EVERSTAR
The Brightest LED

DATASHEET

ES-2835-109V-L1-XXXX

ES-2835-109V-L1-XXXX 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 and etc.

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

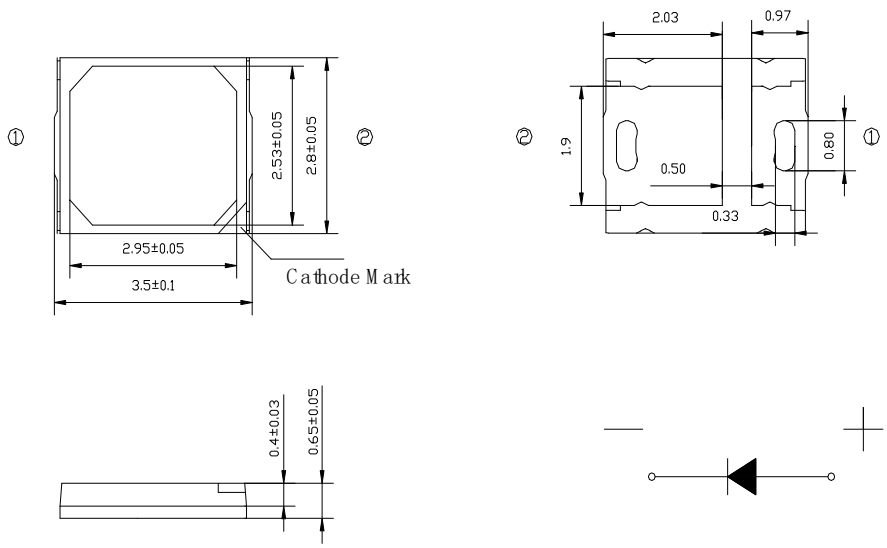
FEATURES

- 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

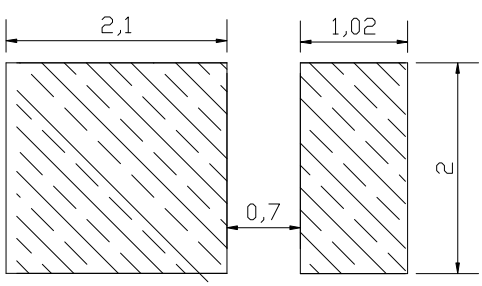
APPLICATIONS

- Flat panel light
- LED tube light
- LED bulb light
- Interior & exterior automotive lighting
- Decorative and landscape lighting
- Signage and channel letter
- Decorating and entertainment lighting
- Architectural lighting

PACKAGE DIMENSIONS



Recommended Solder Pad Design



Notes:

1. All dimensions in millimeters.

2. Thickness tolerance of copper plate is ±0.02mm.

3. Thickness tolerance of product is ±0.05mm.

4. Tolerance is ±0.1mm unless otherwise noted.

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	Pd	1164	mW
Operating Temperature	T_{opr}	-40~+85	℃
Storage Temperature	T_{stg}	-40~+100	℃
Soldering Temperature	T_{sld}	Reflow Soldering: 260℃ for 10 seconds	
LED Junction Temperature	T_j	115	℃

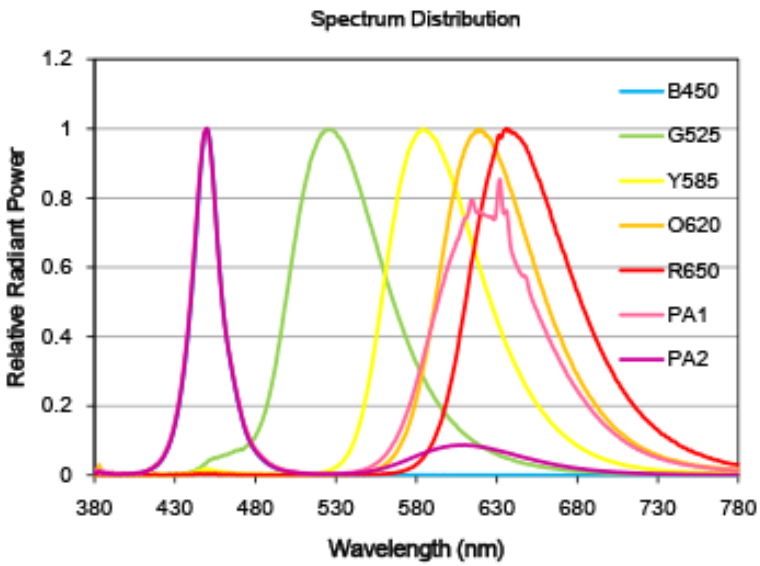
I_{FP} Conditions: Pulse Width ≤10msec. and Duty ≤1/10.

