

SPECIFICATION

产品规格书

NO.(编号) : R&D Version

Part No.(型号) : 7070A12-XXN700-U4S6P-XXX

Description(描述) : 7070 White LED

Model(说明) : EMC7070 12V

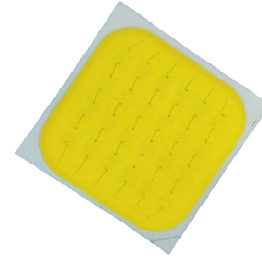
CUSTOMER APPEROVED (客户审核)	APPROVED (核准)	ISSUED (制定)
	朱磊	王磊

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7070A12-XXN700-U4S6P-XXX Datasheet

This 7070 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 6500K.

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

FEATURES

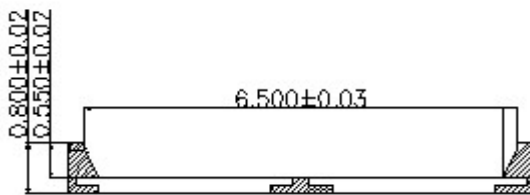
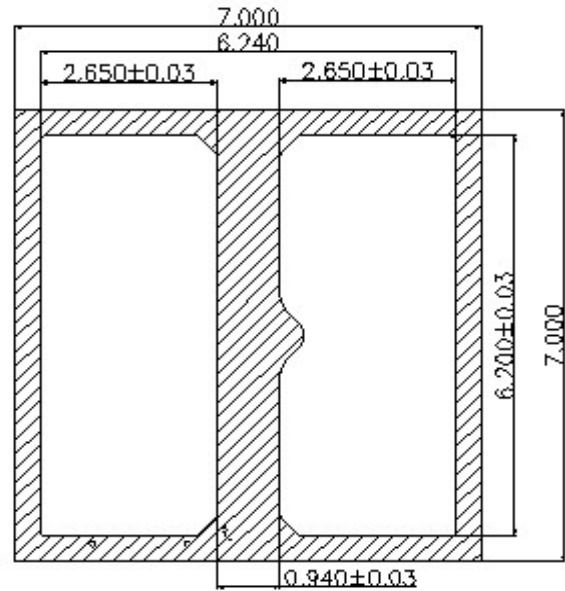
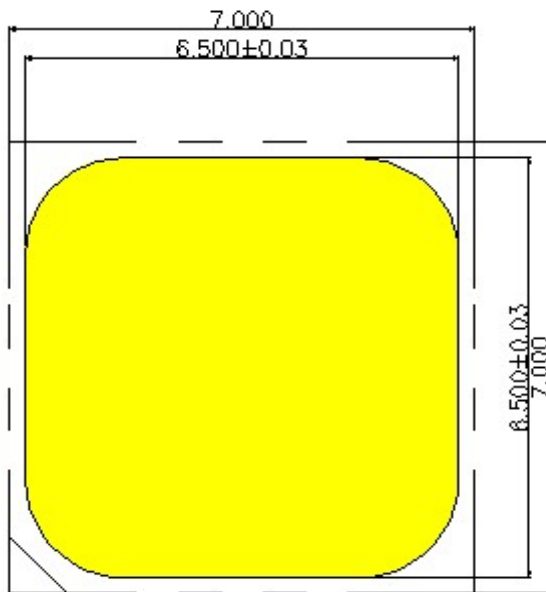
- Available in Cool White, Neutral White and Warm White color
- ANSI-compatible chromaticity bins
- High luminous Intensity and high efficiency
- Compatible with reflow soldering process
- Low thermal resistance
- Long operation life
- Wide viewing angle at 120°
- Silicone encapsulation
- EMC package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

APPLICATIONS

- Street lighting
- Par lighting
- Outdoor lighting

Note: The information in this document is subject to change without notice.

PACKAGE DIMENSIONS



*The tolerance unless mentioned is $\pm 0.1\text{mm}$, unit = mm

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	1200	mA
Peak Forward Current ^[1]	I_{FP}	1800	mA
Reverse Voltage	V_R	15	V
Power Dissipation	P_d	15500	mW
Operating solder point Temperature	T_{SP}	-40~+105	°C
Storage Temperature	T_{stg}	-40~+105	°C
Soldering Temperature	T_{sld}	Reflow Soldering: 260°C for 10 seconds	
LED Junction Temperature	T_j	125	°C

Note:

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

CHARACTERISTICS (T_j=25°C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage ^[1]	V_F	IF=700mA	11	--	13	V
Viewing Angle	$2\theta_{1/2}$	IF=700mA	--	120	--	deg.
Luminous Flux	Φ_v	IF=700mA	1300	--	1600	lm
Color Temperature	CCT	IF=700mA	2700	--	6500	K
Color Rendering Index	Ra	IF=700mA	70	--	--	--
Thermal Resistance (Junction to Solder Point)	R_{th-jS}	IF=700mA	--	2.0	--	°C/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

