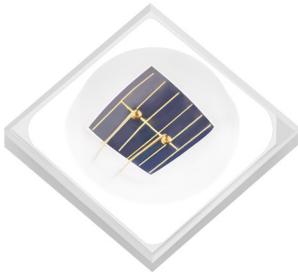


SST-10-IR

Surface Mount Infrared LED



Features

- High power infrared LED
- Built-in ESD protection.
- Low thermal resistance.
- Suitable for all SMT assembly methods.



Applications

- Surveillance Systems / CCTV
- License Plate Scanning
- Automotive Sensing
- Machine Vision
- Night Vision

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Ordering Information

Ordering Part Numbers¹

Peak Wavelength	Radiometric Flux		Lens Angle	Ordering Part Number
	Minimum Flux Bin ¹	Minimum Flux ²		
850 nm	K	265 mW	90 °	SST-10-IR-B90-K850-00
			130 °	SST-10-IR-B130-K850-00
	L	295 mW	90 °	SST-10-IR-B90-L850-00
			130 °	SST-10-IR-B130-L850-00
940 nm	K	265 mW	90 °	SST-10-IR-B90-K940-00
			130 °	SST-10-IR-B130-K940-00

Part Number Nomenclature

SST	10	IR	B###	F###-00
Product Family	Chip Area	Color	Package Configuration	Bin Kit
S: Surface Mount S: Dome Lensed T: Single Emitter	10: 1.0 mm ² class chip	IR: Infrared	B90: 90 deg beam angle B130: 130 deg beam angle Ceramic 3.45 mm x 3.45 mm, see pg. 10 - 12 for details.	Refer to flux bin and wavelength bin table in page3 for more details.

Note:

1. The Ordering Part Number specifies the Minimum Flux Bin in shipment; higher flux bins may be shipped without advance notice. Please refer to 'Radiometric Flux Bins' table for details of all flux bins.



Binning Structure

Radiometric Flux Bins^{1,2}

Flux Bin	Binning @ 350 mA, T _j = 25°C	
	Minimum Flux (mW)	Maximum Flux (mW)
K	265	295
L	295	325
M	325	355
N	355	385
P	385	415

Wavelength Bins^{2,3}

Wavelength Bin	Binning @ 350 mA, T _j = 25°C	
	Minimum Peak Wavelength (nm)	Maximum Peak Wavelength (nm)
850	840	870
940	925	955

Forward Voltage Bins^{2,3}

Voltage Bin	Binning @ 350 mA, T _j = 25°C	
	Minimum Voltage (V)	Maximum Voltage (V)
V1	1.2	1.4
V2	1.4	1.6
V3	1.6	1.8
V4	1.8	2.0

Notes:

1. Luminus maintains a ±6% tolerance on flux measurement.
2. Products are production tested then sorted and packed by bin.
3. Individual bins are not orderable. The wavelength bin as marked on the product label may be followed by a letter which is for internal use only.
4. T_c = Case temperature



Characteristics¹

Parameter (I _f =350 mA, T _j =25°C)		Symbol	Value		Unit
			850nm	940nm	
Forward Current		I _f	350		mA
Typical Output Power		Φ _v	280	225	mW
Forward Voltage	Minimum	V _{f min}	1.2	1.2	V
	Typical	V _{f typ}	1.5	1.4	
	Maximum	V _{f max}	2.0	2.0	
Viewing Angle	B90	2 Ø _{1/2}	90		°
	B130		130		
Typical Output Power	B90	Φ _v	360		mW
	B130		370		
Radiant Intensity at 350 mA, t = 20ms	B90	f _{e typ}	200		mW/Str
	B130		125		
Typical Peak Wavelength		λ _p	850	940	nm
FWHM		Δλ _{1/2}	30		
Electrical Thermal Resistance (junction to case) ²		R _{th JC elec}	3.5		°C/W

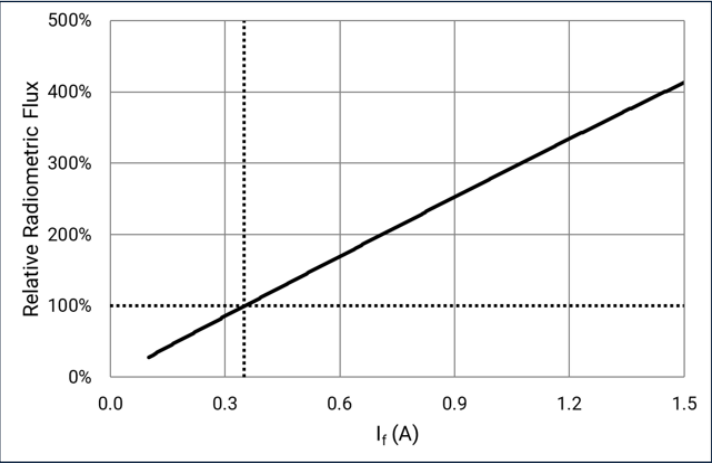
Note:

1. Binning based on operation at a current of 350 mA, 20 ms single pulse and a constant case temperature of $T_j = 25^\circ\text{C}$. Parts are binned and shipped in $V_f=0.2\text{ V}$ increments.