CHARACTERISTICS (Tj=25°C)

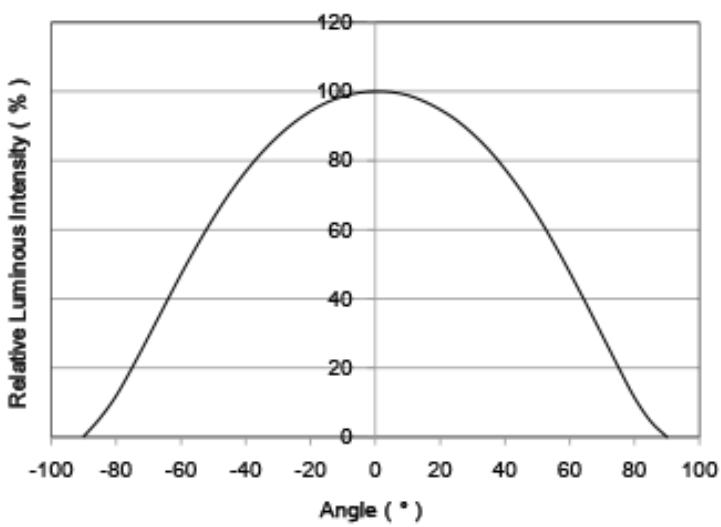
Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V_F	IF=100mA	8.5	--	9.7	V
Viewing Angle	$2\theta_{1/2}$	IF=100mA	--	120	--	deg.
Luminous Flux	Φv	IF=100mA	12	--	200	lm
Peak Wavelength	Wp	IF=100mA	440	--	650	lm
Thermal Resistance (Junction to Solder point)	R_{th-js}	IF=100mA	--	15	--	℃/W

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**

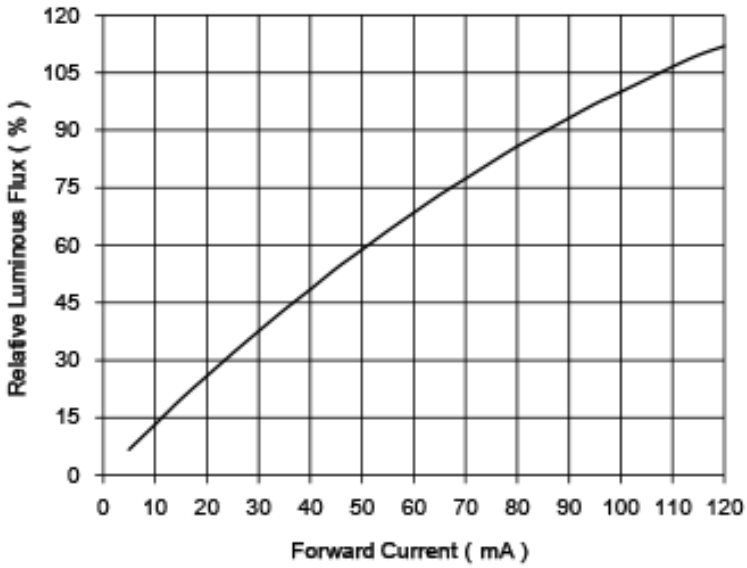
RELATIVE SPECTRAL POWER DISTRIBUTION (T_j=25°C)