ELECTRO-OPTICAL CHARACTERISTICS 光电参数

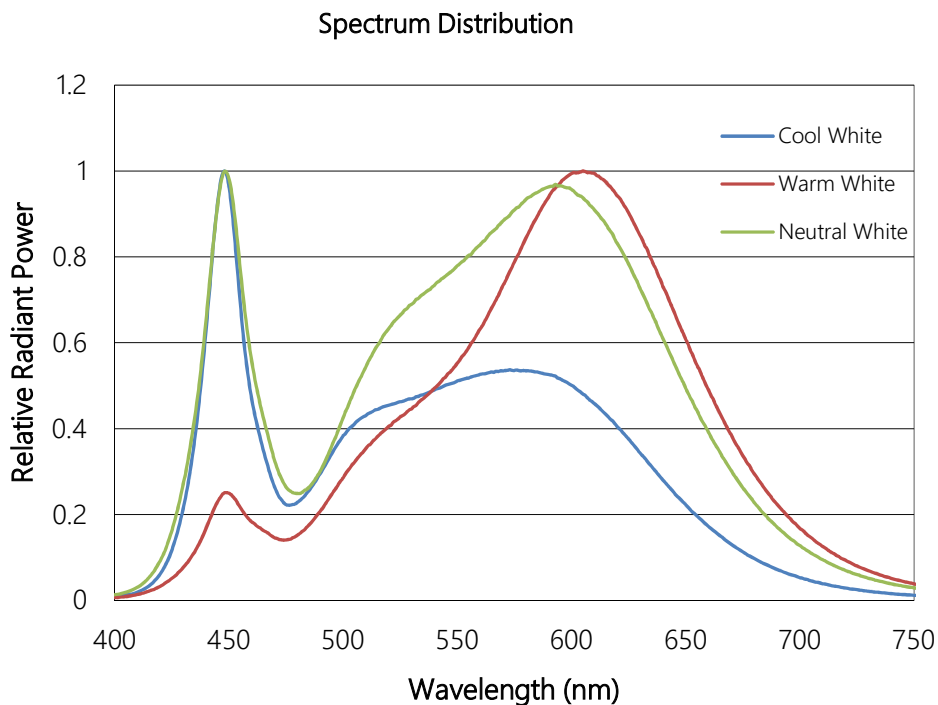
(Tj=25°C; CRI70 ; 5700K)

Forward Current IF	Forward Voltage Typ VF	Power Typ P	Luminous Flux Typ ΦV	Luminous efficacy Typ η
100 mA	10.7 V	1.07 W	240 lm	224 lm/W
200 mA	10.9 V	2.19 W	474 lm	216 lm/W
300 mA	11.2 V	3.35 W	700 lm	209 lm/W
400 mA	11.4 V	4.55 W	920 lm	202 lm/W
500 mA	11.6 V	5.78 W	1131 lm	196 lm/W
600 mA	11.8 V	7.05 W	1340 lm	190 lm/W
700 mA	11.9 V	8.36 W	1540 lm	185 lm/W
800 mA	12.1 V	9.70 W	1745 lm	180 lm/W
900 mA	12.3 V	11.07 W	1930 lm	175 lm/W
1000 mA	12.5 V	12.47 W	2120 lm	170 lm/W
1100 mA	12.6 V	13.91 W	2310 lm	166 lm/W
1200 mA	12.8 V	15.38 W	2490 lm	162 lm/W

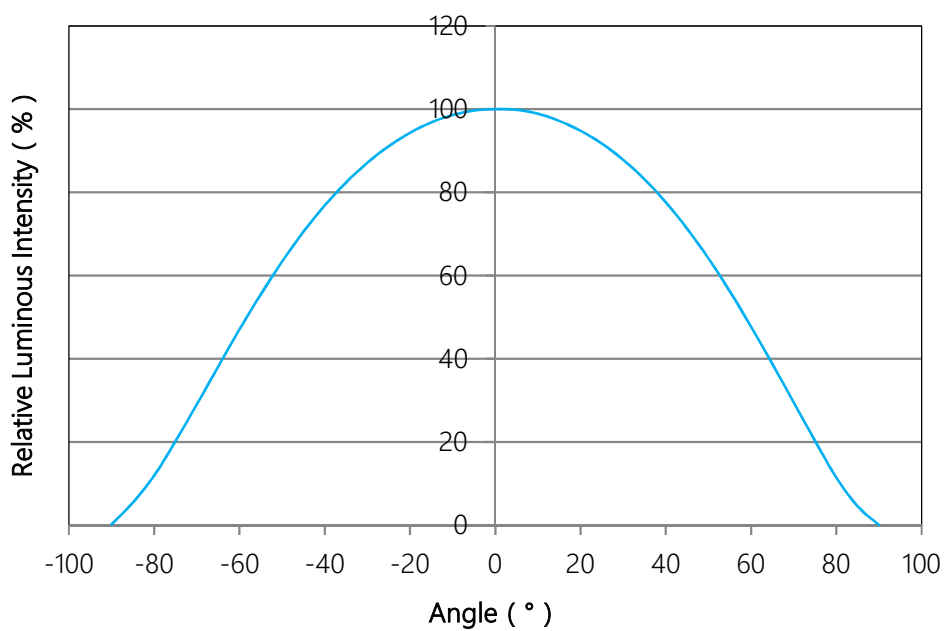
Notes:

1. Luminous flux is measured with an accuracy of $\pm 10\%$.
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 Shineon

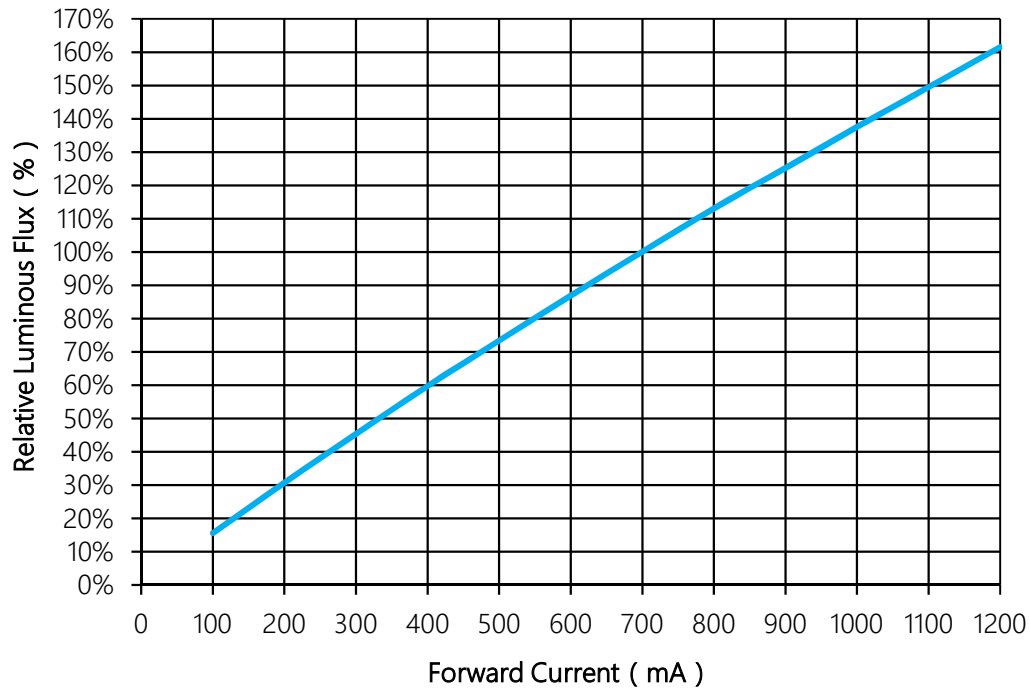
RELATIVE SPECTRAL POWER DISTRIBUTION ($T_j=25^\circ\text{C}$)



