

SST-10-R

Red LED

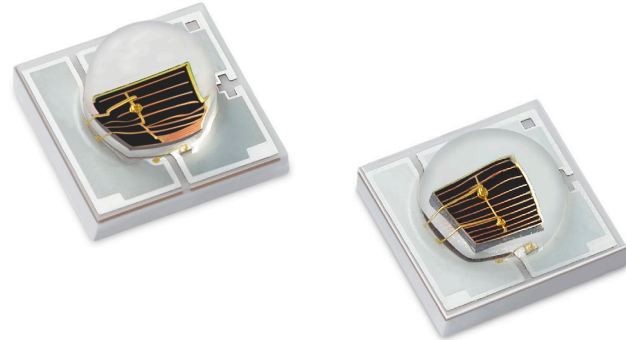


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Features:

- 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
- Built-in ESD Protection
- RoHS and REACH compliant

Applications

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

Ordering Information

The following table describes the bin kit ordering codes available for the SST-10 Red LEDs. Each bin kit specifies a minimum flux as well as specific chromaticity bins allowed. Please note that within each kit a maximum flux is not specified and as a result Luminus may ship any part meeting or exceeding the minimum flux specification. Shipments will always meet the listed chromaticity bins. For information on ordering bin kits not listed below, please contact Luminus.

Ordering Part Numbers

Color	Luminous Flux		Wavelength Bins	Ordering Part Numbers
	Bin Kit Flux Code	Min. Flux		
Red	G	270	615,620,625	SST-10-R-B90-G630
				SST-10-R-B130-G630
	H	310	615,620,625	SST-10-R-B90-H630
				SST-10-R-B130-H630
	J	350	615,620,625	SST-10-R-B90-J630
				SST-10-R-B130-J630

Part Number Nomenclature

SST — 10 — R — <B###> — <FFWW>

Product Family	LED Emission Area	Color	Package Configuration	Bin kit
SST: Surface Mount Package	10: 1.0 mm ²	R: Red	See Mechanical Drawing section	Flux and Wavelength bin kit code - See available ordering codes

Binning Structure^{1,2}

Flux Bins

Color	Flux Bin (FF)	Minimum Flux (mW)	Maximum Flux (mW)
Red	G	270	310
	H	310	350
	J	350	390
	K	390	430

Dominant Wavelength Bins

Color	Wavelength Bin (WWW)	Minimum Wavelength (nm)	Maximum Wavelength (nm)
Red	615	615	620
	620	620	625
	625	625	630

Note 1: Test condition at drive current 350 mA, 20 ms single pulse at 25°C.

Note 2: Luminus maintains a +/- 6% tolerance on flux measurements.

Absolute Maximum Ratings¹

Parameter	Symbol	Rating	Unit
Forward Current ²	I	1.5	A
Power Dissipation	P _D	5.0	W
Reverse Voltage	V _R	5	V
Storage Temperature	T _{STG min}	-40	°C
	T _{STG max}	100	
Junction Temperature ²	T _J	115	°C
ESD Sensitivity (HBM)	V _B	6000	V

Note 1: Ratings are based on operation at a constant junction temperature of $T_J = 25^\circ\text{C}$. Test conditions: 350 mA, 20 ms pulse at 25°C .

Note 2: Maximum operating case temperature combined with maximum drive current defines the total maximum operating condition for the device. To prevent damage, please follow derating curves for all operating conditions.

Device Characteristics¹

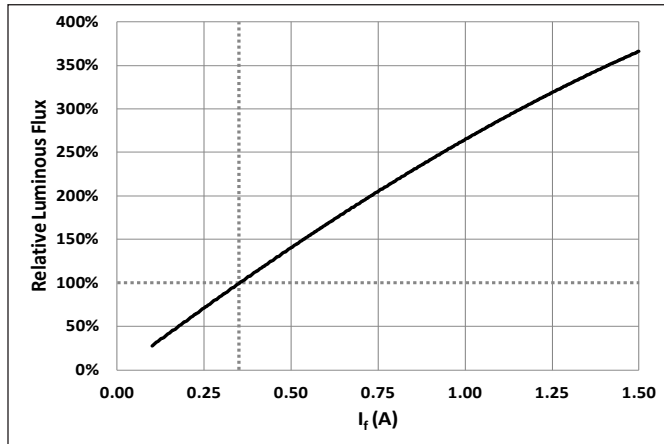
Parameter		Symbol	Value	Unit
Forward Current ²	typ	I_f	350	mA
	max	$I_{f\ max}$	1,500	
Output Power	typ	Φ_r	360	mW
Forward Voltage	min	$V_{f\ min}$	1.8	V
	typ	V_f	2.1	
	max	$V_{f\ max}$	2.6	
Wall-Plug Efficiency	typ	WPE	49	%
Viewing Angle	typ	$2\ \varnothing_{1/2}$	80 or 120	degrees
Dominant Wavelength	min	$\lambda_{d\ min}$	615	nm
	typ	λ_d	621	
	max	$\lambda_{d\ max}$	627	
FWHM	min	$\Delta\lambda_{1/2\ min}$	16	nm
	typ	$\Delta\lambda_{1/2}$	20	
	max	$\Delta\lambda_{1/2\ max}$	24	
Thermal Resistance (Electrical)	typ	R_{th}	4.3	°C/W
Thermal coefficient of radiometric flux	typ		-0.8	%/°C
Thermal coefficient of forward voltage	typ		-2.0	mV/°C
Thermal coefficient of wavelength	typ		0.07	nm/°C

Note 1: Ratings are based on operation at a constant junction temperature of $T_j = 25^\circ\text{C}$. Test conditions: 350 mA, 20 ms pulse at 25°C .

