

DATASHEET

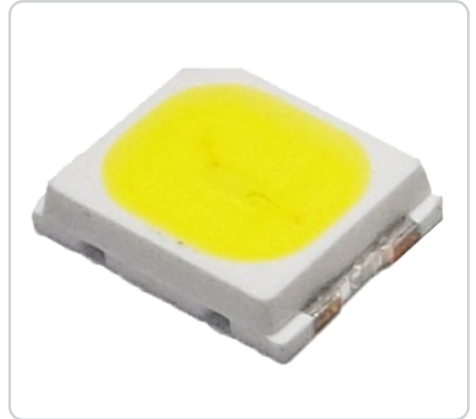
ES-2835-023V-XX-XXX



ES-2835-023V-XX-XXX Datasheet

This 2835 LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The small package outline and high intensity make it an ideal choice for LED panel light, LED bulb light, LED tube light, backlighting and etc.

The White Power LED is available in the range of color temperature from 2700K to 8500K. This part has a foot print that is compatible to most of the same size LED in the market today.



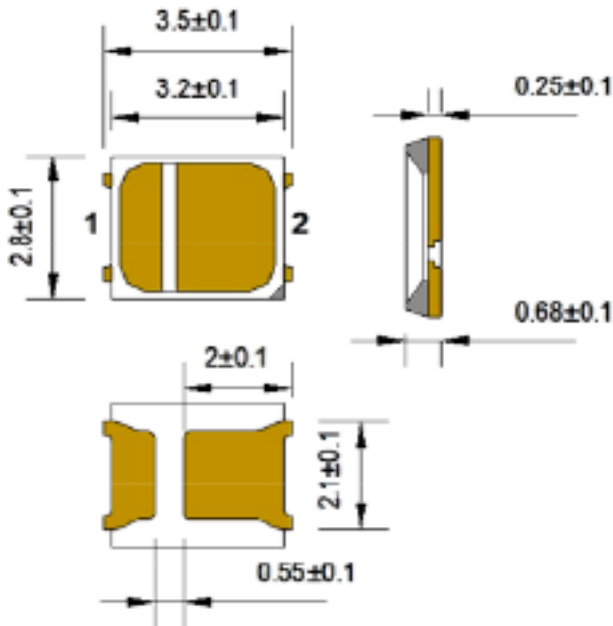
FEATURES

- Available in Cool White, Neutral White and Warm White color
- ANSI-compatible chromaticity bins
- High luminous Intensity and high efficiency
- Compatible with reflow soldering process
- Low thermal resistance
- Long operation life
- Wide viewing angle at 120°
- Silicone encapsulation
- Environmental friendly, RoHS Compliance

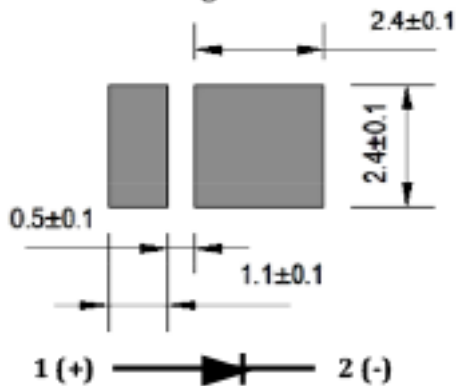
APPLICATIONS

- Flat panel light
- Backlighting
- LED tube light
- LED bulb light
- Decorative and landscape lighting
- Signage and channel letter
- Reading lamp
- Decorating and entertainment lighting
- Architectural lighting

PACKAGE DIMENSIONS



Soldering Pattern



Notes:

1. All dimensions in millimeters.
2. Thickness tolerance of copper plate is $\pm 0.02\text{mm}$.
3. Thickness tolerance of product is $\pm 0.05\text{mm}$.
4. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Absolute Maximum Rating	Unit
Forward current	I_F	75	mA
Peak Forward Current ^[1]	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_d	200	mW
Operating Temperature	T_{opr}	-40~+85	°C
Storage Temperature	T_{stg}	-40~+100	°C
Soldering Temperature	T_{sld}	Soldering: 260 °C for 10 seconds	
LED Junction Temperature	T_j	125	°C

I_{FP} Conditions: Pulse Width ≤10msec. and Duty ≤1/10.

