SST-08-UV
Surface Mount UVA LED

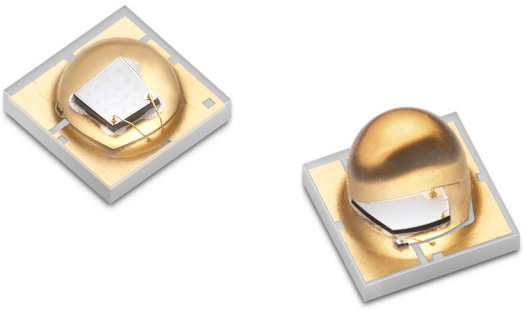

Table of Contents

Features

- High Power UV-A LED series with peak wavelength options of 365 nm, 385 nm, 395 nm and 405 nm
- Sulfur and corrosion resistant package for demanding applications
- Industry standard 3.5 mm x 3.5 mm package
- Drive current up to 750 mA
- Available in 130° and 40° viewing angle
- Built-in ESD Protection
- Environmentally friendly: REACH, RoHS and Halogen compliant

Applications

- Horticulture
- Curing inks, coating and adhesives
- Photocatalytic air/water purification
- Medical and Analytic instrumentation
- Diagnostic
- Fluorescence Imaging

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Ordering Information

The table below lists ordering part numbers available for SST-08-UV LEDs. The part number includes a bin kit, a group of flux and wavelength bins described in page 3, that are shippable for a given ordering part number. Individual flux or wavelength bins are not orderable . Flux bin listed the minimum bin shipped - higher bins may be included at Luminus' discretion.

Ordering Part Numbers

Wavelength Range	Wavelength Bins	Radiometric Flux		Solder Pad	Viewing Angle	Ordering Part Number
		Min. Flux Bin	Min. Flux (mW)			
365-375	365, 370	D	630	A	40°	SST-08-UV-A40-D365-00
		D	630	A	130°	SST-08-UV-A130-D365-00
380-390	380, 385	E	720	A	40°	SST-08-UV-A40-E385-00
		F	810	A	130°	SST-08-UV-A130-F385-00
390-400	390, 395	E	720	A	40°	SST-08-UV-A40-E395-00
		F	810	A	130°	SST-08-UV-A130-F395-00
400-410	400, 405	E	720	A	40°	SST-08-UV-A40-E405-00
		F	810	A	130°	SST-08-UV-A130-F405-00

Part Number Nomenclature

SST — 08 — UV — <A###> — <FWWW-00>

Product Family	Chip Area	Color	Package Configuration	Bin kit
SST : Surface Mount Package	08 : 0.8 mm^2 class	UV	A130 : A Solder pad 130° Viewing Angle A40 : A Solder pad 40° Viewing Angle	Flux (F) and Wavelength(WWW) bin, See ordering informaton

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Binning Structure

SST-08-UV LEDs are tested for radiometric flux and wavelength at a drive current of 500 mA, 20 ms single pulse at 25° C and placed into one of the following radiometric flux (F) , wavelength (WWW) and forward voltage bins. The LEDs can also be driven at other drive currents, to achieve the correlated flux values listed in the table.

Radiometric Flux Bins

Flux Bin (F)[1]	Minimum Flux [3] (mW) 500 mA, 25° C	Maximum Flux [3] (mW) 500 mA, 25° C	Correlated Minimum Flux [2] (mW) at 25° C		
			250 mA	350 mA	700 mA
D	630	720	315	440	875
E	720	810	360	500	1000
F	810	900	400	570	1125
G	900	990	450	630	1250
H	990	1080	495	700	1375

Note 1: Individual bins are not orderable. Please refer to product ordering information on page 2 for a list of ordering part numbers.

Note 2: Correlated minimum flux values are for reference only. SST-08-UVs are tested and binned only at the test current of 500 mA.

Wavelength Bins

Wavelength Bin (WWW)	Minimum Wavelength (nm)[3]	Maximum Wavelength (nm)[3]
365	365	370
370	370	375
380	380	385
385	385	390
390	390	395
395	395	400
400	400	405
405	405	410

Forward Voltage Bins

Voltage Bin[1]	Minimum Voltage (V)	Maximum Voltage (V)
V1	3.0	3.2
V2	3.2	3.4
V3	3.4	3.6
V4	3.6	3.8
V5	3.8	4.0

Note 3: Luminus maintains a +/- 6% tolerance on flux measurements and +/- 1 nm on wavelength measurements.

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Typical Device Performance

Parameter	Symbol	Typical[1]				Unit
Peak Wavelength Range	λ	365-375	380-390	390-400	400-410	nm
Test Current[2]	I_f	500	500	500	500	mA
Forward Voltage	$V_{f\text{-}min}$	3.0	3.0	3.0	3.0	V
	$V_{f\text{-}typ}$	3.8	3.6	3.6	3.7	V
	$V_{f\text{-}max}$	4.1	4.0	4.0	4.0	V
Radiometric Flux[3]	Φ_{typ}	690	900	870	850	mW
FWHM	Δλ	10	10	10	10	nm
Viewing Angle	$2\theta_{1/2}$	40 / 130	40 / 130	40 / 130	40 / 130	°
Thermal Resistance (junction-solder point)	$R_{th\ elec.}$	5.0	5.0	5.0	5.0	°C/W

Note 1: Unless otherwise noted, values listed are typical. Devices are production tested and specified at 500 mA with a 20 ms pulse at 25°C .

Note 2: SST-08-UV LEDs are devices are tested at 500 mA, they can be driven at CW currents ranging from 200 mA to 750mA and at duty cycles ranging from 1% to 100%. Drive current and duty cycle should be adjusted as necessary to maintain the junction temperature desired to meet application lifetime requirements.

Note 3: Typical radiometric flux is for reference only. Minimum flux values are guaranteed based on the bin kit ordered. For product roadmap and future performance of devices, contact Luminus.

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Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current[1]	$I_{f\text{-}max}$	750	mA
Junction Temperature[1]	T_j	100	° C
Storage Temperature Range	T_S	-40 to +100	° C
Soldering Temperature	T_{SLD}	JEDEC J-STD-020C, 245°C	° C

Note 1: SST-08-UV LEDs are designed for operation to an absolute maximum current as specified above. Product lifetime data is specified at or below maximum drive current. Sustained operation beyond absolute maximum currents will result in a reduction of device life time . Actual device lifetimes will also depend on case temperature and operation beyond maximum case temperature is not recommended. Contact Luminus for lifetime derating curves and for further information. In pulsed operation, rise time from 10-90% of forward current should be longer than 0.5 µseconds.

