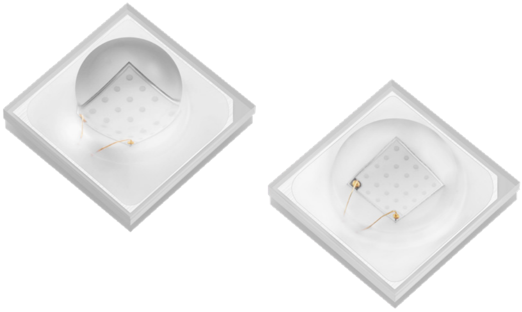


SST-10-SB

Sky Blue LED

Features

- High Power Sky Blue LED with Peak Wavelength of 470 nm
- Wall-Plug Efficiency: typ. 60% @ 350 mA
- 90° or 130° viewing angle at 50% Iv
- Operation at up to 1.5 A CW
- Low Thermal Resistance
- 8 kV HBM ESD rating per ANSI/ESDA/JEDEC JS-001

✓ RoHS ✓ REACH

Applications

- Horticulture / Growlights
- Accent and effect lighting
- Architectural lighting
- Remote-phosphor fixtures
- Stage lighting

Table of Contents

Ordering Information

Ordering Part Numbers[1]

Color	Radiometric Flux		Wavelength Bins	Viewing Angle	Ordering Part Number
	Minimum Flux Bin[1]	Minimum Flux[2]			
Sky Blue	N	510 lm	B6, B7, B8, B9	90°	SST-10-SB-B90-N470
				130°	SST-10-SB-B130-N470

Part Number Nomenclature

SST	10	SB	<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	**SB**: Sky Blue	<**B**> Solder Pad Configuration **B**: type B - see page 9 & 10 <**#**> Viewing Angle **90**: 90° **130**: 130°	<**ff**> Minimum Flux Bin <**www**> Wavelength Bin 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' page for details of all flux bins.
2. Product test condition: I_f =350 mA, T_c=25°C.

Binning Structure

Radiometric Flux Bins[1]

Flux Bin	Binning @ 350 mA, T_c=25°C	
	Minimum Flux (mW)	Maximum Flux (mW)
N	510	550
P	550	590
Q	590	630
R	630	670

Forward Voltage Bins[2]

Voltage Bin	Binning @ 350 mA, T_c= 25°C	
	Minimum Voltage (V)	Maximum Voltage (V)
V1	2.6	3.2

Peak Wavelength Bins

Wavelength Bin	Binning @ 350 mA, T_c= 25°C	
	Minimum Wavelength (nm)	Maximum Wavelength (nm)
B6	460	465
B7	465	470
B8	470	475
B9	475	480

Radiometric Power to Lumens Conversion[3]

Radiometric Power to Lumens			Peak Wavelength (nm)			
			> 460 nm	> 465 nm	> 470 nm	> 475 nm
Flux Bin	N	> 510 mW	27 - 35 lm	33 - 43 lm	40 - 53 lm	49 - 65 lm
	P	> 550 mW	29 - 38 lm	35 - 46 lm	43 - 57 lm	53 - 70 lm
	Q	> 590 mW	31 - 40 lm	38 - 50 lm	46 - 61 lm	57 - 74 lm
	R	> 630 mW	33 - 43 lm	40 - 53 lm	50 - 65 lm	61 - 79 lm

Notes:

1. Product test condition: 350 mA DC, 25°C case temperature.
2. Individual bins are not orderable.
3. For reference only.

Characteristics

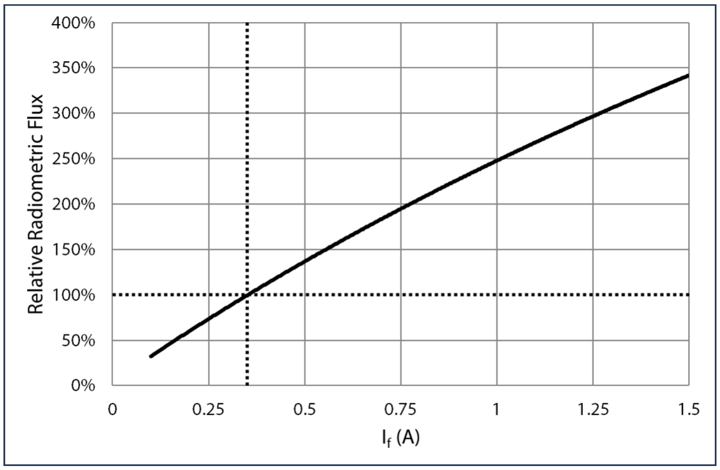
Parameter (I_f=350 mA, T_c=25°C)		**Symbol**	**Value**	**Unit**
Forward Current		I_f	1.5	A
Luminous Flux	Minimum	$\Phi_{V\ min}$	25	lm
	Typical	$\Phi_{V\ typ}$	45	
	Maximum	$\Phi_{V\ max}$	75	
Radiometric Flux	Minimum	$\Phi_{E\ min}$	510	mW
	Typical	$\Phi_{E\ typ}$	590	
	Maximum	$\Phi_{E\ max}$	670	
Forward Voltage	Minimum	$V_{f\ min}$	2.6	V
	Typical	$V_{f\ typ}$	2.8	
	Maximum	$V_{f\ max}$	3.2	
FWHM	Minimum	$\Delta\lambda_{1/2\ min}$	20	nm
	Typical	$\Delta\lambda_{1/2\ typ}$	22	
	Maximum	$\Delta\lambda_{1/2\ max}$	24	
Peak Wavelength	Minimum	$\lambda_{p\ min}$	460	nm
	Typical	$\lambda_{p\ typ}$	470	
	Maximum	$\lambda_{p\ max}$	480	
Wall-Plug Efficiency		WPE	60	%
Real Thermal Resistance (Junction to Case)[1]		$R_{th\ JC\ real}$	5.9	°C/W
Electrical Thermal Resistance (Junction to Case)[1]		$R_{th\ JC\ elec}$	3.4	