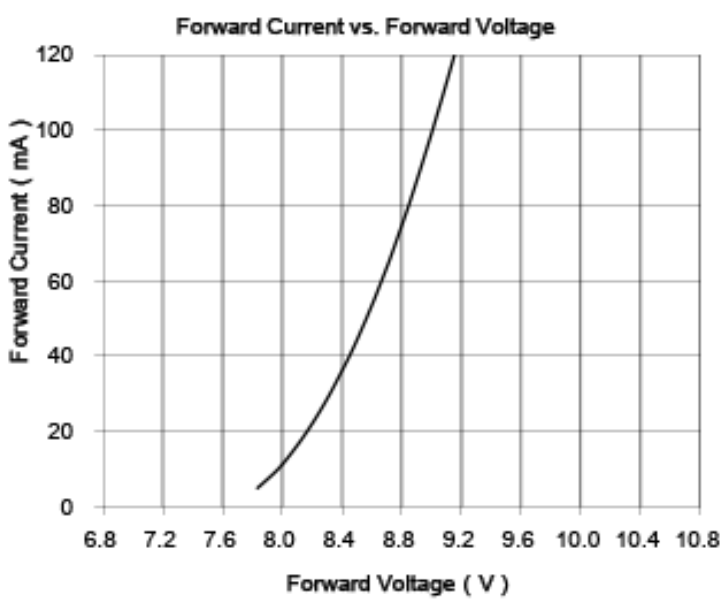
TYPICAL SPATIAL DISTRIBUTION



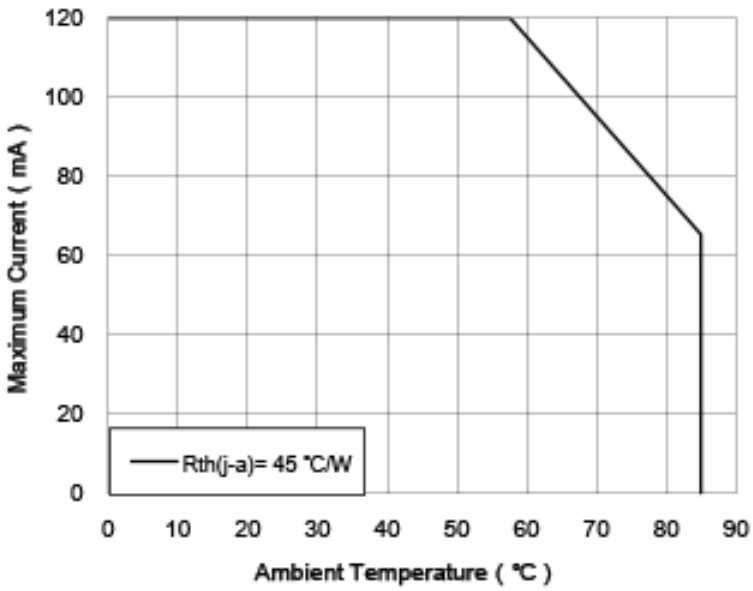
RELATIVE LUMINOUS FLUX VS.CURRENT (T_j=25°C)



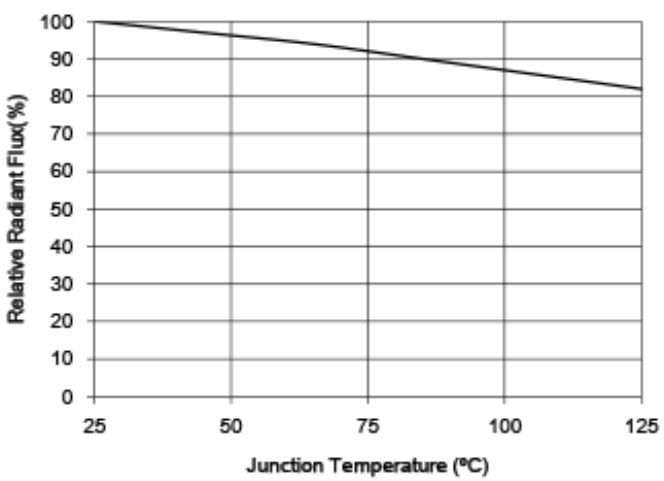
ELECTRICAL CHARACTERISTICS (T_j=25°C)



MAXIMUM CURRENT VS. AMBIENT TEMPERATURE



RELATIVE RADIANT FLUX VS. JUNCTION TEMPERATURE



SORTING RANKS

(1) Luminous Flux (Tj=25℃)

Part Number	Condition	Rank			Unit
ES-2835-109V-L1-B450	100mA	MB	MC	MD	lm
		12-14	14-16	16-18	
ES-2835-109V-L1-G525		QC	QD	QE	
		140-160	160-180	180-200	
ES-2835-109V-L1-Y585		QA	QB	QC	
		100-120	120-140	140-160	
ES-2835-109V-L1-O620		OE	PA	PB	
		46-50	50-60	60-70	
ES-2835-109V-L1-R650		ND	NE	OA	
		26-28	28-30	30-34	
ES-2835-109V-L1-PA01		PA	PB	PC	
		50-60	60-70	70-80	
ES-2835-109V-L1-PA02		OB	OC	OD	
		34-38	38-42	42-46	