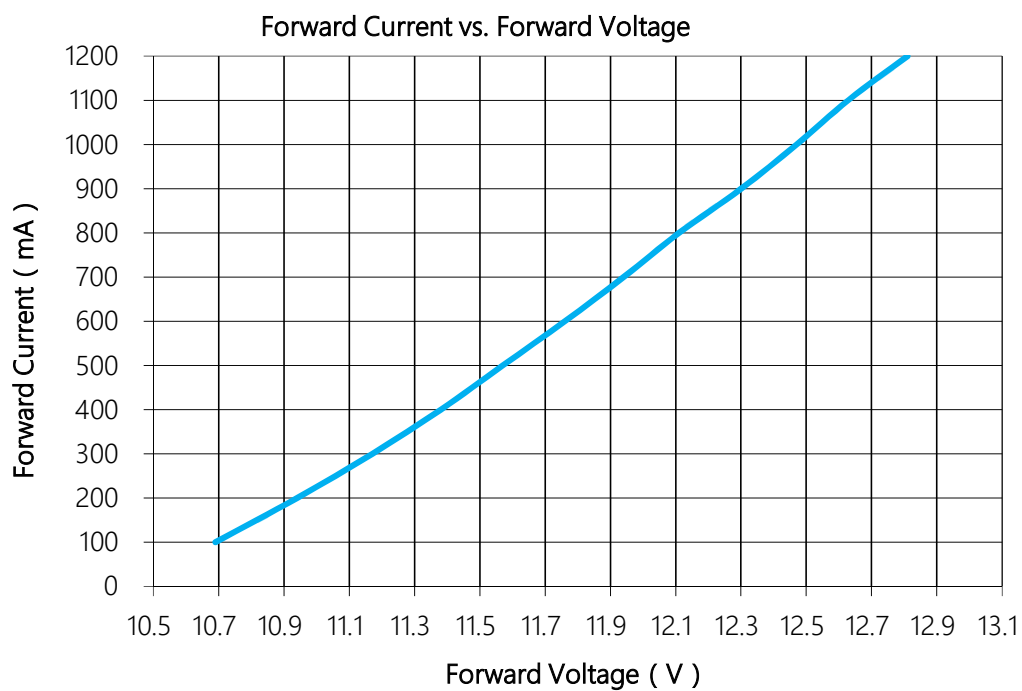
TYPICAL SPATIAL DISTRIBUTION



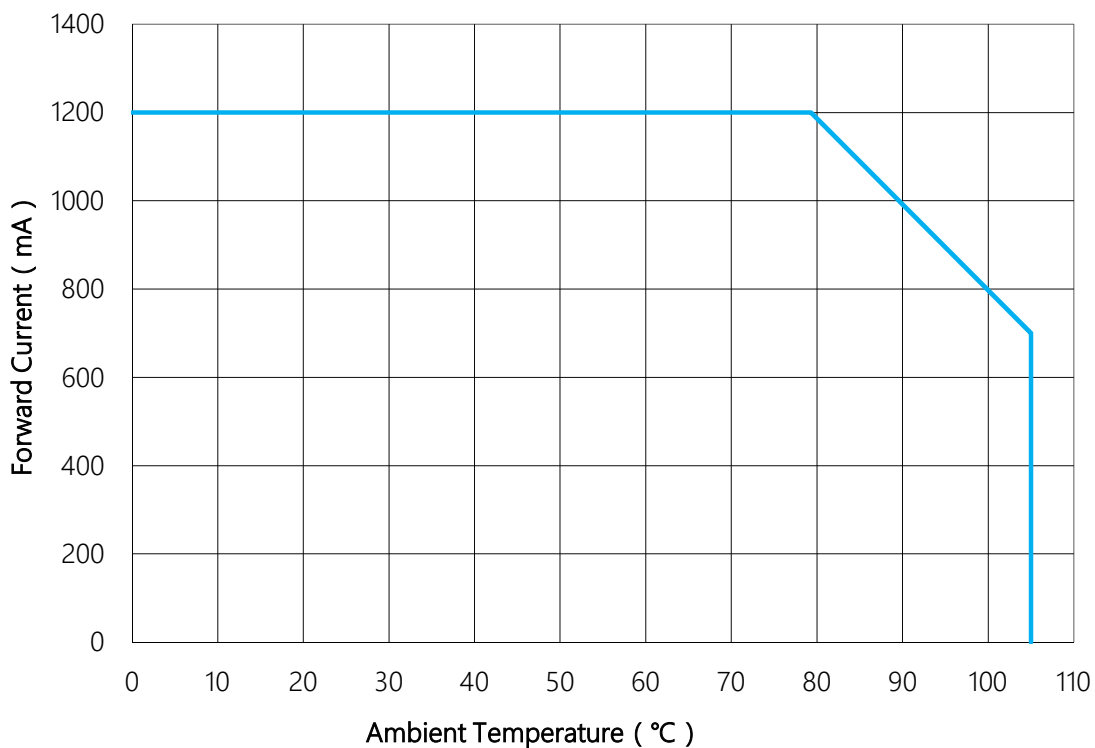
RELATIVE LUMINOUS FLUX VS. CURRENT ($T_j=25^\circ\text{C}$)



