

2016 Mid Power LED

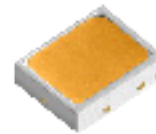


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Features:

- High efficacy
- Low thermal resistance
- Compatible with automatic placement equipment
- Compatible with infrared reflow solder process
- RoHs compatible
- RoHs and REACH compliant

Applications

- | | |
|----------------------|--------------------------|
| • Linear fluorescent | • Down lights |
| • A- lamps | • Architectural lighting |
| • Panel lighting | • Panel lighting |

Technology Overview

Luminus XNOVA mid power LEDs are lighting class solutions designed for high performance general lighting applications. These state-of-the-art LEDs allow illumination engineers and designers to develop lighting solutions with maximum efficacy, brightness and overall quality.

Reliability

XNOVA mid power LED is one of the most reliable light sources in the world today. Having passed a rigorous suite of environmental and mechanical stress tests, including mechanical shock, vibration, temperature cycling and humidity, it is fully qualified for use in a wide range of high performance and high efficacy lighting applications.

REACH & RoHS Compliance

The XNOVA 2016 mid power LED is compliant to the Restriction of Hazardous Substances Directive or RoHS. The restricted materials including lead, mercury cadmium hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ether (PBDE) are not used.

Understanding XNova™ Mid Power LED Test Specifications

Every XNova LED is fully tested to ensure it meets the high quality standards customers have come to expect from Luminus products.

Testing Temperature

XNova Mid Power products are measured at a junction temperature of 25C and placed into intensity, chromaticity and voltage bins as described here in

Product Selection Table

Test condition = 60 mA, 25 °C

Nominal CCT	Minimum CRI	Ordering Part Number	Minimum Flux (Lumens)	Typical Flux (Lumens)
2700K	80	MP-2016-1100-27-80	20	22
3000K	80	MP-2016-1100-30-80	20	22
4000K	70	MP-2016-1100-40-70	24	26
	80	MP-2016-1100-40-80	22	24
5000K	70	MP-2016-1100-50-70	25	27
	80	MP-2016-1100-50-80	23	24
5700K	70	MP-2016-1100-57-70	24	26
	80	MP-2016-1100-57-80	22	23
6500K	70	MP-2016-1100-65-70	24	26
	80	MP-2016-1100-65-80	22	24

*IFP condition with Pulse: Width $\leq 100\mu s$ Duty cycle $\leq 1/10$

2016 Mid Power Operating Characteristics

Optical and Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Condition
Forward Voltage	V _F	2.8	3.0	3.4	V	IF=60mA
Reverse Current	I _R			10	uA	VR=5V
View Angle	2θ1/2		110		°	IF=60mA
Thermal Resistance	Rth _{j-sp}		35		°C/W	IF=60mA
Electrostatic Discharge	ESD	1000			V	

Note 1: To prevent damage refer to operating conditions and derating curves for appropriate maximum operating conditions

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.

Note 3: Mid power 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 case temperature. Refer to the current vs. case temperature derating curves for further information.