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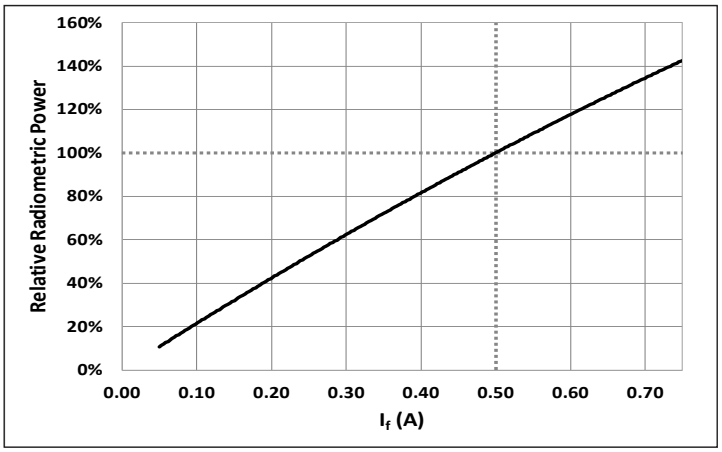
Optical & Electrical Characteristics - 365 nm

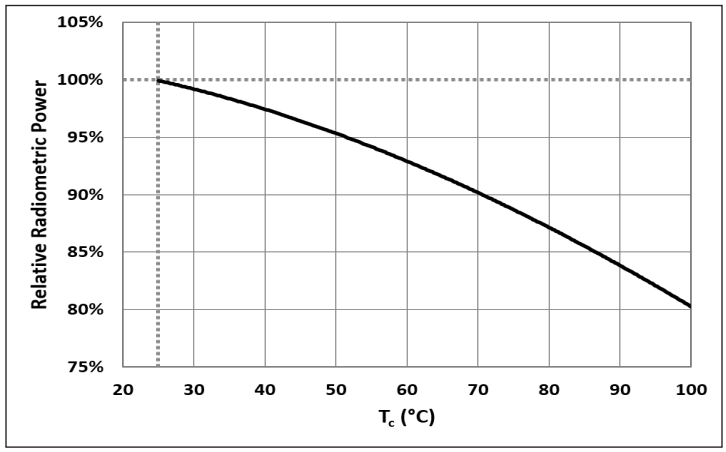
Relative Power vs. Forward Current

$\varphi/\varphi_{(500\,mA)}$, 20 ms pulse, T_c = 25°C



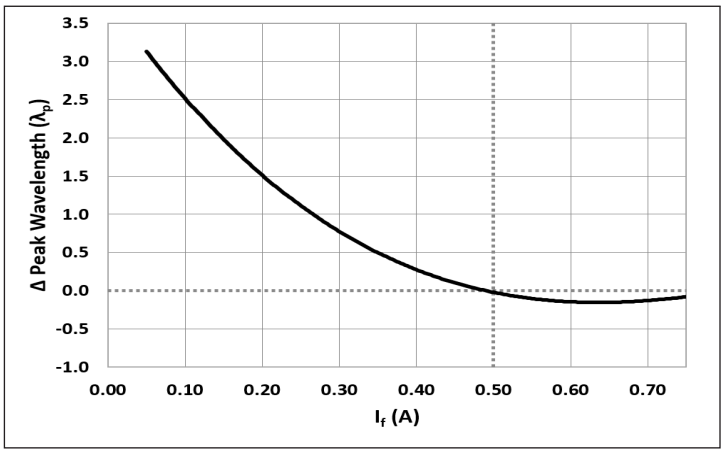
Relative Power vs. Case Temperature

$\varphi/\varphi_{(25°C)}$, 20 ms pulse, 500 mA



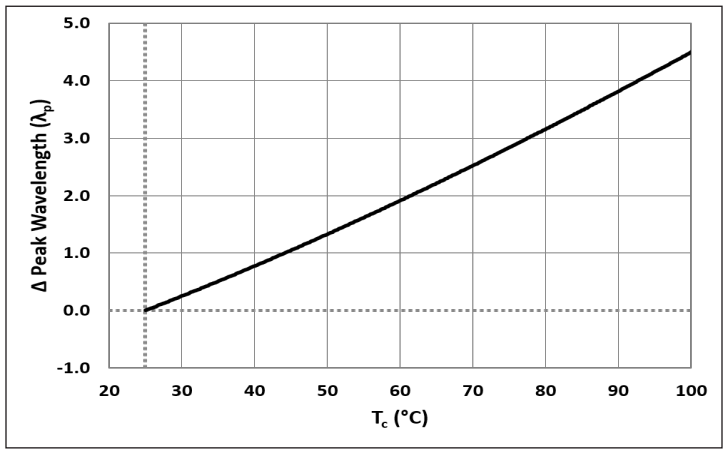
Peak Wavelength Shift vs. Forward Current

$\lambda_p = \lambda_p(I_f) - \lambda_p$ (500 mA), 20 ms pulse, T_c = 25°C



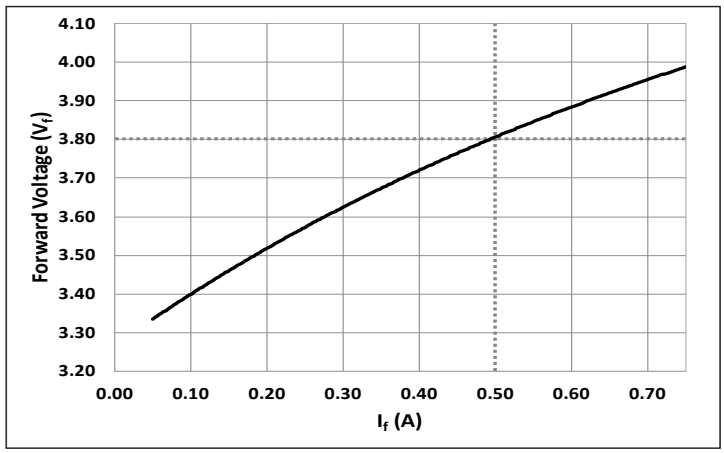
Peak Wavelength Shift vs. Case Temperature

$\lambda_p = \lambda_p(T_c) - \lambda_p$ (25°C), 20 ms pulse, I_f = 500 mA



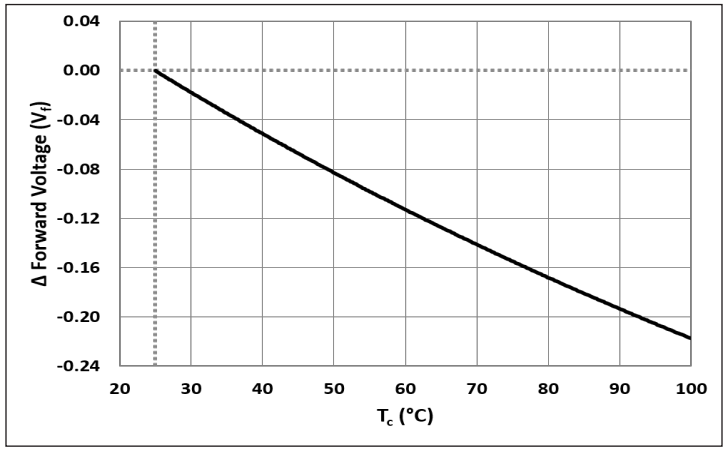
Forward Voltage vs. Forward Current

25°C, 20 ms pulse



Forward Voltage Shift vs. Case Temperature

$\Delta V_f = V_f(T_c) - V_f$(25°C), 20 ms pulse, I_f = 500 mA



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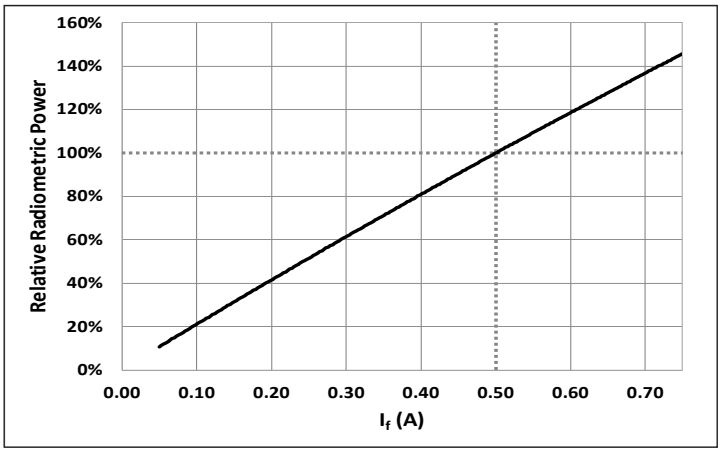
Optical & Electrical Characteristics - 385 nm

