



Customer Part No:

Brightek Part No: 3535DP ALN

- White: VZDP35AW37FNDQZ4
- White: VZDP35AW37FNDPZ4
- Neutral White: VZDP35AW57FNDKZ4
- Warm White: VZDP35AW57FNDDZ4

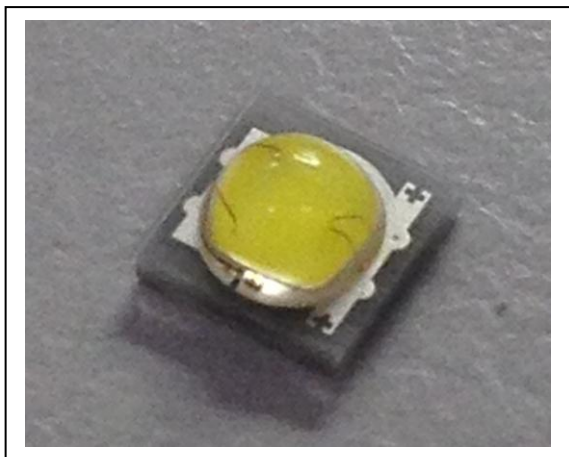
Specification:

Documents No:

Prepared By: Kiwi / Time: 2012/06/27

Checked By: Ethan / Time: 2012/06/27

Customer Confirmation:



FEATURES

- § Eutectic chip bonding process
- § Forward maximum current 700mA (ALN type)
- § Wide viewing angle: Typ.135°
- § Operating temperature -30~85°C
- § Storage temperature-40~100°C
- § ROHS-compliant
- § Outline (L x W x H) of 3.5*3.5*2.0mm
- § Reverse voltage: 5V

CATALOG

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Substrate	Color	Emitter
ALN (1W~3W)	Cool White CRI 70	VZDP35AW37FNDQZ4
	Cool White CRI 80	VZDP35AW37FNDPZ4
	Neutral White CRI 80	VZDP35AW57FNDKZ4
	Warm White CRI 80	VZDP35AW57FNDDZ4

➤ **COOL--WHITE**

VZDP35AW37FNDQZ4

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_f	---	3.25	3.4	V	$I_f=350mA$
Reverse Current	I_r	---	---	10	μA	$V_r=5V$
Viewing angle	$2\theta_{1/2}$	---	135	---	Deg	$I_f=350mA$
Chromaticity	X	---	0.3287	---	---	$I_f=350mA$
Coordinate	Y	---	0.3417	---	---	
Color Temperature	CCT	---	5700	---	K	$I_f=350mA$
Color Index	CRI		70			
Luminous Flux	Φ_v	---	115	---	Lm	$I_f=350mA$
Luminous Flux	Φ_v	---	160	---	Lm	$I_f=500mA$
Luminous Flux	Φ_v	---	200	---	Lm	$I_f=700mA$

1. Luminous intensity (Iv) $\pm 5\%$, Forward Voltage (VF) $\pm 0.05V$, Viewing angle($2\theta_{1/2}$) $\pm 5\%$
2. IS standard testing
3. Electrical-Optical Characteristics (Ta=25°C)