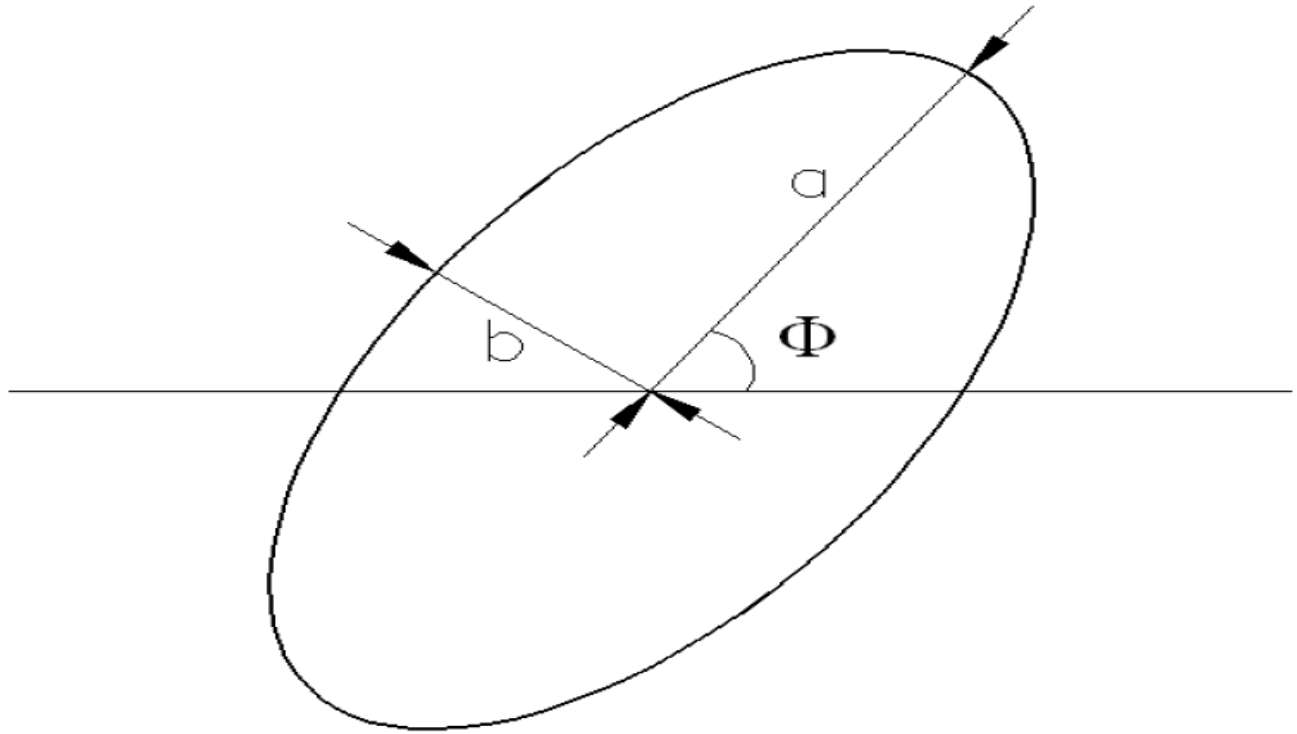
Note 4: Caution must be taken not to stare at the light emitted from these LEDs. Under special circumstances, the high intensity could damage the eye.

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Forward Current	I _F	120	mA
Pulse Forward Current	I _{FP}	200	mA
Power Dissipation	P _D	816	mW
Reverse Voltage	V _R	5	V
Operating Temperature	T _{OPR}	-40~+80	°C
Storage Temperature	T _{STG}	-40~+80	°C
Junction Temperature	T _J	115	°C
Soldering Temperature	T _{SLD}	230 °C OR 260 °C FOR 10 SEC	