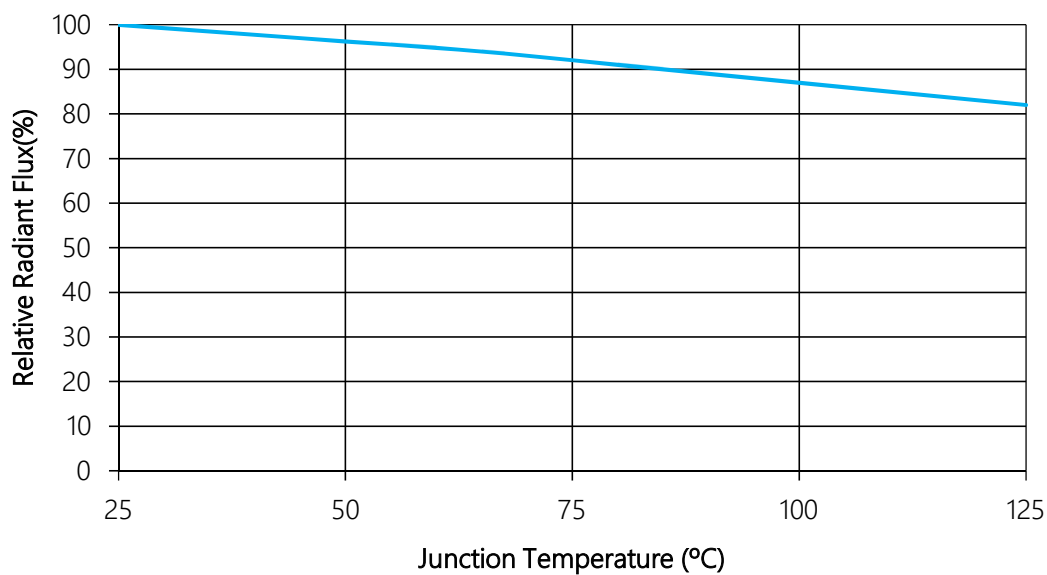
ELECTRICAL CHARACTERISTICS ($T_j=25^\circ\text{C}$)



MAXIUM CURRENT VS. AMBIENT TEMPERATURE



RELATIVE RADIANT FLUX VS. JUNCTION TEMPERATURE



SORTING RANKS

(1) Luminous Flux (Tj=25°C)

Part Number	Condition	Rank	Unit
7070A12-27N700-U4S6P-XXX	700mA	Z3	lm
		1300-1500	
7070A12-30N700-U4S6P-XXX		Z3	
		1300-1500	
7070A12-40N700-U4S6P-XXX		Z6	
		1400-1600	
7070A12-50N700-U4S6P-XXX		Z6	
		1400-1600	
7070A12-57N700-U4S6P-XXX		Z6	
		1400-1600	
7070A12-60N700-U4S6P-XXX		Z6	
		1400-1600	
7070A12-65N700-U4S6P-XXX	Z6		
	1400-1600		

(2) Forward Voltage (Tj=25°C)

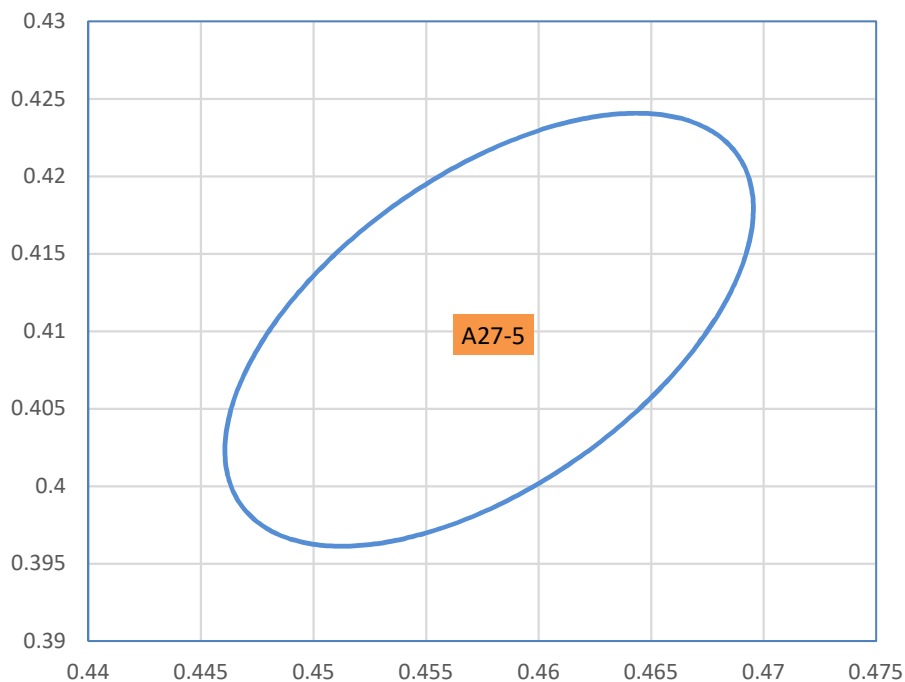
Rank	Condition	Min.	Max.	Unit
FB	700mA	11	12	V
FC		12	13	

Notes:

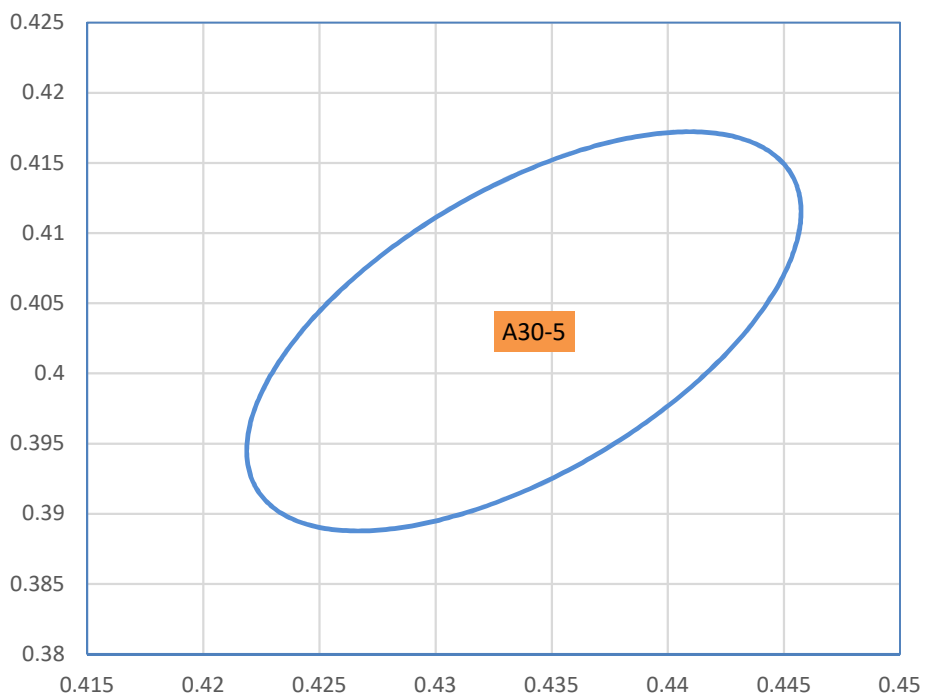
1. 10% tolerance for luminous intensity may be caused by measurement inaccuracy.
2. Measurement Uncertainty of the Forward Voltage : $\pm 0.06V$

(3) Chromaticity Bins

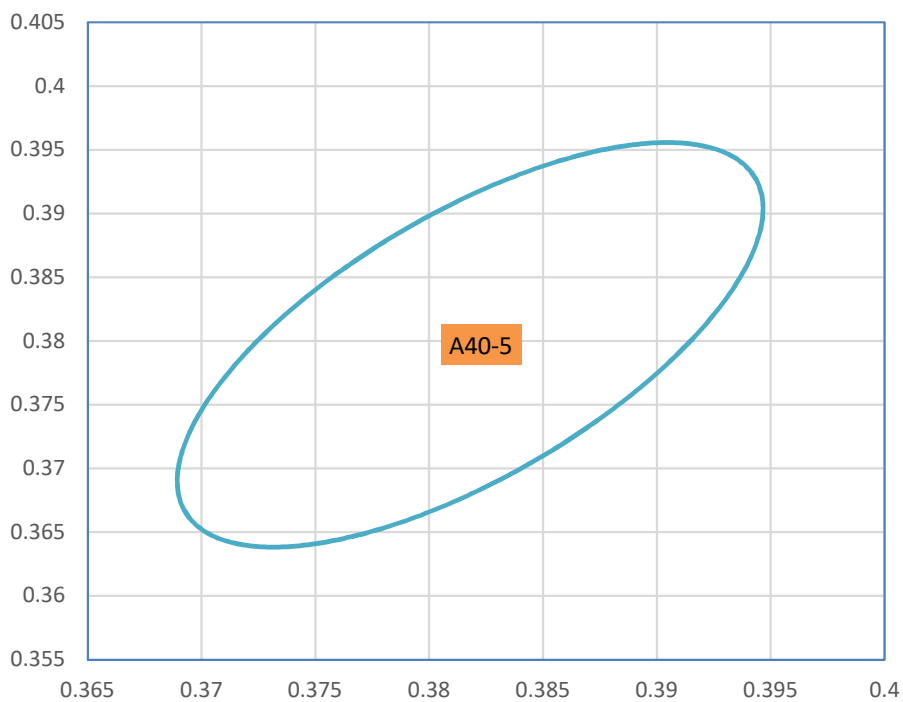
Part Number	7070A12-27N700-U4S6P-XXX			CCT	2700K
Bin Code	Color Coordinates(x,y)				
A27-5	x	y	a	b	Theta°
		0.4578	0.4101	0.01350	0.0070



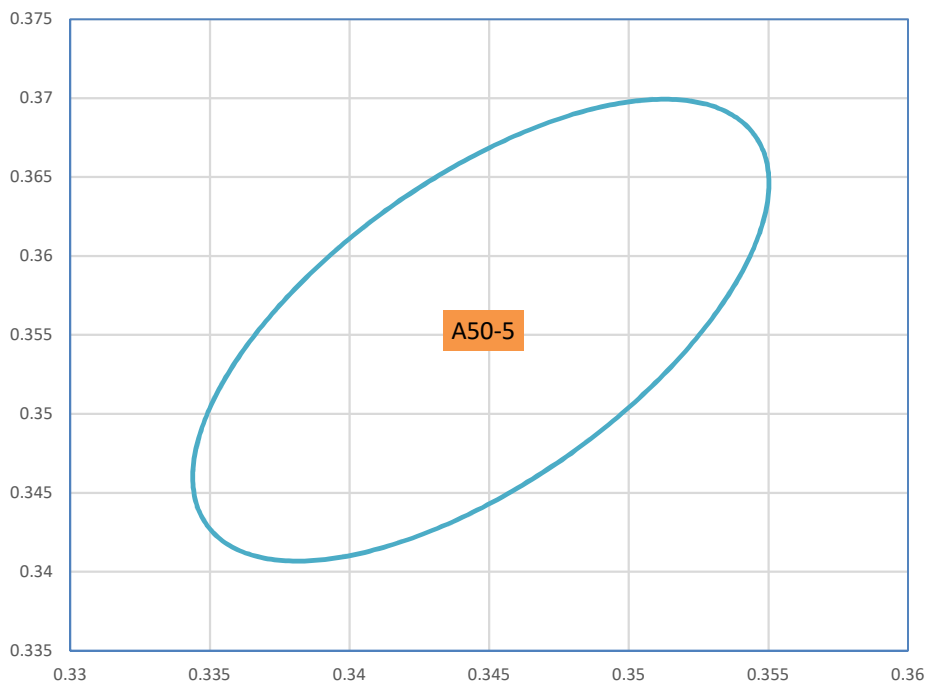
Part Number	7070A12-30N700-U4S6P-XXX			CCT	3000K
Bin Code	Color Coordinates(x,y)				
A30-5	x	y	a	b	Theta°
	0.4338	0.4030	0.0139	0.0068	53.22