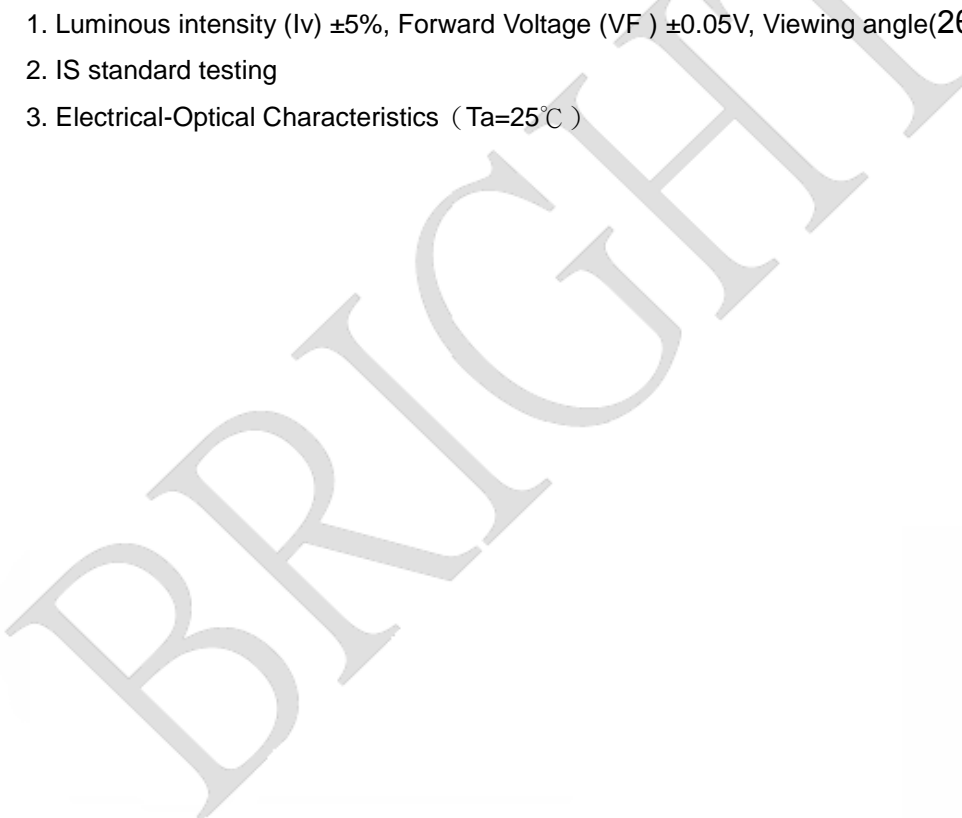


COOL--WHITE

VZDP35AW37FNDPZ4

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _f	---	3.25	3.4	V	I _f =350mA
Reverse Current	I _r	---	---	10	μA	V _r =5V
Viewing angle	2θ _{1/2}	---	135	---	Deg	I _f =350mA
Chromaticity	X	---	0.3287	---	---	I _f =350mA
Coordinate	Y	---	0.3417	---	---	
Color Temperature	CCT	---	5700	---	K	I _f =350mA
Color Index	CRI		80			
Luminous Flux	Φ _v	---	105	---	Lm	I _f =350mA
Luminous Flux	Φ _v	---	145	---	Lm	I _f =500mA
Luminous Flux	Φ _v	---	180	---	Lm	I _f =700mA

1. Luminous intensity (I_v) ±5%, Forward Voltage (VF) ±0.05V, Viewing angle(2θ_{1/2}) ±5%
2. IS standard testing
3. Electrical-Optical Characteristics (Ta=25°C)





NEUTRAL --WHITE
VZDP35AW57FNDKZ4

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _f	---	3.25	3.4	V	I _f =350mA
Reverse Current	I _r	---	---	10	μA	V _r =5V
Viewing angle	2θ _{1/2}	---	135	---	Deg	I _f =350mA
Chromaticity coordinate	X	---	0.3818	---	---	I _f =350mA
	Y	---	0.3797	---	---	
Color Temperature	CCT	---	4000	---	K	I _f =350mA
Color Index	CRI		80			
Luminous Flux	Φ _v	---	95	---	Lm	I _f =350mA
Luminous Flux	Φ _v	---	130	---	Lm	I _f =500mA
Luminous Flux	Φ _v	---	165	---	Lm	I _f =700mA

1. Luminous intensity (I_v) ±5%, Forward Voltage (VF) ±0.05V, Viewing angle(2θ_{1/2}) ±5%
2. IS standard testing
3. Electrical-Optical Characteristics (Ta=25°C)