*IFP condition with Pulse: Width ≤100μs Duty cycle ≤1/10

Chromaticity Diagram

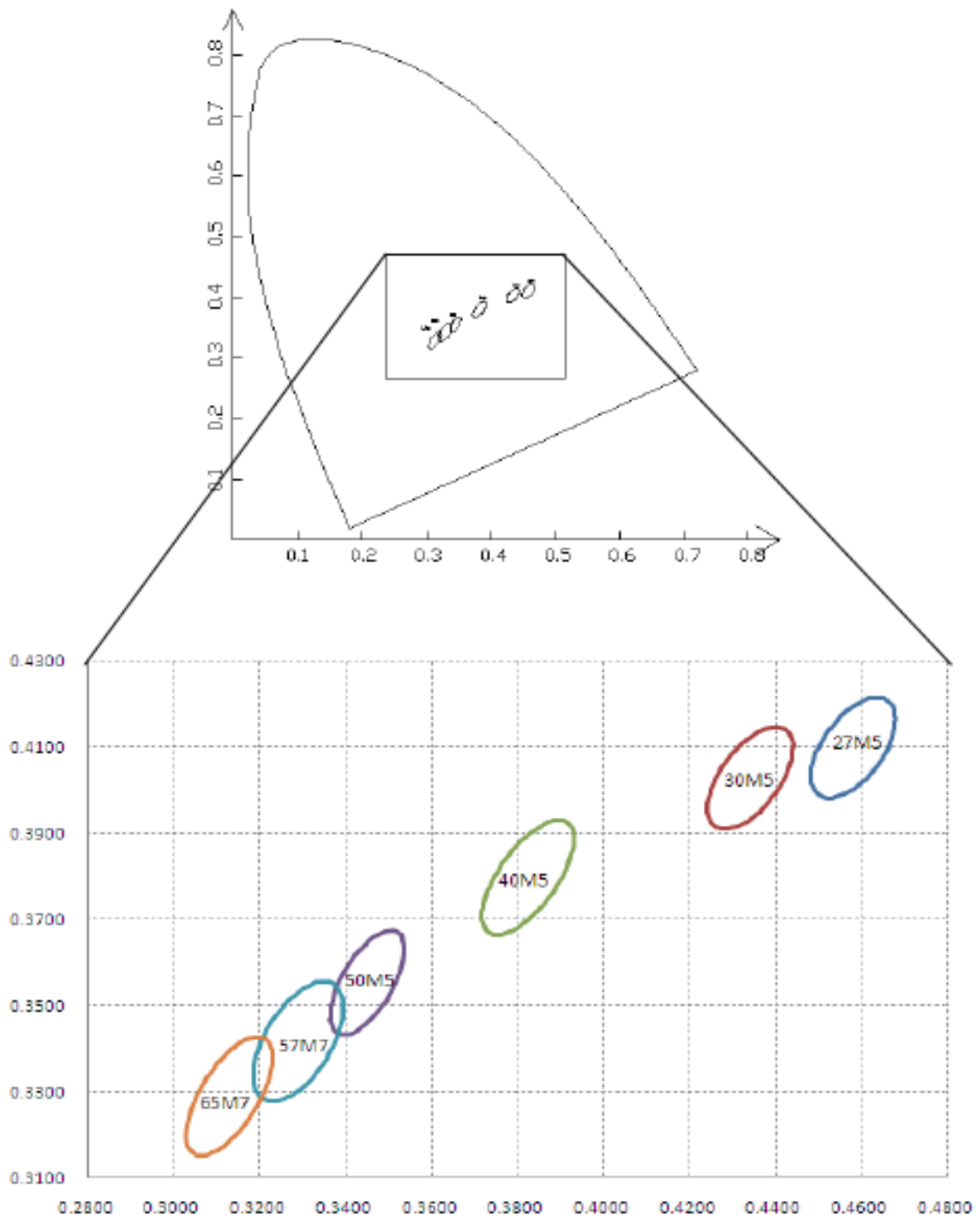


Color Bins

Color Code	Center		RADIUS		Angle(deg)
	x	y	a	b	Φ
27m5	0.4582	0.4099	0.013500	0.00700	53.42
30m5	0.4342	0.4028	0.013900	0.00680	53.13
40m5	0.3825	0.3789	0.015650	0.00670	53.43
50m5	0.3451	0.3554	0.013700	0.00590	59.37
57m7	0.3290	0.3417	0.015645	0.00770	58.35
65m7	0.3130	0.3290	0.015610	0.006650	58.34

*Note: Tolerance of measurements of the chromaticity Coordinate is ± 0.005
Chromaticity coordinates as per ANSI standard.

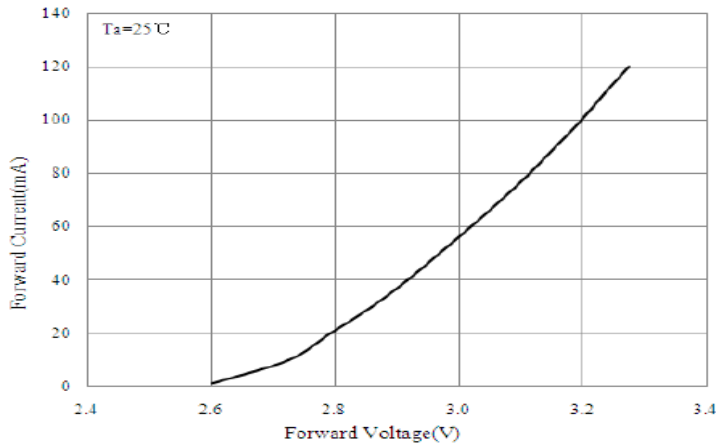
Chromaticity Coordinate Group



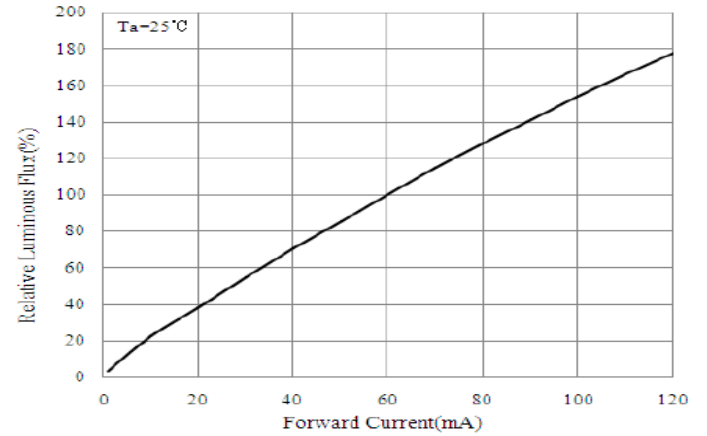
*Note: Luminus maintains a +/- 0.01 tolerance on chromaticity (CIEx and CIEy) measurements.