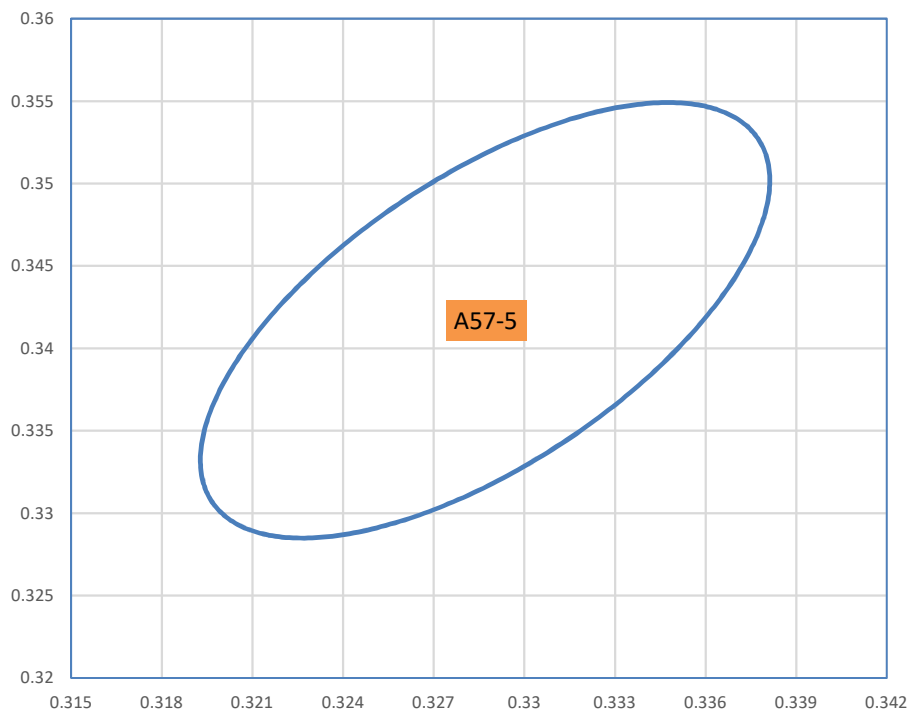
Part Number	7070A12-40N700-U4S6P-XXX			CCT	4000K
Bin Code	Color Coordinates(x,y)				
A40-5	x	y	a	b	Theta°
	0.3818	0.3797	0.01565	0.0067	53.72



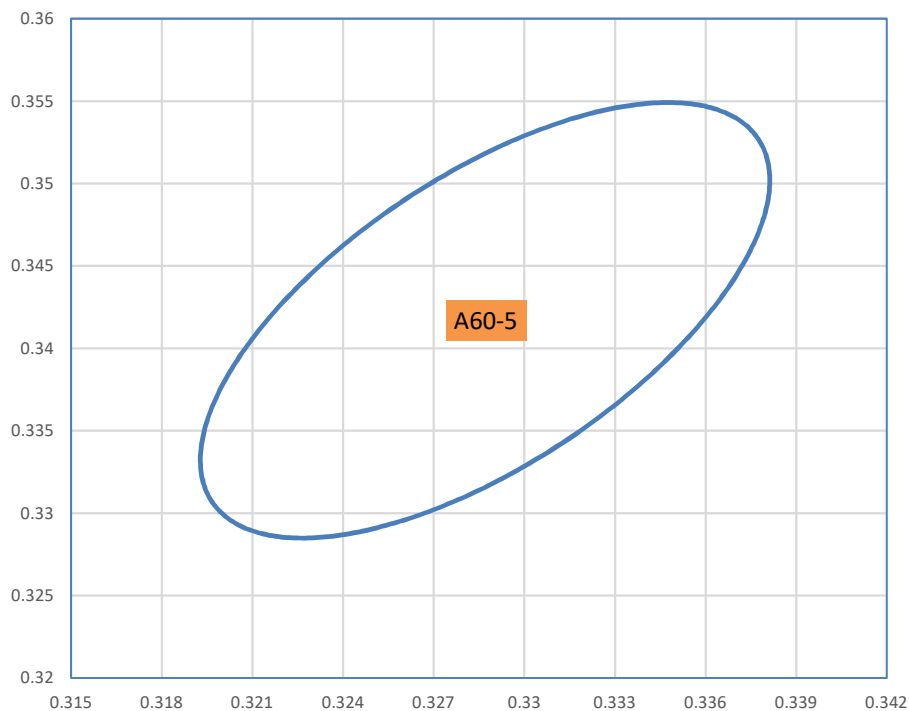
Part Number	7070A12-50N700-U4S6P-XXX			CCT	5000K
Bin Code	Color Coordinates(x,y)				
A50-5	x	y	a	b	Theta°
	0.3447	0.3553	0.0137	0.0059	59.62