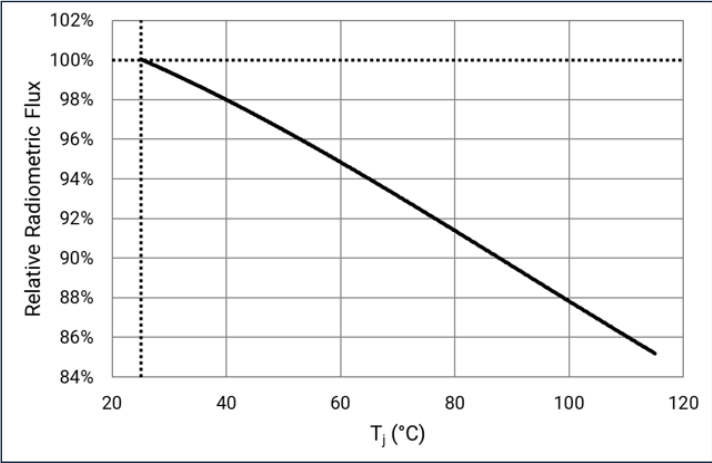
Relative Radiometric Flux vs Forward Current

$T_j = 25^{\circ}\text{C}$



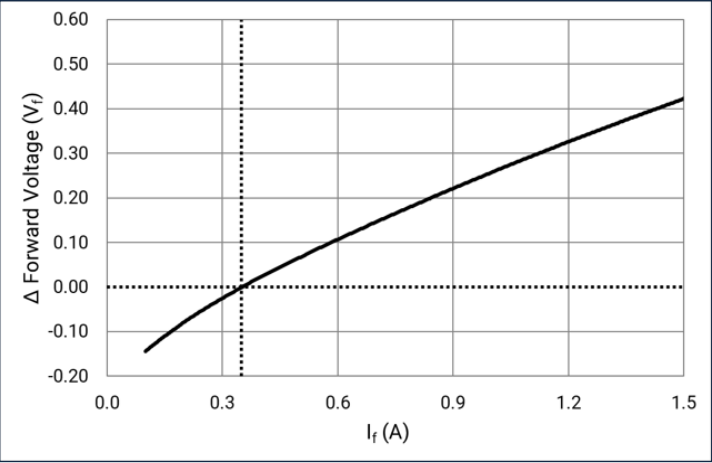
Relative Radiometric Flux vs Temperature

$I_f = 350\text{ mA}$



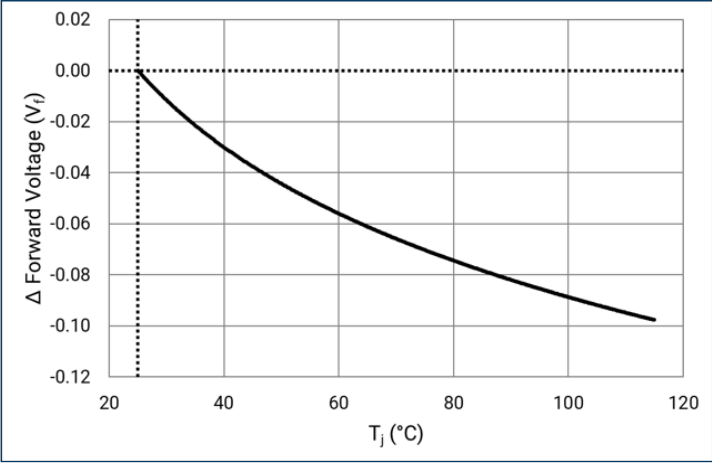
Forward Voltage vs Forward Current

$T_j = 25^{\circ}\text{C}$



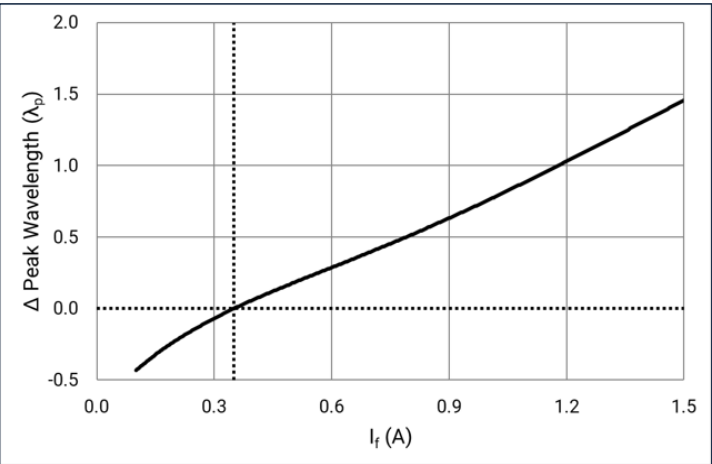
Forward Voltage vs Temperature

$I_f = 350\text{ mA}$



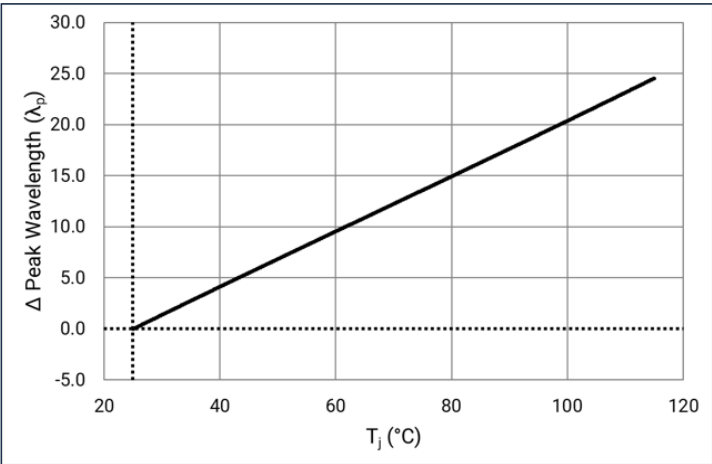
Peak Wavelength Shift vs Forward Current