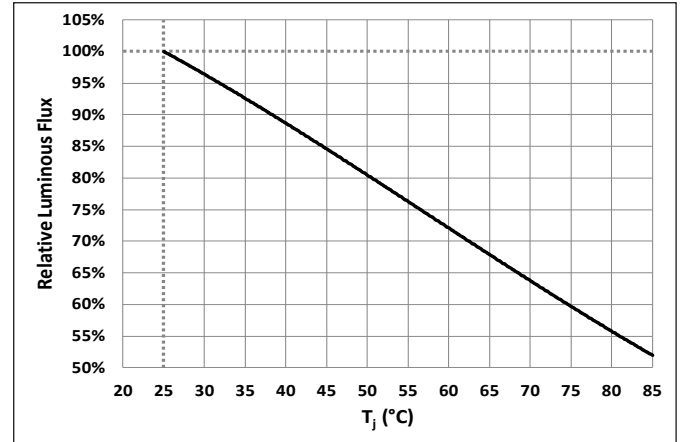
Note 2: To prevent damage, please refer to operating conditions and derating curves for appropriate maximum operating conditions.

Relative Luminous Flux vs. Forward Current

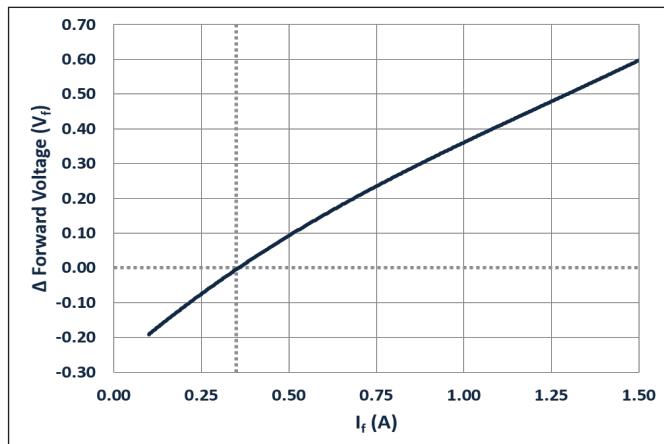
$$\Phi_v / \Phi_v(0.35 \text{ A}), T_j = 25^\circ\text{C}$$


Relative Luminous Flux vs. Temperature

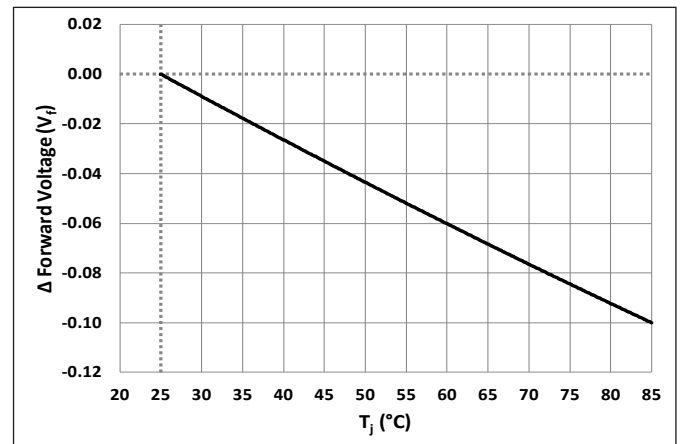
$$\Phi_v / \Phi_v(25^\circ\text{C}), I_f = 0.35 \text{ A}$$


Relative Forward Voltage vs. Forward Current

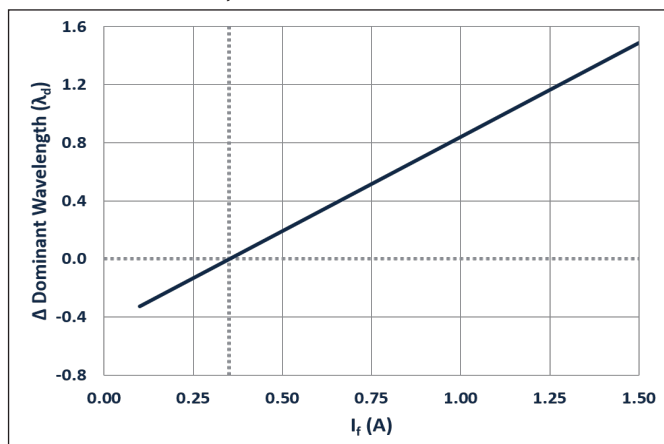
$$V_f = f(I_f), T_j = 25^\circ\text{C}$$


