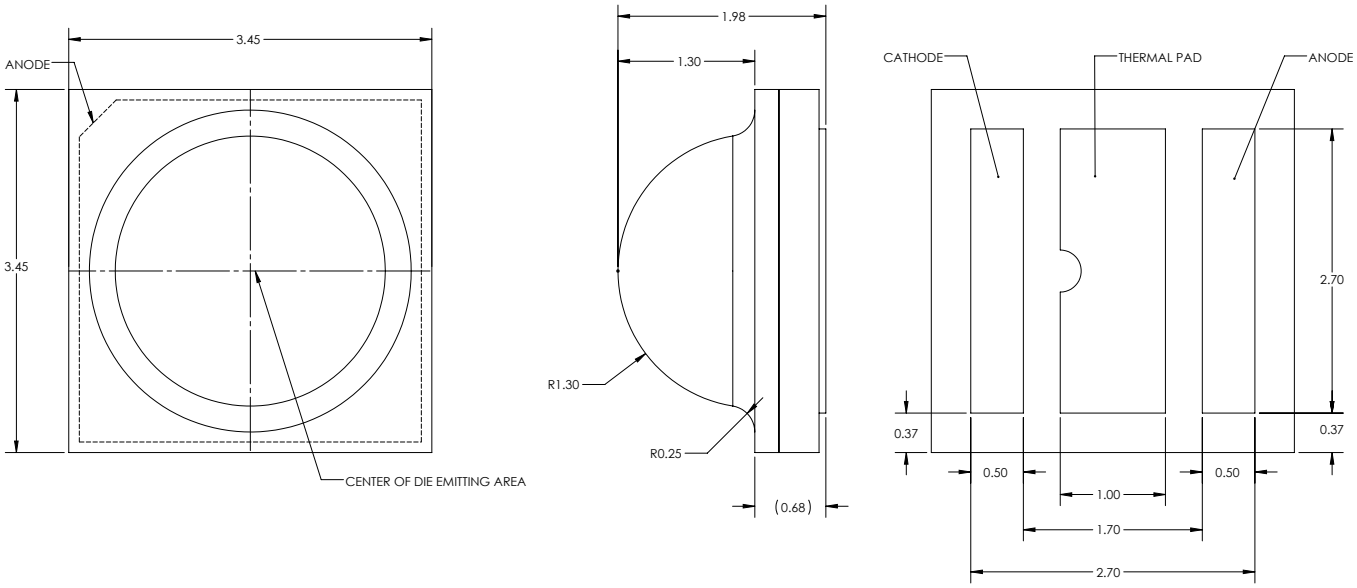
Absolute Maximum Ratings[1, 2]