$T_j = 25^{\circ}\text{C}$



Peak Wavelength Shift vs Temperature

$I_f = 350\text{ mA}$

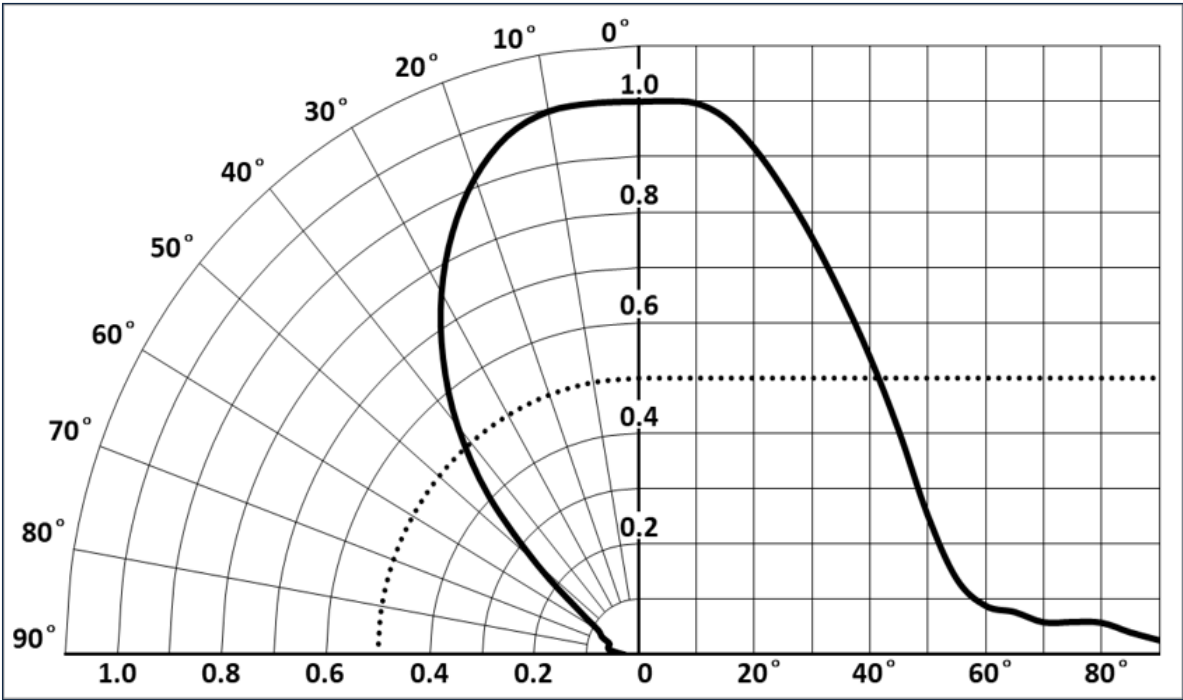




Angular Distribution

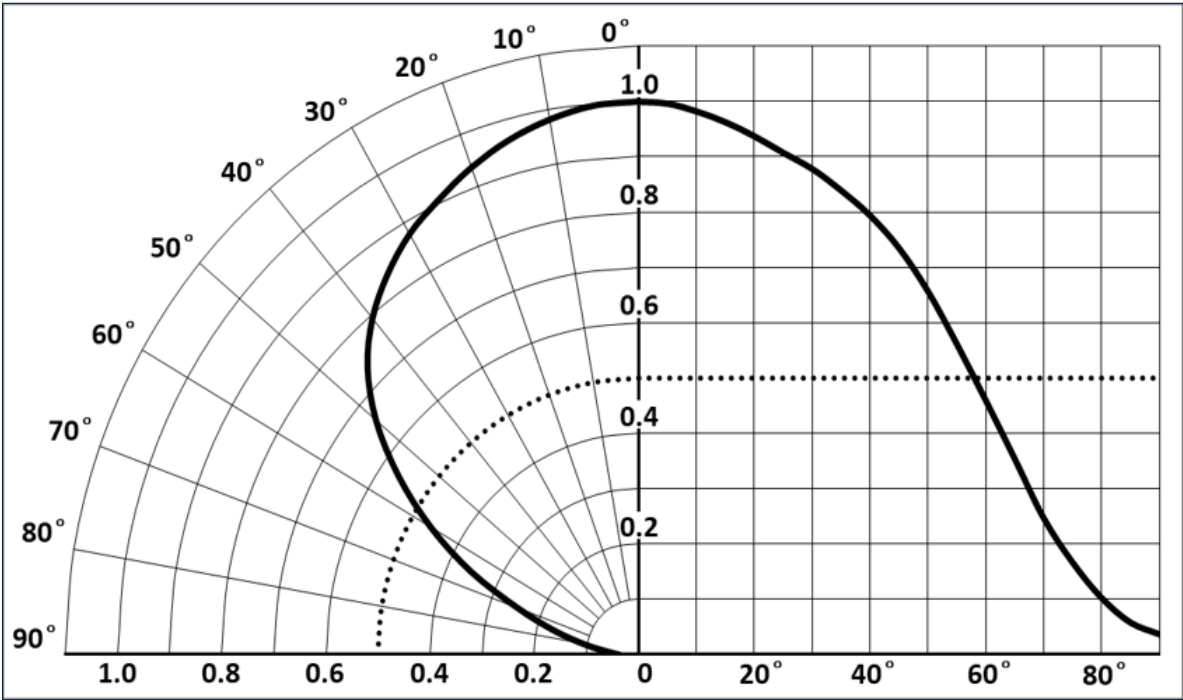
Typical Polar Radiation - B90