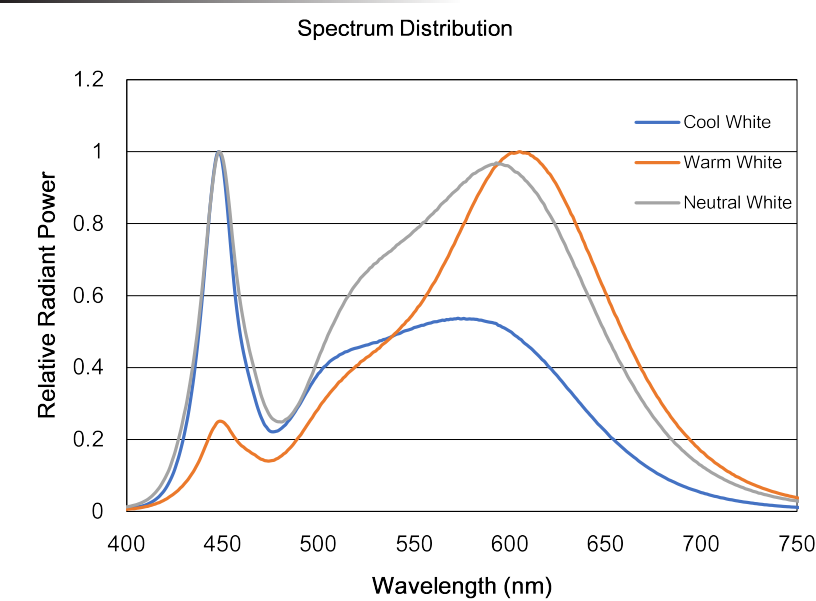
CHARACTERISTICS (T_j=25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V_F	$I_F=60\text{mA}$	2.8	3.0	3.4	V
Viewing Angle	2θ _{1/2}	$I_F=60\text{mA}$	--	120	--	deg.
Luminous Flux	Φ _v	$I_F=60\text{mA}$	24	--	31	lm
Color Rendering Index	CRI	$I_F=60\text{mA}$	80	--	--	--
Color Temperature	CCT	$I_F=60\text{mA}$	2700	--	8500	K
Thermal Resistance (Junction to Solder point)	R_{th-js}	$I_F=60\text{mA}$	--	30	--	°C/W

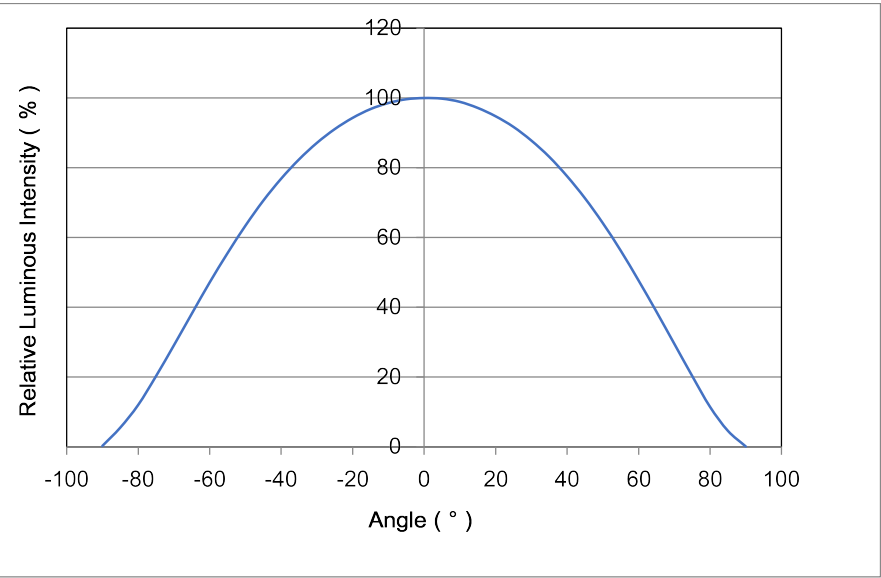
Notes:

1. Luminous flux is measured with an accuracy of ± 10%.
2. Chromaticity coordinate bins are measured with an accuracy of ± 0.01.
3. CRI is measured with an accuracy of ± 2.
4. Some color and CRI bins may have limited availability, please contact us before ordering.
5. All measurements were made under the standardized environment of Everstar