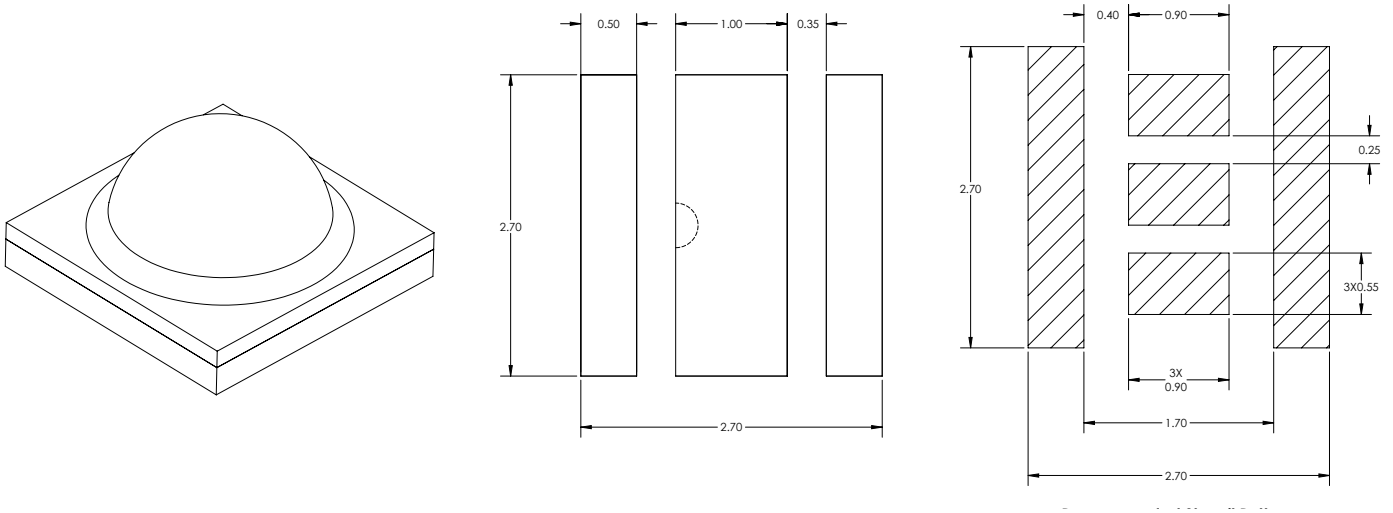
Parameter		Symbol	Values	Unit
Forward Current (CW)[3]	Minimum	$I_{f\ pulse\ min}$	0.1	A
	Maximum	$I_{f\ pulse\ max}$	1.5	
Reverse Voltage		V_r	5	V
Power Dissipation		P_D	5	W
Junction Temperature		T_j	115	°C
Storage Temperature Range		T_{stg}	-40 to 100	°C
ESD withstand Voltage ANSI/ESDA/JEDEC JS-001 (HBM, Class)		V_{ESD}	6	kV

Notes:

1. Ratings are based on operation at a constant case temperature of T_c = 25°C. Test conditions: 350 mA, 20 ms pulse at 25°C.
2. Avoid operating the LED beyond the maximum ratings.
3. In pulsed operation, rise time from 10% to 90% of forward current should be larger than 0.5 microseconds.

Mechanical Dimensions - B130[1, 2]