Typical optical/Electrical Characteristics Graphs

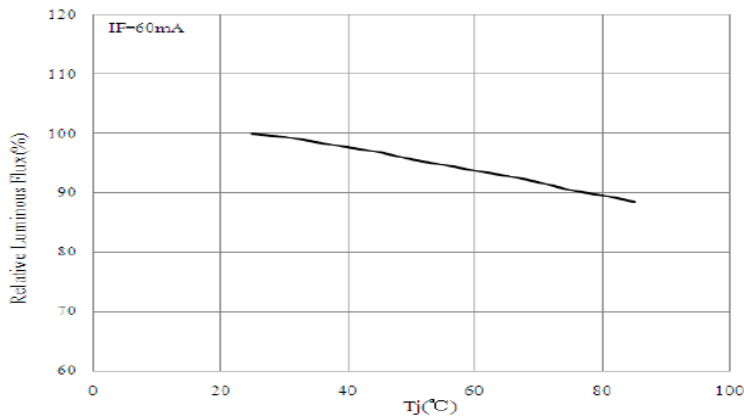
Vf-----IF



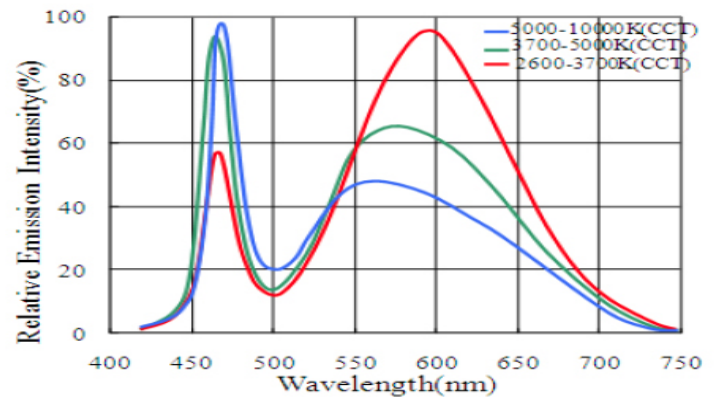
IF---- Relative Luminous flux



Tj-----Relative Luminous Flux



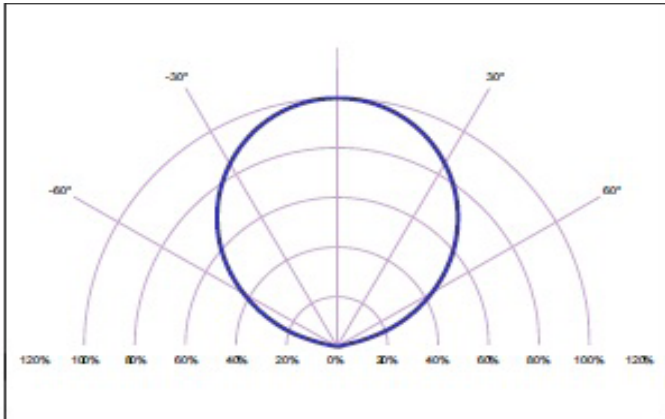
Wavelength- Relative Emission Intensity



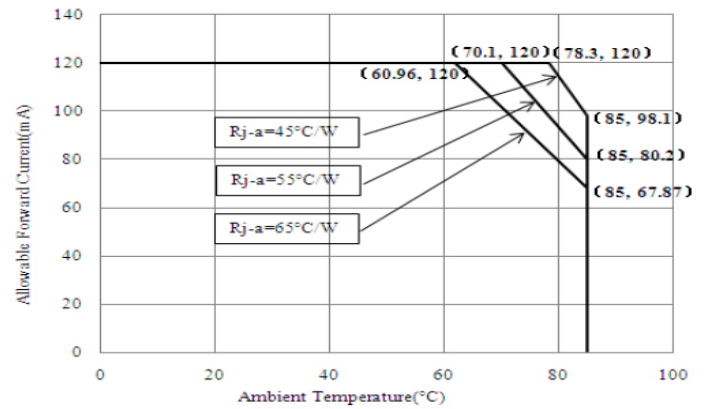
*Note: Luminus maintains a +/- 0.01 tolerance on chromaticity (CIEx and CIEy) measurements.

