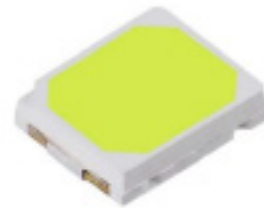


MP-2835-12D2

Mid Power LED



Features

- High efficacy
- CRI Options: Minimum 80, 90
- Low thermal resistance
- Compatible with automatic placement equipment
- Compatible with infrared reflow solder process



Applications

- Replacement lamps
- Panel lighting
- Down lights
- Architectural lighting

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Ordering Information

Ordering Part Numbers

Minimum CRI ¹	Nominal CCT	Luminous Flux ²		Ordering Part Number
		Minimum Flux (lm) ^{3,4}	Typical Flux (lm) ^{3,4}	
80	2200K	28.0	30.0	MP-2835-12D2-22-80
90		24.0	26.0	MP-2835-12D2-22-90
80	2700K	30.0	33.5	MP-2835-12D2-27-80
90		26.0	28.0	MP-2835-12D2-27-90
80	3000K	32.0	35.0	MP-2835-12D2-30-80
90		26.0	29.5	MP-2835-12D2-30-90
80	3500K	34.0	36.0	MP-2835-12D2-35-80
90		28.0	30.0	MP-2835-12D2-35-90
80	4000K	34.0	37.0	MP-2835-12D2-40-80
90		28.0	31.0	MP-2835-12D2-40-90
80	5000K	34.0	37.0	MP-2835-12D2-50-80
90		28.0	31.0	MP-2835-12D2-50-90
80	5700K	34.0	37.0	MP-2835-12D2-57-80
90		28.0	31.0	MP-2835-12D2-57-90
80	6500K	34.0	37.0	MP-2835-12D2-65-80
90		28.0	31.0	MP-2835-12D2-65-90

PPF and PPF/W Performance^{3,4}

PPF (μmol/s)	PPF/W (μmol/J)	Ordering Part Number
0.51	2.93	MP-2835-12D2-30-80
0.53	3.03	MP-2835-12D2-50-80

Notes:

1. CRI tolerance ±2
2. Luminous flux tolerance ±7%
3. Test condition: $I_f=65$ mA, $T_c=25^\circ\text{C}$
4. Pulse Forward Current condition: Pulse width ≤100 μs, Duty cycle ≤1/10



Ordering Information

Part Number Nomenclature

MP

2835

12D2

##

##

Product Family	Package Type	Package Configurator	Nominal CCT ¹	Minimum CRI
MP: Mid Power LED	2835: 2.8 mm x 3.5 mm	12D2: Package code	22: 2200K 27: 2700K 30: 3000K 35: 3500K 40: 4000K 50: 5000K 57: 5700K 65: 6500K	80: CRI>80 90: CRI>90

Note:

1. Correlated Color Temperatures (CCT)



Binning Structure

Each mid power product shipped will be labeled with its specific flux and voltage bins. Not all bins listed are available in all CCTs and CRIs.

Flux Bins

Bin Code	Binning @ 65 mA, $T_c = 25^\circ\text{C}^{1,2}$	
	Minimum Flux (lm)	Maximum Flux (lm)
D5	24.0	26.0
D6	26.0	28.0
D7	28.0	30.0
D8	30.0	32.0
D9	32.0	34.0
E1	34.0	36.0
E2	36.0	38.0
E3	38.0	40.0
E4	40.0	42.0

Forward Voltage Bins³

Bin Code	Binning @ 65 mA, $T_c = 25^\circ\text{C}^{1,2}$	
	Minimum Voltage (V)	Maximum Voltage (V)
Z	2.6	2.7
A	2.7	2.8
B	2.8	2.9

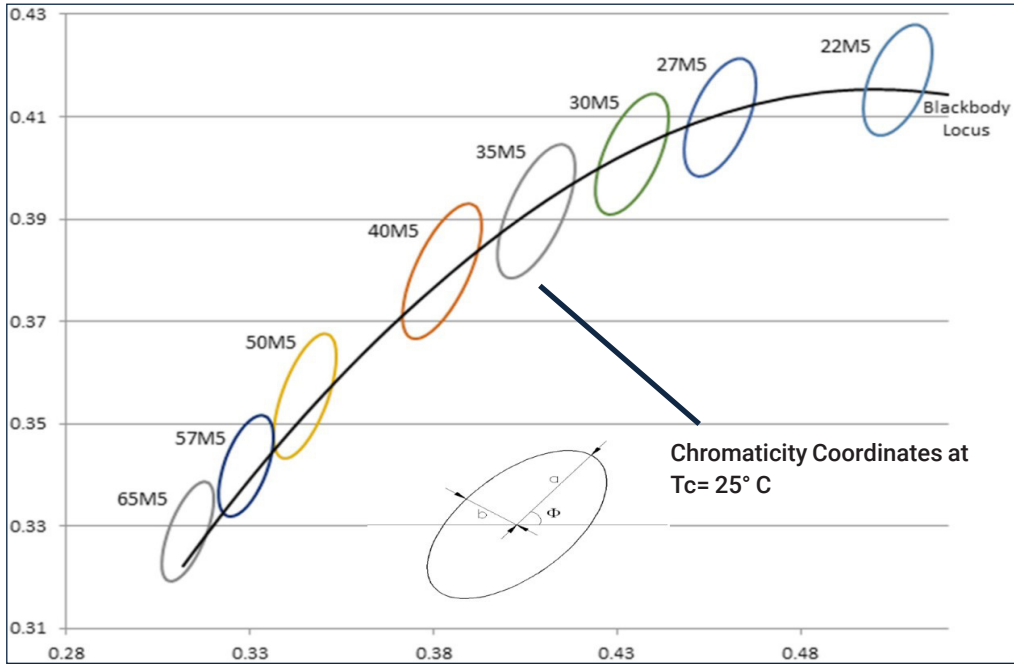
Notes:

1. LEDs are measured at drive current 65 mA at $T_c = 25^\circ\text{C}$.
2. Pulse Forward Current condition: Pulse width $\leq 100 \mu\text{s}$, Duty cycle $\leq 1/10$
3. Forward Voltage measurement tolerance $\pm 0.08 \text{ V}$



Binning Structure

Chromaticity Binning Diagram



Color Bins¹

Color Code	Center		Radius		Angle(°)
	x	y	a	b	Φ
22M5	0.5018	0.4153	0.012500	0.007000	53.00
27M5	0.4582	0.4099	0.013500	0.007000	53.42
30M5	0.4342	0.4028	0.013900	0.006800	53.13
35M5	0.4080	0.3916	0.015450	0.006900	54.00
40M5	0.3825	0.3798	0.015650	0.006700	53.43
50M5	0.3451	0.3554	0.013700	0.005900	59.37
57M5	0.3290	0.3417	0.011175	0.005500	58.35
65M5	0.3130	0.3290	0.011150	0.004750	58.34

Note:

1. Chromaticity Coordinate measurement tolerance ±0.005.



Absolute Maximum Ratings^{1,2,3}

Parameter		Symbol	Values	Unit
Forward Current	Maximum	$I_{f\ max}$	400	mA
Pulse Forward Current	Maximum	$I_{fp\ max}$	600	mA
Power Dissipation		P_d	1160	mW
Reverse Voltage		V_r	5	V
Operating Temperature Range		T_{opr}	-40 to 85	°C
Storage Temperature Range		T_{stg}	-40 to 85	°C
Junction Temperature		T_j	120	°C

Notes:

1. Maximum operating case temperature combined with maximum current defines the total maximum operating condition for the device. To prevent damage, please follow derating curves for all operating conditions.
2. All ratings are based on standard testing conditions at drive current 65 mA and $T_c = 25^\circ\text{C}$.
3. Pulse Forward Current condition: Pulse width $\leq 100\ \mu\text{s}$, Duty cycle $\leq 1/10$



Characteristics^{1,2,3,4}

Parameter ($I_f=65\text{ mA}$, $T_c=25^\circ\text{C}$)		Symbol	Value	Unit
Forward Voltage	Minimum	$V_{f\text{ min}}$	2.6	V
	Typical	$V_{f\text{ typ}}$	2.69	
	Maximum	$V_{f\text{ max}}$	2.9	
Reverse Current ($V_r=5\text{ V}$)	Maximum	$I_{r\text{ max}}$	10	μA
Viewing Angle		$2\theta_{1/2}$	120	$^\circ$
Thermal Resistance		$R_{\text{th J-C}}$	12	$^\circ\text{C/W}$
Electrostatic Discharge		V_{ESD}	1000	V

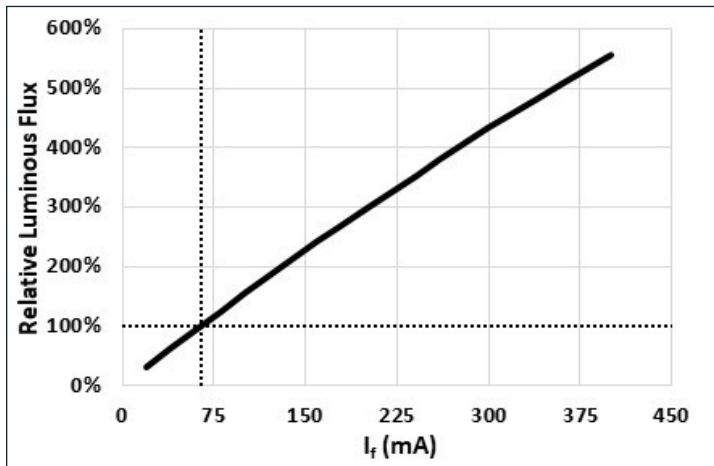
Notes:

1. Product test condition: 65 mA and $T_c = 25^\circ\text{C}$.
2. Pulse Forward Current condition: Pulse width $\leq 100\ \mu\text{s}$, Duty cycle $\leq 1/10$
3. To prevent damage refer to operating conditions and derating curves for appropriate maximum operating conditions
4. Mid power LEDs are designed for operation up to an absolute maximum forward drive current as specified below. 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 case temperature. Refer to the current vs. case temperature derating curves for further information.