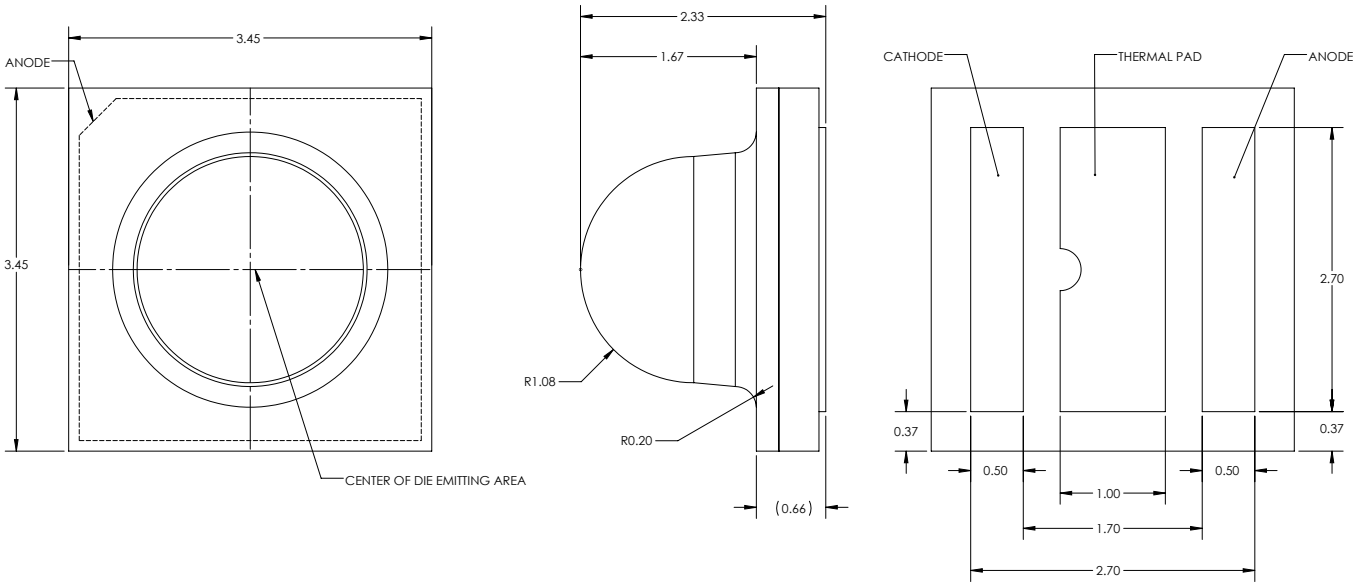


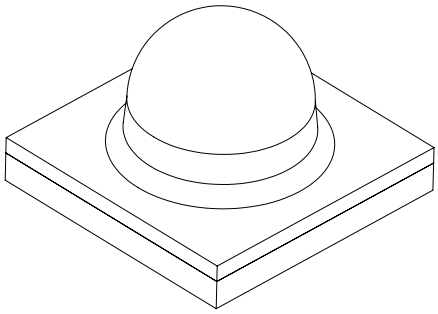
RECOMMENDED PCB SOLDER PAD DESIGN **RECOMMENDED STENCIL PATTERN DESIGN**

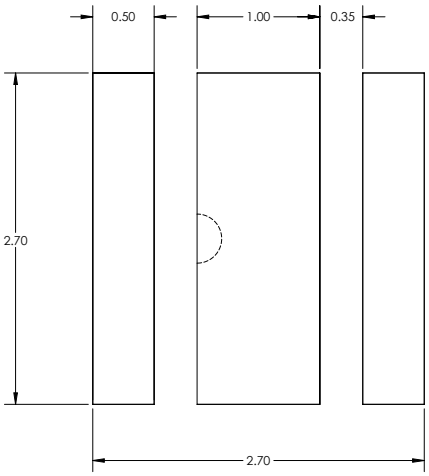
Note:

1. All dimensions are in millimeter ± 0.13 mm.
2. Legacy versions of this product may not include the white compound surrounding the die. This variation is purely cosmetic and does not affect performance.

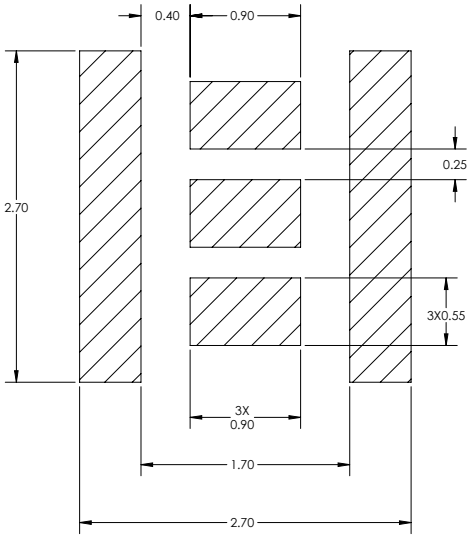
Mechanical Dimensions - B90[1, 2]







RECOMMENDED PCB SOLDER PAD DESIGN



RECOMMENDED STENCIL PATTERN DESIGN

Note:

1. All dimensions are in millimeter ± 0.13 mm.
2. Legacy versions of this product may not include the white compound surrounding the die. This variation is purely cosmetic and does not affect performance.