$T_c = 25^{\circ}\text{C}$



Typical Polar Radiation - B130

$T_c = 25^{\circ}\text{C}$

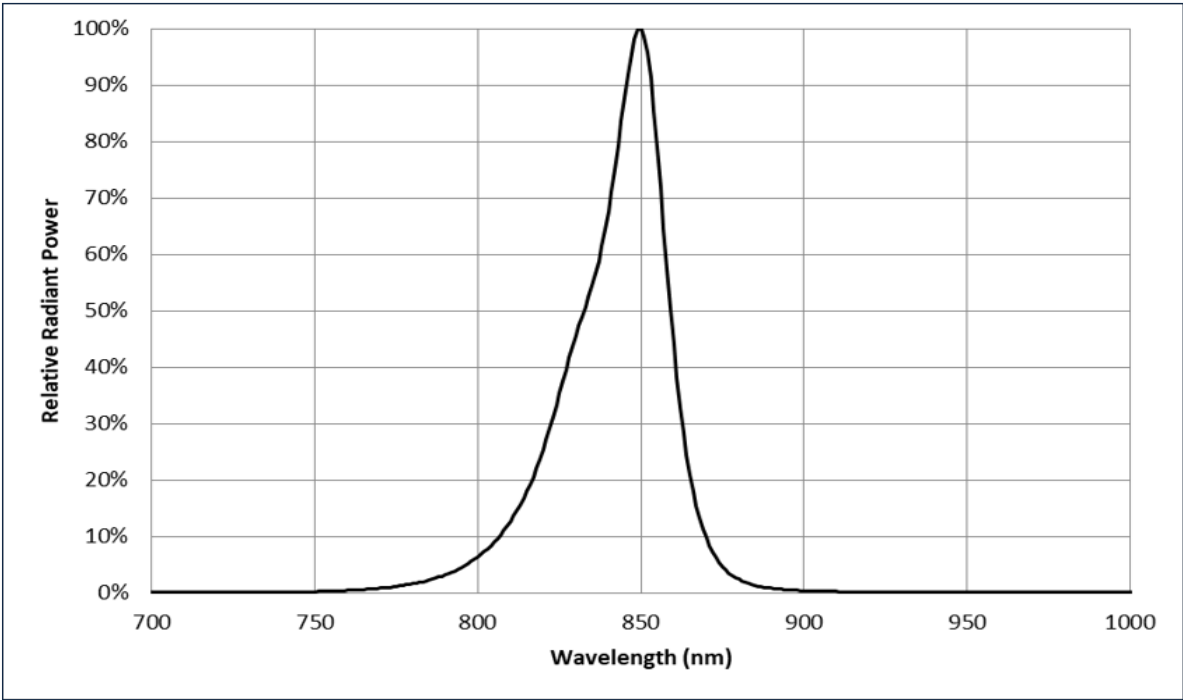




Typical Spectrum

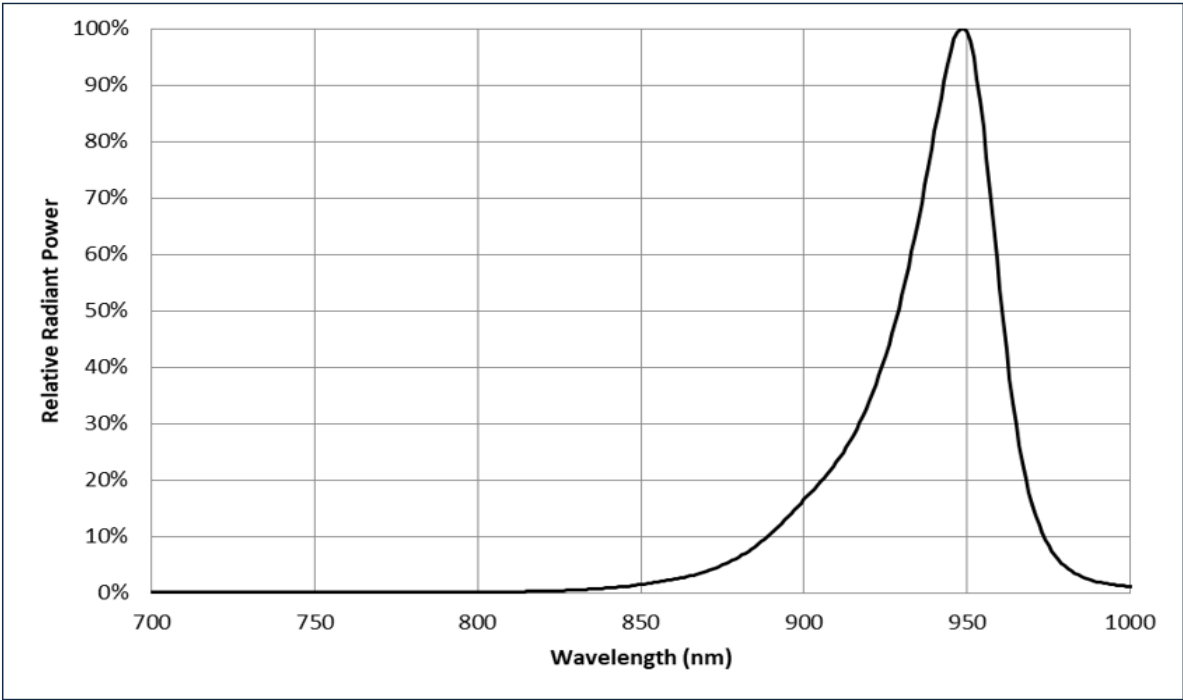
Relative Spectral Power Distribution - 850nm