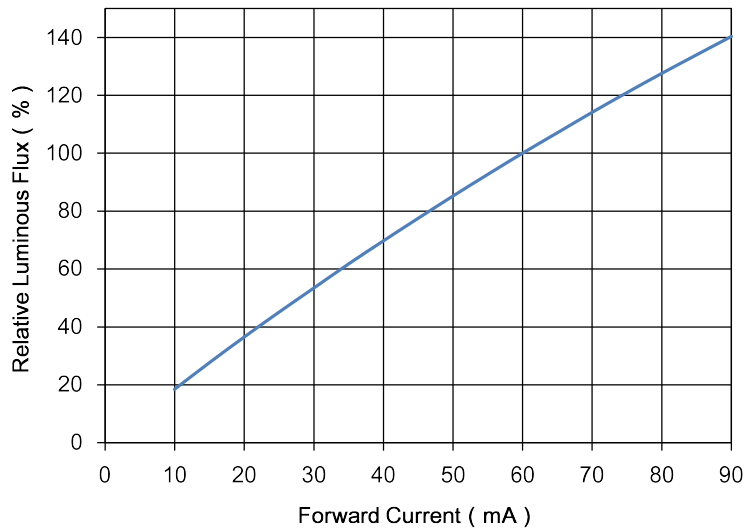
RELATIVE SPECTRAL POWER DISTRIBUTION ($T_j=25^{\circ}\text{C}$)



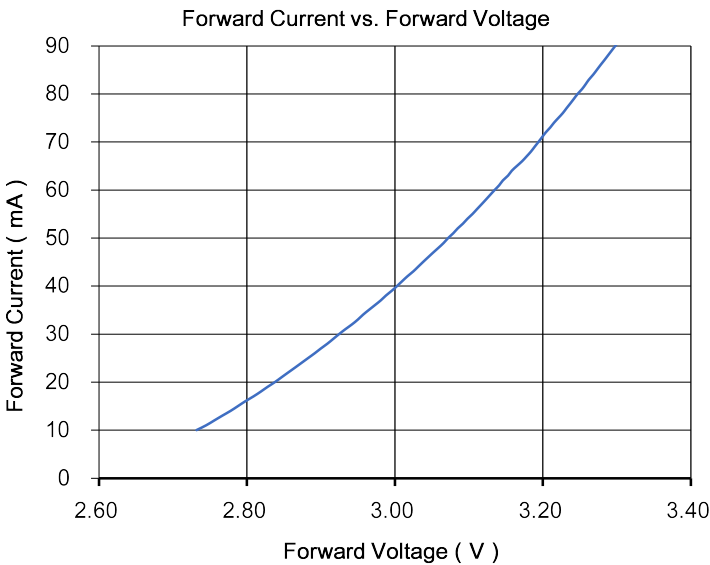
TYPICAL SPATIAL DISTRIBUTION



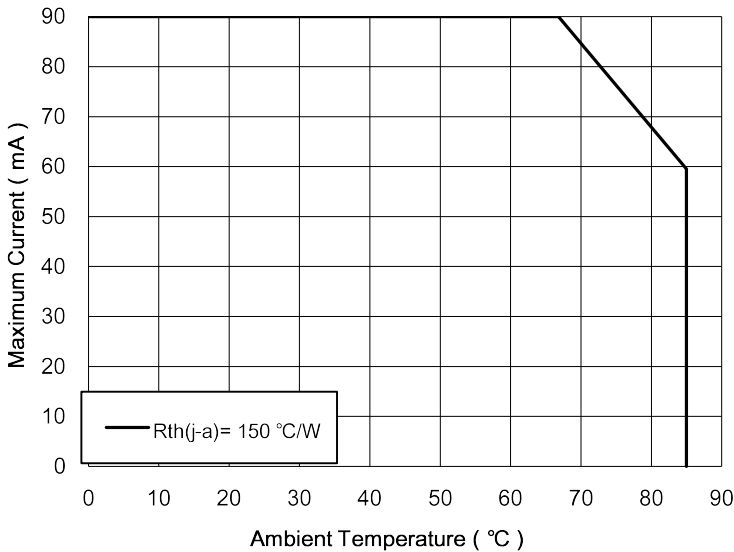
RELATIVE LUMINOUS FLUX VS.CURRENT (T_j=25°C)