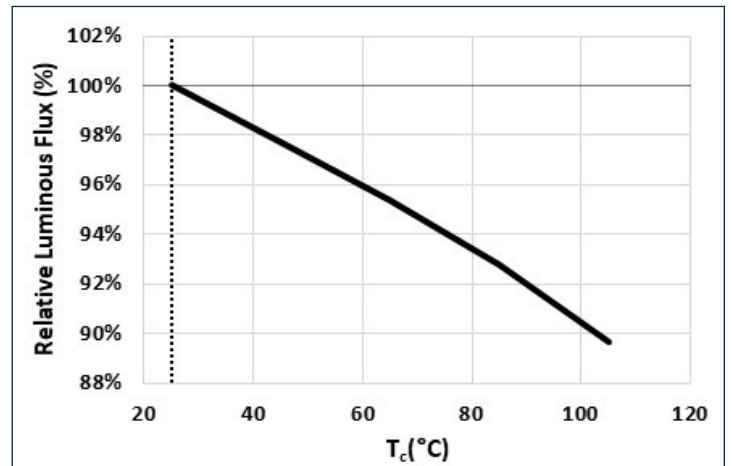
Relative Luminous Flux vs Forward Current

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



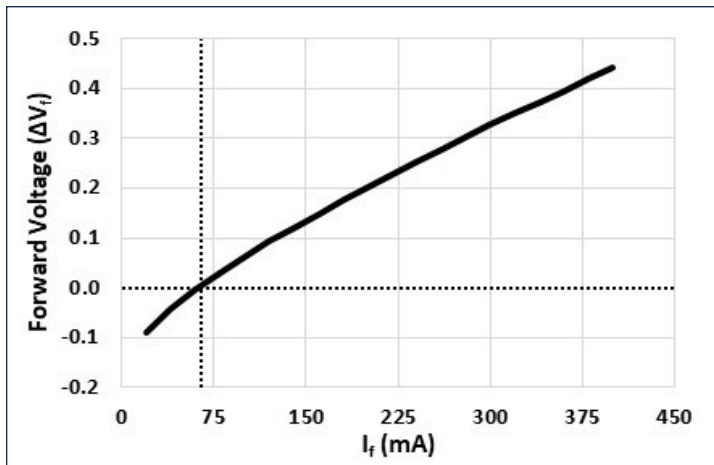
Relative Luminous Flux vs Temperature

$I_f = 65\text{ mA}$



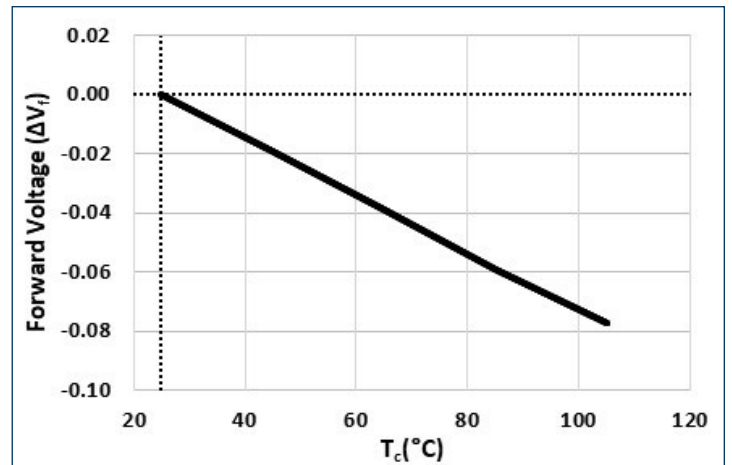
Forward Voltage vs Forward Current

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