$I_f = 350 \text{ mA}$; $T_c = 25^\circ\text{C}$



Relative Spectral Power Distribution - 940nm

$I_f = 350 \text{ mA}$; $T_c = 25^\circ\text{C}$





Absolute Maximum Ratings

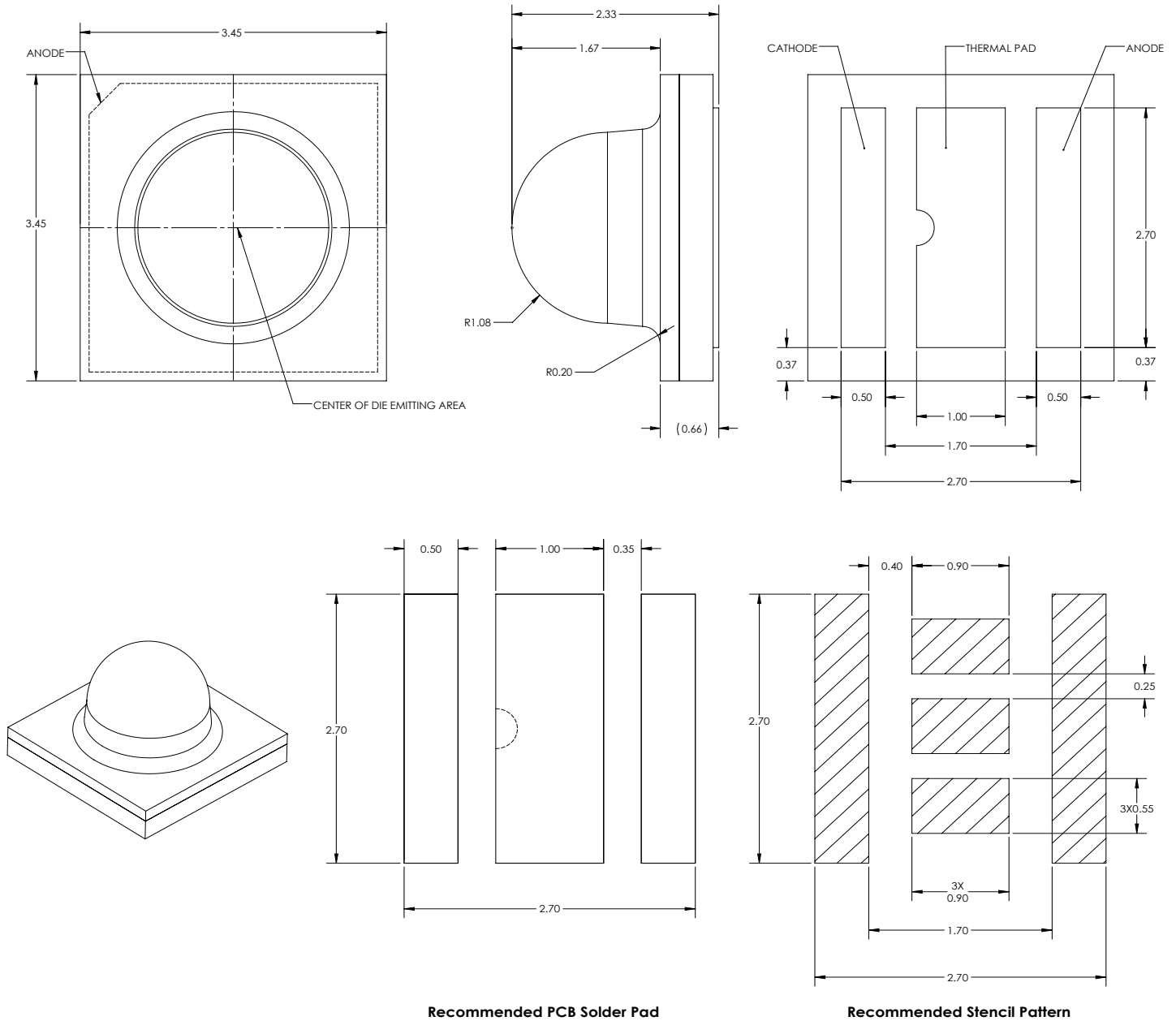
Parameter	Symbol	Values	Unit
Forward Current (CW) ^{1,2}	$I_{f\ CW\ max}$	1.5	A
Power Dissipation	P_D	3.0	W
Reverse Voltage	V_r	5.0	V
Storage Temperature Range	T_{stg}	-40 to 100	°C
Junction Temperature ^{1,2}	T_j	115	
Soldering Temperature	T_s	260	
ESD withstand Voltage ANSI/ESDA/JEDEC JS-001 (HBM)	V_{ESD}	6	kV

Notes:

1. Luminus LEDs are designed for operation up to an absolute maximum forward drive current as specified above. Product lifetime data is specified at typical forward drive currents. Sustained operation at absolute maximum currents will result in a reduction of device lifetime compared to typical forward drive currents. Actual device lifetimes will also depend on junction temperature.
2. Maximum operating case temperature combined with maximum drive current defines the total maximum operating condition for the device. To prevent damage, please operate devices within specified conditions.



