

A large graphic of a magnifying glass with a blue handle and frame, and a yellow lens. The text is centered within the lens.

DATA SHEET
ES-3030-PL-DI-1
HORTICULTURE

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ES-3030-PL-DI-1 Datasheet

This 3030 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 and etc.

This part has a foot print that is compatible to most of the same size LED in the market today.

The spectral ratio is R: B3: 1 / R: FR4.8: 1; R:B=3:1 is the most suitable spectrum for leafy vegetables and fruiting plants. The spectrum of R:FR=4.8:1 is very close to suitable spectrum of flowers, and it can cover the needs of many plants to the maximum extent. The photosynthetic photon flux efficiency (@ 1W) > 2.0umol/J can meet the requirements of promoting plant growth. More higher PPF/W recommended at 0.5W.

CRI90 is in accordance with US Standard 3500K color tolerance standard, continuous wide distribution spectrum, meets the human eye lighting demand, the light color quality is high.



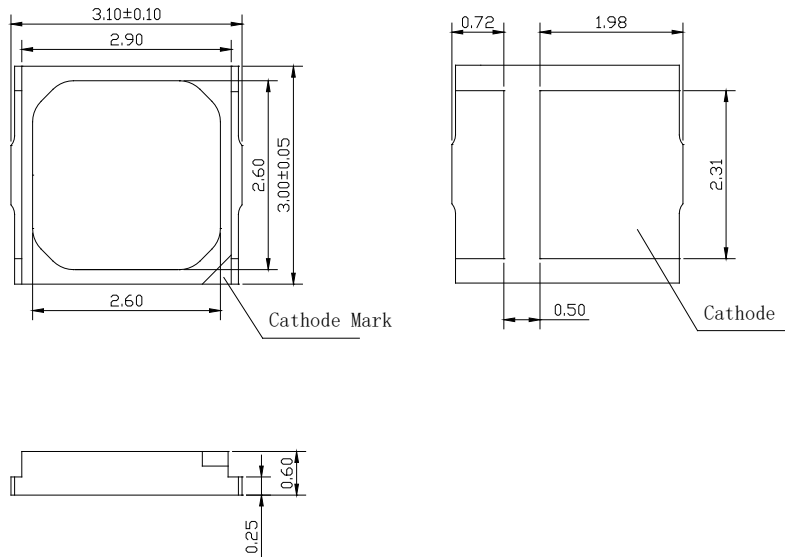
FEATURES

- 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
- suitable spectrum for leafy vegetables and fruiting plants

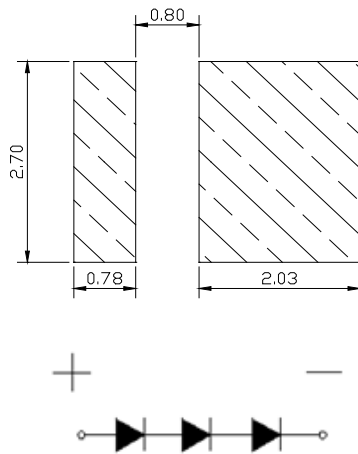
APPLICATIONS

- Flat panel light
- LED tube light
- LED bulb light
- Horticulture light

PACKAGE DIMENSIONS



Recommended Solder Pad Design



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Absolute Maximum Rating	Unit
Forward current	I_F	120	mA
Peak Forward Current ^[1]	I_{FP}	400	mA
Reverse Voltage	V_R	15	V
Power Dissipation	P_d	1116	mW
Operating Temperature	T_{opr}	-40~+85	°C
Storage Temperature	T_{stg}	-40~+100	°C
Soldering Temperature	T_{sld}	Reflow Soldering: 260°C for 10 seconds	
LED Junction Temperature	T_j	115	°C

Note:

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

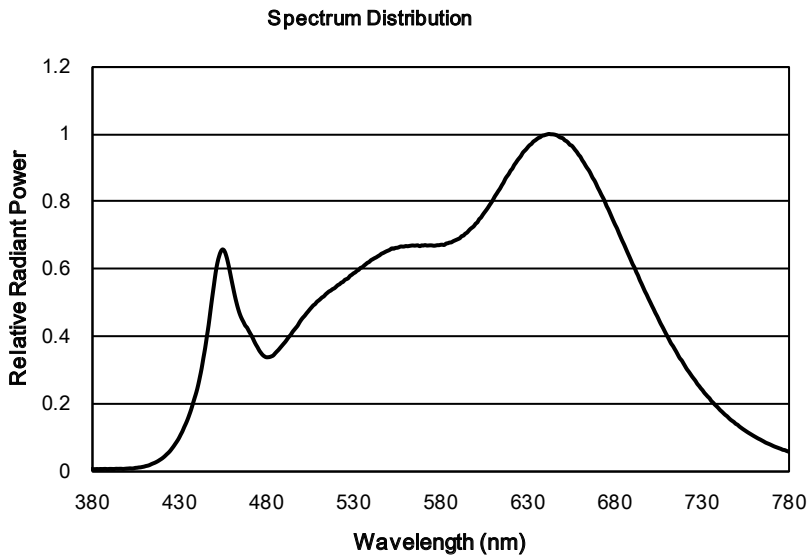
CHARACTERISTICS (T_j=25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V_F	$I_F=100$ mA	8.5	9.0	9.3	V
Viewing Angle	$2\theta_{1/2}$	$I_F=100$ mA	--	120	--	deg.
Luminous Flux	Φ_v	$I_F=100$ mA	90	--	110	lm
Color Rendering Index	CRI	$I_F=100$ mA	90	--	--	--
Color Temperature	CCT	$I_F=100$ mA	--	3500	--	K
Thermal Resistance (Junction to Solder point)	R_{th-js}	$I_F=100$ mA	--	18	--	°C/W
Radiation power	Φ_e	$I_F=100$ mA	--	385	--	mw
Photon flux	PPF	$I_F=100$ mA	--	1.9	--	umol/s
Photon flux efficiency	PPF/W	$I_F=100$ mA	--	2.1	--	umol/s/W

Notes:

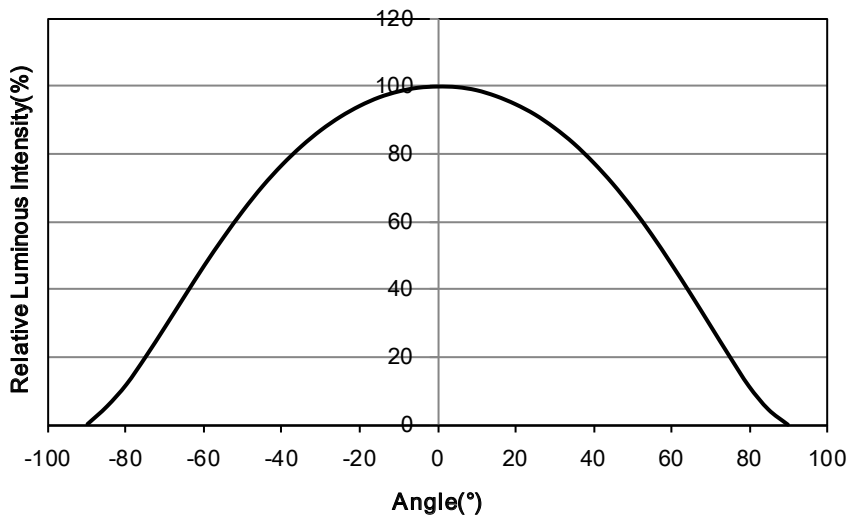
- Luminous flux is measured with an accuracy of $\pm 10\%$.
- Chromaticity coordinate bins are measured with an accuracy of ± 0.01 .
- CRI is measured with an accuracy of ± 2 .
- Some color and CRI bins may have limited availability, please contact us before ordering.
- All measurements were made under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

RELATIVE SPECTRAL POWER DISTRIBUTION (Tj=25°C)