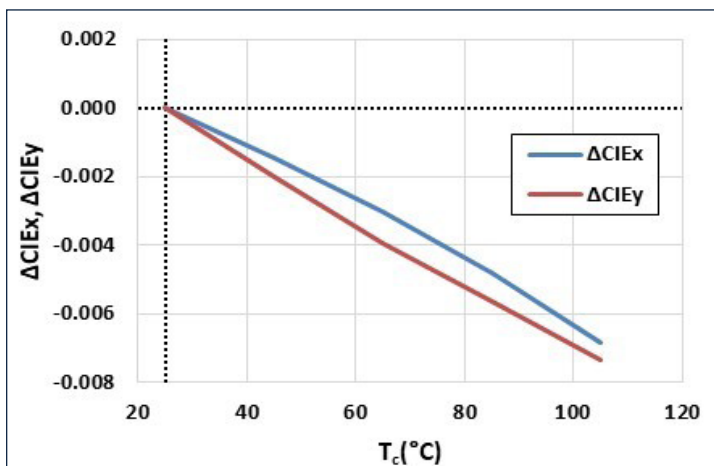
Forward Voltage vs Temperature

$I_f = 65\text{ mA}$



Relative Chromaticity vs Temperature

$I_f = 65\text{ mA}$

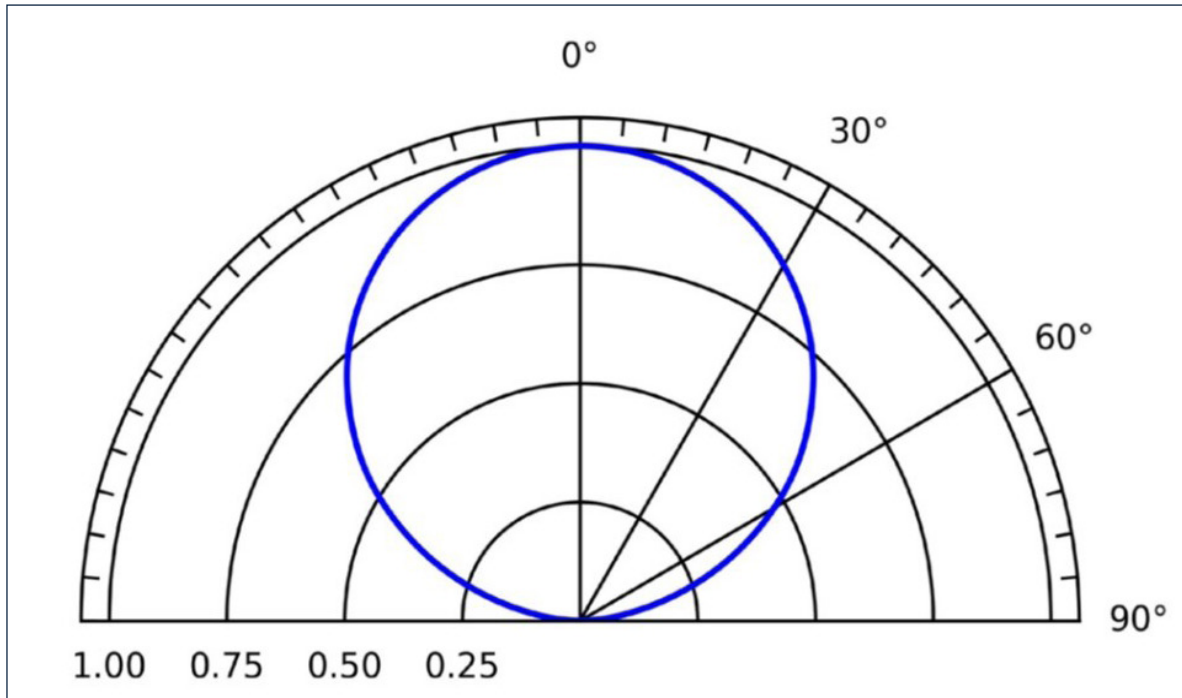




Angular Distribution and Typical Spectrum

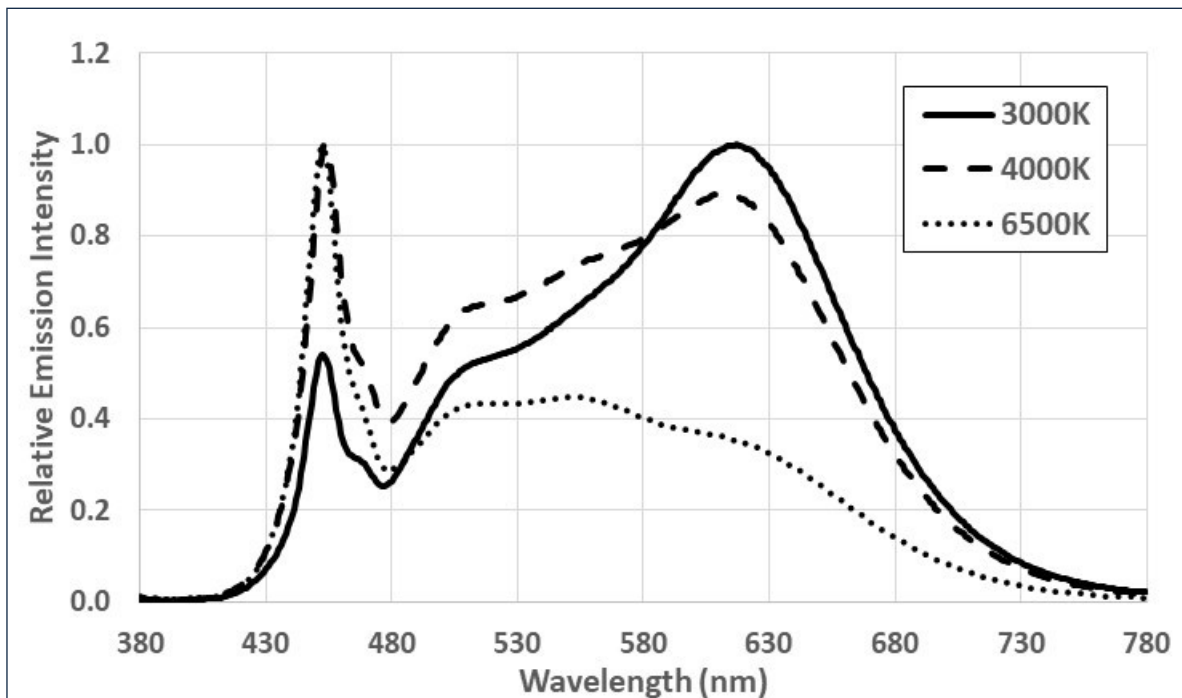
Typical Polar Radiation Pattern