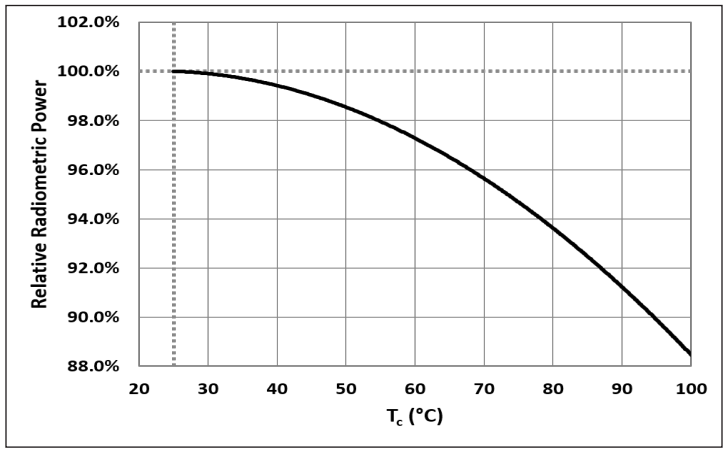
Relative Power vs. Forward Current

$\varphi/\varphi_{(500\,mA)}$, 20 ms pulse, T_c= 25°C



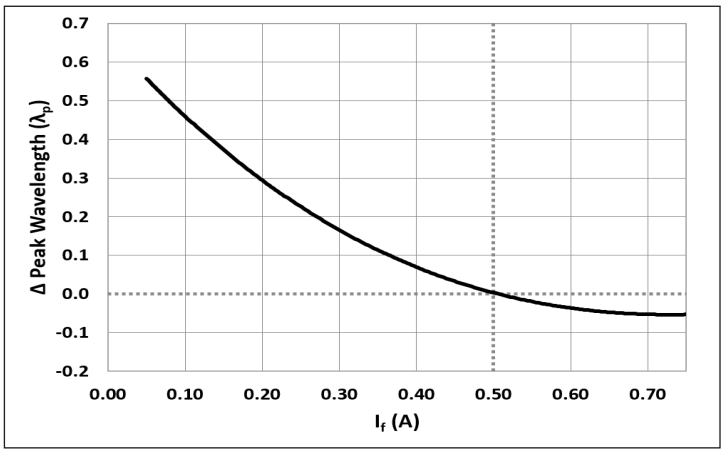
Relative Power vs. Case Temperature

$\varphi/\varphi_{(25°C)}$, 20 ms pulse, 500 mA



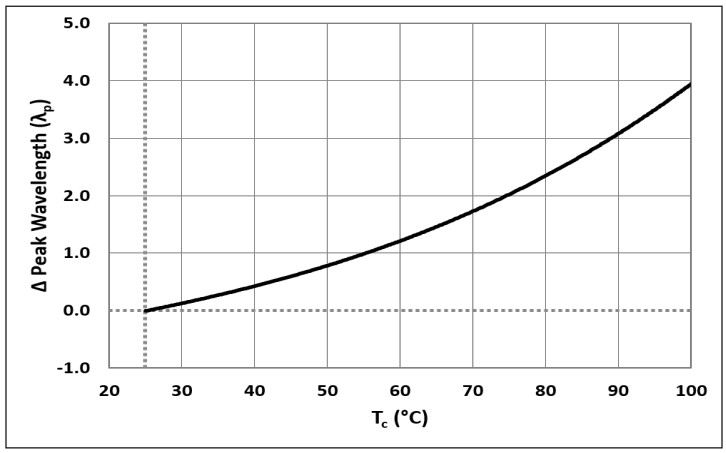
Peak Wavelength Shift vs. Forward Current

$\lambda_p = \lambda_p(I_f) - \lambda_p$ (500 mA), 20 ms pulse, T_c = 25°C



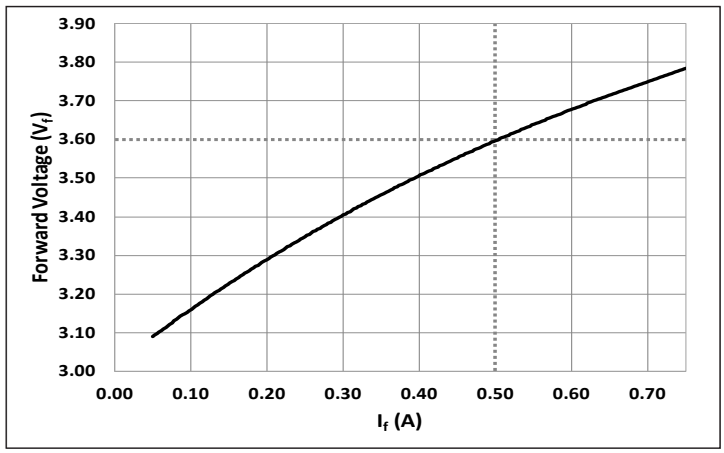
Peak Wavelength Shift vs. Case Temperature

$\lambda_p = \lambda_p(T_c) - \lambda_p$ (25°C), 20 ms pulse, I_f=500 mA



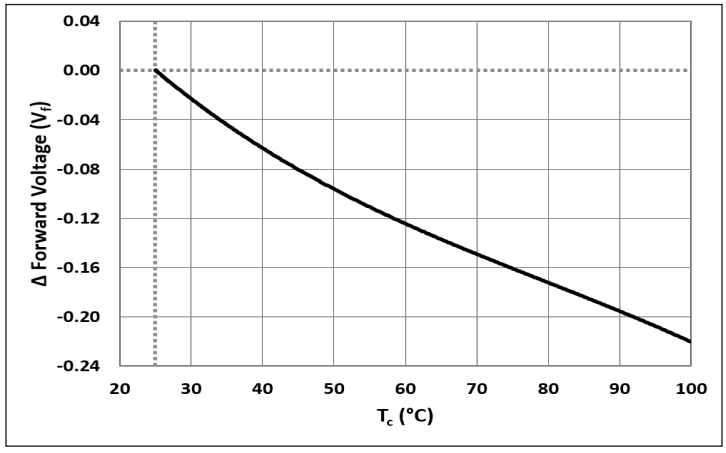
Forward Voltage vs. Forward Current

25°C, 20 ms pulse



Forward Voltage Shift vs. Case Temperature

$\Delta V_f = V_f(T_c) - V_f$(25°C), 20 ms pulse, I_f = 500 mA



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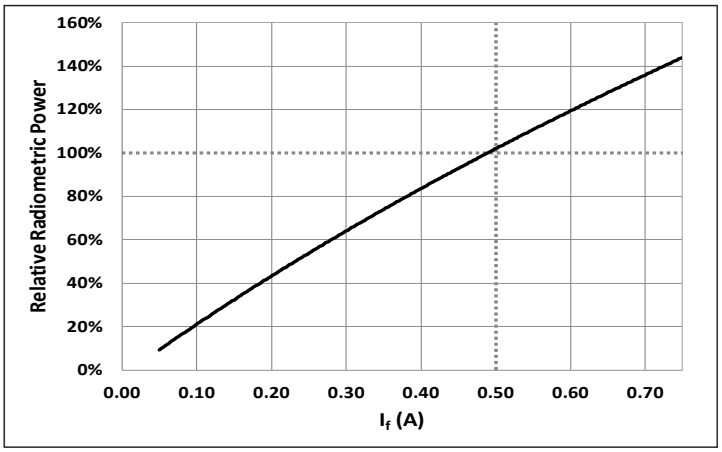
Optical & Electrical Characteristics - 395 nm