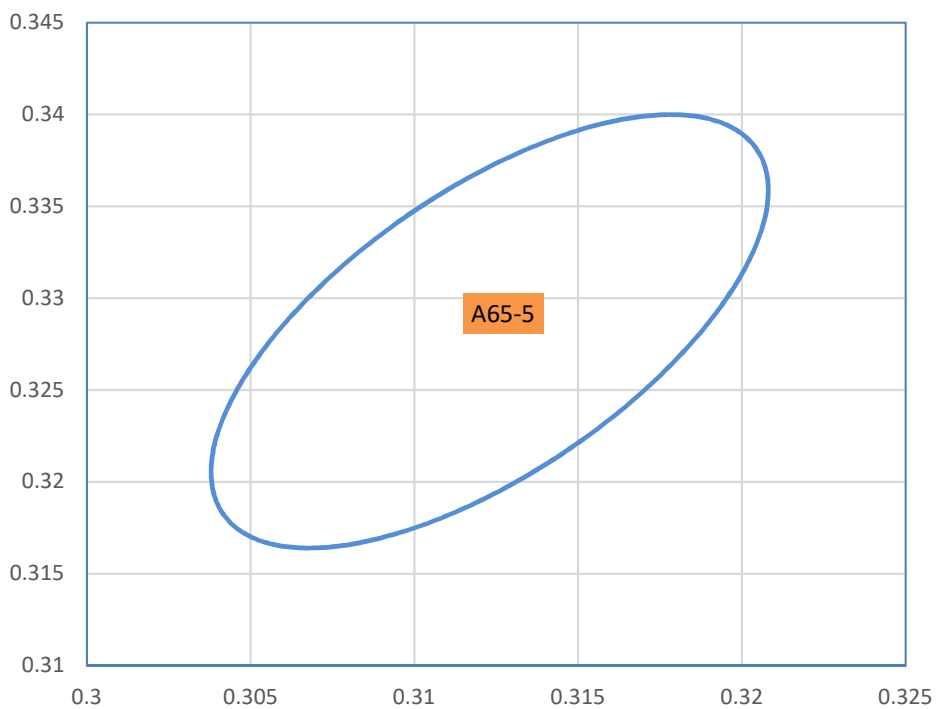
Part Number	7070A12-57N700-U4S6P-XXX			CCT	5700K
Bin Code	Color Coordinates(x,y)				
A57-5	x	y	a	b	Theta°
	0.3287	0.3417	0.01243	0.00533	59.09



Part Number	7070A12-60N700-U4S6P-XXX			CCT	6000K
Bin Code	Color Coordinates(x,y)				
A60-5	x	y	a	b	Theta°
	0.322	0.3365	0.01179	0.00504	59.21



Part Number	7070A12-65N700-U4S6P-XXX			CCT	6500K
Bin Code	Color Coordinates(x,y)				
A65-5	x	y	a	b	Theta°
	0.3123	0.3282	0.01115	0.00475	58.57



REFLOW SOLDERING CHARACTERISTICS

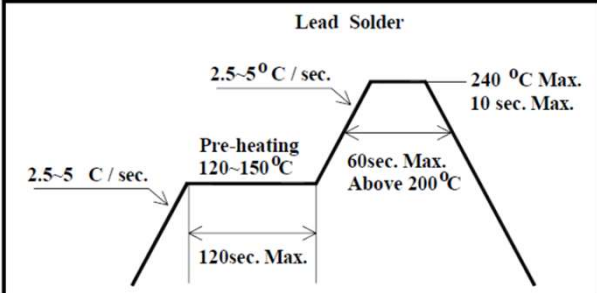
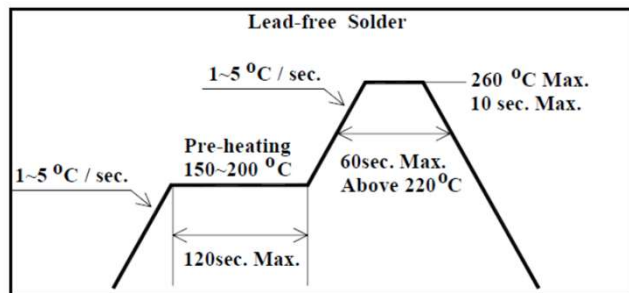
For Reflow Process:

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

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

Gradual Cooling (Avoid quenching).

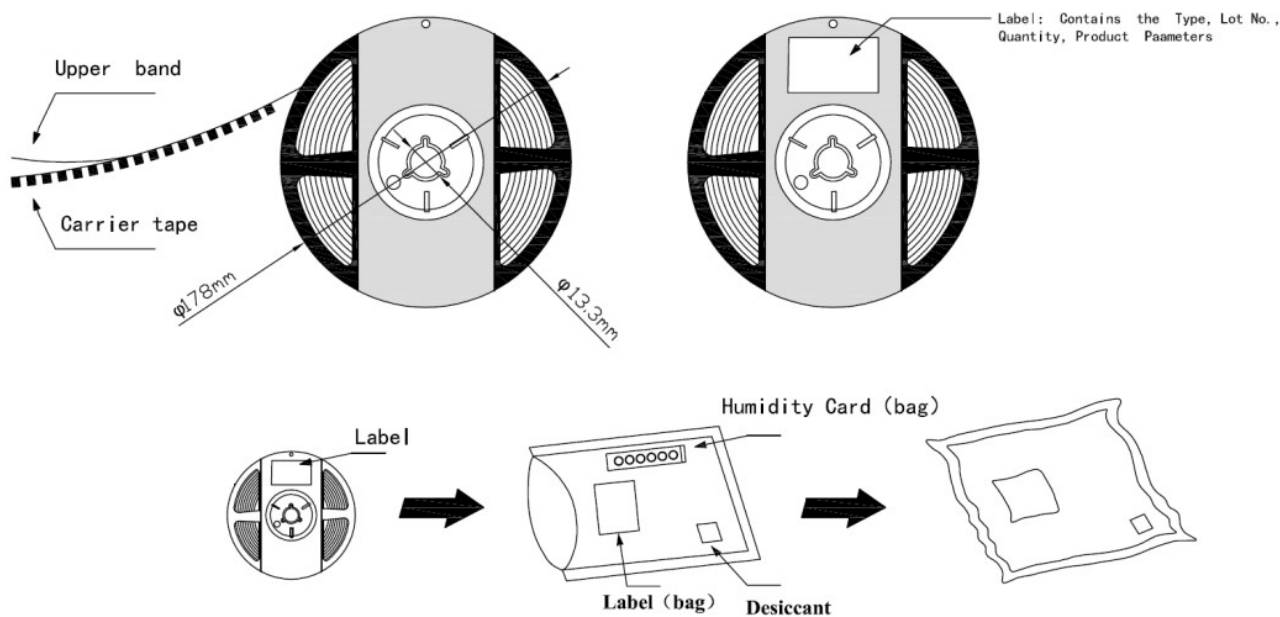
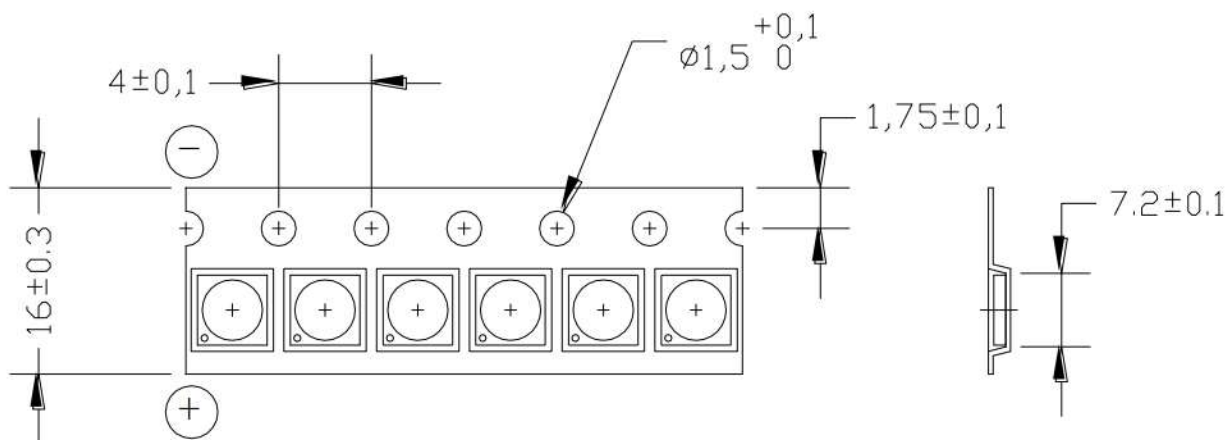
Lead solder		Lead-free solder	
Pre-heat	120-150°C	Pre-heat	150-200°C
Pre-heat time	120 sec.Max.	Pre-heat time	120 sec.Max.
Peak Temperature	240°C Max.	Peak Temperature	260°C Max.
Soldering time condition	10 sec.Max.	Soldering time condition	10 sec.Max.