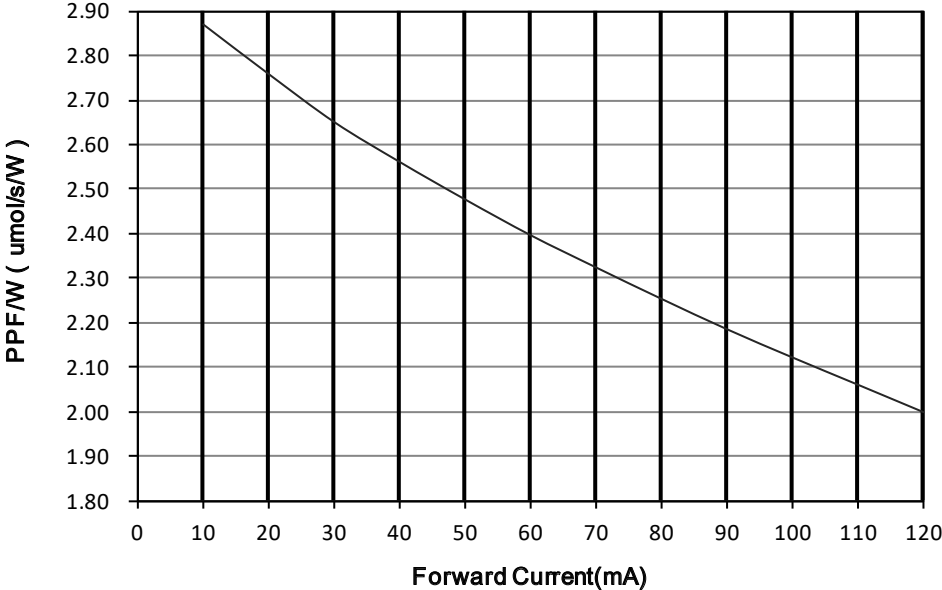


Note:
 Radiation power ratio: (380nm-500nm):(500nm-600nm) :(600nm-700nm) :(700nm-780nm)= 15:32:44:9

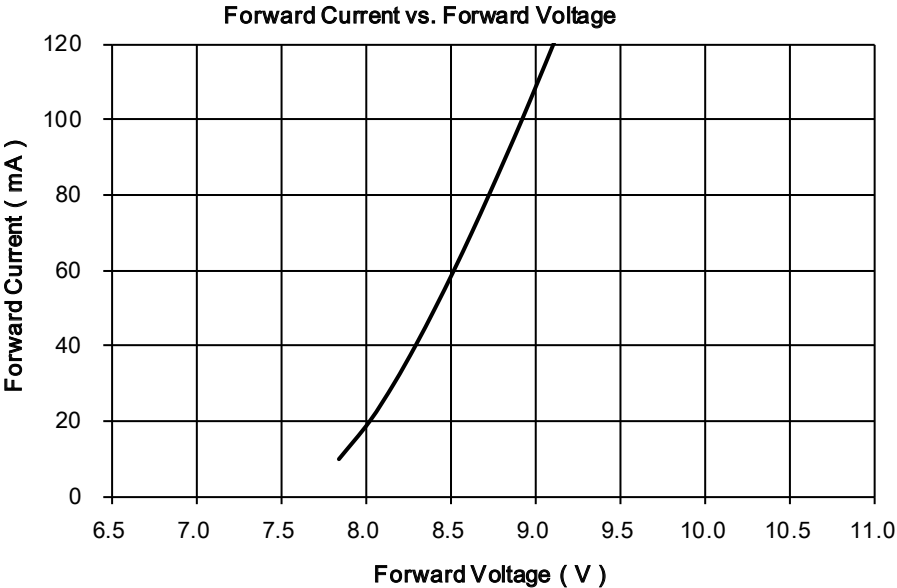
TYPICAL SPATIAL DISTRIBUTION



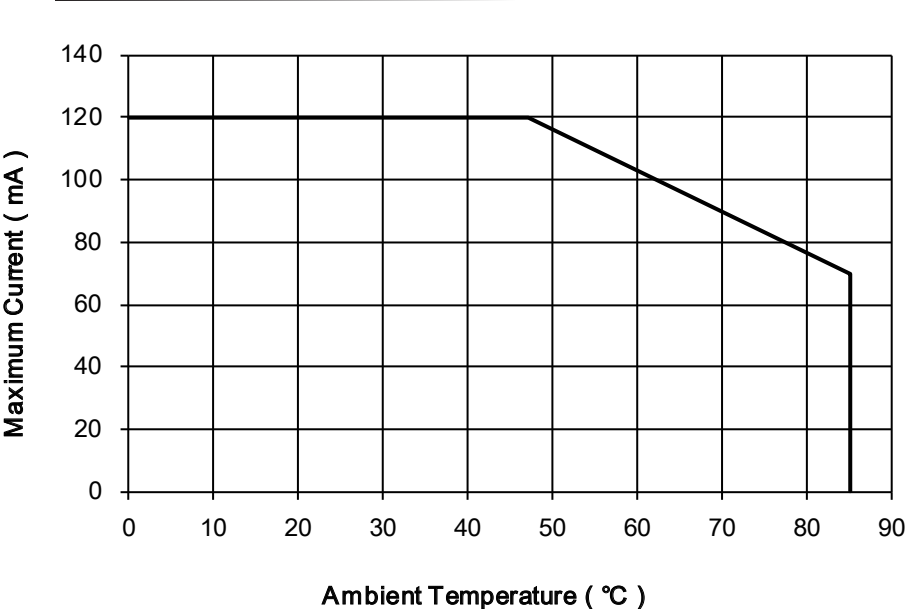
PPF/W VS. CURRENT(Tj=25°C)