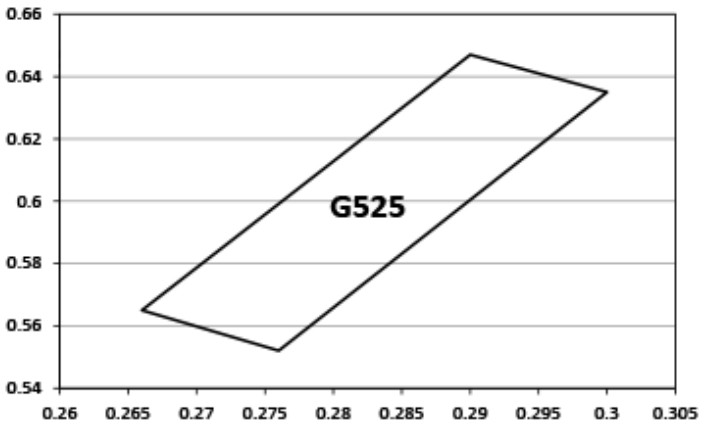
(2) Forward Voltage (Tj=25℃)

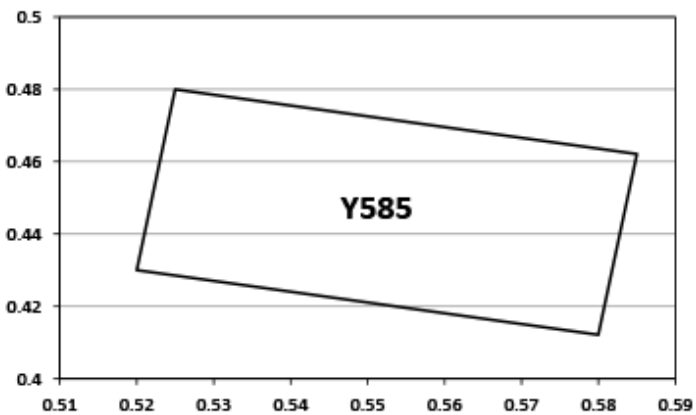
Rank	Condition	Min.	Max.	Unit
1	100mA	8.5	8.8	V
2	100mA	8.8	9.1	V
3	100mA	9.1	9.4	V
4	100mA	9.4	9.7	V

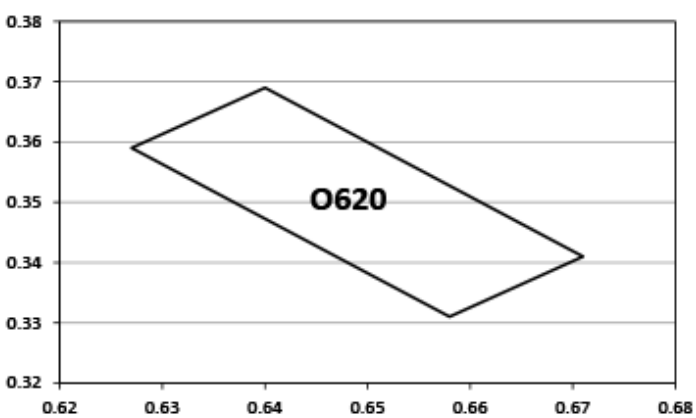
Notes:
1. 10% tolerance for luminous intensity may be caused by measurement inaccuracy.
2. Measurement Uncertainty of the Forward Voltage : ± 3%