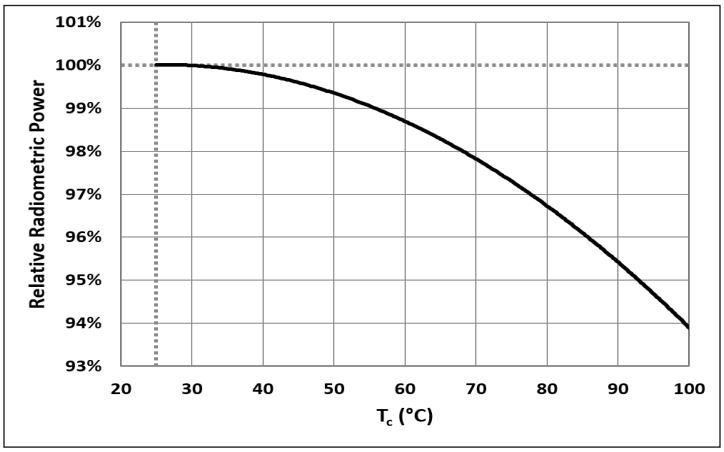
Relative Power vs. Forward Current

$\varphi/\varphi_{(500\ mA)}$, 20 ms pulse, T_c= 25°C



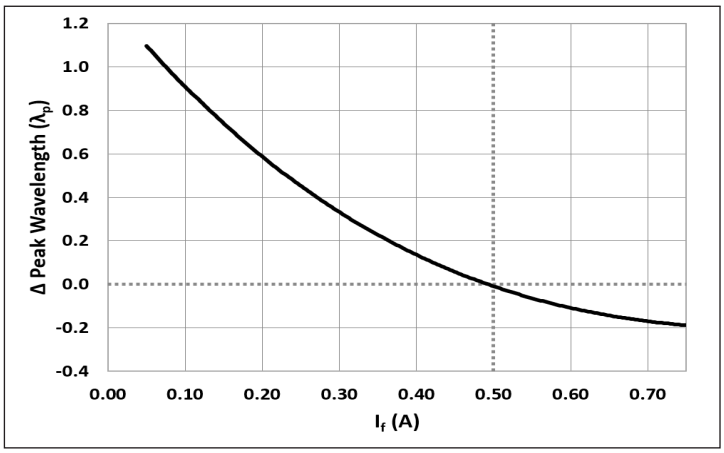
Relative Power vs. Case Temperature

$\varphi/\varphi_{(25°C)}$, 20 ms pulse, 500 mA



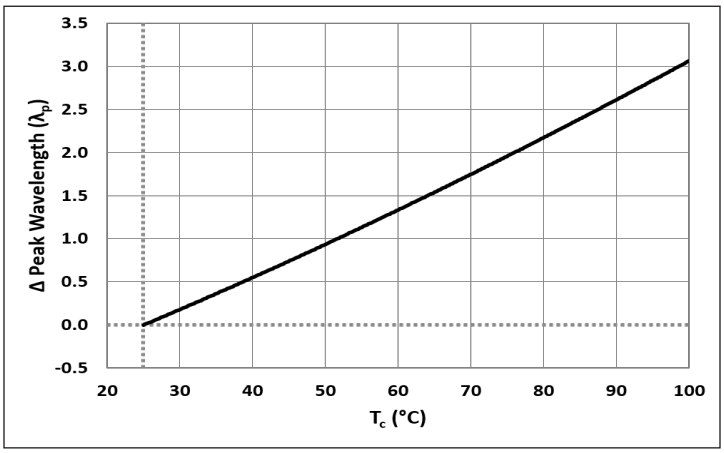
Peak Wavelength Shift vs. Forward Current

$\lambda_p = \lambda_p(I_f) - \lambda_p$ (500 mA), 20 ms pulse, T_c = 25°C



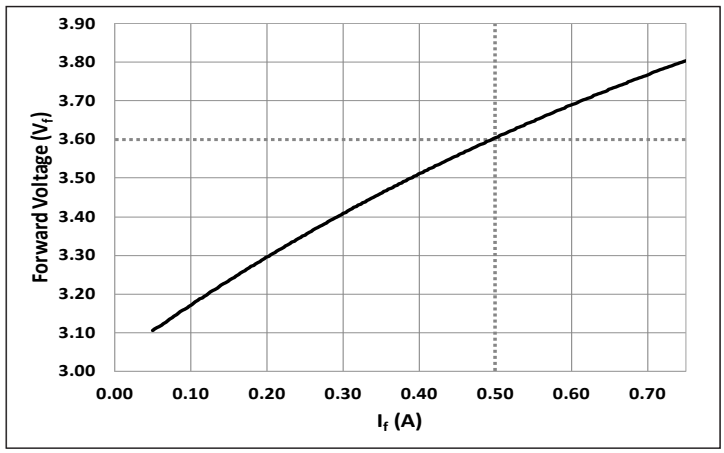
Peak Wavelength Shift vs. Case Temperature