Mechanical Characteristics

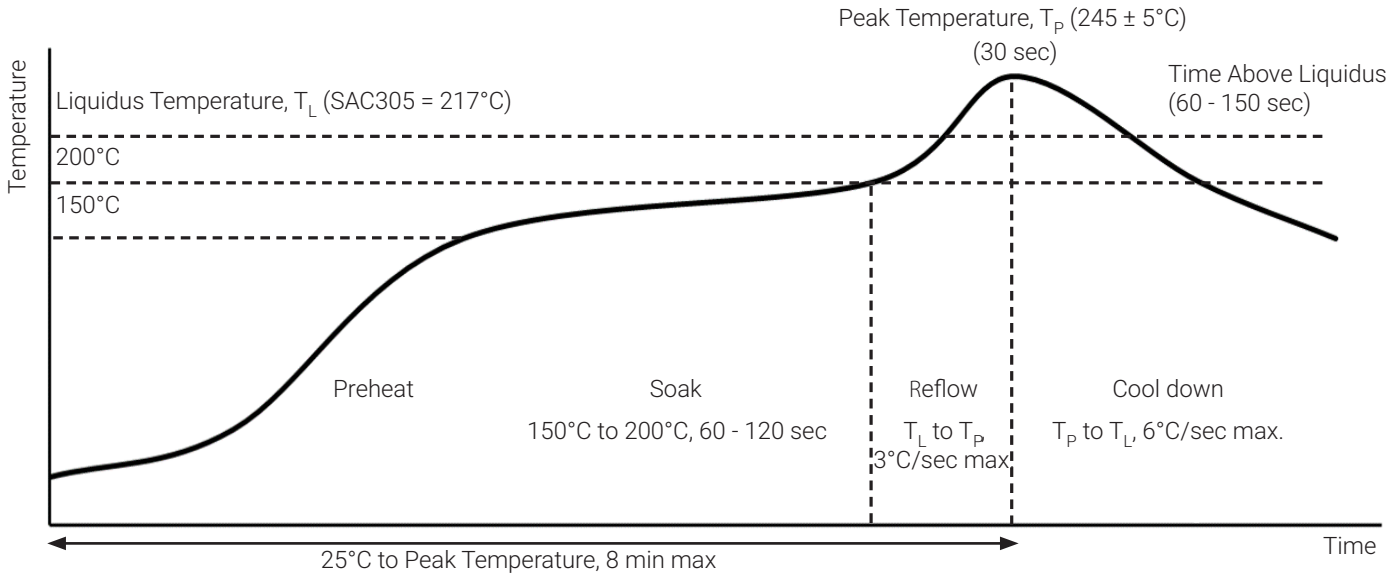
JEDEC Moisture Sensitivity[1, 2]

Level	Floor Life	
	Time	Conditions
1	Unlimited	≤30°C / 85% RH

Notes:

1. Please note that the above MSL level based on the MSL qualification rating.
2. This LED has silver-plated pads, and for LEDs with silver plating, MSL3 environment control is required to protect silver-plated surface from oxidation, even though the products may be qualified as MSL1 or 2.