Solder Profile

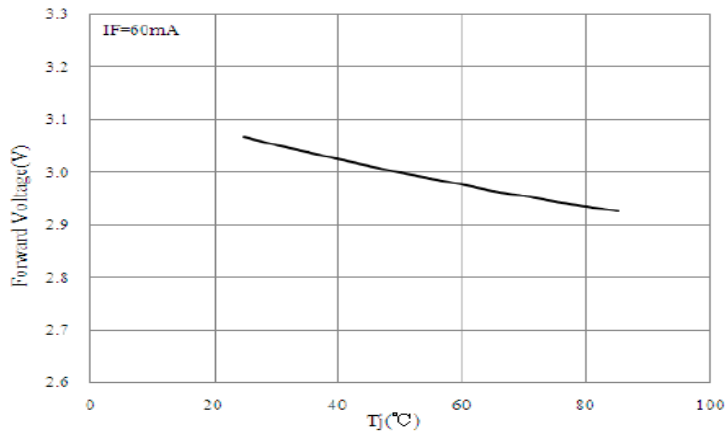
Typical Polar Radiation Pattern



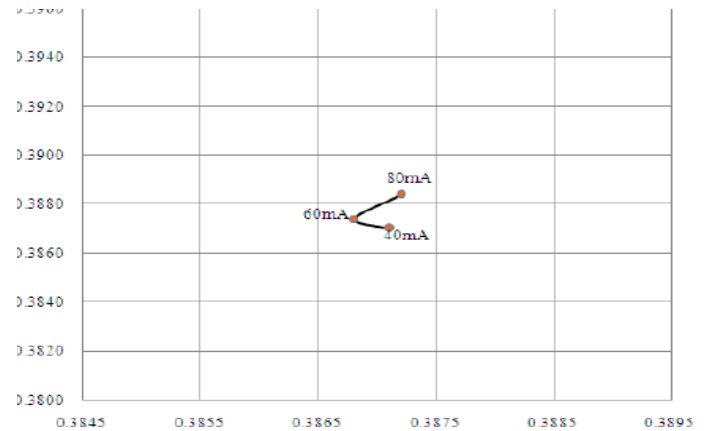
Ambient Temperature-Allowable Forward Current



T_j--Forward Voltage



Forward Current --Chromaticity Coordinate



Product Ordering and Shipping Part Number Nomenclature

All mid power products are packaged and labeled with part numbers as outlined in below. When shipped, each reel will contain only a single flux and voltage bin. The part number designation is as follows:

2016 Mid Power LEDs

Mid Power	Package Type	Package Configurator	Nominal CCT	Minimum CRI
MP	2016	1100	##	##

Example:

The part number MP-2016-1100-30-80 refers to a 2016 mid power emitter with nominal color temperature of 3,000k and minimum CRI of 80. Please refer to page 5 for a description of available CCT and CRI combinations.

Note 1: CCT Codes:

27 = 2700 k

30 = 3000 k

40 = 4000 k

50 = 5000 k

57 = 5700 k

65 = 6500 k

Note 2: CRI Codes:

70

80

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.