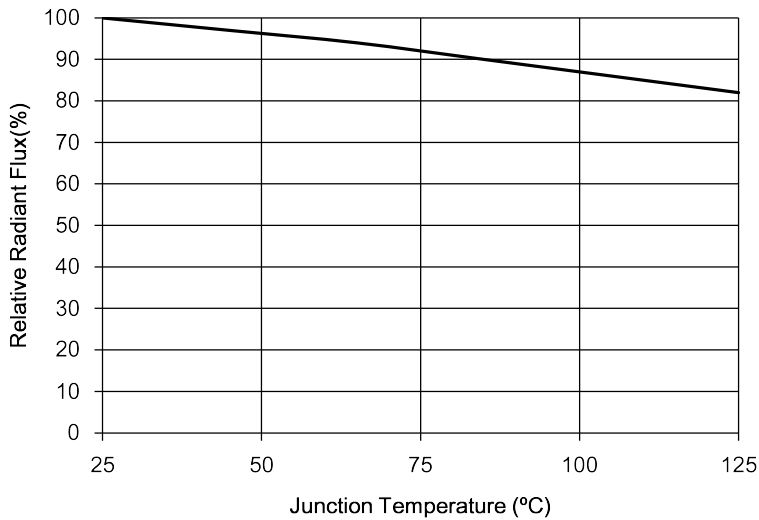
ELECTRICAL CHARACTERISTICS (T_j=25°C)



MAXIMUM CURRENT VS. AMBIENT TEMPERATURE



RELATIVE RADIANT FLUX VS. JUNCTION TEMPERATURE



SORTING RANKS

(1) Luminous Intensity ($T_j=25^{\circ}\text{C}$)

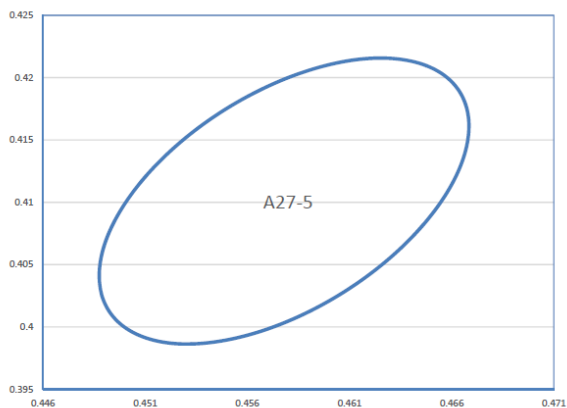
Ordering code	Condition	Rank				Unit
		L0	L1	L2	L3	
ES-2835-023V-XX-827	60mA	22-24	24-26	26-28	27-29	lm
ES-2835-023V-XX-830		22-24	24-26	26-28	27-29	
ES-2835-023V-XX-840		24-26	26-28	28-30	29-31	
ES-2835-023V-XX-857		24-26	26-28	28-30	29-31	
ES-2835-023V-XX-860		24-26	26-28	28-30	29-31	
ES-2835-023V-XX-865		24-26	26-28	28-30	29-31	
ES-2835-023V-XX-875		24-26	26-28	27-29	29-31	

(2) Forward Voltage ($T_j=25^{\circ}\text{C}$)

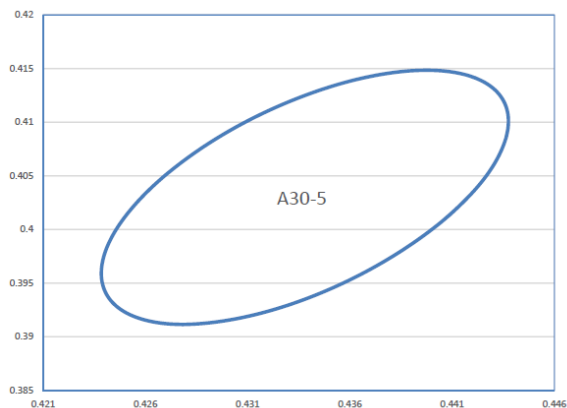
Rank	Condition	Min.	Max.	Unit
V1	60mA	2.8	3.0	V
V2		3.0	3.2	
V3		3.2	3.3	