BRIGHTTEK

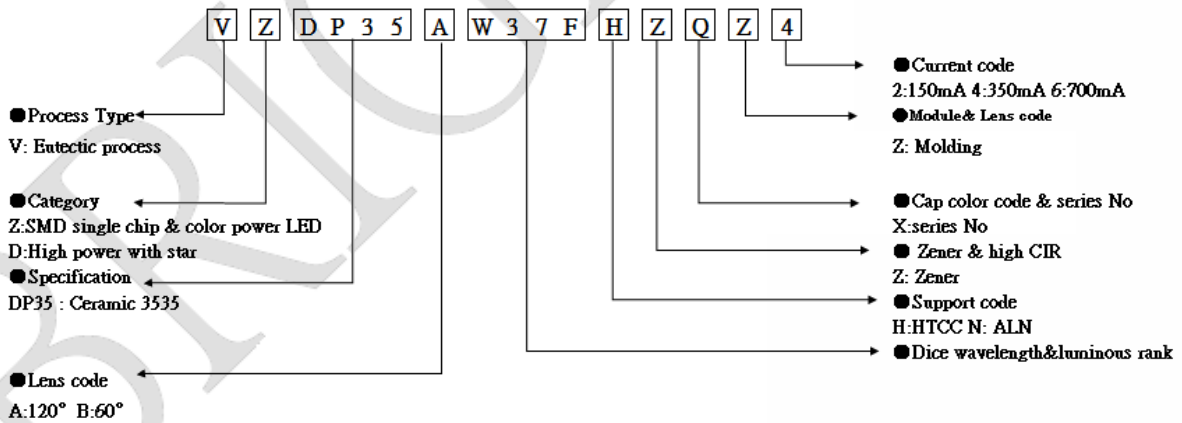


➤ WARM -WHITE VZDP35AW57FNDDZ4

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _f	---	3.25	3.4	V	I _f =350mA
Reverse Current	I _r	---	---	10	μA	V _r =5V
Viewing angle	2θ _{1/2}	---	135	---	Deg	I _f =350mA
Chromaticity coordinate	X	---	0.4338	---	---	I _f =350mA
	Y	---	0.4030	---	---	
Color Temperature	CCT	---	2800	---	K	I _f =350mA
Color Index	CRI		80			
Luminous Flux	Φ _v	---	90	---	Lm	I _f =350mA
Luminous Flux	Φ _v	---	125	---	Lm	I _f =500mA
Luminous Flux	Φ _v	---	160	---	Lm	I _f =700mA