Luminus Flux Bins

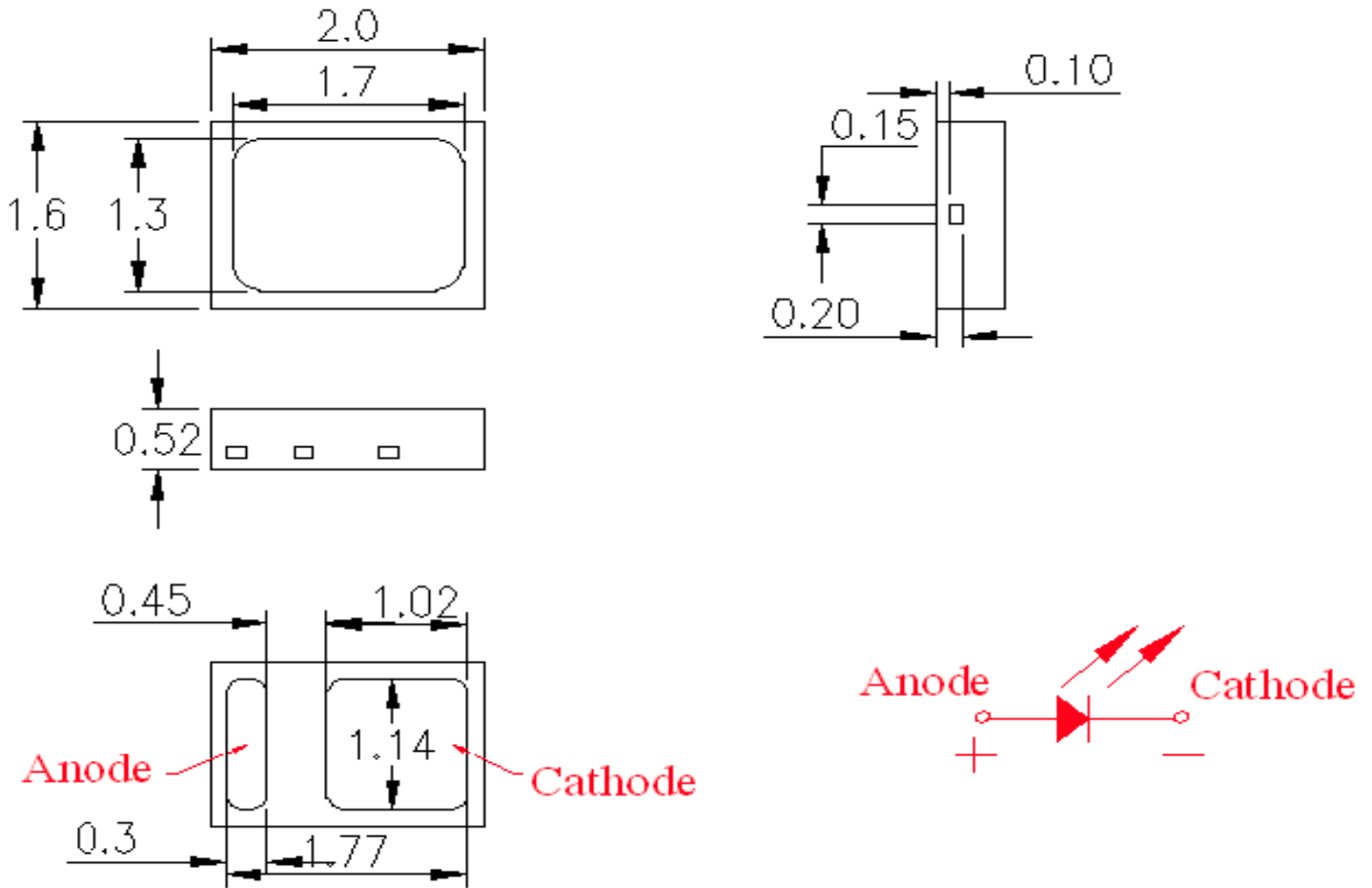
Bin Code	Minimum Flux (Lumens)	Maximum Flux (Lumens)
D1	17	18
D2	18	20
D3	20	22
D4	22	24
D5	24	26

Forward Voltage Bins (Ta=25°C)

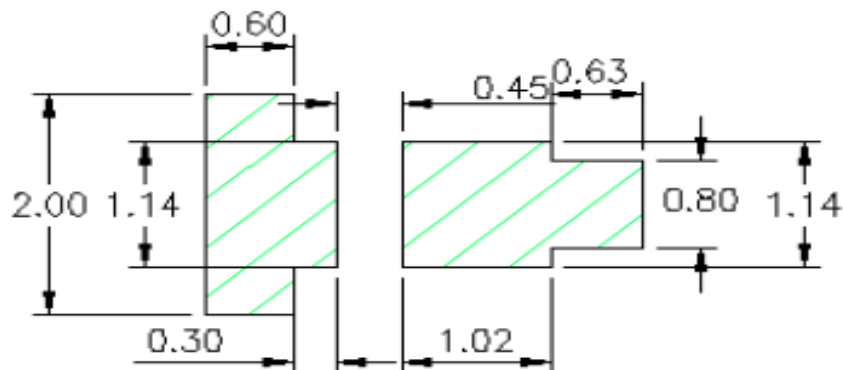
Bin Code	Minimum Voltage (Volts)	Maximum Voltage (Volts)
B	2.8	2.9
C	2.9	3.0
D	3.0	3.1
E	3.1	3.2
F	3.2	3.3
G	3.3	3.4

*Tolerance of measurements of the Forward Voltage is $\pm 0.1V$

Package Dimension (mm)



Recommended Soldering Pad Pattern



Note: tolerance : .X: $\pm 0.10\text{mm}$.XX: $\pm 0.05\text{mm}$

Technical drawing of a mechanical part showing front and side views with dimensions.