$\lambda_p = \lambda_p(T_c) - \lambda_p$ (25°C), 20 ms pulse, I_f=500 mA



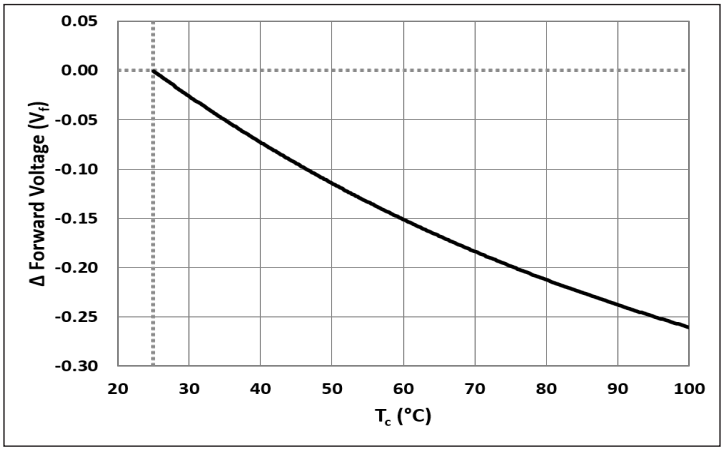
Forward Voltage vs. Forward Current

25°C, 20 ms pulse



Forward Voltage Shift vs. Case Temperature

$\Delta V_f = V_f(T_c) - V_f$(25°C), 20 ms pulse, I_f = 500 mA



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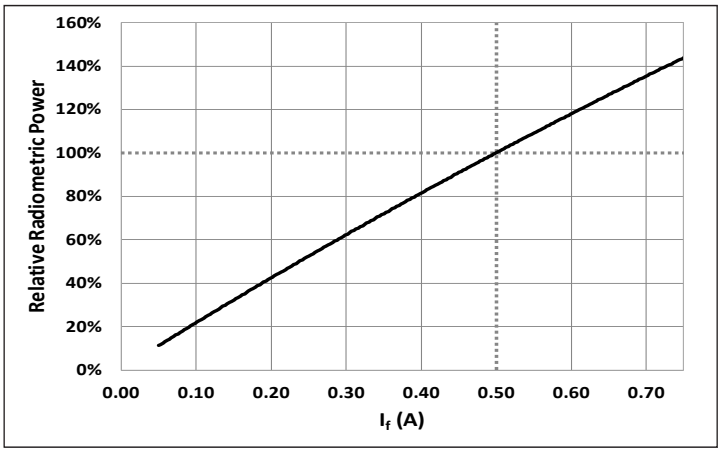
Optical & Electrical Characteristics - 405 nm

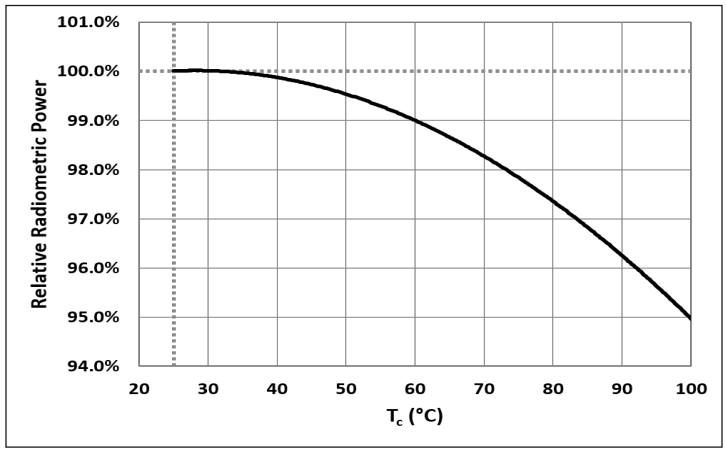
Relative Power vs. Forward Current

$\varphi/\varphi_{(500\,mA)}$, 20 ms pulse, T_c= 25°C



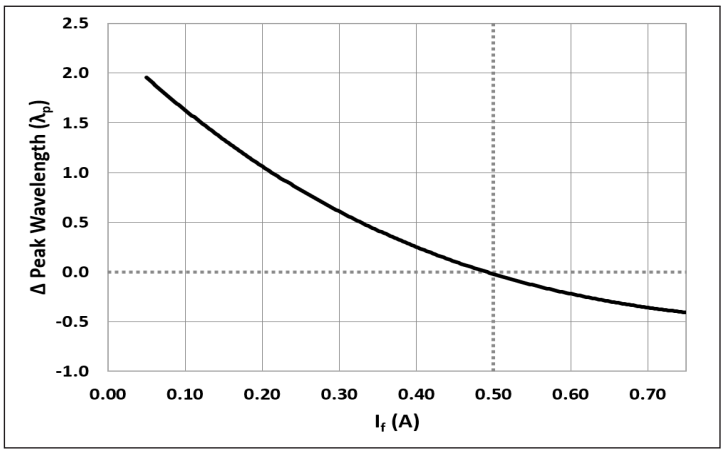
Relative Power vs. Case Temperature

$\varphi/\varphi_{(25°C)}$, 20 ms pulse, 500 mA



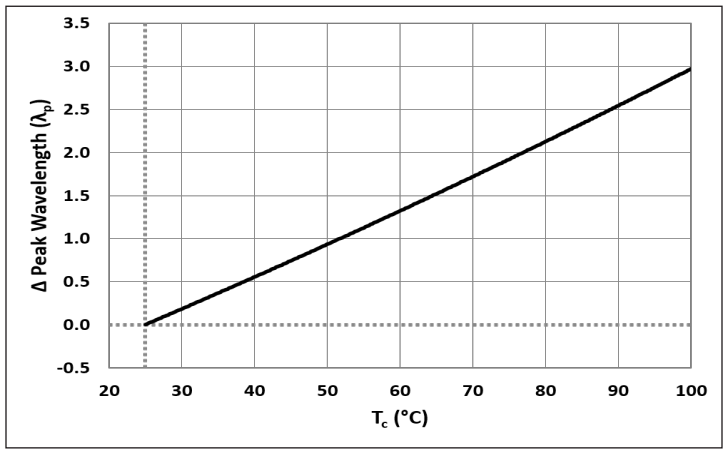
Peak Wavelength Shift vs. Forward Current

$\lambda_p = \lambda_p(I_f) - \lambda_p$ (500 mA), 20 ms pulse, T_c = 25°C



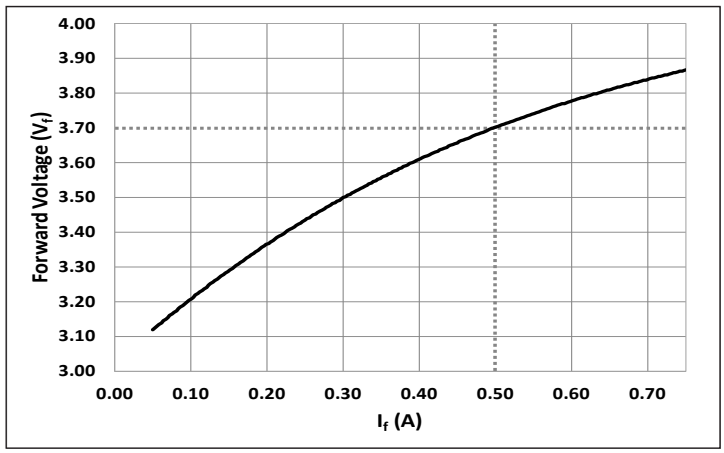
Peak Wavelength Shift vs. Case Temperature