Relative Forward Voltage vs. Temperature

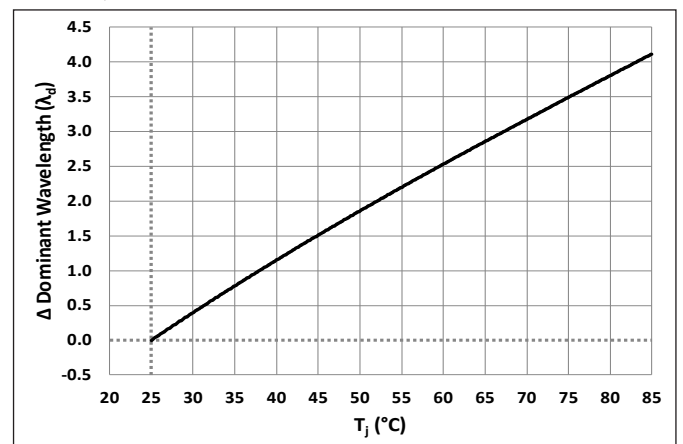
$$\Delta V_f = V_f(T_j) - V_f(25^\circ\text{C}), I_f = 0.35 \text{ A}$$


Dominant Wavelength Shift vs. Forward Current

$$\Delta\lambda = \lambda(I_f) - \lambda(0.35 \text{ A}), T_j = 25^\circ\text{C}$$

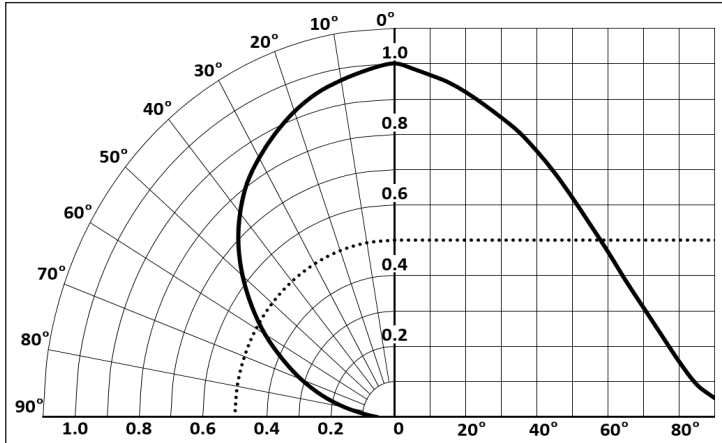

Dominant Wavelength Shift vs. Temperature

$$\Delta\lambda = \lambda(T_j) - \lambda(25^\circ\text{C}), I_f = 0.35 \text{ A}$$