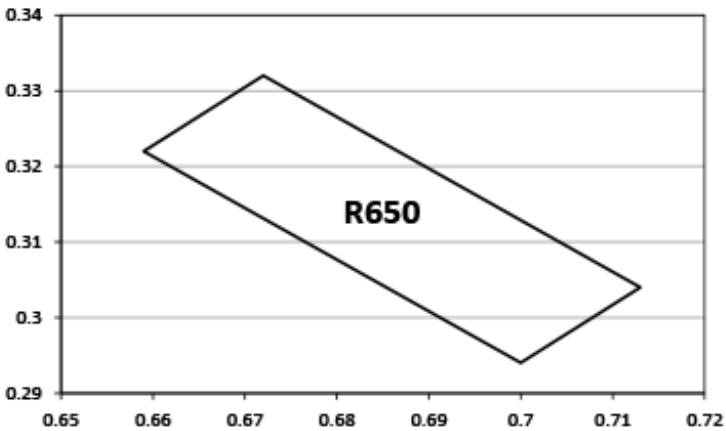
(3) Chromaticity Bins

Part No.	Bin Code	Color Coordinates				
ES-2835-109V-L1-G525	G	X	0.2900	0.2660	0.6710	0.6580
		Y	0.6470	0.5650	0.5520	0.6350
ES-2835-109V-L1-Y585	Y	X	0.5200	0.5800	0.5850	0.5250
		Y	0.4300	0.4121	0.4621	0.4800
ES-2835-109V-L1-O620	O	X	0.6270	0.6400	0.6710	0.6580
		Y	0.3590	0.3690	0.3410	0.3310
ES-2835-109V-L1-R650	R	X	0.6590	0.6720	0.7130	0.7000
		Y	0.3220	0.3320	0.3040	0.2940
ES-2835-109V-L1-PA01	PA01	X	0.3900	0.4000	0.4430	0.4330
		Y	0.2100	0.1800	0.2100	0.2400
ES-2835-109V-L1-PA02	PA02	X	0.2050	0.2100	0.2380	0.2330
		Y	0.0900	0.0600	0.0800	0.1100


0.66
0.64
0.62
0.6
0.58
0.56
0.54
G525
0.26
0.265
0.27
0.275
0.28
0.285
0.29
0.295
0.3
0.305


0.5
0.48
0.46
0.44
0.42
0.4
Y585
0.51
0.52
0.53
0.54
0.55
0.56
0.57
0.58
0.59


0.38
0.37
0.36
0.35
0.34
0.33
0.32
O620
0.62
0.63
0.64
0.65
0.66
0.67
0.68


0.34
0.33
0.32
0.31
0.3
0.29
0.65
0.66
0.67
0.68
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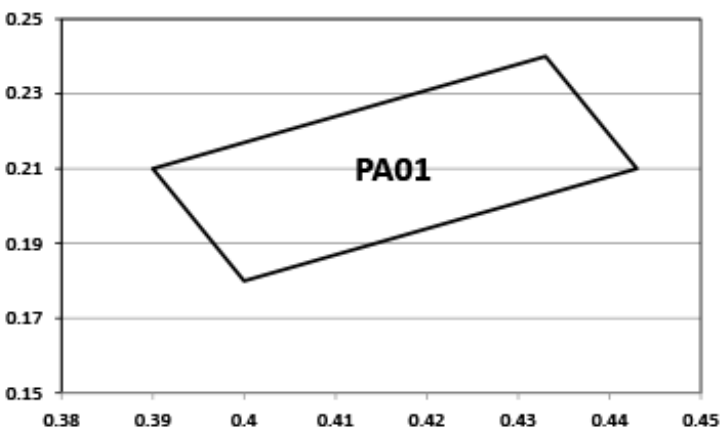
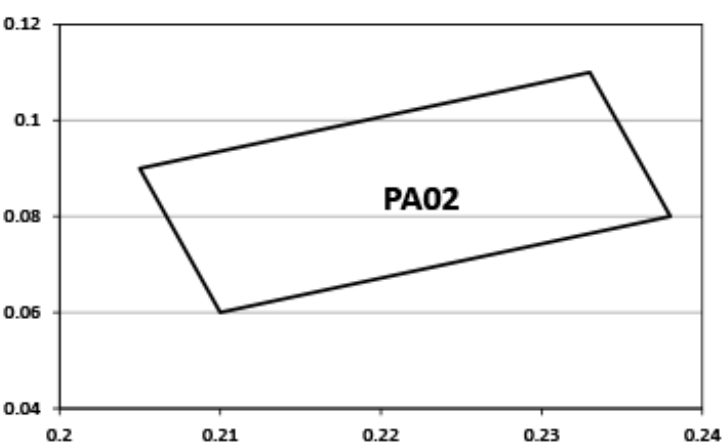
0.7
0.71
0.72
R650