$\lambda_p = \lambda_p(T_c) - \lambda_p$ (25°C), 20 ms pulse, I_f=500 mA



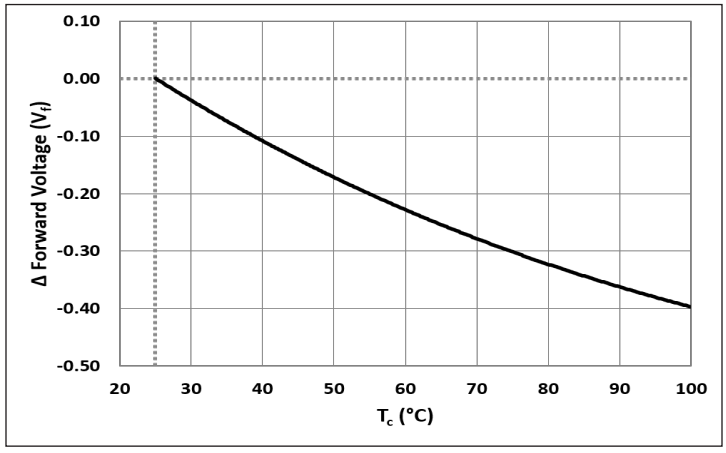
Forward Voltage vs. Forward Current

25°C, 20 ms pulse



Forward Voltage Shift vs. Case Temperature

$\Delta V_f = V_f(T_c) - V_f$(25°C), 20 ms pulse, I_f = 500 mA



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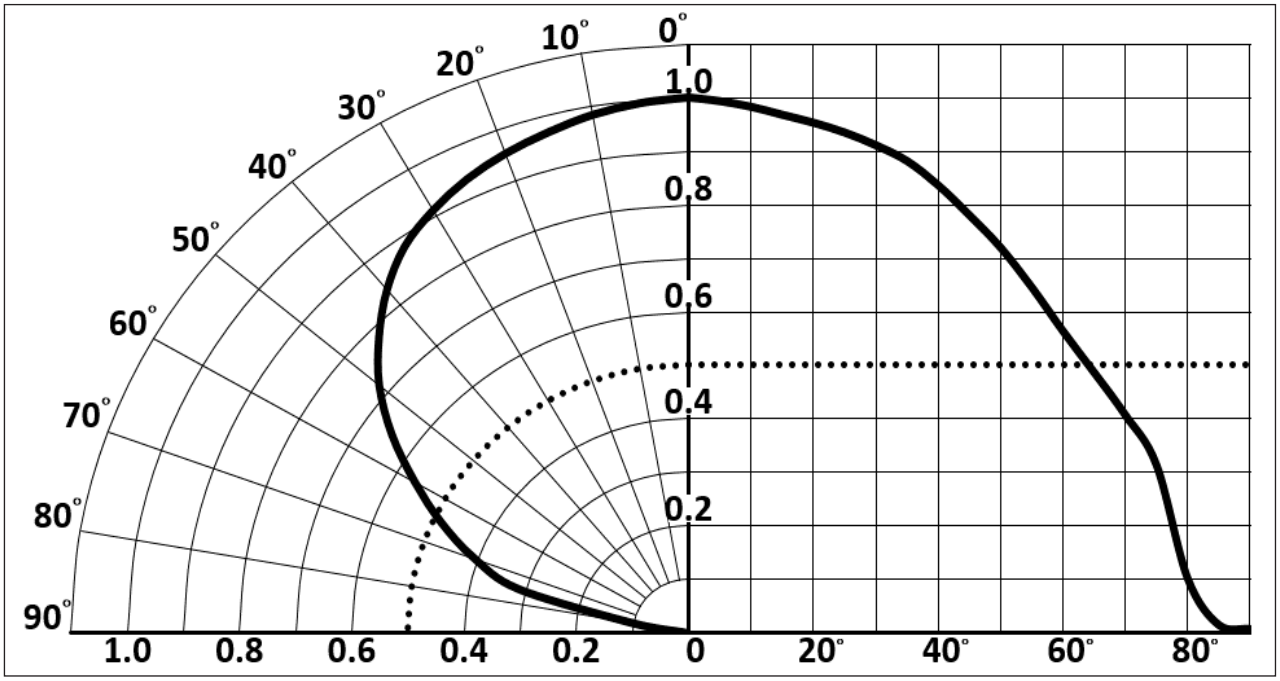
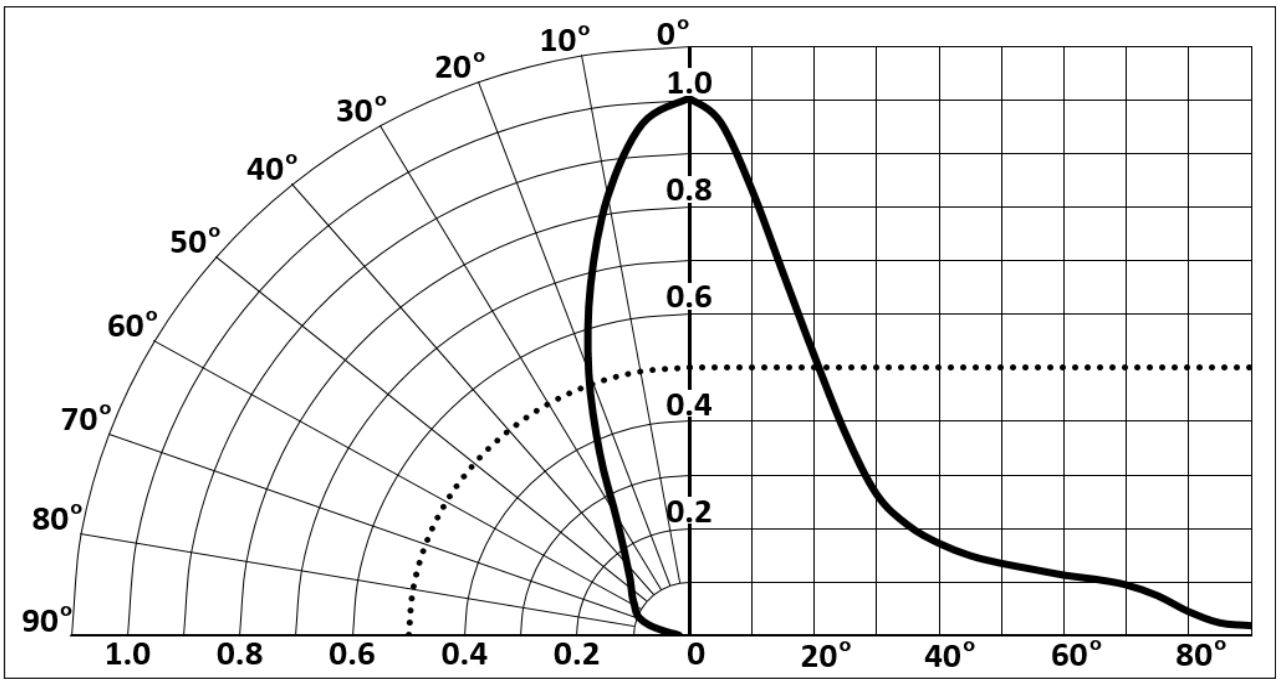
Angular Distribution and Spectrum