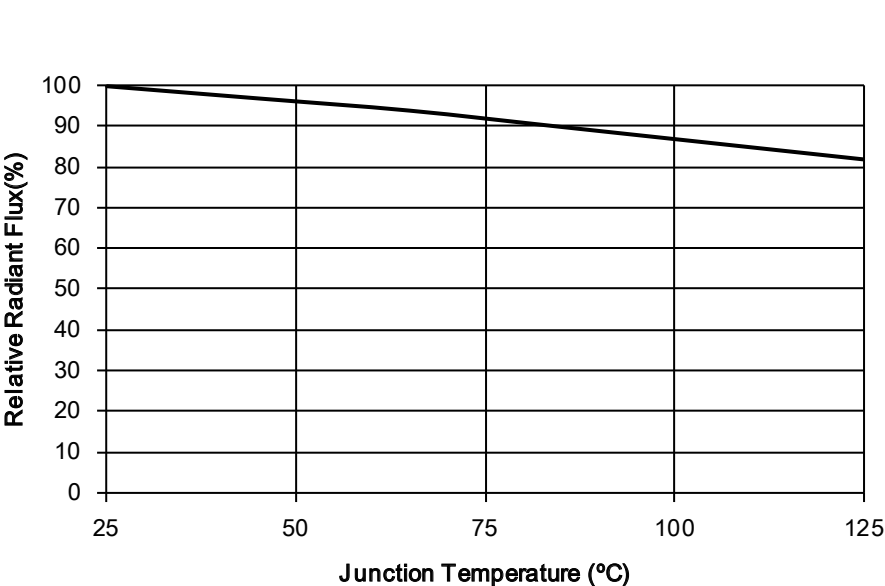
ELECTRICAL CHARACTERISTICS (Tj=25°C)



MAXIMUM CURRENT VS. AMBIENT TEMPERATURE



RELATIVE RADIANT FLUX VS. JUNCTION TEMPERATURE



SORTING RANKS

(1) Luminous Flux (T_j=25°C)

Part Number	Condition	Rank		Unit
		PE	Q0	
ES-3030-PL-DI-1	100mA	90-100	100-110	lm

(2) Forward Voltage (T_j=25°C)

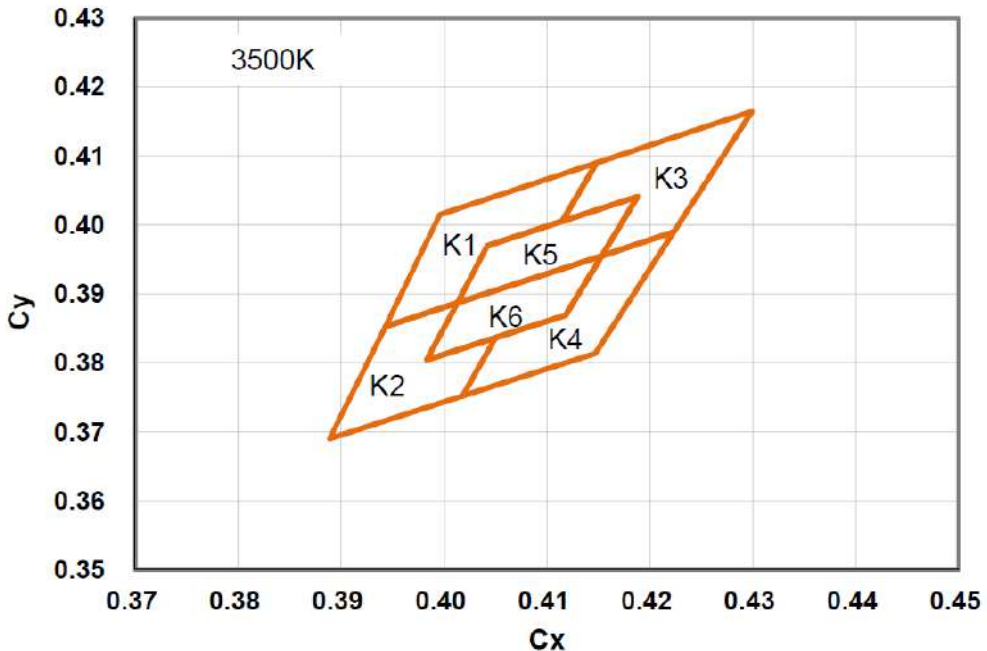
Rank	Condition	Min.	Max.	Unit
EB	100mA	8.5	8.8	V
EC		8.8	9.3	