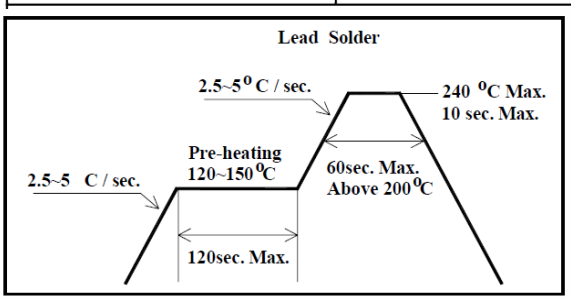

0.25
0.23
0.21
0.19
0.17
0.15
0.38
0.39
0.4
0.41
0.42
0.43
0.44
0.45
PA01

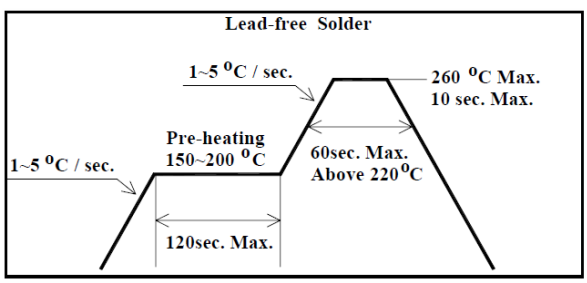

0.12
0.1
0.08
0.06
0.04
0.2
0.21
0.22
0.23
0.24
PA02

REFLOW SOLDERING CHARACTERISTICS

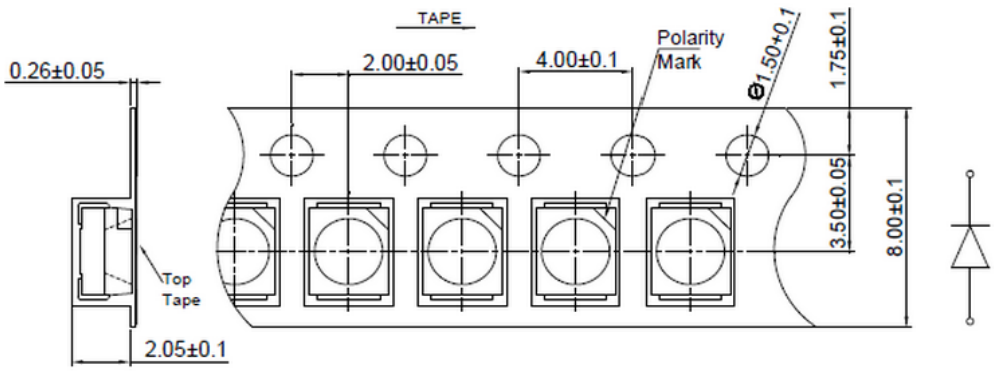
Preheating : 140℃~160℃±5℃,within 2 minutes.
Operation heating : 260℃(Max.) within 10 seconds.(Max)
Gradual Cooling (Avoid quenching).

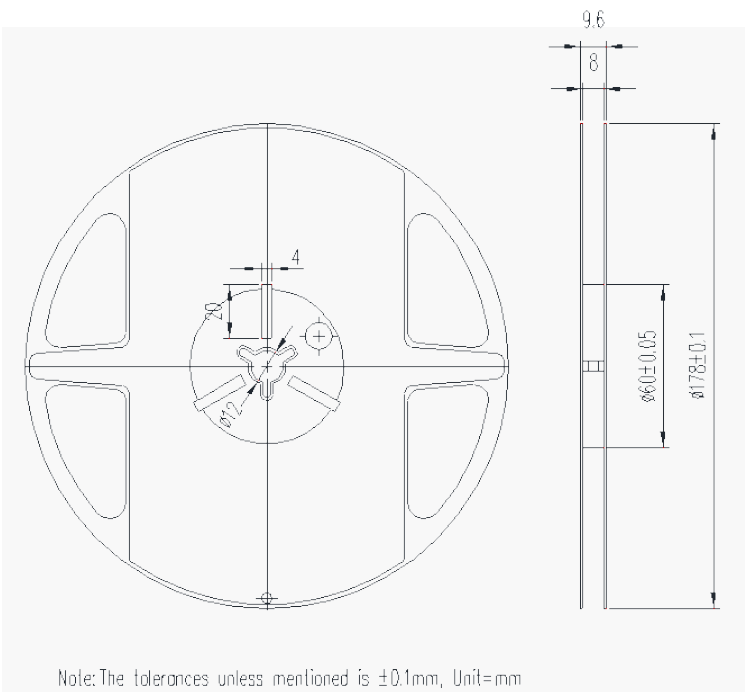
Lead solder		Lead-free solder	
Pre-heat	120-150℃	Pre-heat	150-200℃
Pre-heat time	120 sec.Max.	Pre-heat time	120 sec.Max.
Peak Temperature	240℃ Max.	Peak Temperature	260℃ Max.
Soldering time condition	10 sec.Max.	Soldering time condition	10 sec.Max.