Note:

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

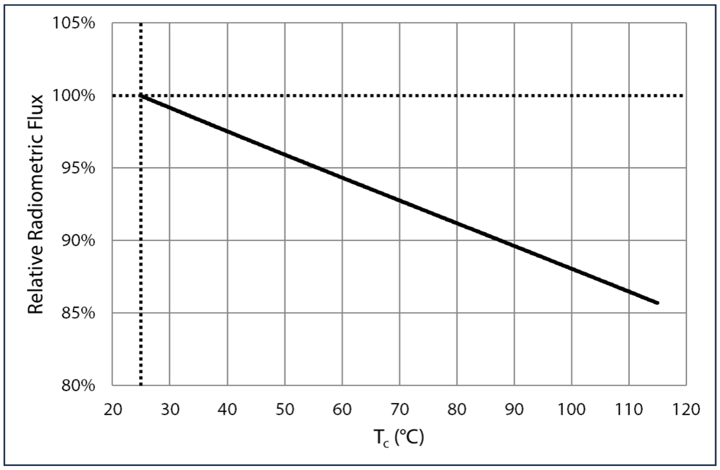
Relative Radiometric Flux vs Forward Current

T_c= 25°C



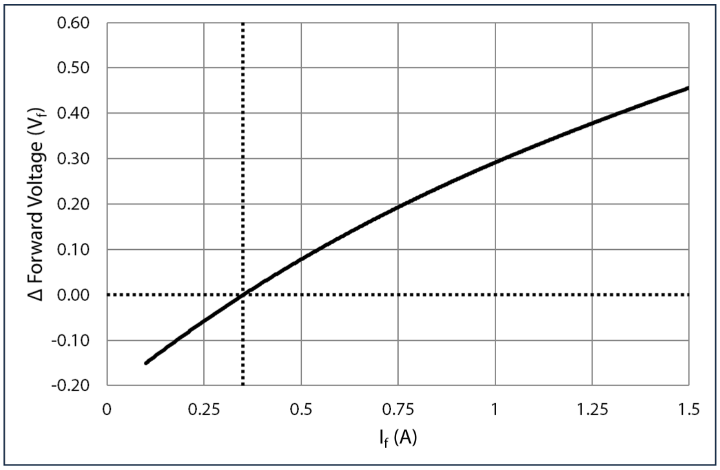
Relative Radiometric Flux vs Temperature

I_f = 350 mA



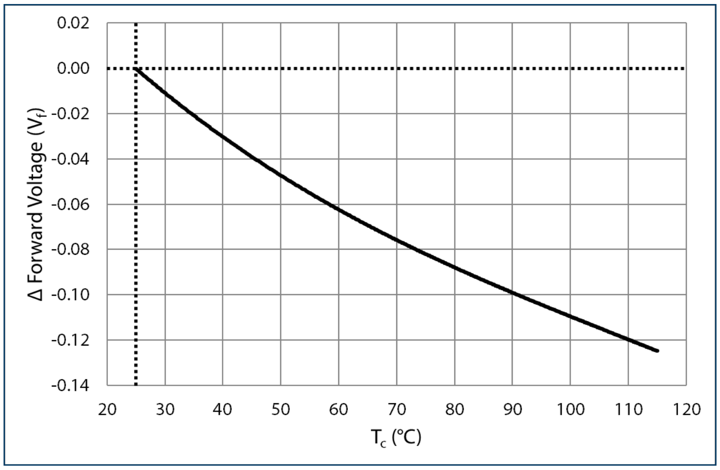
Forward Voltage vs Forward Current

T_c= 25°C



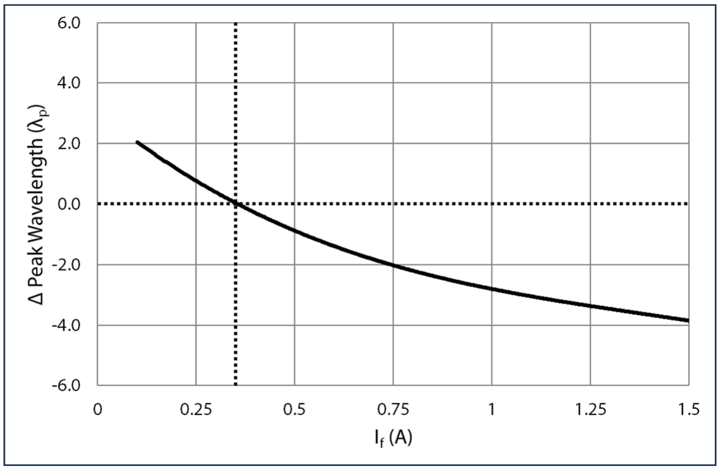
Forward Voltage vs Temperature

I_f = 350 mA



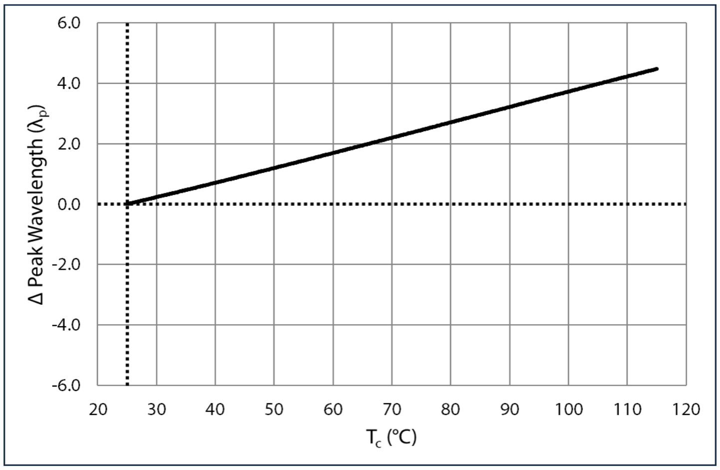
Peak Wavelength Shift vs Forward Current