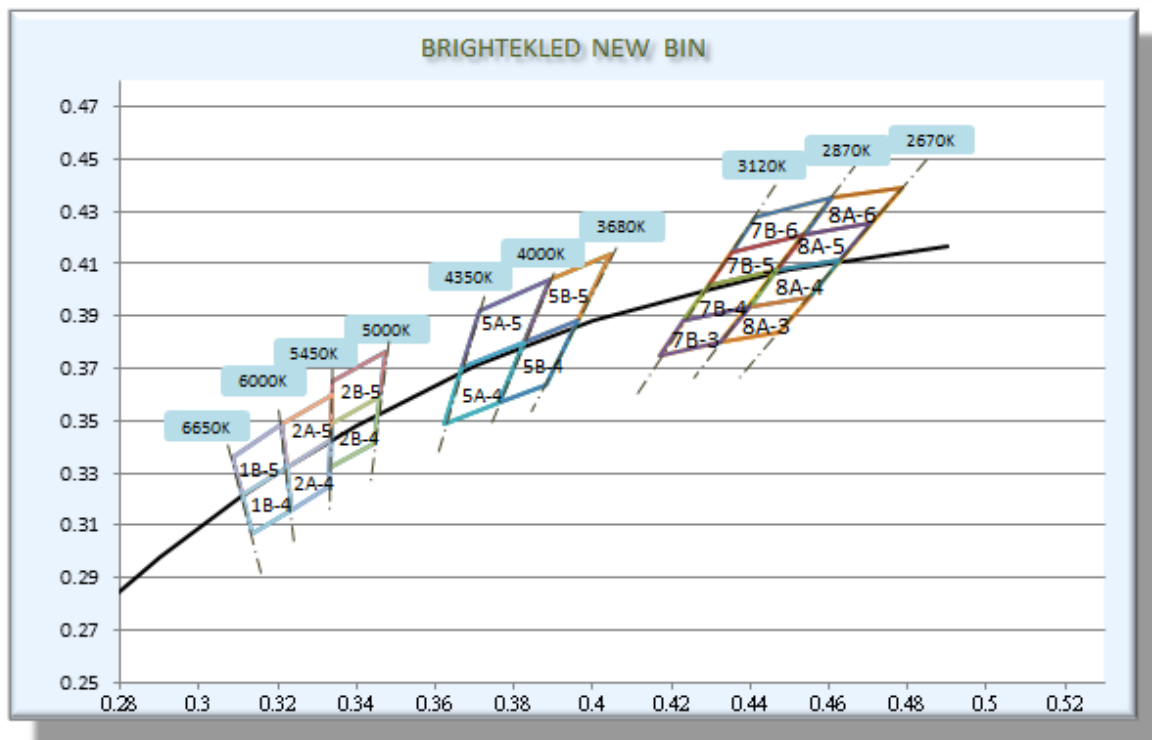
1. Luminous intensity (I_v) ±5%, Forward Voltage (V_F) ±0.05V, Viewing angle(2θ_{1/2}) ±5%
2. IS standard testing
3. Electrical-Optical Characteristics (Ta=25°C)

➤ 3535DP IDENTIFICATION CODE





➤ COLOR COORDINATE (CIE-1931)



SPECIFICATION FOR APPROVAL

BRIGHTTEK



PERFORMANCE GROUPS – CHROMATICITY

BIN	x	y	BIN	x	y	BIN	x	y
1B-5	0.3211	0.3485	2A-5	0.3340	0.3600	2B-5	0.3475	0.3763
	0.3088	0.3363		0.3211	0.3485		0.3341	0.3654
	0.3111	0.3216		0.3223	0.3322		0.3337	0.3489
	0.3223	0.3322		0.3335	0.3425		0.3459	0.3590
1B-4	0.3223	0.3322	2A-4	0.3335	0.3425	2B-4	0.3459	0.3590
	0.3111	0.3216		0.3223	0.3322		0.3337	0.3489
	0.3135	0.3070		0.3235	0.3160		0.3332	0.3323
	0.3235	0.3160		0.3330	0.3250		0.3443	0.3416

BIN	x	y	BIN	x	y
5A-5	0.3893	0.4037	5B-5	0.4046	0.4134
	0.3714	0.3924		0.3893	0.4037
	0.3669	0.3705		0.3828	0.3803
	0.3828	0.3803		0.3963	0.3887
5A-4	0.3828	0.3803	5B-4	0.3963	0.3887
	0.3669	0.3705		0.3828	0.3803
	0.3624	0.3486		0.3762	0.3569
	0.3762	0.3569		0.3881	0.3640

SPECIFICATION FOR APPROVAL





BIN	x	y	BIN	x	y
7B-6	0.4609	0.4352	8A-6	0.4788	0.4394
	0.4415	0.4281		0.4609	0.4352
	0.4354	0.4148		0.4538	0.4214
	0.4538	0.4214		0.4709	0.4254
7B-5	0.4538	0.4214	8A-5	0.4709	0.4254
	0.4354	0.4148		0.4538	0.4214
	0.4293	0.4014		0.4468	0.4077
	0.4468	0.4077		0.4630	0.4114
7B-4	0.4468	0.4077	8A-4	0.4630	0.4114
	0.4293	0.4014		0.4468	0.4077
	0.4232	0.3881		0.4397	0.3939
	0.4397	0.3939		0.4551	0.3975
7B-3	0.4397	0.3939	8A-3	0.4551	0.3975
	0.4232	0.3881		0.4397	0.3939
	0.4171	0.3748		0.4326	0.3801
	0.4326	0.3801		0.4472	0.3835