Soldering Profile



SMT Solder Rework Temperature Guidelines

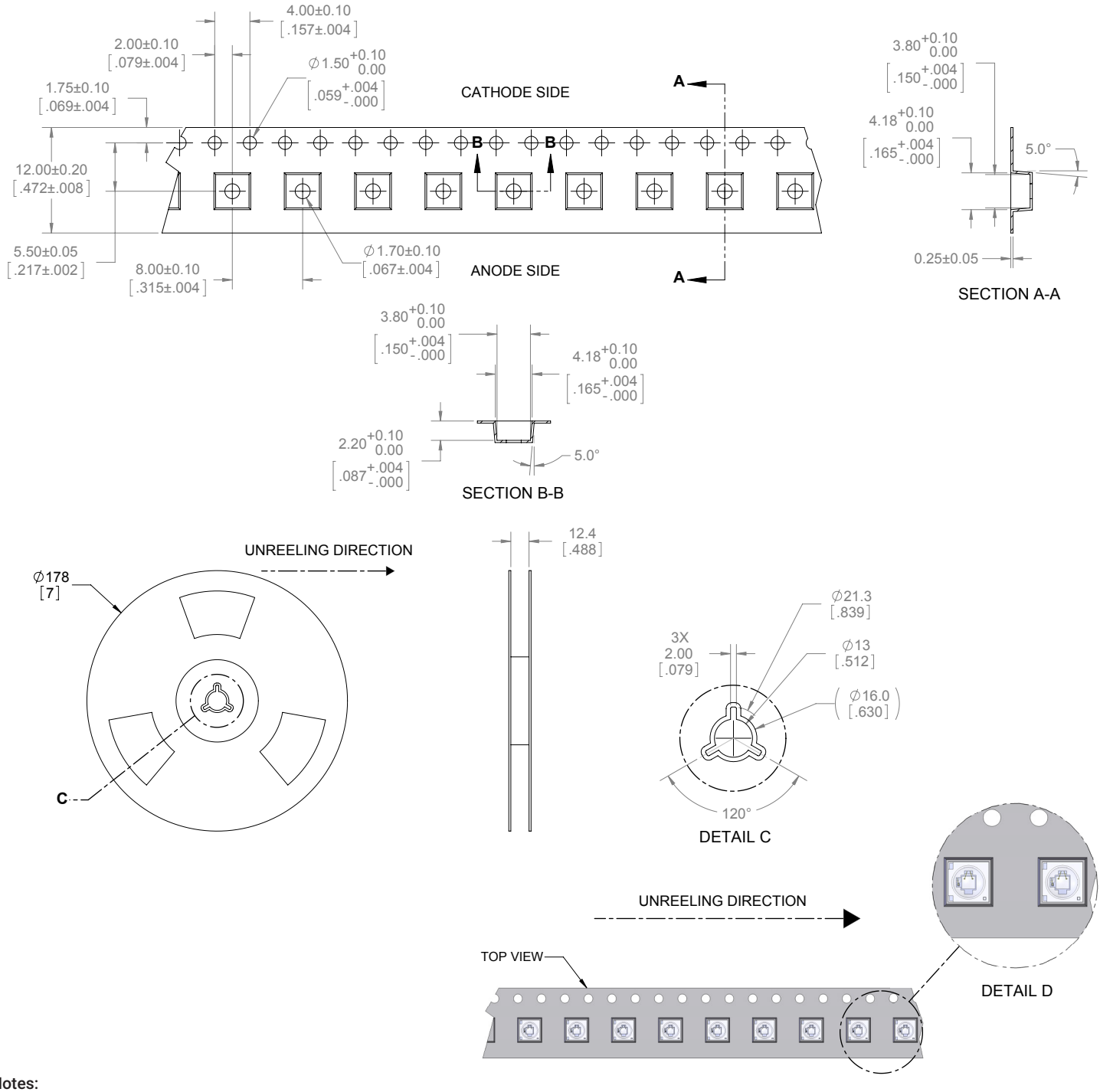
Parameter	Manual Hotplate Reflow	Hot Air Gun Reflow
Heating Time	< 60 sec	
Hotplate Temperature	< 245°C	< 150°C

Notes:

1. The numbers in the table are specific to SAC305. Luminus recommends using an SAC305 solder paste with a no-clean flux for RoHS compliant products.
2. Use of a multi-zone IR reflow oven with a nitrogen blanket is recommended.
3. Time-temperature profile of the reflow process showing the four functional profile zones are defined in IPC-7801. All the temperatures refer to the application PCB measured adjacent to the package body.
4. The actual profile shall be optimized per the PCB design and configuration.
5. Key visual and LED performance characteristics to consider include solder bridging, solder voiding, solder balling, LED component placement or shifting, potential contamination that may impact light emissions, and the functional performance of the LED.
6. Luminus recommends to use the solder paste data sheet information as a starting point in time-temperature process development.
7. These are general guidelines. Consult the solder paste manufacturer's datasheet for guidelines specific to the alloy and flux combination used in your application. For more information, please refer to:

   https://luminusdevices.zendesk.com/hc/en-us/articles/360060306692-How-do-I-Reflow-Solder-Luminus-SMD-Components-
8. For any technical questions about soldering process, please contact Luminus at techsupport@luminus.com.