T_c= 25°C



Peak Wavelength Shift vs Temperature

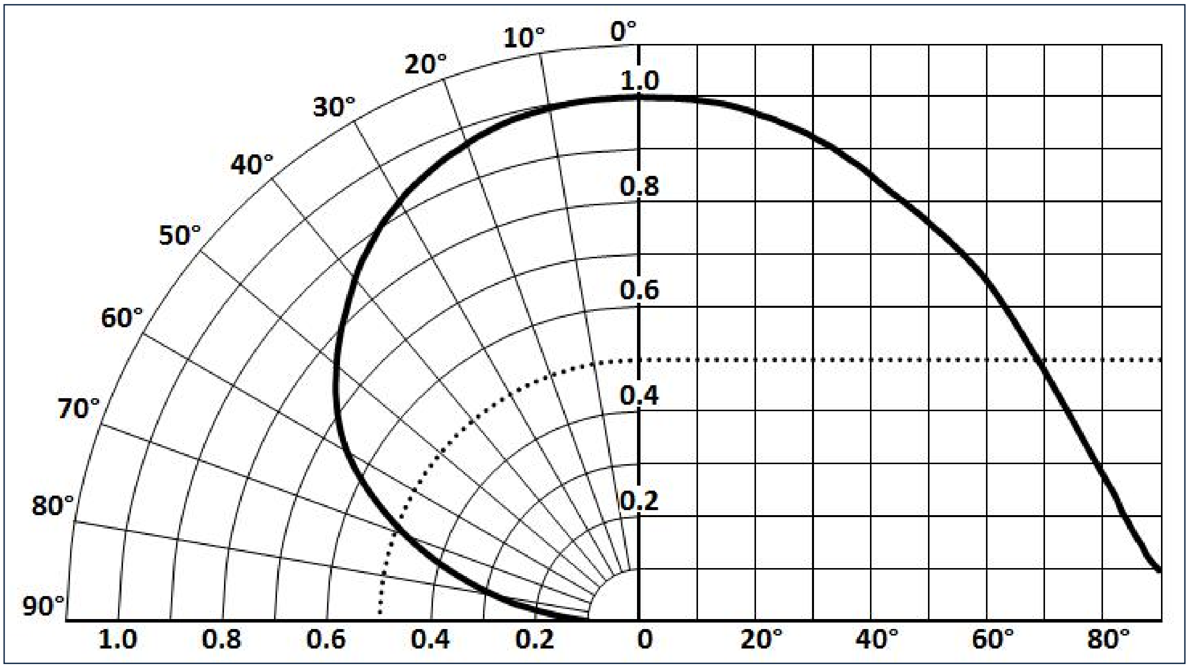
I_f = 350 mA



Angular Distribution and Typical Spectrum

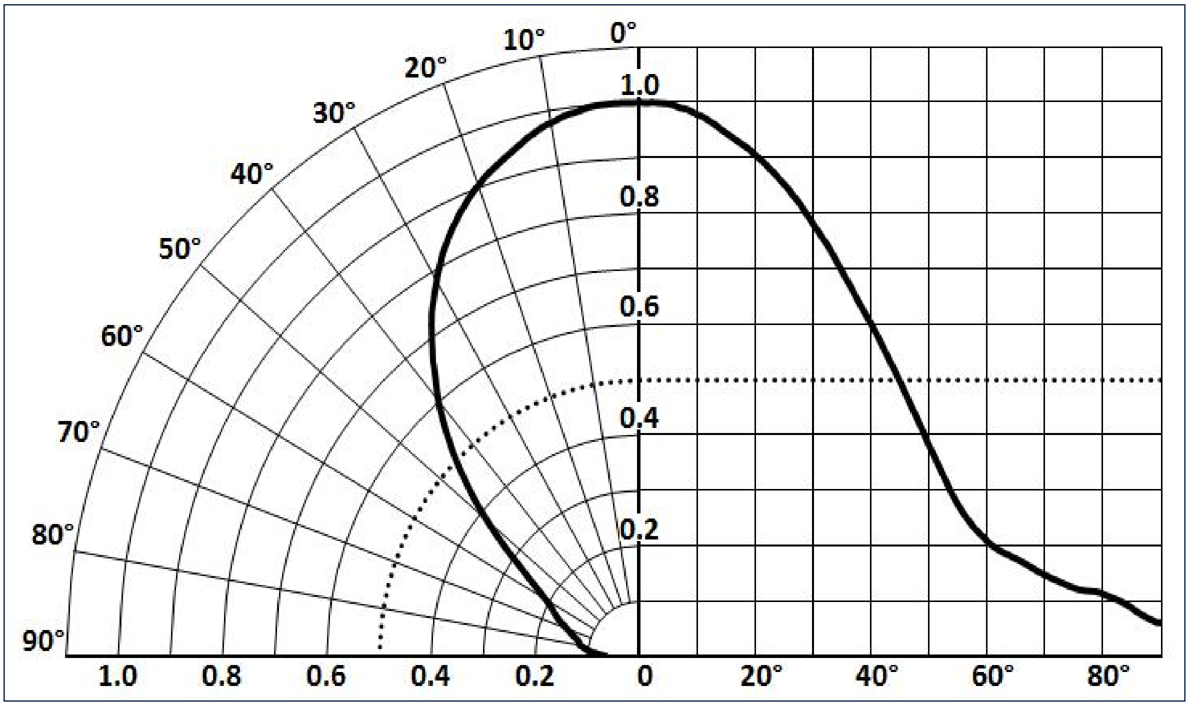
Angular Distribution - B130

I_f = 350 mA; T_c= 25°C



Angular Distribution - B90

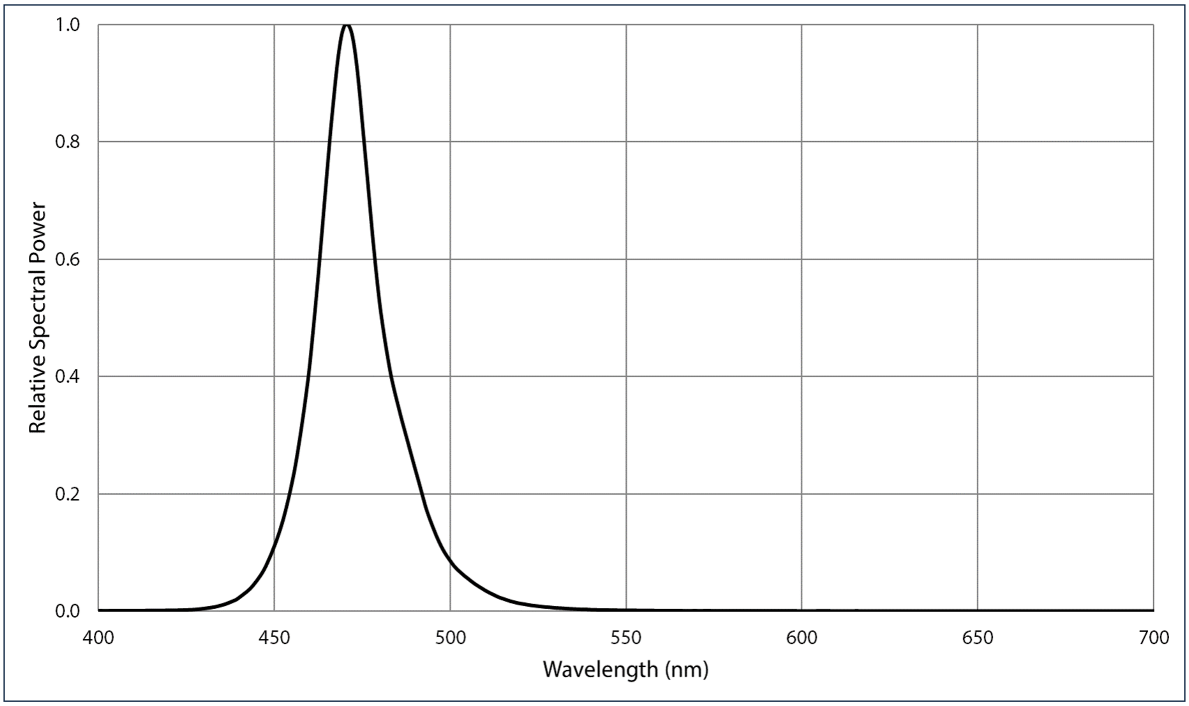
I_f = 350 mA; T_c= 25°C



Angular Distribution and Typical Spectrum

Relative Spectral Power Distribution

I_f = 350 mA; T_c= 25°C