Lead Solder	Lead-free Solder
 <p>The diagram shows a reflow profile for Lead Solder. It starts with a heating phase at 2.5-5 °C/sec. This is followed by a pre-heating phase at 120-150°C for a maximum of 120 seconds. The temperature then rises to a peak of 240°C at a rate of 2.5-5 °C/sec. The peak is maintained for a maximum of 10 seconds. Finally, the temperature is cooled at 60°C/sec for a maximum of 60 seconds above 200°C.</p>	 <p>The diagram shows a reflow profile for Lead-free Solder. It starts with a heating phase at 1-5 °C/sec. This is followed by a pre-heating phase at 150-200°C for a maximum of 120 seconds. The temperature then rises to a peak of 260°C at a rate of 1-5 °C/sec. The peak is maintained for a maximum of 10 seconds. Finally, the temperature is cooled at 60°C/sec for a maximum of 60 seconds above 220°C.</p>

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.

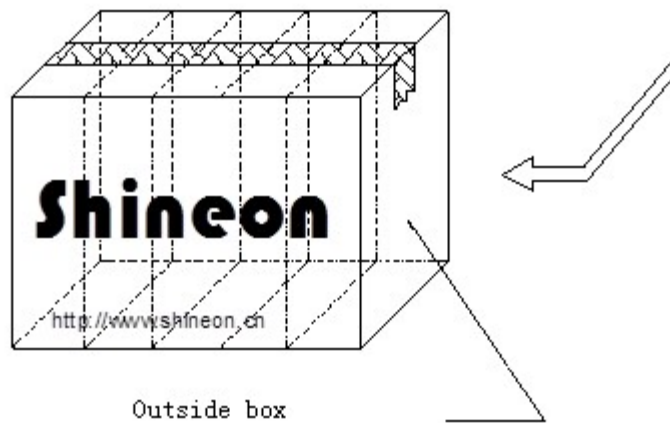
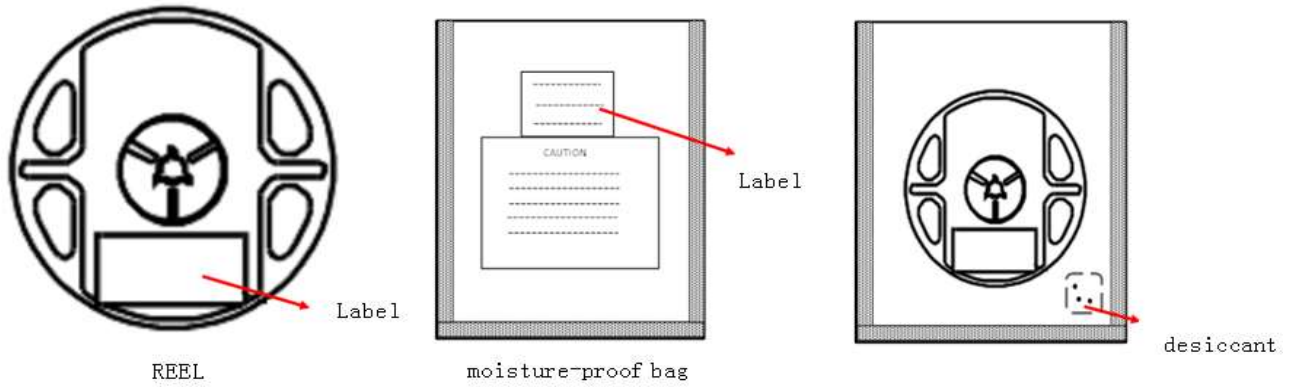
TAPE AND REEL



Notes:

- (1) Quantity : 1000pcs/Reel OR 5,000pcs/Reel
- (2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ± 0.2 mm
- (3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N 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



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
High Temperature Storage (HTS) 100°C	1000hrs	0/20
Low Temperature Storage (LTS) -40°C	1000hrs	0/20
Thermal Shock (TS) $-45^{\circ}\text{C}\sim 125^{\circ}\text{C}$ 15min dwell 30sec 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

Item	Symbol	Test Condition	Criteria for Judgment	
			Min.	Max.
Forward	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

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 ShineOn, 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 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.