Mechanical Dimensions - B90 Package

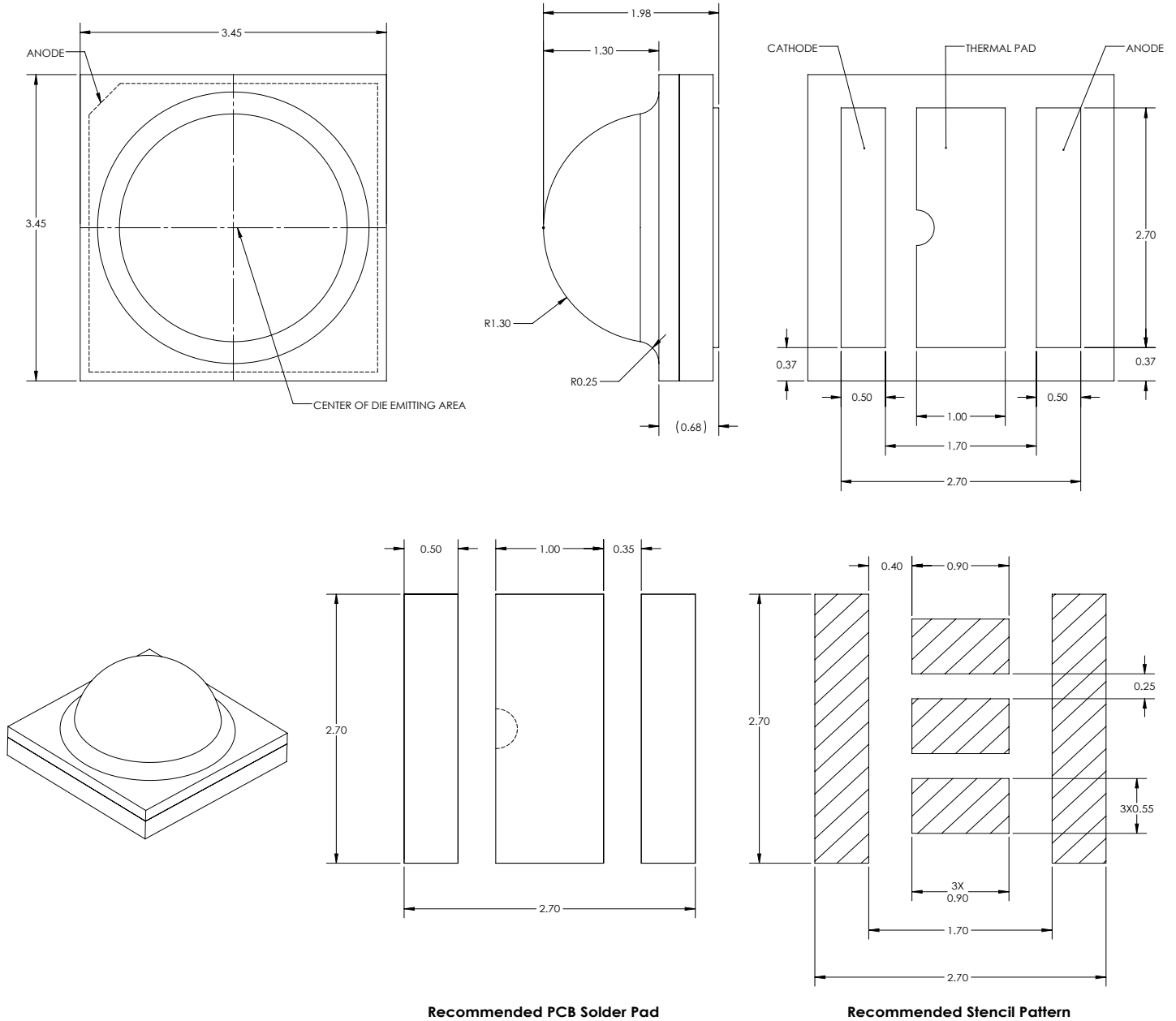


Note:

1. All dimensions are in millimeter ± 0.13 mm.



Mechanical Dimensions - B130 Package



Note:

1. All dimensions are in millimeter ± 0.13 mm.



Mechanical Characteristics

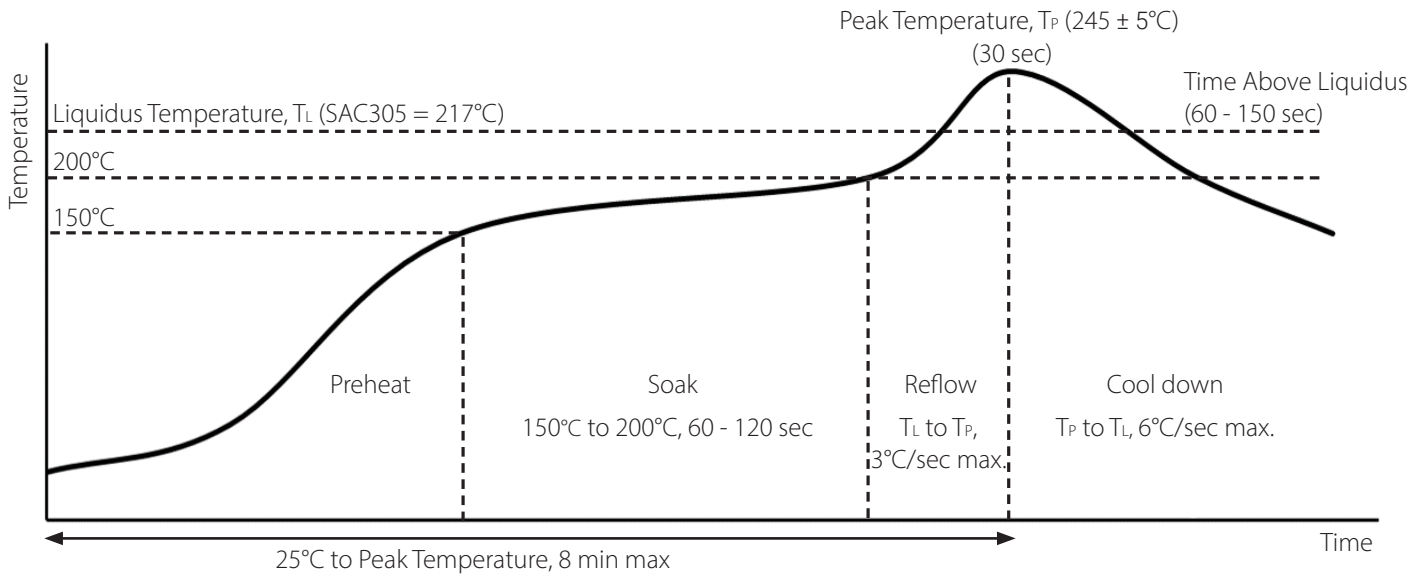
JEDEC Moisture Sensitivity^{1, 2}

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



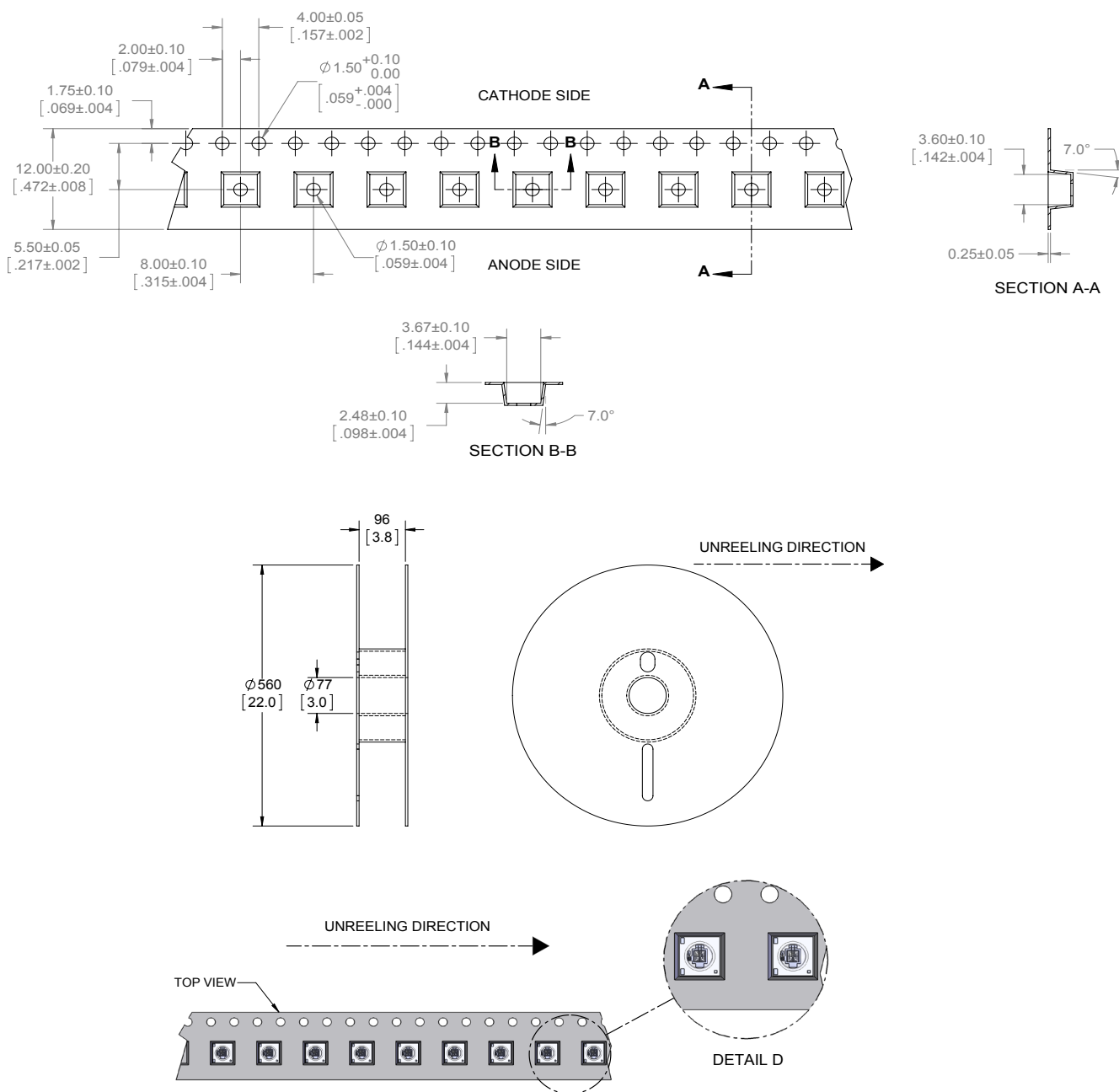
SMT Solder Rework Temperature Guidelines

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

Notes:

- 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.
- Use of a multi-zone IR reflow oven with a nitrogen blanket is recommended.
- 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.
- The actual profile shall be optimized per the PCB design and configuration.
- 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.
- Luminus recommends to use the solder paste data sheet information as a starting point in time-temperature process development.
- 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->
- For any technical questions about soldering process, please contact Luminus at techsupport@luminus.com.