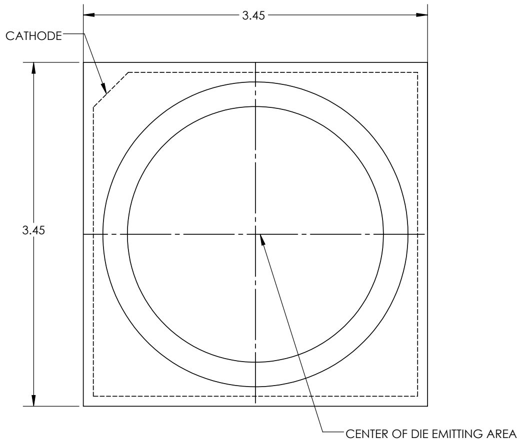
Absolute Maximum Ratings[1, 2]

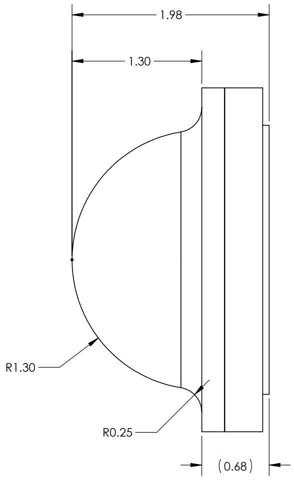
Parameter		Symbol	Values	Unit
Forward Current (CW)	Minimum	$I_{f\ CW\ min}$	0.1	A
	Maximum	$I_{f\ CW\ max}$	1.5	
Reverse Voltage		V_r	5	V
Power Dissipation		P_D	6.0	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-40 to 100	°C
ESD withstand Voltage ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)		V_{ESD}	8	kV