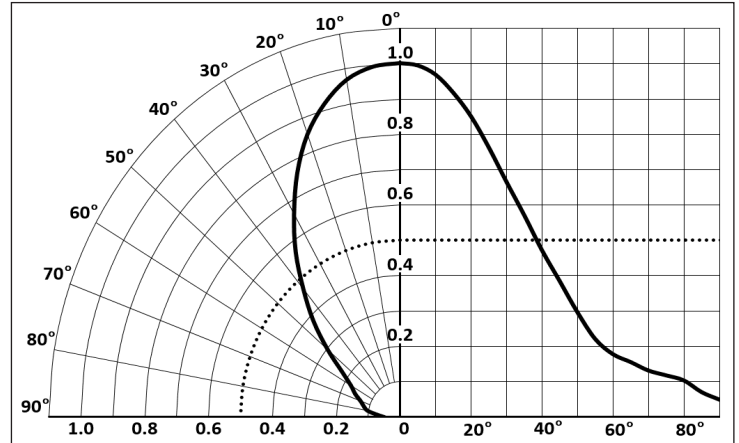


Angular Distribution and Spectrum

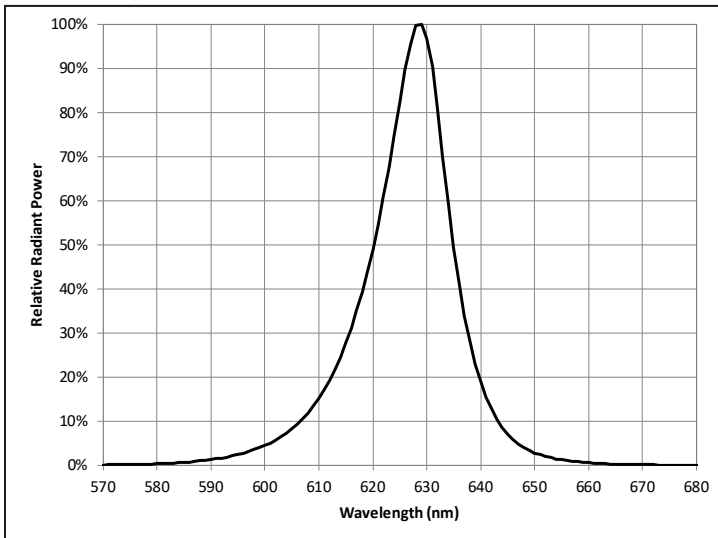
Typical Angular Distribution - B130

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


Typical Angular Distribution - B90

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


Typical Spectrum

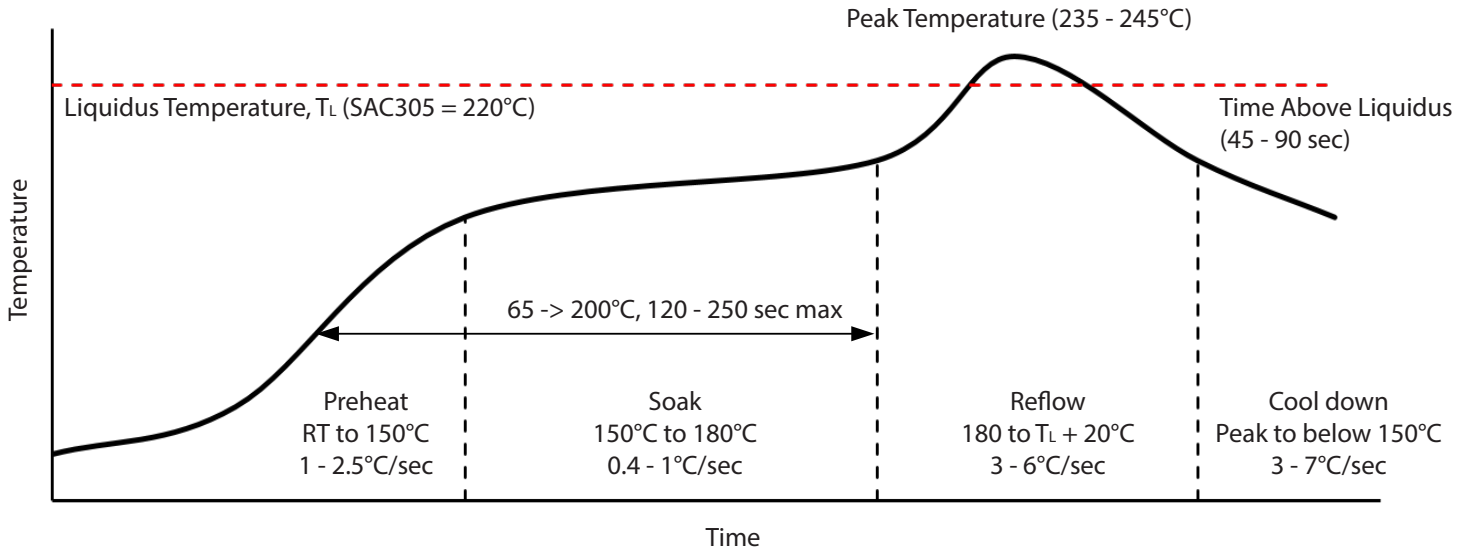
 $I_f = 0.35\text{ A}, T_j = 25^\circ\text{C}$


Conversion Table - Radiometric Power - Lumens

 $I_f = 0.35\text{ A}, T_j = 25^\circ\text{C}$

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

Soldering Profile

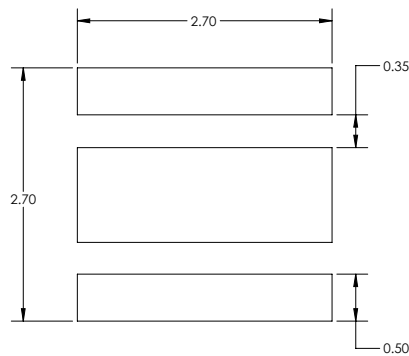
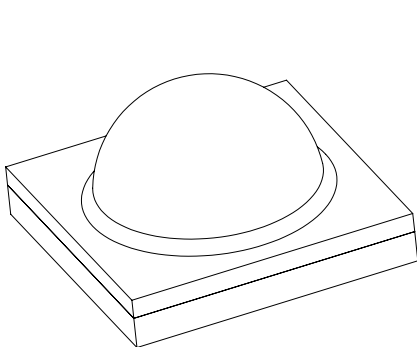
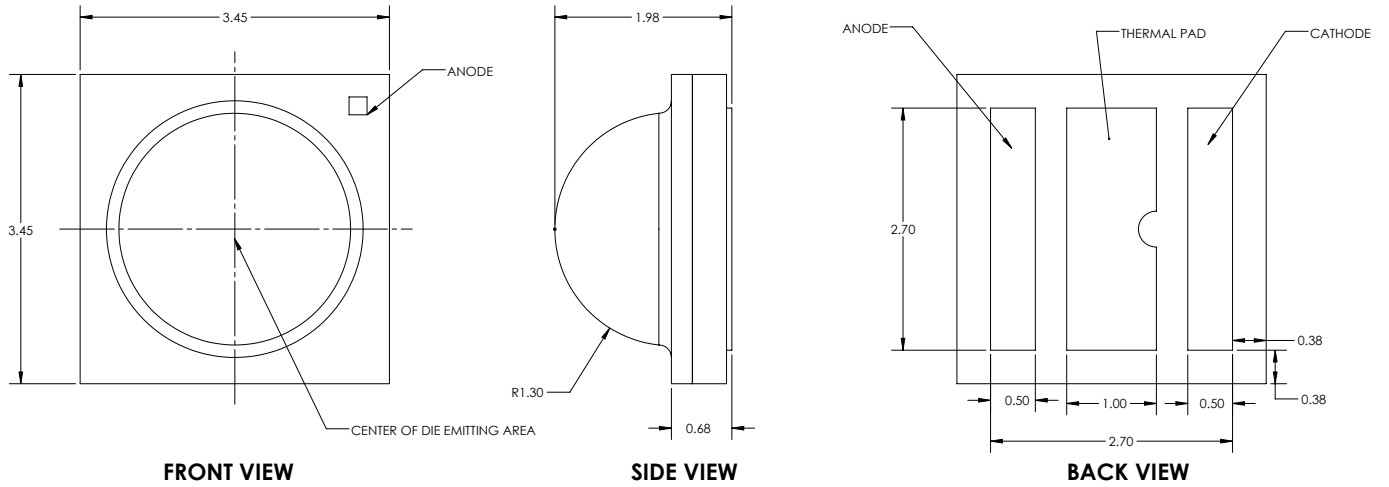