Front View Dimensions:

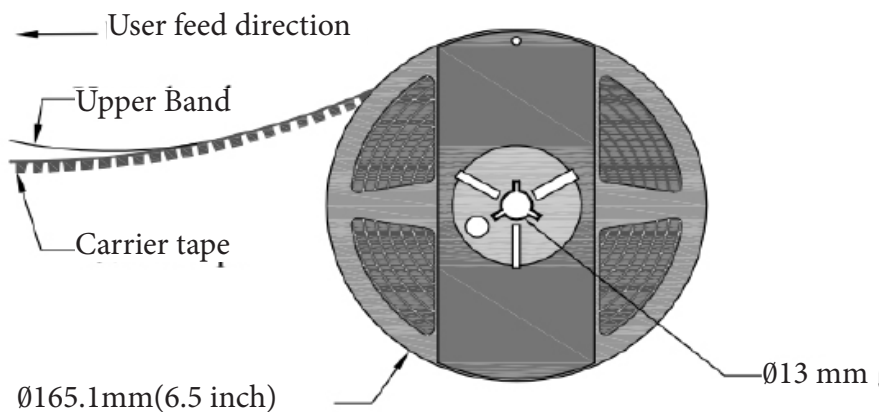
- Top hole diameters: $\varnothing 1.5^{+0.1}_{-0.1}$ and $\varnothing 1.1^{+0.1}_{-0.1}$
- Bottom hole diameters: $\varnothing 2.2^{+0.1}_{-0.1}$ and $\varnothing 1.8^{+0.1}_{-0.1}$
- Top hole center-to-center distances: $4.0^{+0.1}$ and $2.0^{+0.05}$
- Bottom hole center-to-center distances: $4.0^{+0.1}$ and $2.0^{+0.05}$
- Overall width: $8.0^{+0.1}$
- Overall height: $1.75^{+0.1}$
- Section line A-A' is indicated.

Side View Dimensions:

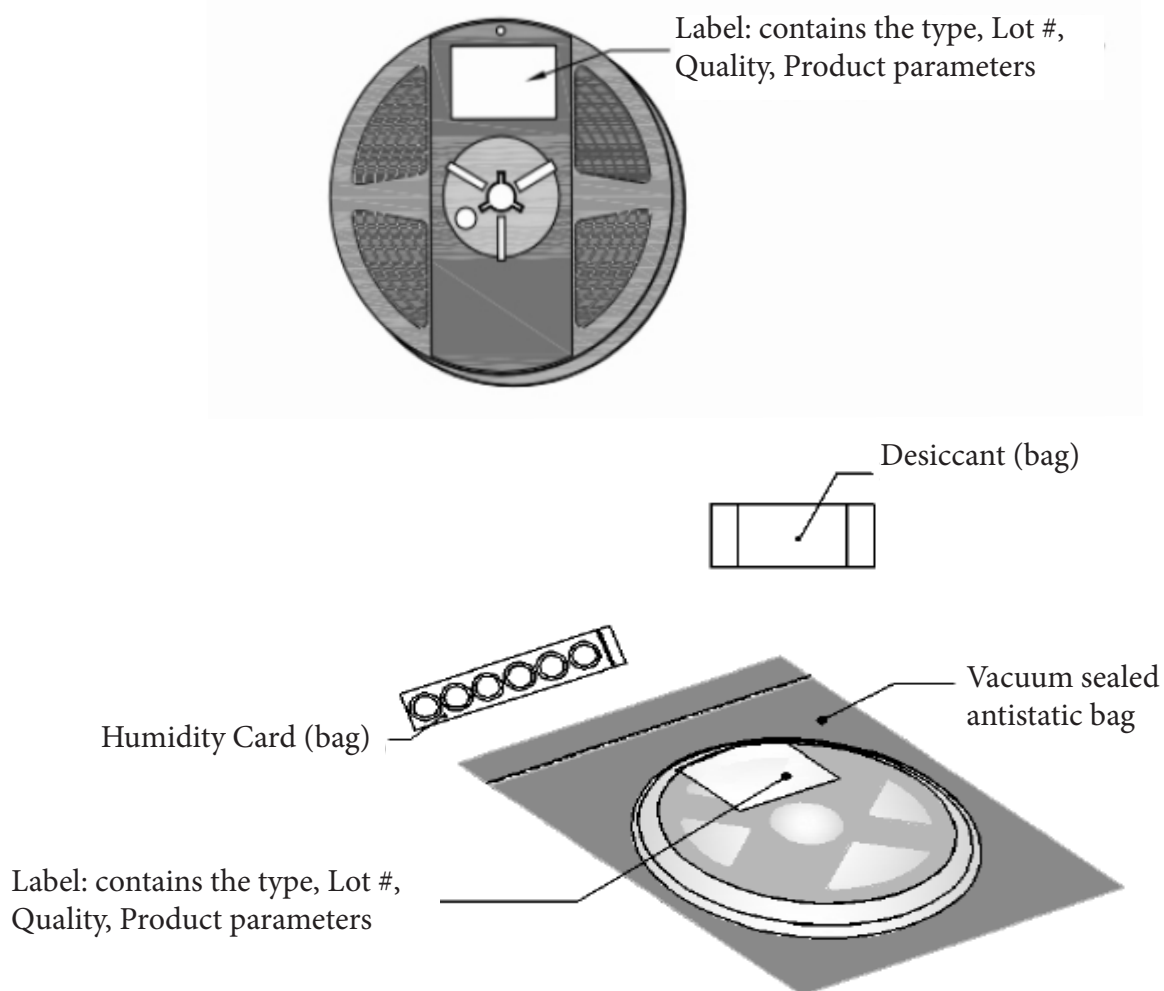
- Top flange thickness: $2.0^{+0.05}$
- Bottom flange thickness: $0.70^{+0.1}$