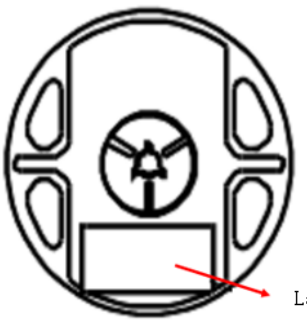
TAPE AND REEL



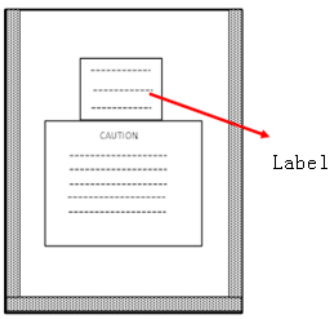


Notes:
(1) Quantity : 4,000pcs/Reel
(2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm
(3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10º to the carrier tape
(4) Package : P/N, Manufacturing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

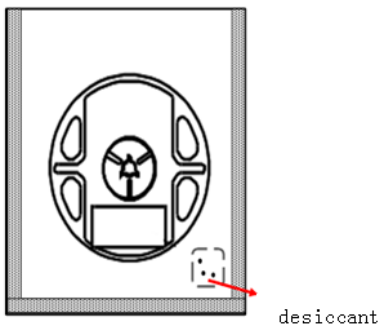
PACKAGING

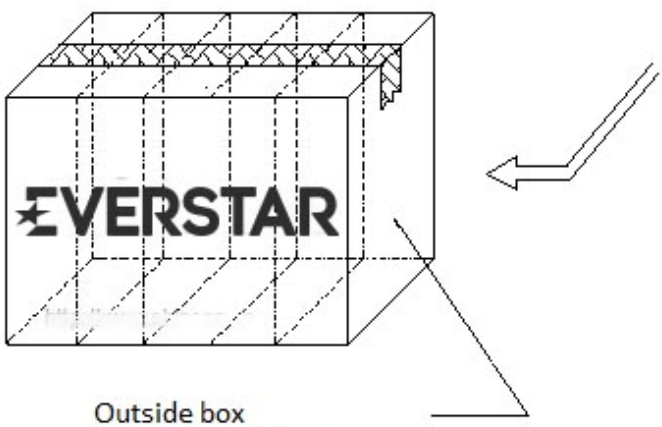


REEL



moisture-proof bag





Test Items	Test Duration	Number of Damaged
Steady State Operating Life of High Temperature (HTOL) Ts=85℃, IF=Max	1000hrs	0/20
Steady State Operating Life of Low Temperature (LTOL) Ta=-40℃, IF=Max	1000hrs	0/20
Pulse Wet Operating Life of High Temperature (PWHTOL) 60℃/90%RH, IF30mins ON/30min OFF	500hrs	0/20
High Temperature Storage (HTS) ℃ 80℃	1000hrs	0/20
Low Temperature Storage (LTS) -40℃	1000hrs	0/20
Thermal Shock (TS) -45℃~125℃ 30min dwell 20sec transfer	100cycles	0/20
Solder Resistance (SR) 265℃, 3X MSL	5sec	0/20
Solder Ability (SA) 245℃5sec, 95% coverage	5sec	0/11
Mechanical Shock (MS) 1500G 0.5msec pulse shock	Each6 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℃, 30g/m2/day	48hrs	0/11

Item	Symbol	Test Condition	Criteria for Judgment Min.	Max.
Forward Voltage	V_F	IF=Typical Current		U.S.L x1.1
Luminous Flux	Im	IF=Typical Current	L.S.L x0.7	
CCX&CCY	x.y	IF=Typical Current		Shift<0.02

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 3months 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.