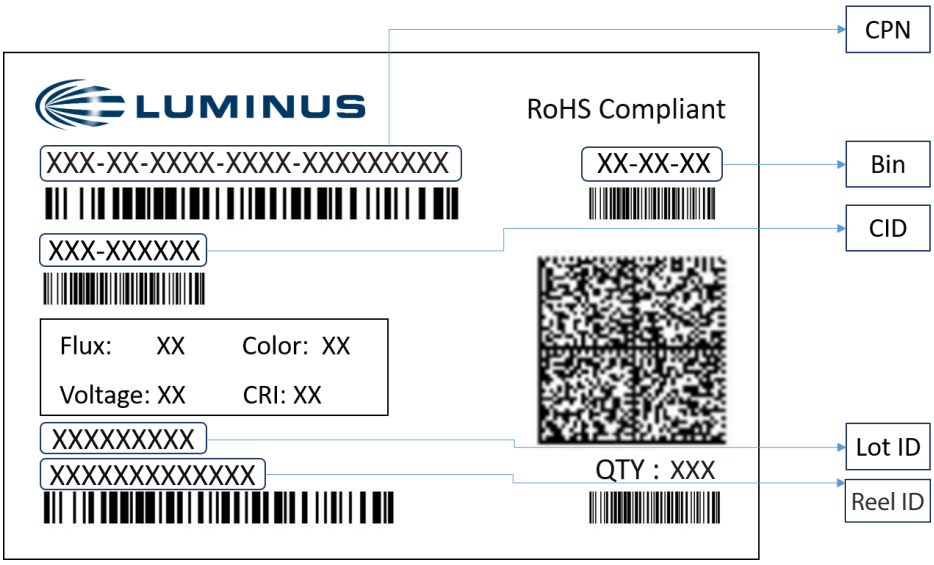
Tape and Reel Outline



Notes:

1. Each reel contains 1,000 units of LEDs.
2. Leave minimum 304.8 mm with empty compartments sealed by cover tape for lead in.
3. Leave minimum 457.2 mm with empty compartments sealed by cover tape for trailer.
4. All dimensions must comply to EIA-481-D.
5. Final tape and reel packaging must meet the requirements of JEDEC -STD-033, LEVEL 2A.

Shipping Label



Label Fields:

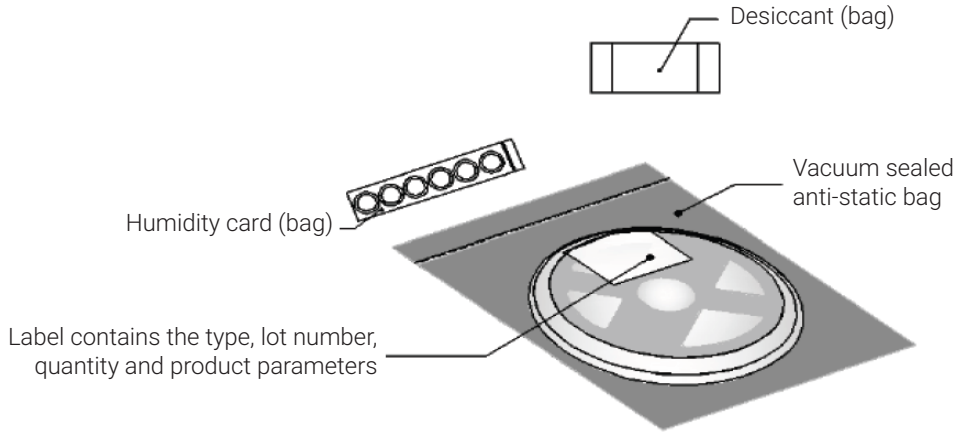
- CPN: Luminus ordering part number
- CID: Customer's part number
- QTY: Quantity of parts per reel
- Flux: Bin as defined on page 3
- Voltage: Bin as defined on page 3
- Color: Bin as defined on page 3
- CRI: NA
- Lot ID & Reel ID: For Luminus internal use