SMT Rework Guideline	Manual Hotplate Reflow	Hot Air Gun Reflow
Heating Time	< 60 sec	
Hotplate Temperature	< 245°C	< 150°C

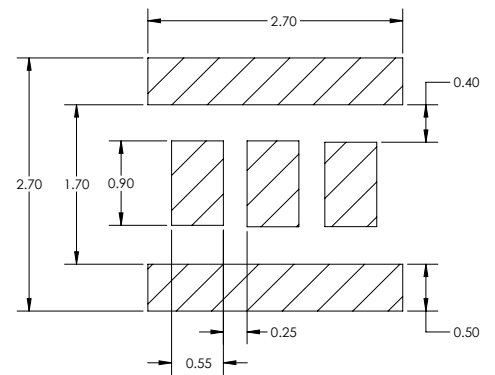
Notes

- Product complies to Moisture Sensitivity Level 1 (MSL 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.
- During the pick and place process, axial forces on the dome (or window) should not exceed 0.5 Newtons (N).
- 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. Temperature is referenced to the center of the PCB.
- 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.

Mechanical Dimensions - B130 Package

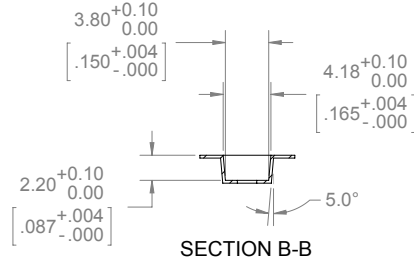
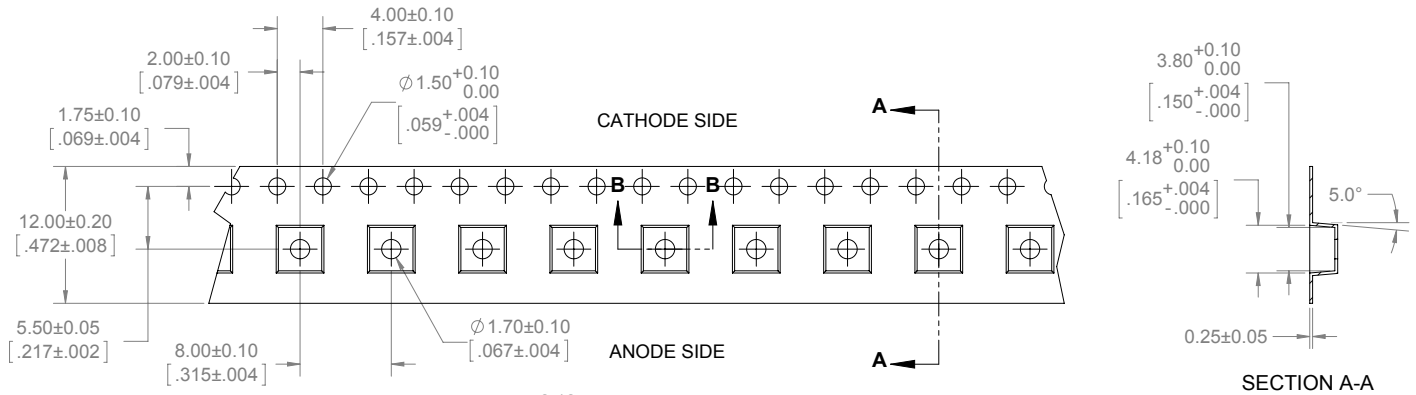


Recommended PCB Solder Pad



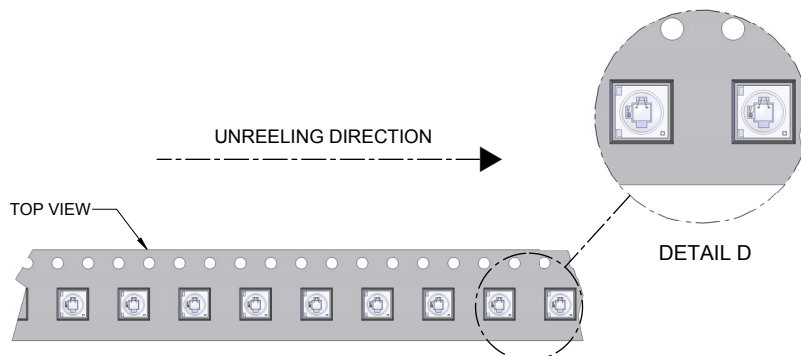
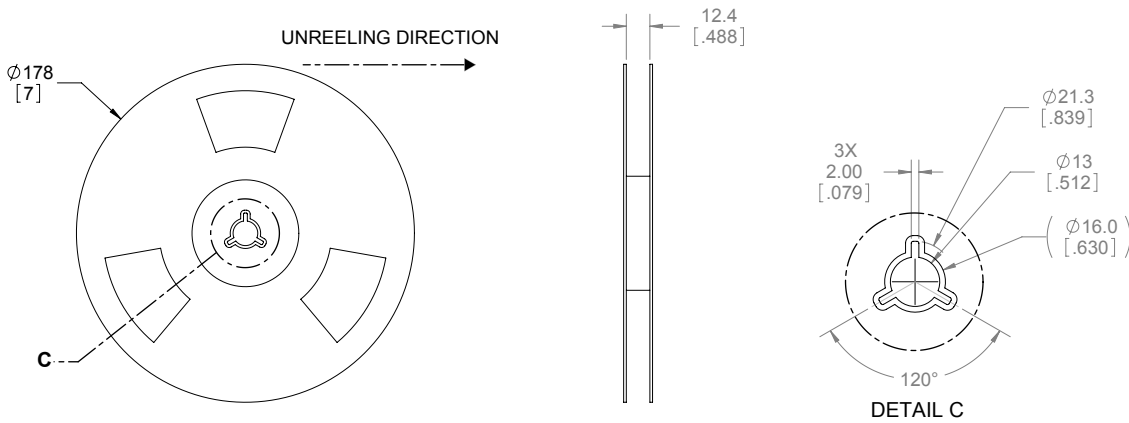
Recommended Stencil Pattern