Notes:

1. 10% tolerance for luminous intensity may be caused by measurement inaccuracy.
2. Measurement Uncertainty of the Forward Voltage : ± 0.1V

(3) Chromaticity Bins

Rank	X	Y	Rank	X	Y	Rank	X	Y
K1	0.3943	0.3853	K4	0.4018	0.3752	K5	0.4042	0.3970
	0.3996	0.4015		0.4050	0.3837		0.4188	0.4041
	0.4148	0.4090		0.4118	0.3869		0.4153	0.3955
	0.4115	0.4006		0.4153	0.3955		0.4013	0.3887
	0.4042	0.3970		0.4223	0.3990		0.4042	0.3970
	0.4013	0.3887		0.4147	0.3814			
	0.3943	0.3853		0.4018	0.3752			
K2	0.3889	0.3690	K3	0.4148	0.4090	K6	0.4013	0.3887
	0.3943	0.3853		0.4299	0.4165		0.4153	0.3955
	0.4013	0.3887		0.4223	0.3990		0.4118	0.3869
	0.3983	0.3804		0.4153	0.3955		0.3983	0.3804
	0.4050	0.3837		0.4188	0.4041		0.4013	0.3887
	0.4018	0.3752		0.4115	0.4006			
	0.3889	0.3690		0.4148	0.4090			



REFLOW SOLDERING CHARACTERISTICS

For Reflow Process:

Preheating : 140°C~160°C±5°C, within 2 minutes.

Operation heating : 260°C(Max.) within 10 seconds.(Max)

Gradual Cooling (Avoid quenching).

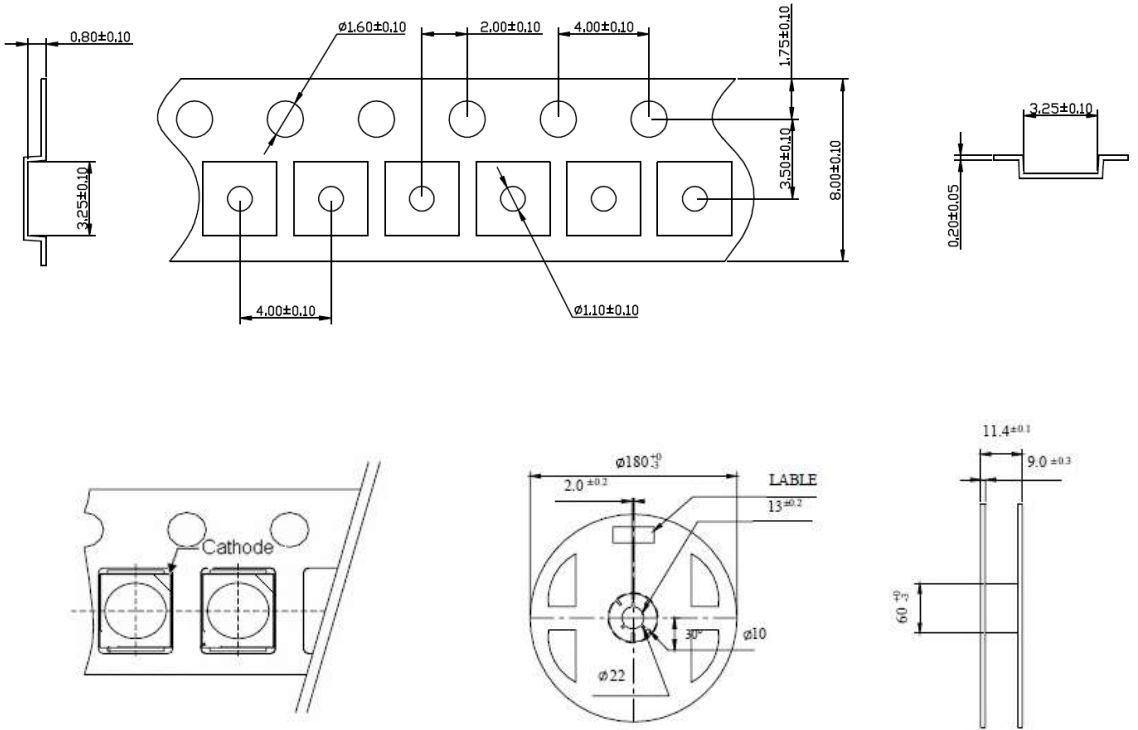
Lead solder		Lead-free solder	
Pre-heat	120-150°C	Pre-heat	150-200°C
Pre-heat time	120 sec.Max.	Pre-heat time	120 sec.Max.
Peak Temperature	240°C Max.	Peak Temperature	260°C Max.
Soldering time condition	10 sec.Max.	Soldering time condition	10 sec.Max.