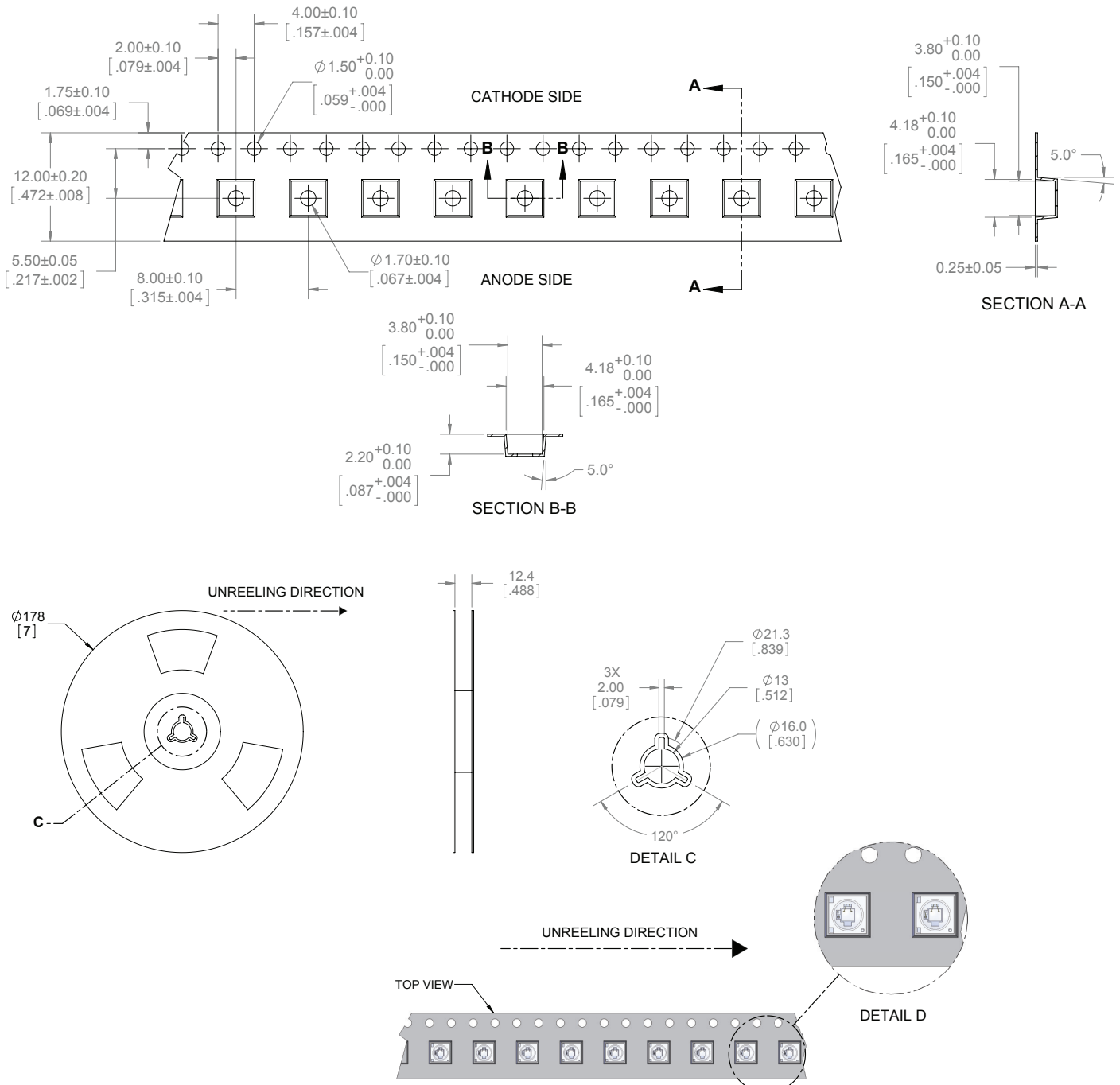
Tape and Reel Outline - B90



Notes:

1. Each reel contains 500 units.
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.

Tape and Reel Outline - B130



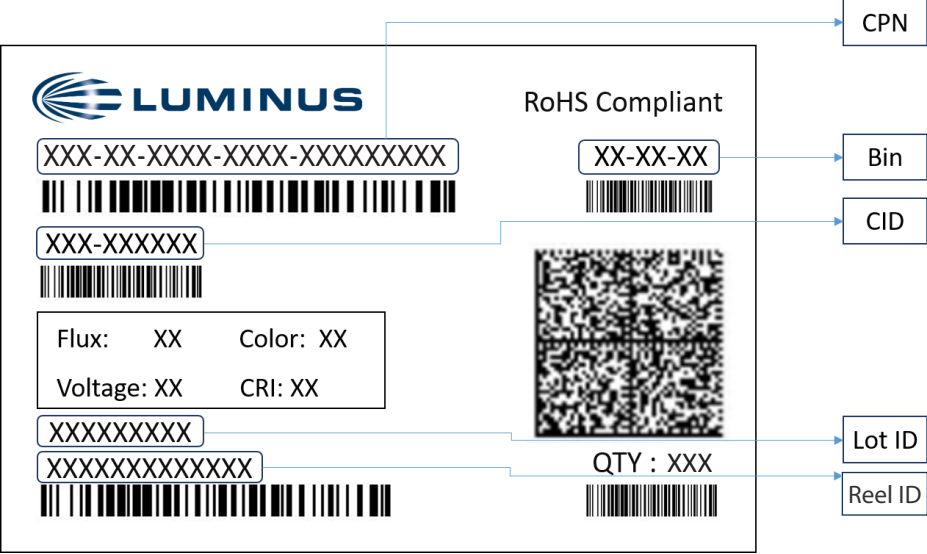
Notes:

1. Each reel contains 1,000 units.
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 on Packaging Box



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: NA
- CRI: NA
- Lot ID & Reel ID: For Luminus internal use

Packing Configuration:

- 500 units per reel for B90 package, 1,000 units per reel for B130 package
- Each reel is placed in an anti-static moisture barrier bag
- Partial reep may be shipped
- Shipping label is placed on top of each packaging box



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.



Notes

Corrosion Robustness

1. The LEDs were tested in accordance with the AEC-Q102 Rev A standard. Test condition used was: 40 °C / 90 % RH / 15 ppm H₂S / 14 days.
2. The LEDs passed the optical and electrical Pass/Fail criteria as defined in AEC-Q102 Rev A – “Appendix 5: Parametric Test Requirements and Failure Criteria”
3. Corrosion test: Class 3B based on the corrosion class definition as below:

Class	Grade A	Grade B	Test Condition
0	NA	Discoloration possible	Not Tested
1	No visible discoloration	Discoloration possible	25 °C / 75 % RH / 200ppb SO ₂ , 200ppb NO ₂ , 10ppb H ₂ S, 10ppb Cl ₂ / 21 days (EN 60068-2-60 (Method 4))
2	No visible discoloration	Discoloration possible	25 °C / 75 % RH / 10ppm H ₂ S / 21 days (IEC 60068-2-43)
3	No visible discoloration	Discoloration possible	40 °C / 90 % RH / 15ppm H ₂ S / 14 days (stricter than IEC 60068-2-43)



Revision History

Rev	Date	Description of Change
01	01/13/2016	Initial release.
02	03/28/2016	Updated Binning and Angular Distribution Data, Added 90deg Tape and Reel.
03	02/08/2022	Updated Solder Profile, Precaution for use & add flux bin.
04	05/08/2025	Updated to new template. Update photo, Ordering Part Number, Characteristics, Mechanical Drawing and Notes

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