Tape and Reel - B130 Package

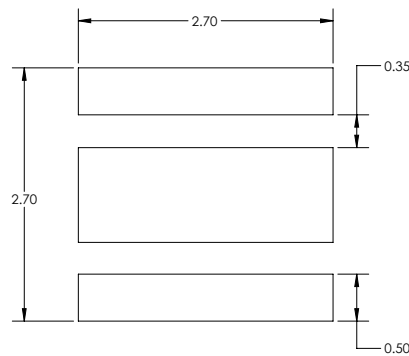
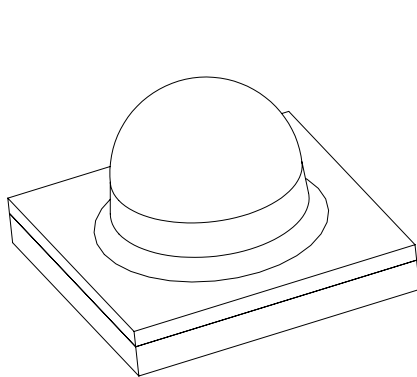
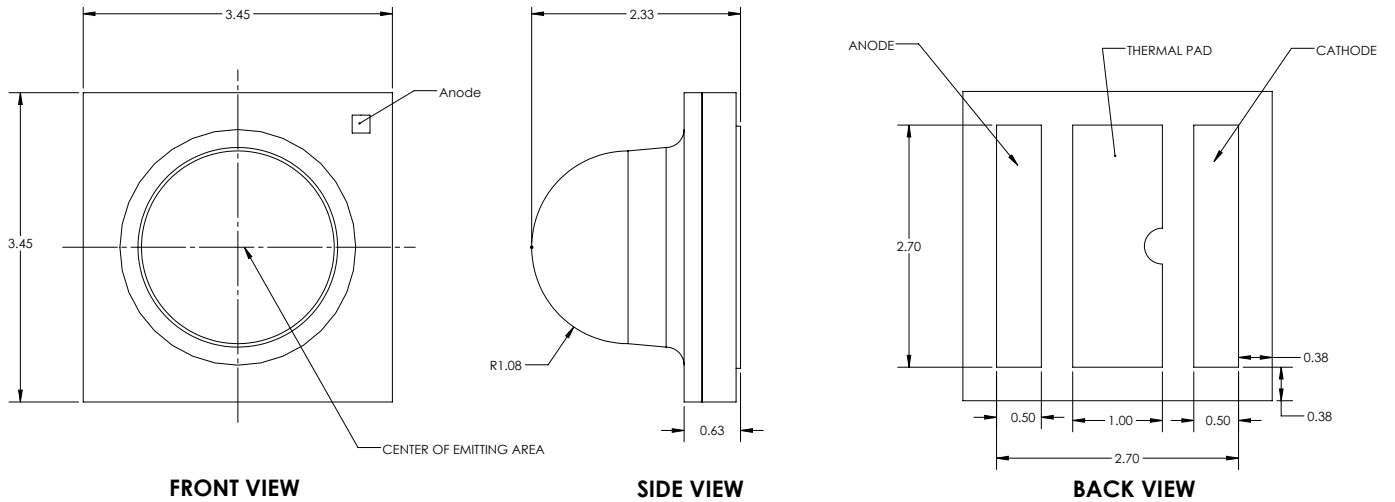


NOTES:

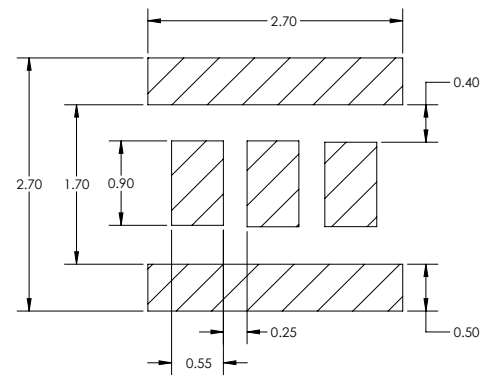
1. FINAL TAPE AND REEL PACKAGING MUST MEET THE REQUIREMENTS OF JEDEC-STD-033, LEVEL 2A.
2. LEAVE 304.8mm [12.00 in] OF TAPE EMPTY FOR LEAD IN (38 EMPTY POCKETS).
3. LEAVE 457.2mm [18.00 in] OF TAPE EMPTY FOR TRAILER (57 EMPTY POCKETS).
4. MUST COMPLY TO EIA-481-C-2003