<p style="text-align: center;">Lead Solder</p>	<p style="text-align: center;">Lead-free Solder</p>
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Notes:

The encapsulated material of the LEDs is silicone . Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when using the picking up nozzle, the pressure on the silicone resin should be proper.

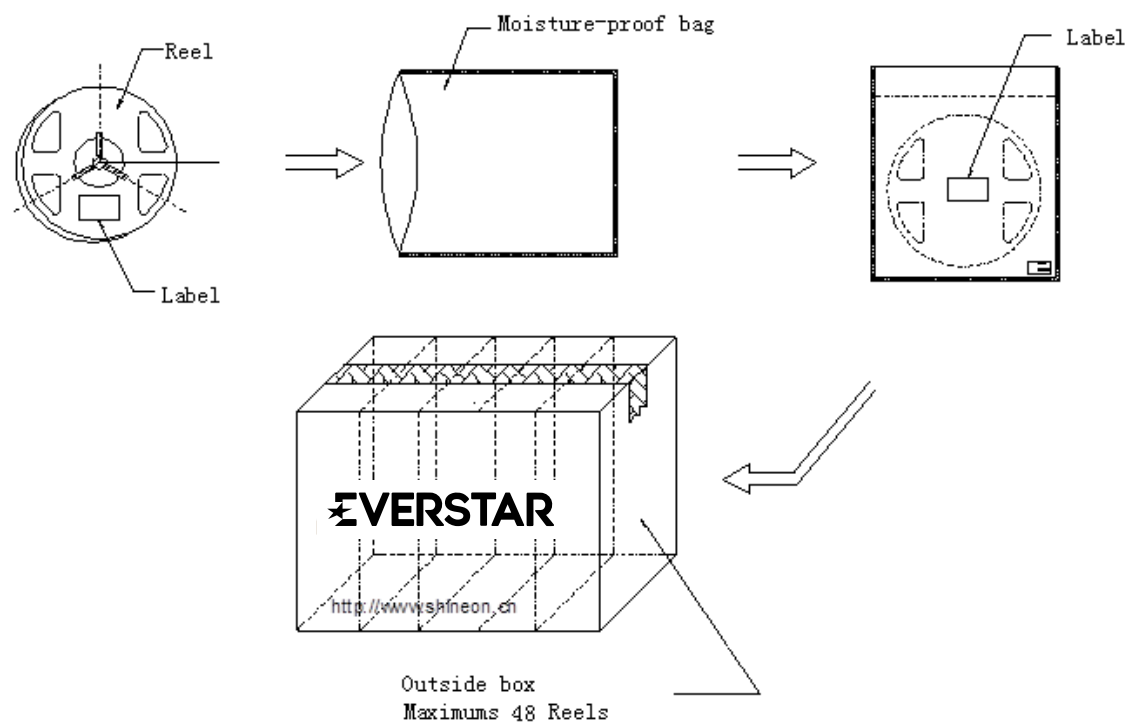
TAPE AND REEL



Notes:

- (1) Quantity : 3,500pcs/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.

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 four weeks 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 anti-electrostatic 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.