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



Relative Spectral Power Distribution

$R_a \geq 90, T_c = 25^\circ\text{C}$

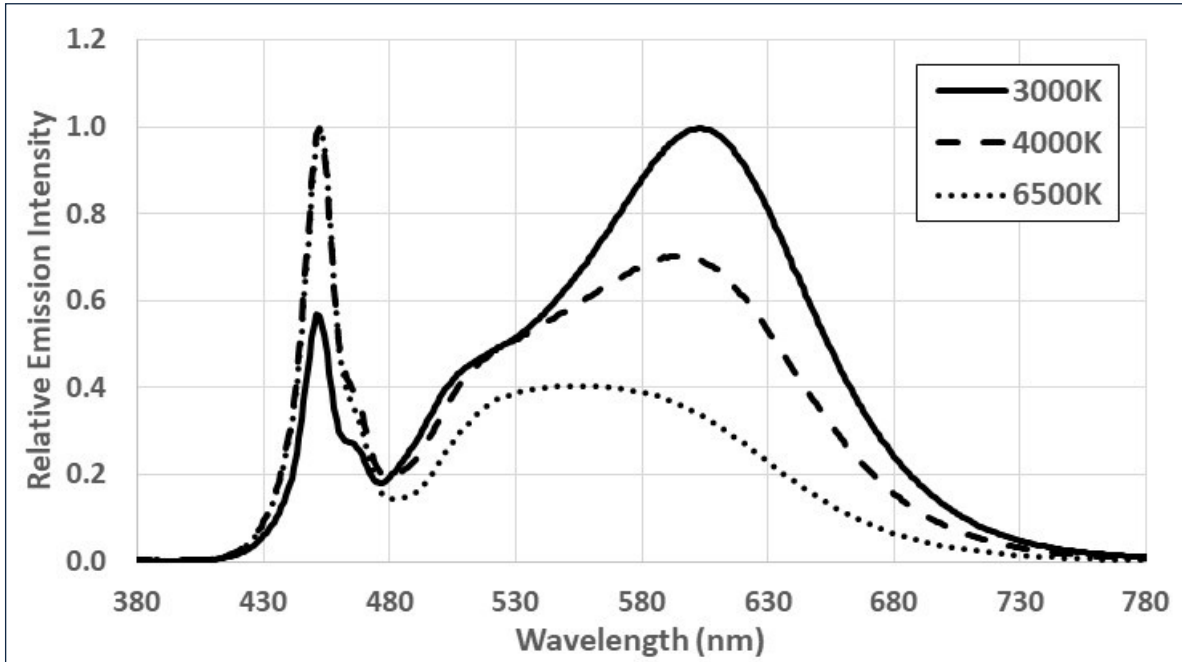




Angular Distribution and Typical Spectrum

Relative Spectral Power Distribution

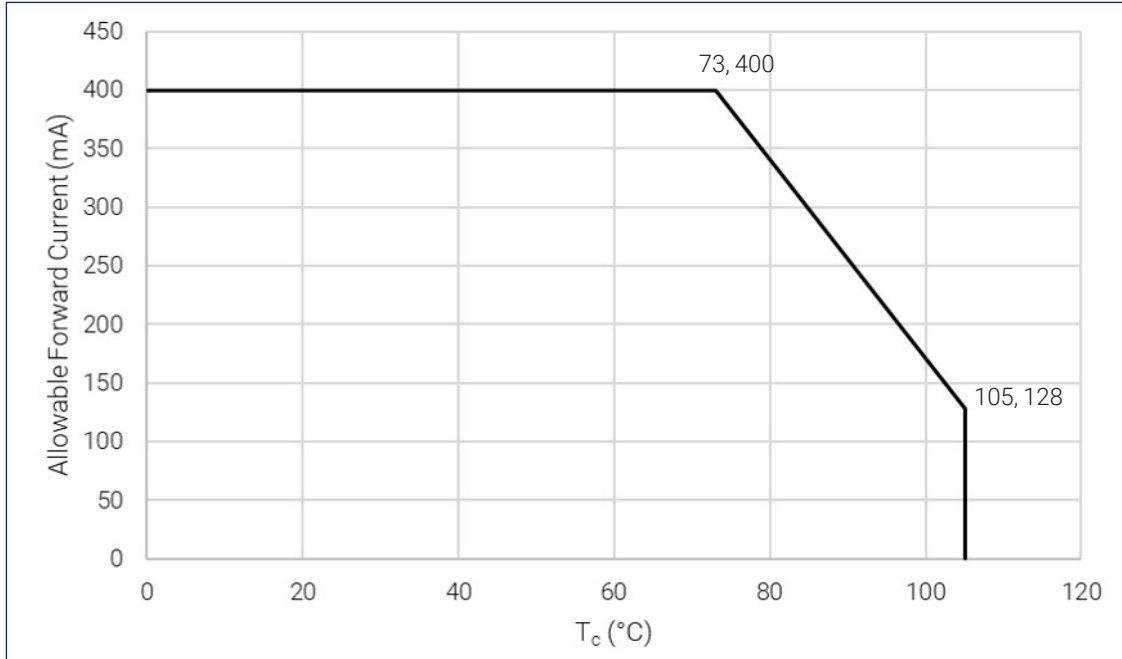
Ra ≥ 80, T_c = 25°C





Derating Characteristics