Packing Configuration:

- 1,000 units per reel
- Each reel is placed in an anti-static moisture barrier bag
- Partial reel may be shipped
- Shipping label is placed on top of each packaging box

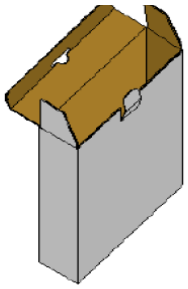
Packaging

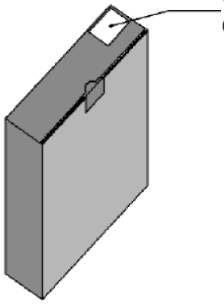
Packaged Reel



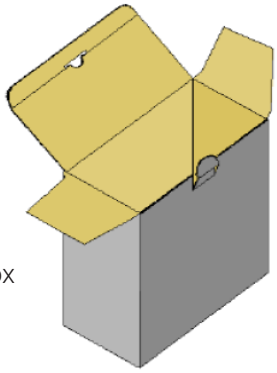
Packaging boxes

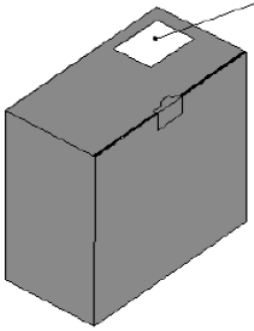
Box Size 1 - 5 reels per box
Size: 22.5 x 24.5 x 6.5 cm





Box Size 2 - 10 reels per box
Size: 22.5 x 24.5 x 13 cm





Notes

Environmental Compliance

Luminus complies with RoHS and REACH. Luminus is committed to selling environmentally friendly and sustainable products. We do not use harmful or hazardous substances in our composites and products. Luminus will not intentionally add the following restricted materials to our products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), or polybrominated diphenyl ethers (PBDE).

Static Electricity

1. The products are sensitive to static electricity, and care should be taken when handling them.
2. Static electricity or surge voltage will damage the LEDs. It is recommended to wear anti-electrostatic gloves or wristband when handling the LEDs.
3. All devices, equipment and machinery must be properly grounded. It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.

Reference: APN-002815 Electrical Stress Damage to LEDs and How to Prevent It

Storage

Please follow J-STD-033D guidance on safe storage and bake treatment.

Mechanical Handling

1. xFx series: During the pick and place process, ensure the pick-up tool does not touch any die components.
2. xBx and xSx series: During the pick and place process, axial forces on the dome (or window) should not exceed 0.5 Newtons (N).
3. PT series: During the pick and place process, ensure the pick-up tool does not touch any die components. This profile applies when attaching surface mount components.
4. SBT series: During the pick and place process, axial forces on the dome (or window) should not exceed 0.5 Newtons (N). Vapor phase soldering is not recommended as the package is not hermetic.

Revision History

Rev	Date	Description of Change
01	06/10/2016	Initial release - Preliminary specification.
02	04/03/2017	Updated title in "Relative Output Flux vs. Junction Temperature" graph and address.
03	07/31/2017	Corrected ordering information typo on page 2, dissipated power value on page 4 and other various minor typos.
04	03/10/2023	Updated flux bins and ordering part numbers. Updated graphs on page 6 & 7. Updated product photos.
05	02/15/2025	Updated the template. Updated product photos, mechanical dimensions and graphs.

About Luminus

Luminus has been dedicated to lighting innovation, collaborating closely with industry leaders to address complex challenges. Initially focused on enhancing energy efficiency and light quality, we've since expanded our efforts to ensure seamless integration of our LED solutions across various applications. Our partnerships span diverse sectors, from agriculture to automotive, where we tailor our products to meet specific needs. As a solutions-driven company, Luminus is committed to illuminating the way forward, both indoors and outdoors, for a brighter and more sustainable future.

To learn more about our lighting solutions, visit www.luminus.com.