Mechanical Dimensions - B90 Package

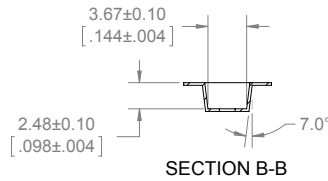
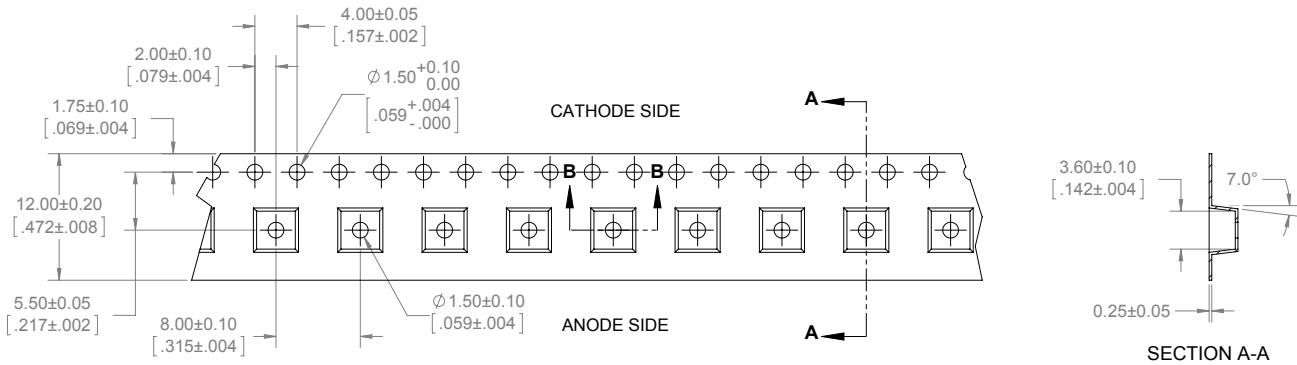


Recommended PCB Solder Pad



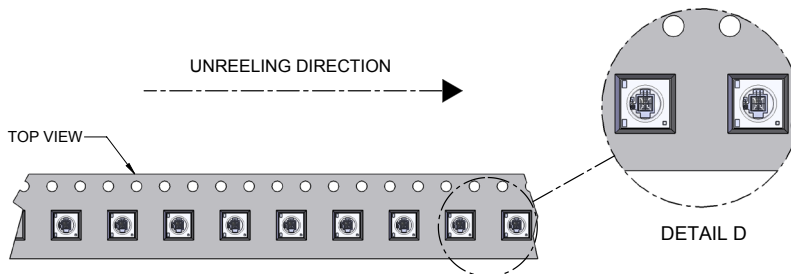
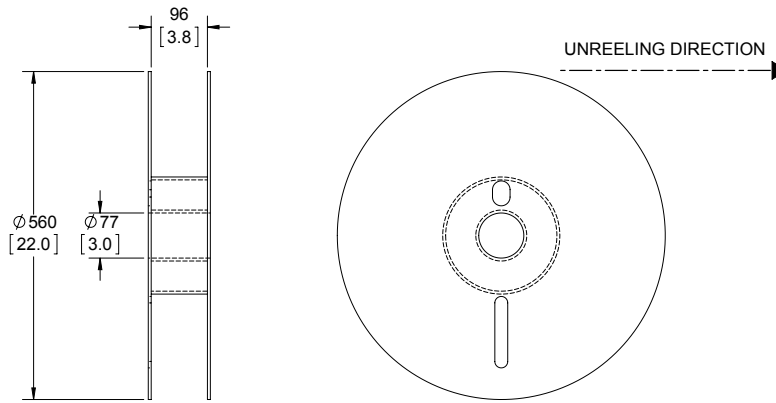
Recommended Stencil Pattern

Tape and Reel - B90 Package



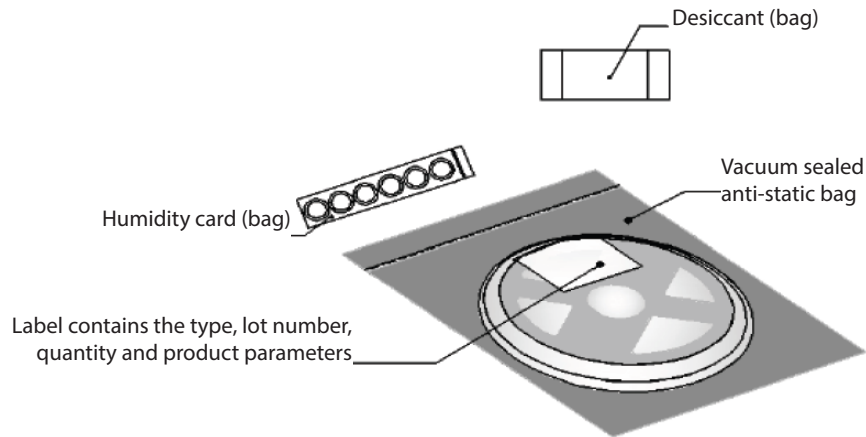
NOTES:

1. FINAL TAPE AND REEL PACKAGING MUST MEET THE REQUIREMENTS OF JEDEC-STD-033, LEVEL 2A.
2. LEAVE 304.8mm [12.00 in] OF TAPE EMPTY FOR LEAD IN (38 EMPTY POCKETS).
3. LEAVE 457.2mm [18.00 in] OF TAPE EMPTY FOR TRAILER (57 EMPTY POCKETS).
4. MUST COMPLY TO EIA-481-C-2003