Radiation Pattern - 130°



Radiation Pattern - 40°



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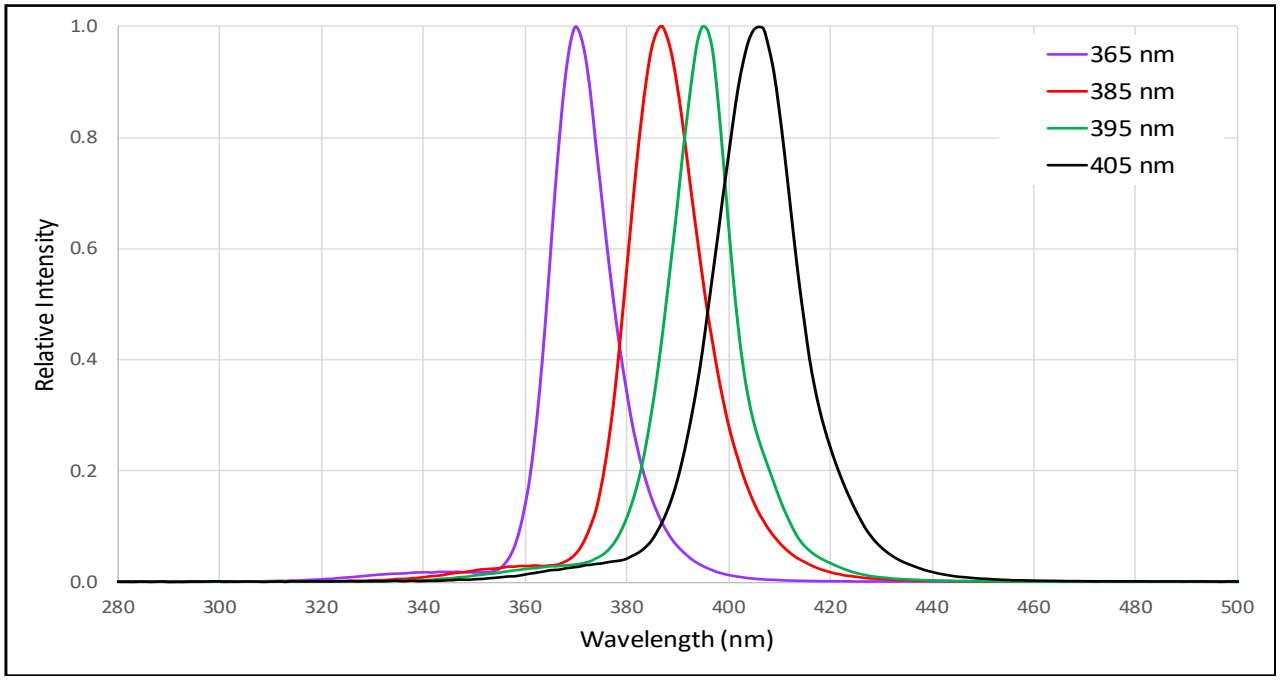
Typical Spectrum

$I_f = 0.5A, T_c = 25°C$, 20 ms pulse



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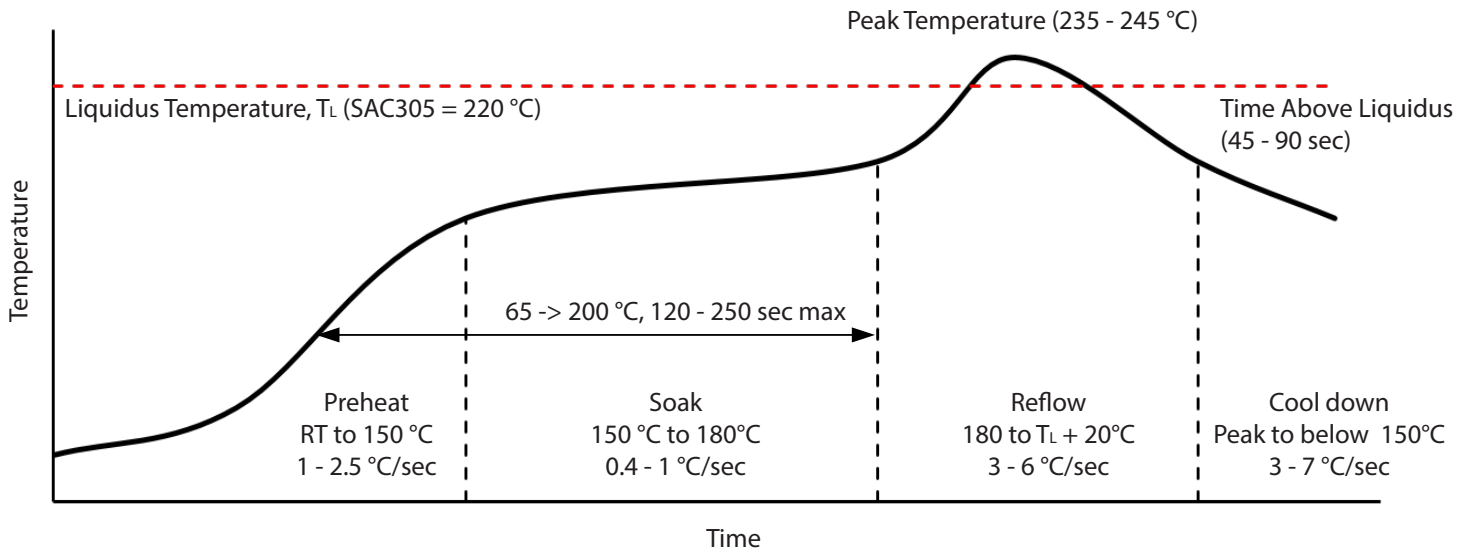
Solder Profile



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

Note 1: Product complies to Moisture Sensitivity Level 1 (MSL 1).
Note 2: 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.
Note 3: During the pick and place process, axial forces on the dome (or window) should not exceed 0.5 Newtons (N).
Note 4: Use of a multi-zone IR reflow oven with a nitrogen blanket is recommended.
Note 5: 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.
Note 6: Luminus recommends to use the solder paste data sheet information as a starting point in time-temperature process development.
Note 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-
Note 8: For any technical questions about soldering process, please contact Luminus at techsupport@luminus.com.

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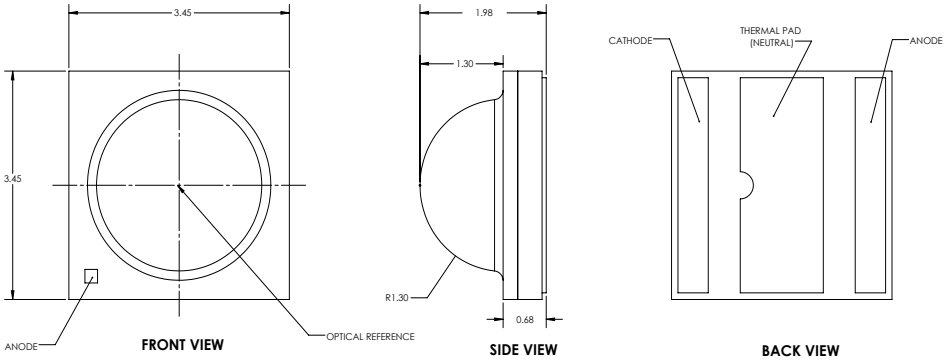
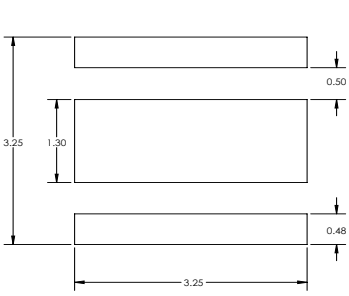
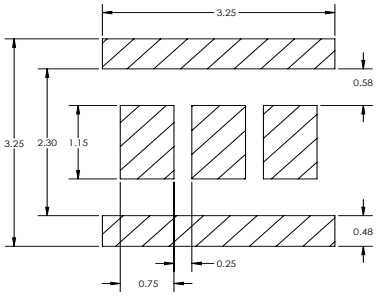
Mechanical Dimensions - A130 Package