The diagram illustrates the layout of an LED reel, divided into three main sections: Start, Capacity per reel (500PCs LEDs), and End. The Start section is labeled "With the seal partion is not less than 400mm spaces" and the End section is labeled "With the seal partion is not less than 160mm spaces". The Capacity per reel section is labeled "Capacity per reel (500PCs LEDs)". The diagram shows a sequence of LED components (represented by circles) and seal parts (represented by squares) along the reel.

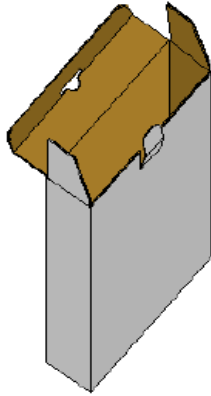
Package Dimensions of Reel (mm)



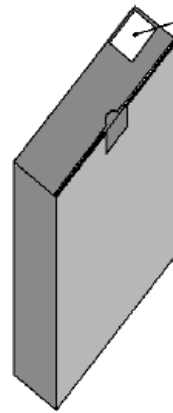
Package Dimensions of Reel (mm)



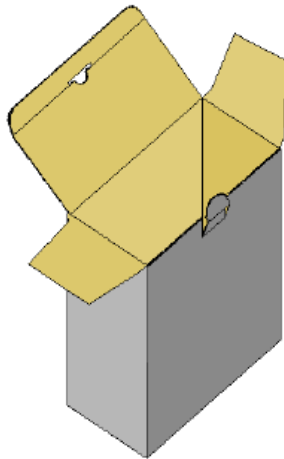
Inner Box



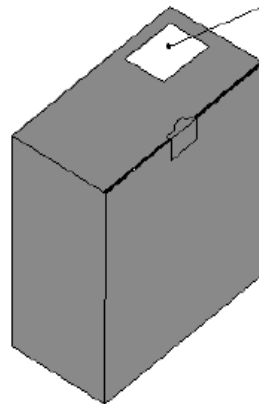
*Capacity 5 reels per box



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



*Capacity 10 reels per box



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

Precaution for Use

Storage:

1. Recommended storage condition:
At 5 °C - 30 °C and relative humidity 60% RH max.
2. 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 24 hours.
 - b) Stored at less than 30% RH.
3. Devices require baking before mounting, if :
2a or 2b is not met.
- 4) If baking is required, devices must be baked under below conditions:
24 hours at 60 °C \pm 5 °C.

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.