Solder Pad Temperature v.s. Allowable Forward Current

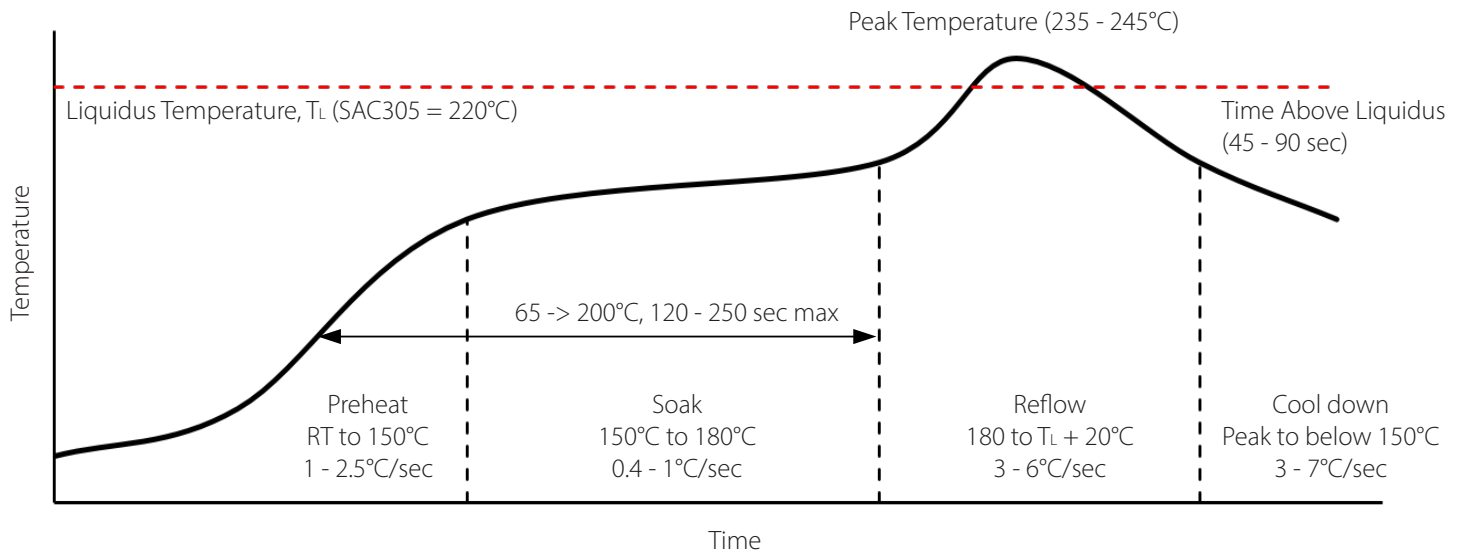


Note:

1. R_{thJ-C} is measured in the condition of Maximum Allowable Forward Current at 400 mA with T_c from 73°C to 105°C.



Soldering Profile



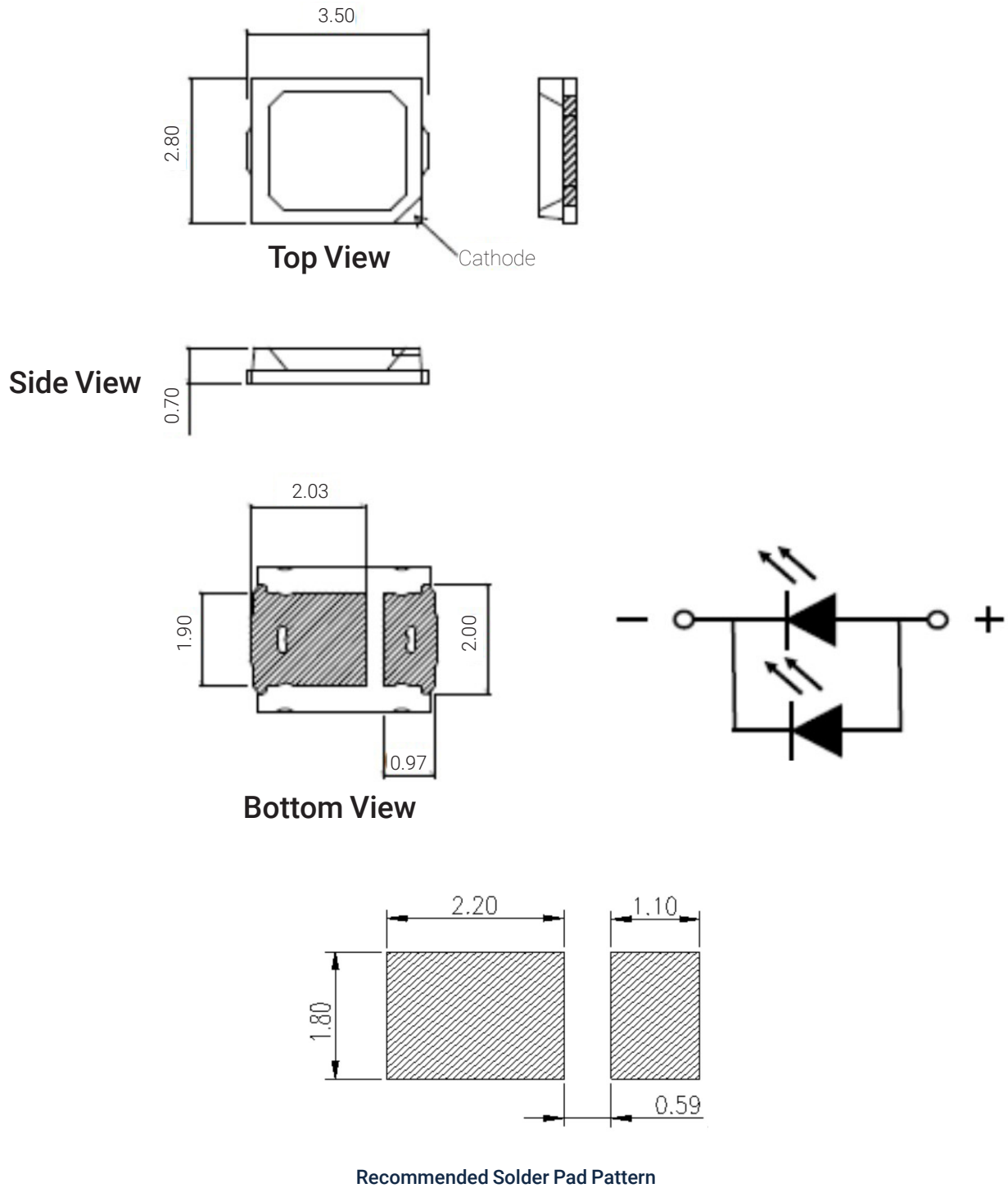
SMT Rework Guideline	Manual Hotplate Reflow	Hot Air Gun Reflow
Heating Time		< 60 sec

Notes:

- Product complies to Moisture Sensitivity Level 3 (MSL 3).
- 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



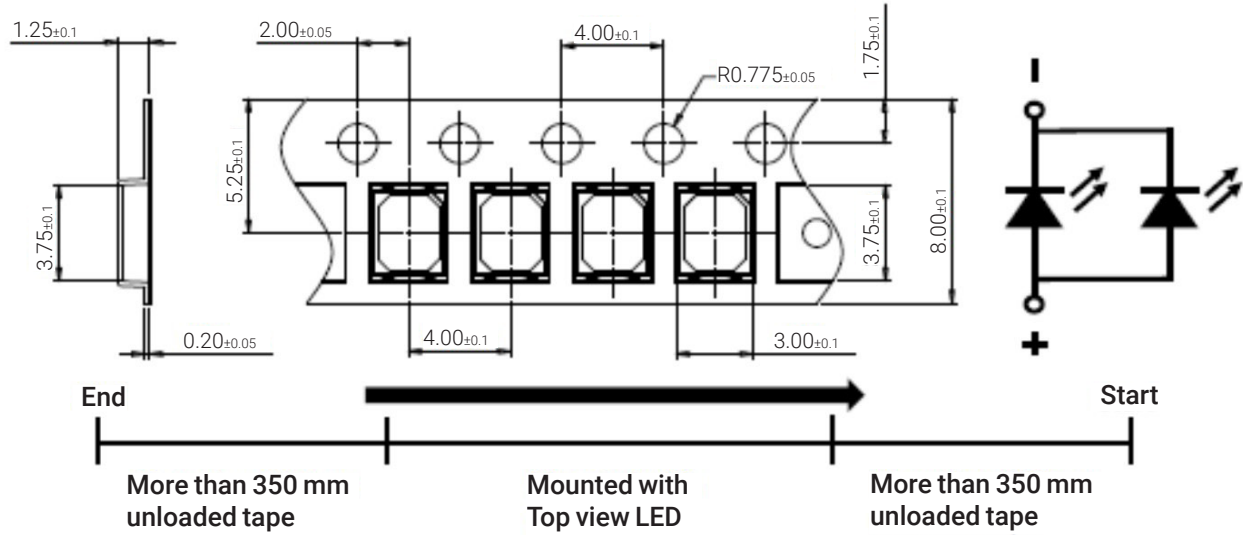
Note:

1. All dimensions are in mm, tolerance is ± 0.1 mm.



Tape and Reel Outline

Tape Package Dimensions



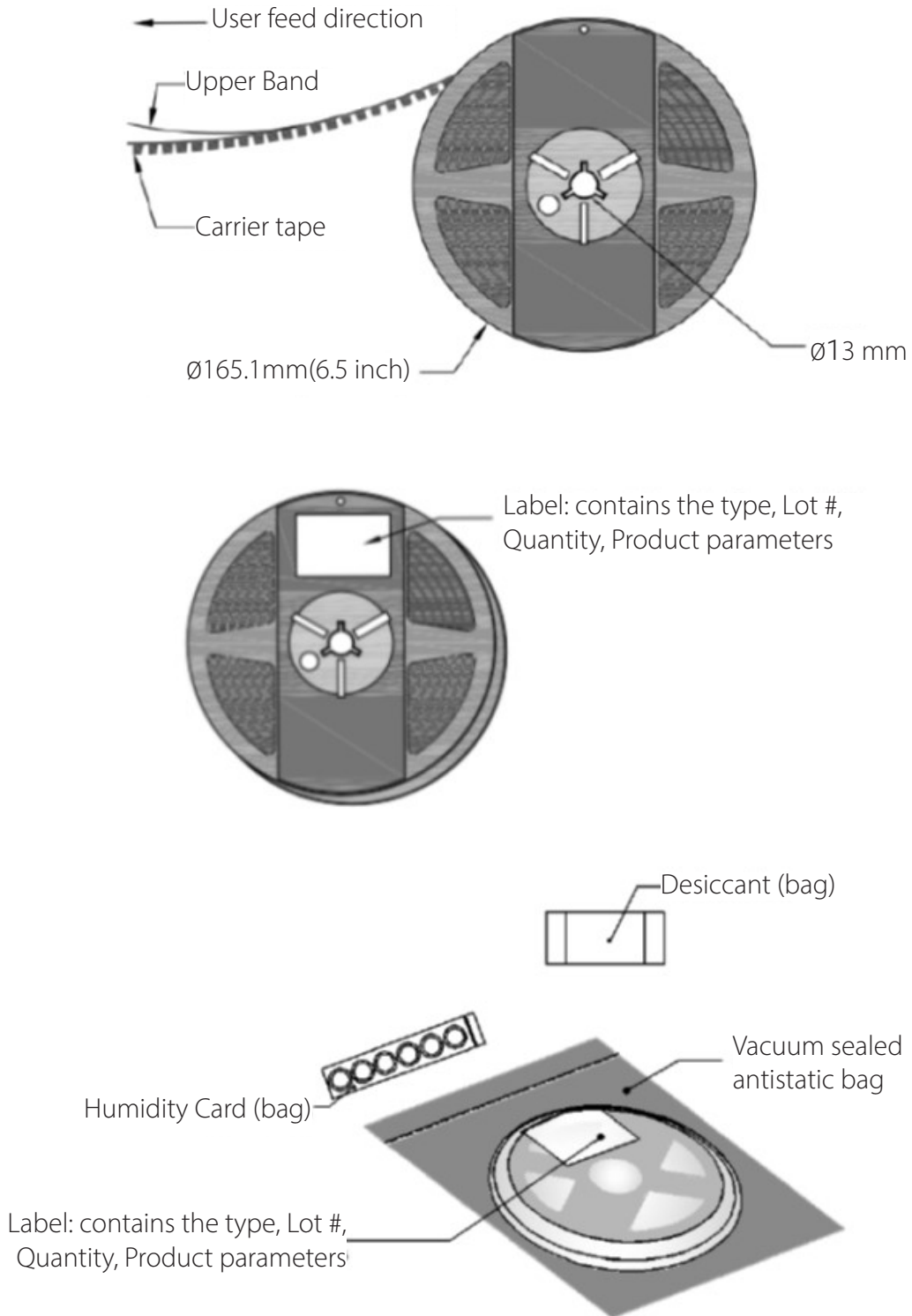
Notes:

1. Quantity : Max 4000 pcs/Reel
2. Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ± 0.2 mm
3. Adhesion Strength of Cover Tape Adhesion strength to be 0.1-0.7 N when the cover tape is turned off from the carrier tape at the angle of 10° to the carrier tape.
4. Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package



Tape and Reel Outline

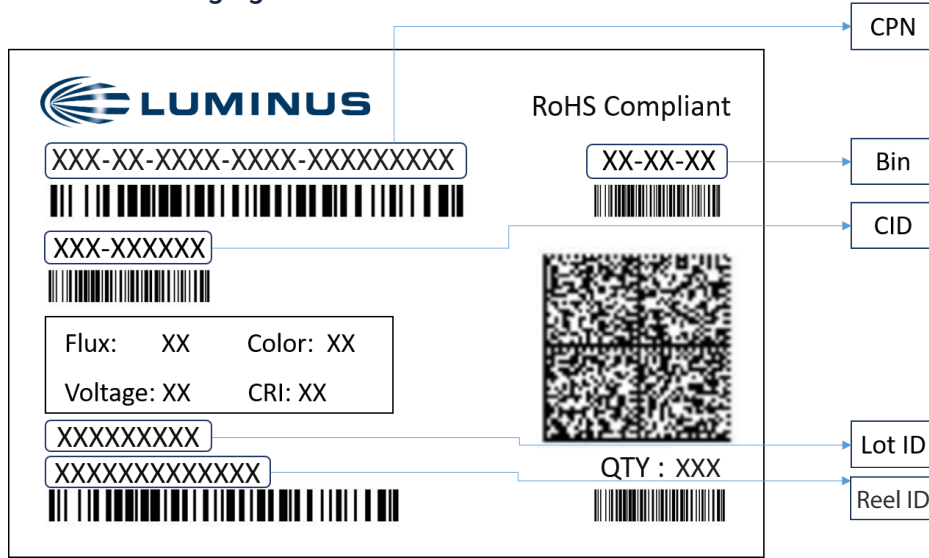
Reel Package Dimensions





Shipping Label

Label on Packaging Box



Label Fields:

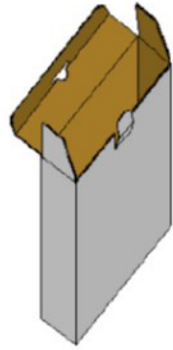
- CPN: Luminus ordering part number
- CID: Customer's part number
- QTY: Quantity of parts per reel
- Flux: Bin as defined on page 4
- Voltage: Bin as defined on page 4
- Color: Bin as defined on page 5
- CRI: Bin as defined on page 2

Packing Configuration:

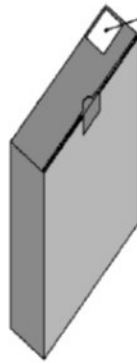
- 4000 pieces per reel
- Partial pack or tray may be shipped
- Each pack is enclosed in anti-static bag
- Shipping label is placed on top of each pack



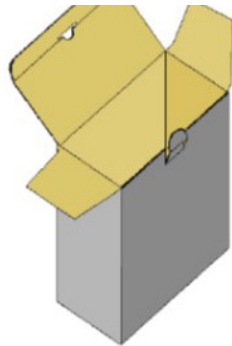
Packaging Boxes



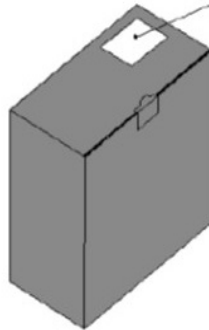
*Capacity 5 reels per box



Label: contains the type, Lot #,
Quality, Product parameters



*Capacity 10 reels per box



Label: contains the type, Lot #,
Quality, Product parameters



Notes

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 an 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.

Storage

1. This device is rated at MSL 3 per JEDEC J-STD-020 standard.
2. Recommended storage condition:
At 5°C - 30°C and relative humidity 60 % RH in its original package
3. After this bag is opened, devices that will be applied to infrared reflow, vapor - phase reflow, or equivalent soldering process must be:
 - a) Completed within 168 hours
 - b) Stored at less than 60 %RH
 - c) If not completely used within 168 hours, seal the remaining in the moisture barrier bag
4. Devices require baking before mounting, if 3 a) is not met.
5. If baking is required, devices must be baked under below conditions:
24 hours at 60°C±5°C



Revision History

Rev	Date	Description of Change
01	06/01/2017	Initial release
02	08/25/2019	Revise flux value
03	06/13/2011	Format improvement
04	11/22/2024	Revise format, Update derating curve and flux value