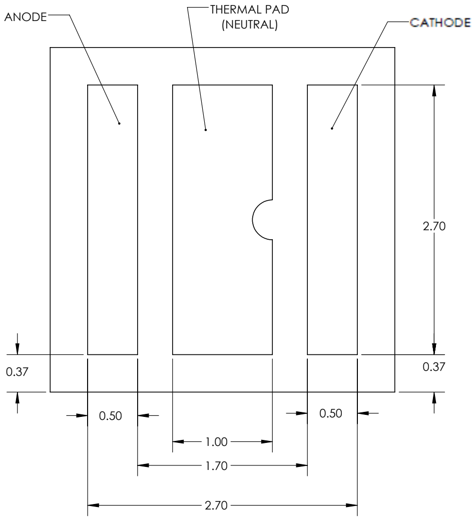
Notes:

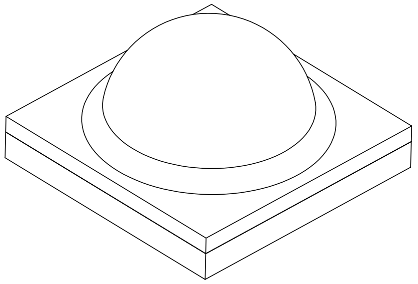
1. The LED is safe for operation at the absolute maximum ratings as specified above. However, note that product lifetime data is provided based on nominal drive conditions. If sustained operation occurs at the absolute maximum ratings, it may lead to a reduction in device lifetime.
2. Avoid operating the LED beyond the maximum ratings.

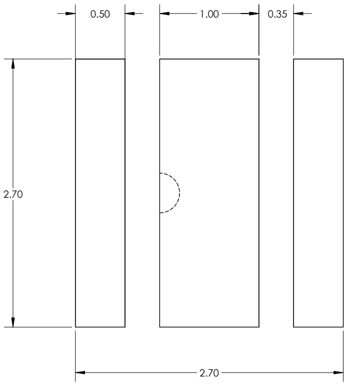
Mechanical Dimensions - B130



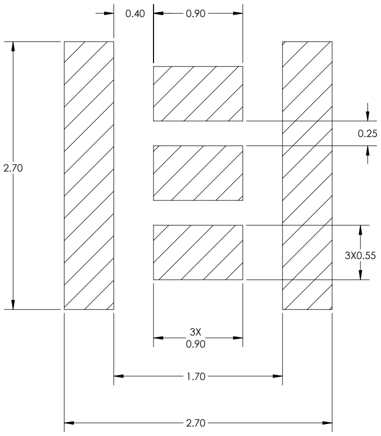








RECOMMENDED PCB SOLDER PAD DESIGN

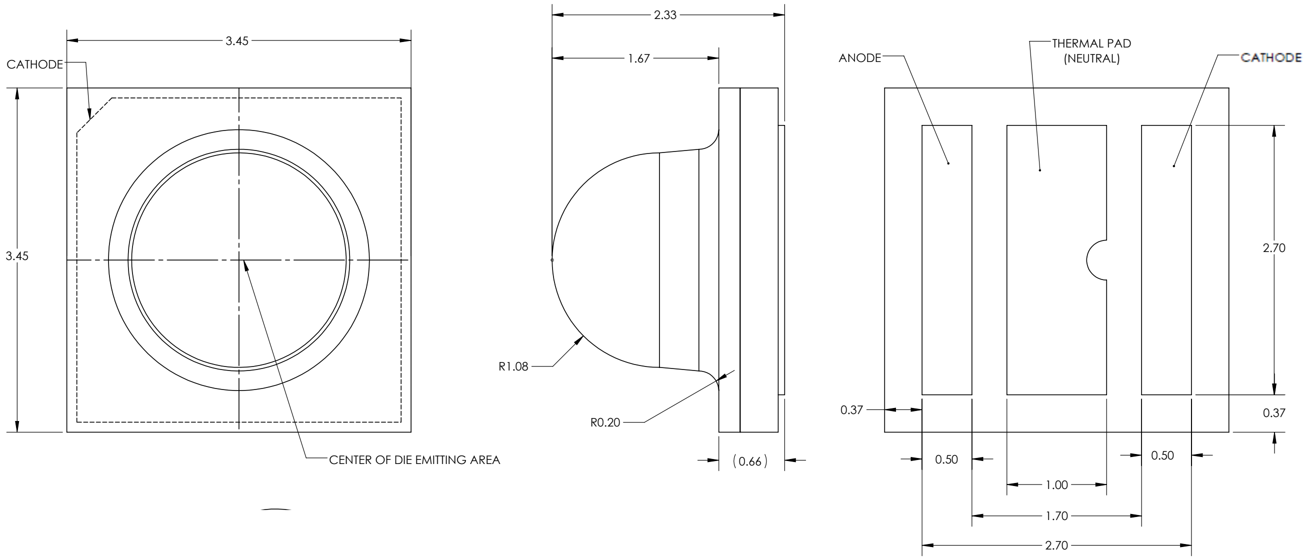


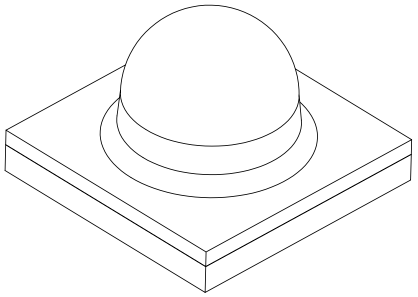
RECOMMENDED STENCIL PATTERN DESIGN

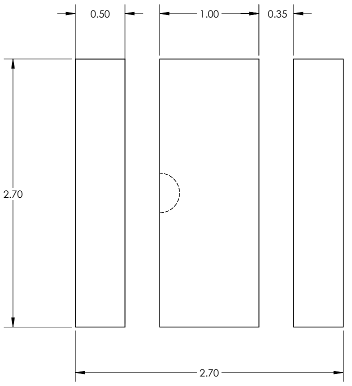
Note:

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.