3) Chromaticity Bins

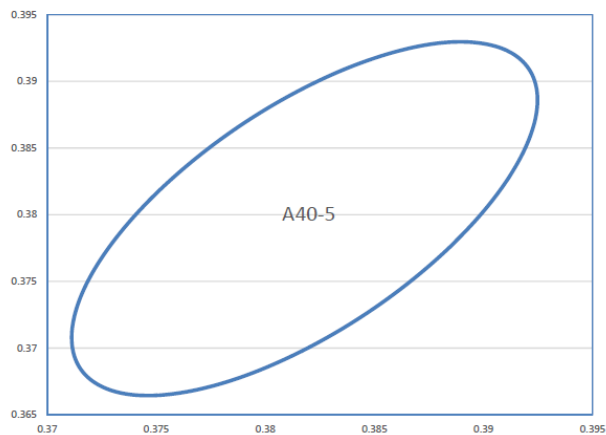
Part Number	ES2835-023V-XX-827			CCT	2700K
Bin Code	Color Coordinates(X,Y)				
27-5	X	Y	A	B	Theta°
	0.4578	0.4101	0.01290	0.00685	57.283



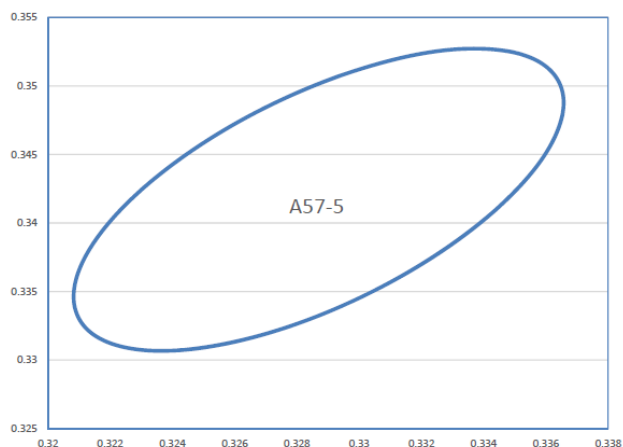
Part Number	ES2835-023V-XX-830			CCT	3000K
Bin Code	Color Coordinates(X,Y)				
30-5	X	Y	A	B	Theta°
	0.4338	0.403	0.01390	0.00680	53.167



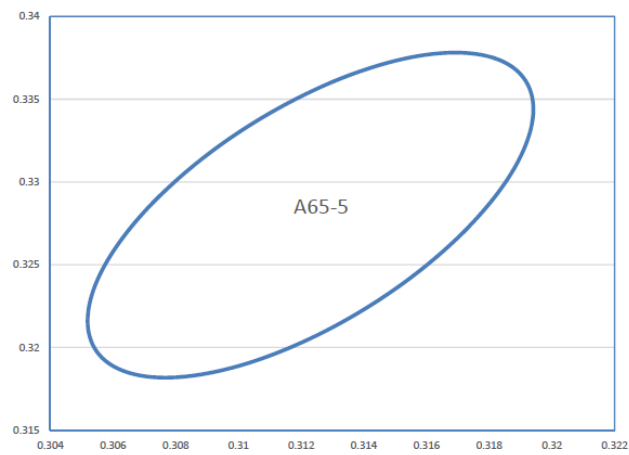
Part Number	ES2835-023V-XX-840			CCT	4000K
Bin Code	Color Coordinates(X,Y)				
40-5	X	Y	A	B	Theta°
	0.3818	0.3797	0.01565	0.00670	54



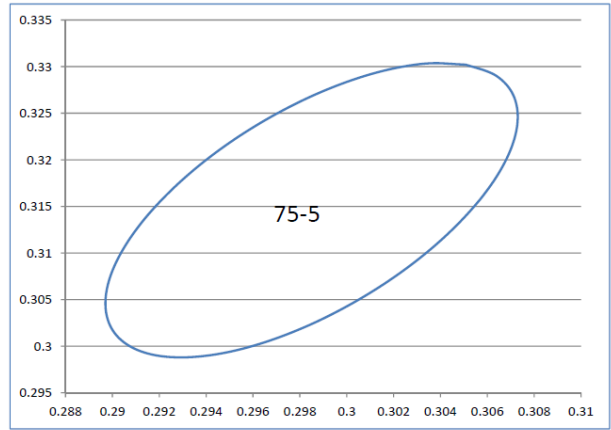
Part Number	ES2835-023V-XX-857			CCT	5700K
Bin Code	Color Coordinates(X,Y)				
57-5	X	Y	A	B	Theta°
	0.3287	0.3417	0.01245	0.00535	59.09



Part Number	ES2835-023V-XX-865			CCT	6500K
Bin Code	Color Coordinates(X,Y)				
65-5	X	Y	A	B	Theta°
	0.3123	0.3282	0.01115	0.00475	58.383