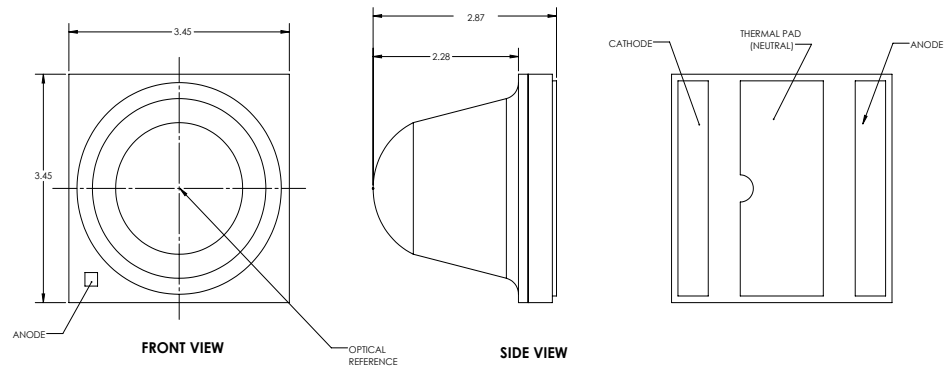


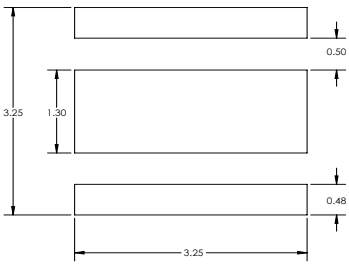
Recommended PCB Solder Pad



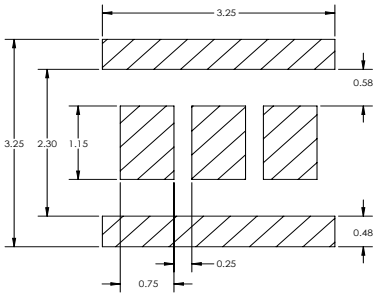
Recommended Stencil Pattern

Mechanical Dimensions - A40 Package





Recommended PCB Solder Pad



Recommended Stencil Pattern

Note 1: All dimensions are in millimeter +/-0.13 mm

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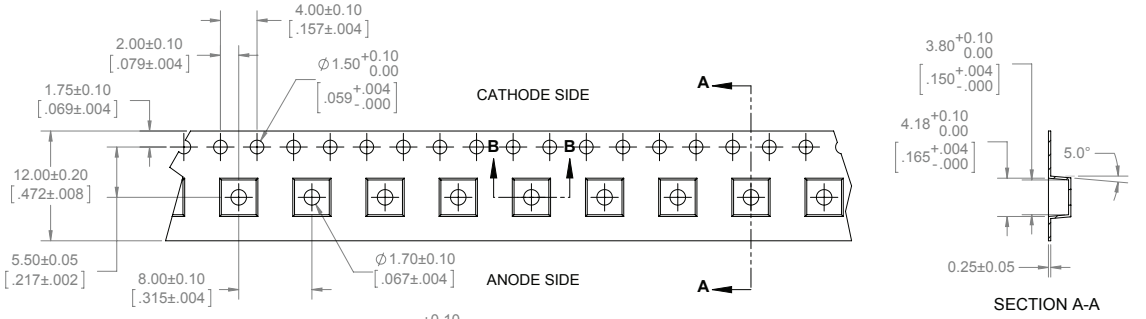
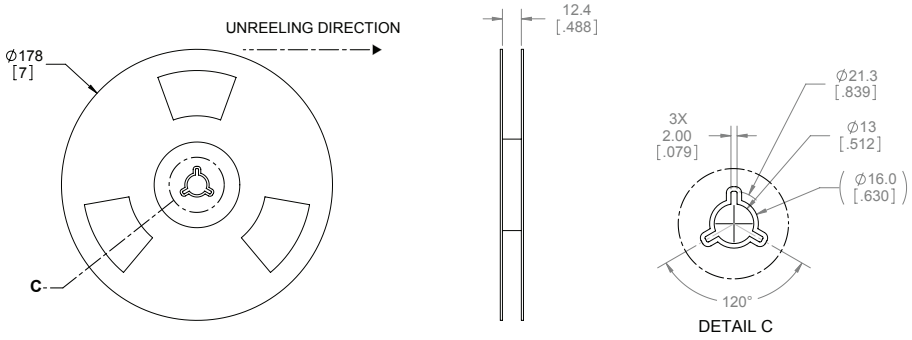
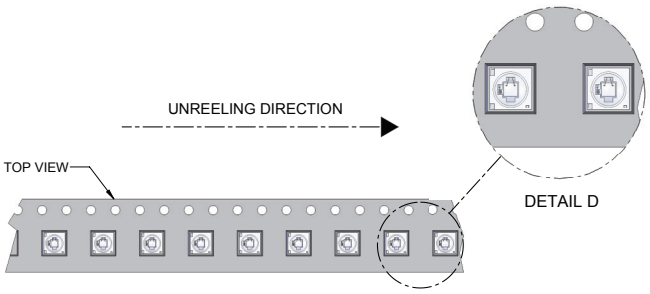
Packaging Information

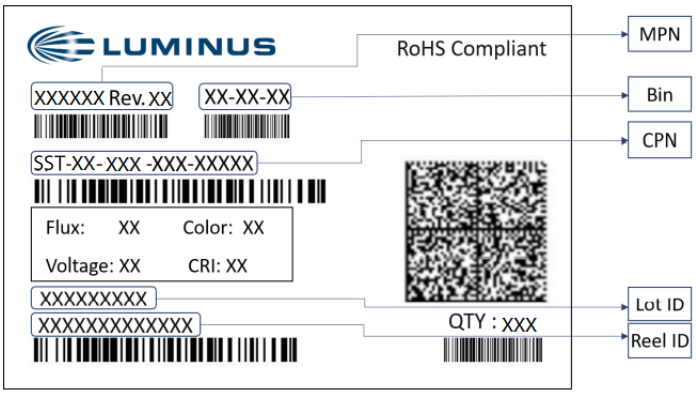


NOTES:

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







Note 1: Maximum of 500 pcs/reel. Lower quantities may be shipped.

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Precautions for storage, handling and use of UV LEDs

1. UV Light

SST-08-UV LEDs are short wavelength, UV LEDs. During operation, the LED emits high intensity UVA radiation, which is harmful to skin and eyes, and may cause cancer. Avoid exposure to UV light when LED is operational.

2. Static Electricity (ESD)

While SST-08 LEDs are robust in nature, they are particularly sensitive to ESD (Electrostatic Discharge). Static electricity and surge voltages seriously damage UV LEDs and can result in complete failure of the device. Anti-electrostatic wristband or gloves are recommended when handling the LEDs. All devices, equipment and machinery must be properly grounded and precautions must be taken against surge voltages.

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

3. Operating Conditions

In order to ensure the correct functioning of these LEDs, compliance to maximum allowed specifications is important. UV LEDs are particularly sensitive to drive currents that exceed the max operating specifications and may be damaged by such drive curents. The use of current regulated drive circuits is strongly recommended when operating these devices. Customers should also provide adequate thermal management to ensure LEDs do not exceed maximum recommended temperatures. Operating LEDs at temperatures in excess of specification will result in damage and possibly complete failure of the device.

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Revision History

Rev	Date	Description of Change
01	08/26/2022	Initial Release

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