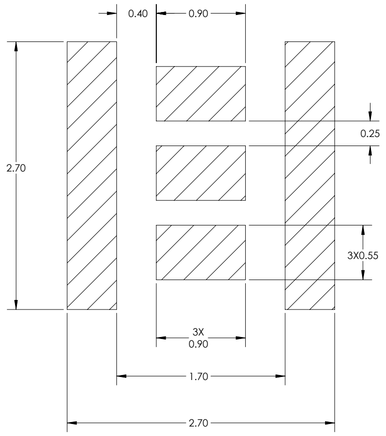
Mechanical Dimensions - B90







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

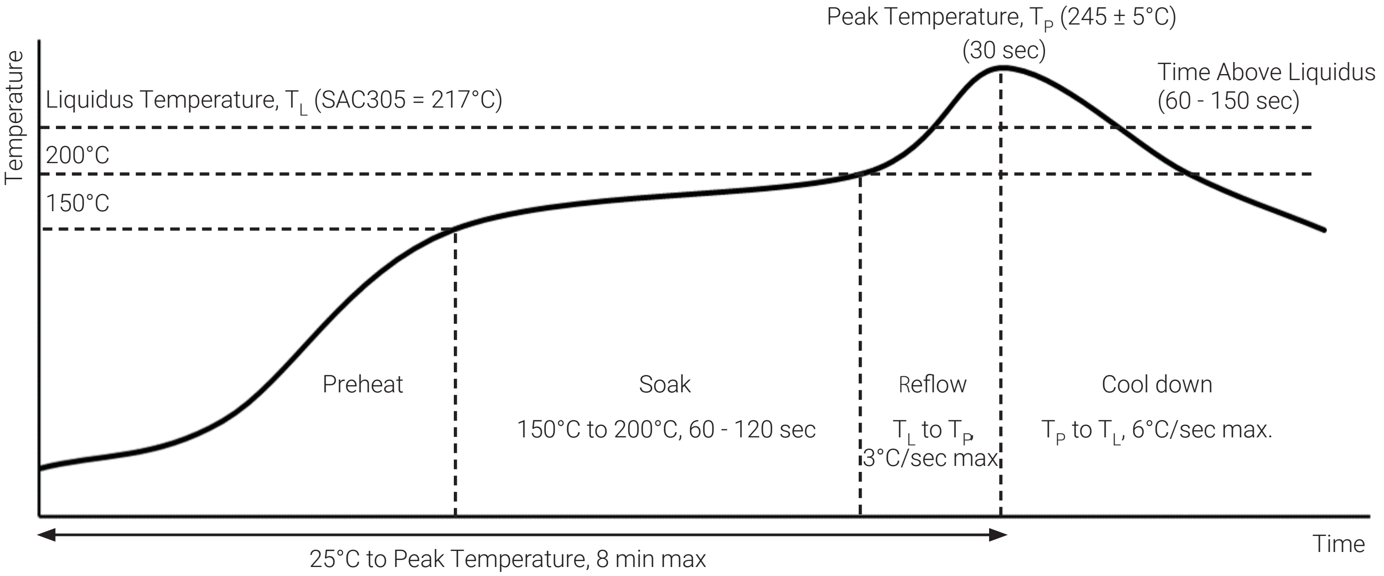
JEDEC Moisture Sensitivity[1, 2]

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

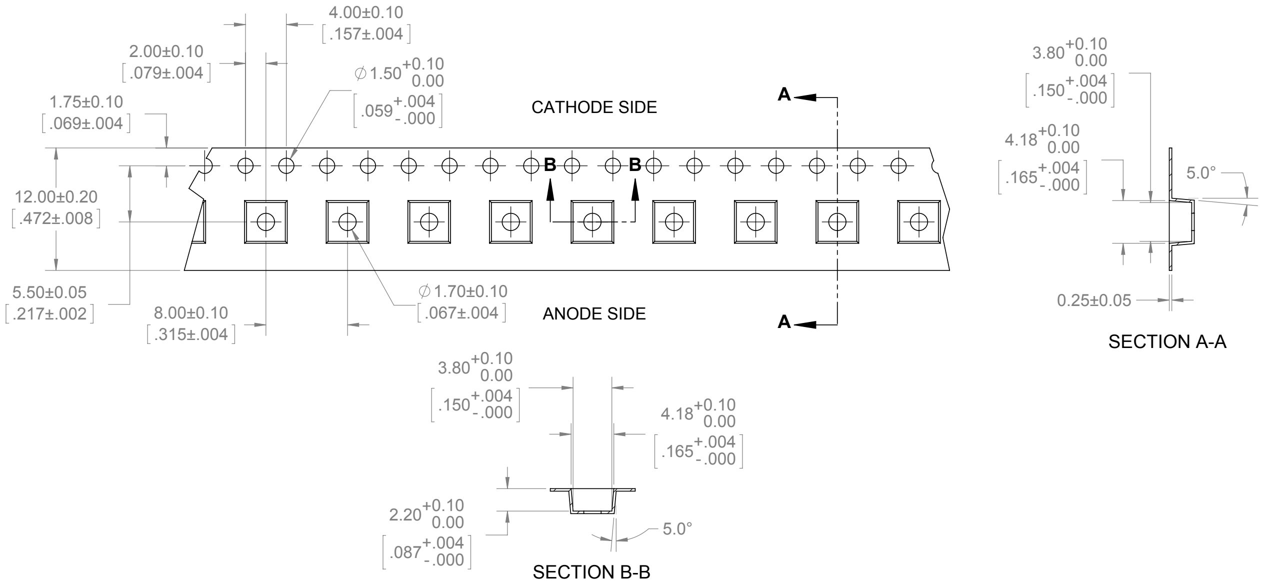
Parameter	Manual Hotplate Reflow	Hot Air Gun Reflow
Heating Time	< 60 sec	
Hotplate Temperature	< 245°C	< 150°C