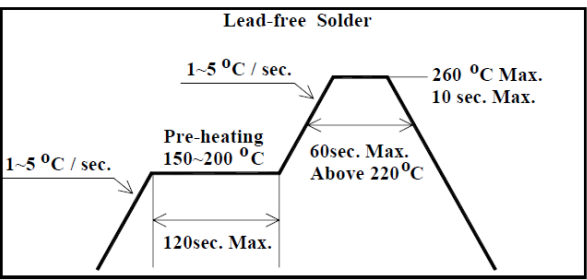
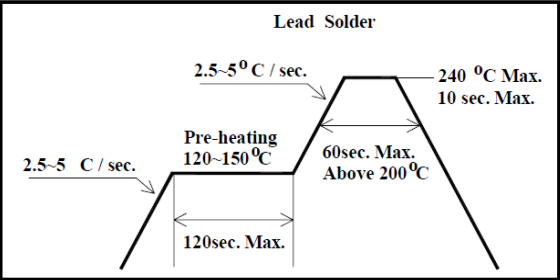
Part Number	ES2835-023V-XX-875			CCT	7500K
Bin Code	Color Coordinates(X,Y)				
75-5	X	Y	A	B	Theta°
	0.2985	0.3146	0.0169	0.0064	67.18



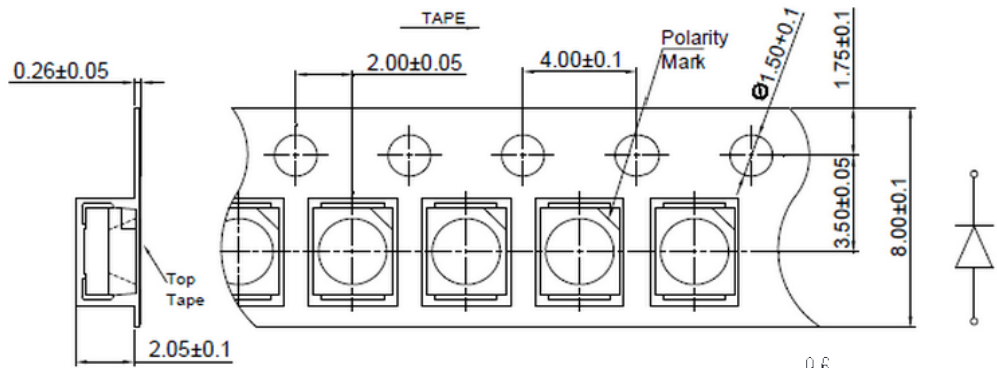
REFLOW SOLDERING CHARACTERISTICS

Preheating : 140°C~160°C±5°C,within 2 minutes.
Operation heating : 260°C(Max.) within 10 seconds.(Max)
Gradual Cooling (Avoid quenching).

Lead solder		Lead-free solder	
Pre-heat	120-150°C	Pre-heat	150-200°C
Pre-heat time	120 sec.Max.	Pre-heat time	120 sec.Max.
Peak Temperature	240°C Max.	Peak Temperature	260°C Max.
Soldering time condition	10 sec.Max.	Soldering time condition	10 sec.Max.



TAPE AND REEL



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Unit=mm

Notes:

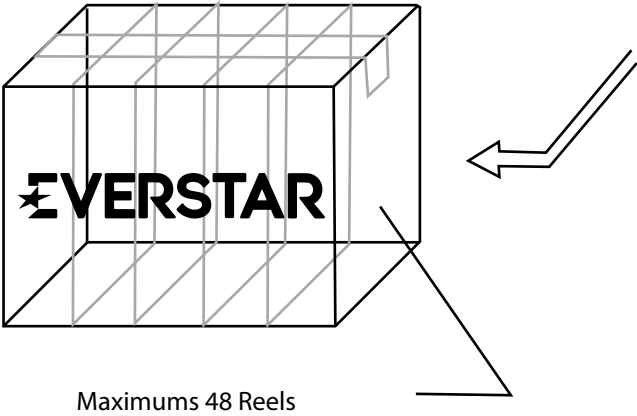
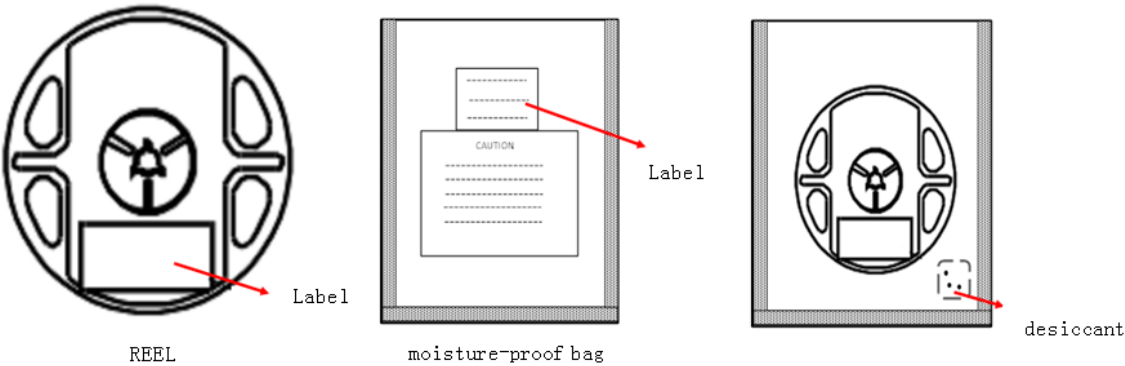
- (1) Quantity : 4,000pcs/Reel
- (2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be $\pm 0.2\text{mm}$
- (3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10° to the carrier tape
- (4) Package : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package.

RELIABILITY TEST ITEMS

Test Items	Test Duration	Number of Damaged
Steady State Operating Life of High Temperature (HTOL) $T_s=85^{\circ}\text{C}$, $I_F=\text{Max}$	1000hrs	0/20
Steady State Operating Life of Low Temperature (LTOL) $T_a=-40^{\circ}\text{C}$, $I_F=\text{Max}$	1000hrs	0/20
Pulse Wet Operating Life of High Temperature (PWHTOL) $60^{\circ}\text{C}/90\%\text{RH}$, $I_F 30\text{mins ON}/30\text{min OFF}$	500hrs	0/20
High Temperature Storage (HTS) $^{\circ}\text{C } 80^{\circ}\text{C}$	1000hrs	0/20
Low Temperature Storage (LTS) -40°C	1000hrs	0/20
Thermal Shock (TS) $-45^{\circ}\text{C} \sim 125^{\circ}\text{C}$ 30min dwell 20sec transfer	100cycles	0/20
Solder Resistance (SR) 265°C , 3X MSL	5sec	0/20
Solder Ability (SA) 245°C 5sec, 95% coverage	5sec	0/11
Mechanical Shock (MS) 1500G 0.5msec pulse shock	Each 6 axis	0/6
Random Vibration (RV) 6G RMS, 10-2000Hz, 10min	Per axis	0/6
Variable Vibration Frequency (VVF) 10-2000-10Hz, log or linear sweep rate, 20G for 1 min, 1.5mm each apply 3x per axis over	6hrs	0/6
Salt Spread (SS) 35°C , 30g/m ² /day	48hrs	0/11

Item	Symbol	Test Condition	Criteria for Judgment Min. Max.
Forward Voltage	V_F	$I_F=\text{Typical Current}$	U.S.L x1.1
Luminous Flux	I_m	$I_F=\text{Typical Current}$	L.S.L x0.7
CCX&CCY	x.y	$I_F=\text{Typical Current}$	Shift<0.02

PACKAGING



PRECAUTION FOR USE

- (1) This device should not be used in any type of fluid such as water, oil, organic solvent, etc. When washing is required, IPA should be used.
- (2) When the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.
- (3) LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3 months or more after being shipped from EVERSTAR, a sealed container with a nitrogen atmosphere should be used for storage.
- (4) The LEDs must be used within seven days after opening the moisture proof packing. Repack unused Products with anti-moisture packing, fold to close any opening and then store in a dry place.
- (5) The appearance and specifications of the product may be modified for improvement without notice.
- (6) This LED is sensitive to the static electricity and surge. It is recommended to use a wrist Band or antielectrostatic glove when handling the LEDs.
- (7) On manual soldering, a solder tip must be needed as grounded for usage. If over voltage which exceeds the absolute maximum rating is applied to LEDs, it will cause damage LEDs and result in destruction. Damaged LEDs will show some unusual characteristics such as leak current remarkably increase, turn-on voltage becomes lower and the LEDs get unlighted at low current.