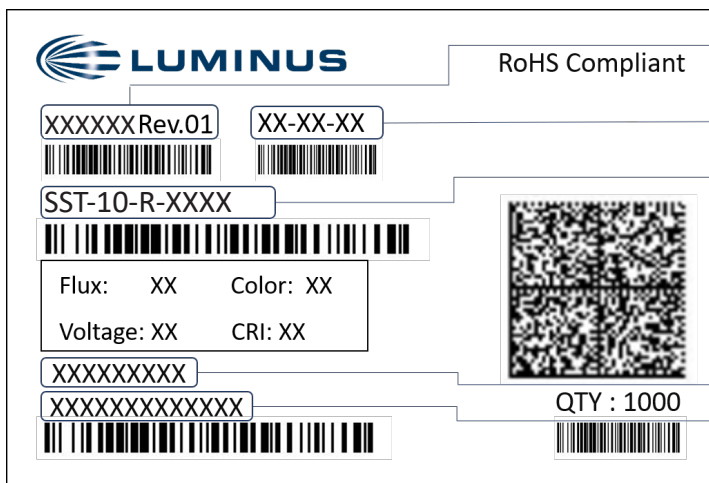


Packaging Information

Packaging Reel



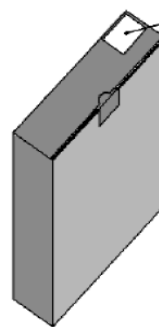
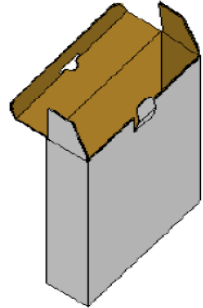
Label on Reel



Label Information	
CPN	Luminus ordering part number
MPN	For Luminus internal use
QTY	Quantity of parts per reel
Flux	Single flux bin code (see <i>Flux Bins</i> table on page 3)
Color	Single Dominant Wavelength bin code (see <i>Dominant Wavelength Bins</i> table on page 3)
Voltage	N/A
CRI	N/A
Lot ID & Reel ID	For Luminus internal use

Packaging Boxes

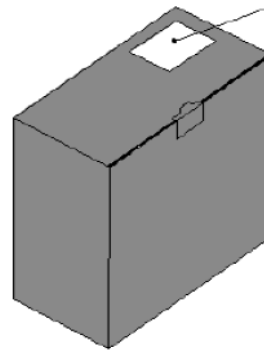
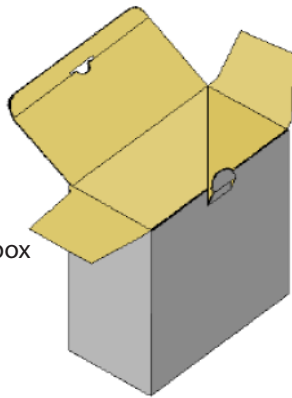
Box Size 1 - 5 reels per box
Size: 22.5 x 24.5 x 6.5 cm



Label contains the type, lot number, quantity and product parameters

*Capacity 5 reels per box


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



Label contains the type, lot number, quantity and product parameters


Shipping Label on Packaging Box

Multiple labels are attached to the box (one label per reel inside the box)




RoHS Compliant

SST-10-R-XXXX-XXXXX Rev.01 XX-XX-XX




XXX-XXXXXX




Flux: XX	Color: XXX
Voltage: XX	CRI: XX

XXXXXXXXXX

XXXXXXXXXXXXXXXXXX



QTY : 1000



CPN

Bin

CID

Lot ID

Reel ID

Label Information	
CPN	Luminus ordering part number
CID	Customer ID
QTY	Quantity of parts per reel
Flux	Single flux bin code (see <i>Flux Bins</i> table on page 3)
Voltage	N/A
Color	Single Dominant Wavelength bin code (see <i>Dominant Wavelength Bins</i> table on page 3)
CRI	N/A
Lot ID & Reel ID	For Luminus internal use

Precautions for Use

Storage:

1. Before opening the package

The LEDs should be kept at a temperature lower than 40°C and relative humidity lower than 90%. The LEDs should be used within a year. When storing the LEDs, moisture proof package with absorbent material (silica gel) is recommended.

2. After opening the package

The LEDs should be kept at temperature lower than 30°C and relative humidity lower than 60%. The LEDs should be soldered within 168 hours (7 days) after opening the moisture proof package.

If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with moisture proof package within absorbent material (silica gel). It is also recommended to return the unused LEDs to the original moisture proof package and to seal the moisture proof package again.

If the moisture absorbent material (silica gel) vapors or expires the expiration date, baking treatment should be performed by using the following conditions : 60°C for 20 hours.

The LEDs electrode and leadframe comprise a silver plated copper alloy. The silver surface may be affected by environments. Please avoid conditions which may cause the LEDs to corrode or discolored. The corrosion or discoloration might lower solderability or affect optical characteristics.

Please avoid rapid transition in ambient temperature, especially in high humidity environments where condensation can occur.

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 a anti-electrostatic wristband or anti-electrostatic gloves 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.

Revision History

Rev	Date	Description of Change
01	06/10/2016	Initial Release - Preliminary Specifications
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 picture