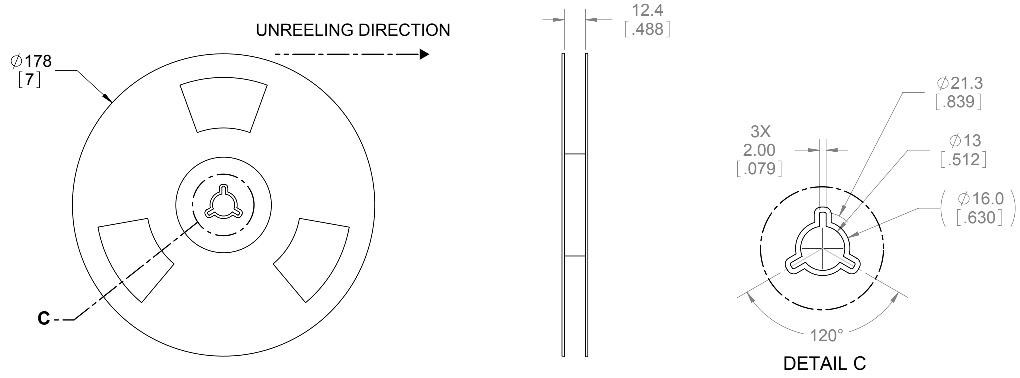
Notes:

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 - B130

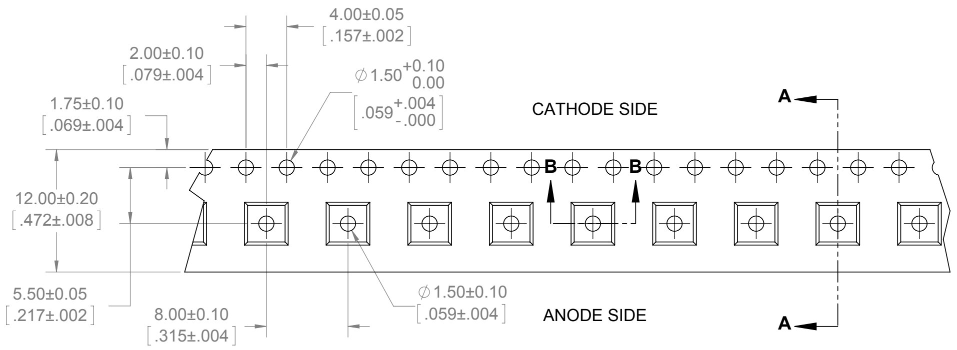


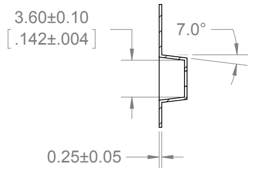


Notes:

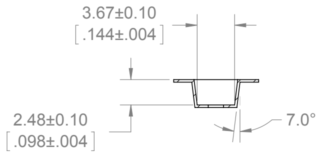
1. Each reel contains 1,000 units of LEDs.
2. Leave minimum 304.8 mm with empty compartments sealed by cover tape for lead in.
3. Leave minimum 457.2 mm with empty compartments sealed by cover tape for trailer.
4. All dimensions must comply to EIA-481-C.
5. Final tape and reel packaging must meet the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

Tape and Reel Outline - B90

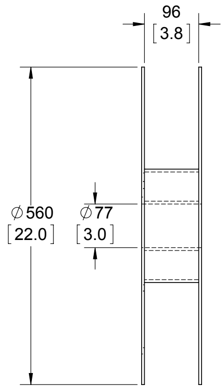


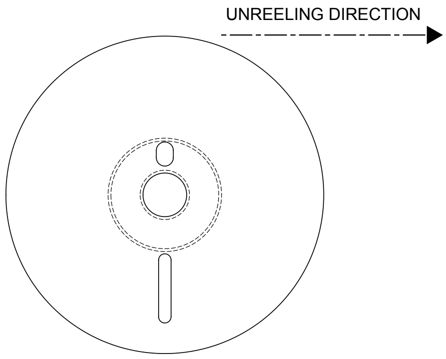


SECTION A-A



SECTION B-B

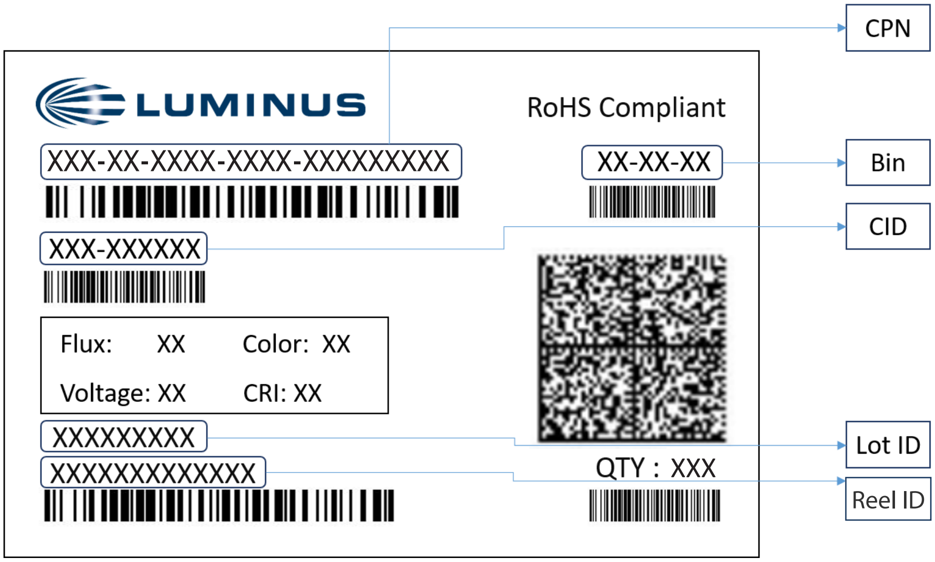




Notes:

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-C.
5. Final tape and reel packaging must meet the requirements of JEDEC -STD-033, LEVEL 2A.

Shipping Label



Label Fields:

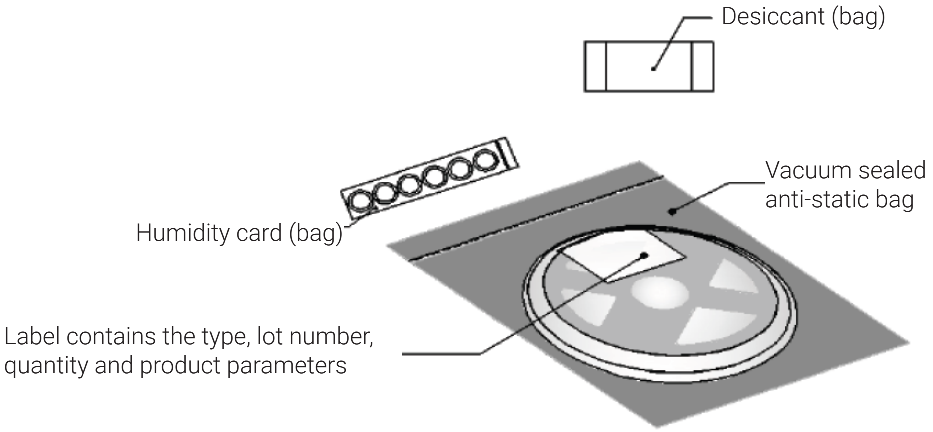
- CPN: Luminus ordering part number
- CID: Customer's part number
- QTY: Quantity of parts per reel
- Flux: Bin as defined on page 3
- Voltage: Bin as defined on page 3
- Color: Bin as defined on page 3
- CRI: NA
- Lot ID & Reel ID: For Luminus internal use

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

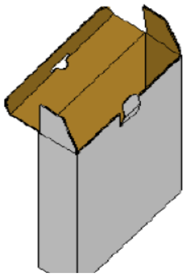
Packaging

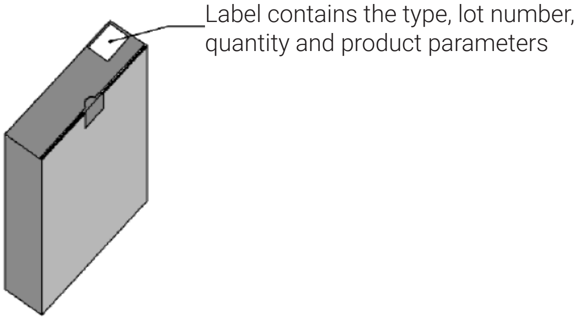
Packaged Reel / Tray



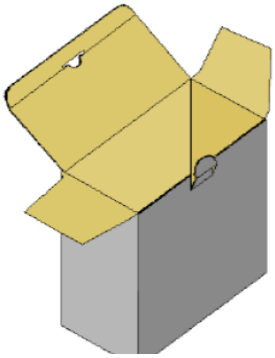
Packaging boxes

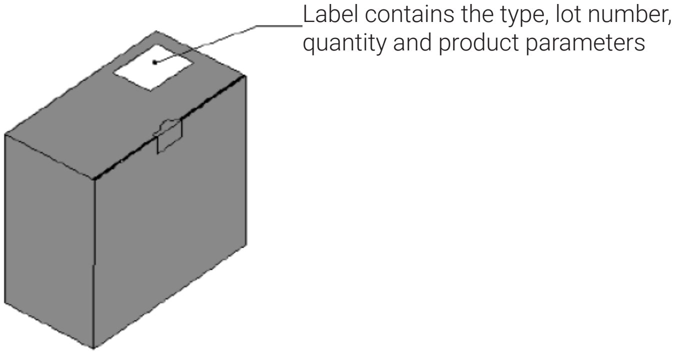
Box Size 1 - 5 reels per box
Size: 22.5 x 24.5 x 6.5 cm





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.

Eye Safety

According to the test specification risk group IEC 62471: 2006-Non-GLS under 1500 mA, this product complies to Risk group 0 (RG0) Exempt.
No photo biological hazard under foreseeable conditions.

For more information, please refer to: https://luminusdevices.zendesk.com/hc/en-us/articles/10532958752397

Revision History

Rev	Date	Description of Change
01	04/12/2018	Initial release - Preliminary Specifications
02	06/15/2018	Updated forward voltage, lumen output and pictures
03	06/23/2020	Updated "Typical Polar Radiation Plot - B90" on page 5
04	04/02/2022	Updated typ. Vf and max Vf Updated maximum junction temperature to 150°C Updated minimum flux bin. Added bin kits. Updated WPE Updated spectrum
05	07/03/2025	Updated template Updated LIVT Updated spectrum