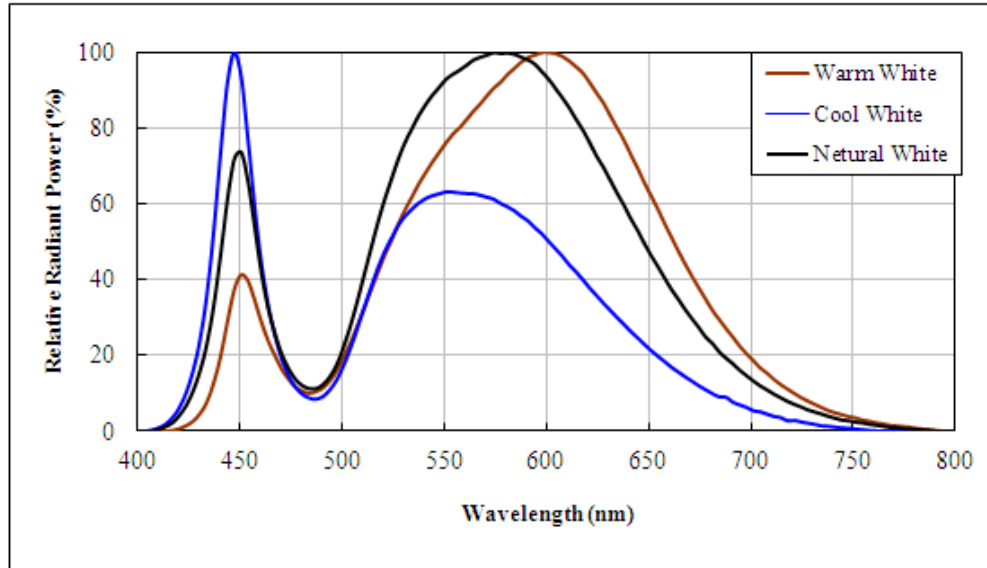
➤ **PERFORMANCE GROUPS – BRIGHTNESS**

Bin	E	F						
VF(v)	3.0-3.2	3.2-3.4						
Bin	29	30	31	32	33	34	35	36
Flux(lm)	70-75	75-80	80-90	90-100	100-110	110-120	120-130	130-140

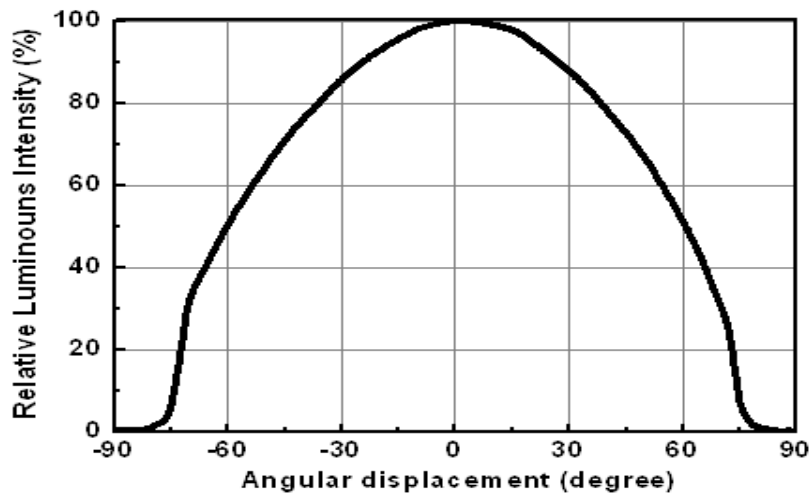


➤ OPTICAL CHARACTERISTICS

Figure 1. Relative Spectral Power VS Wavelength @ Tc=25°C

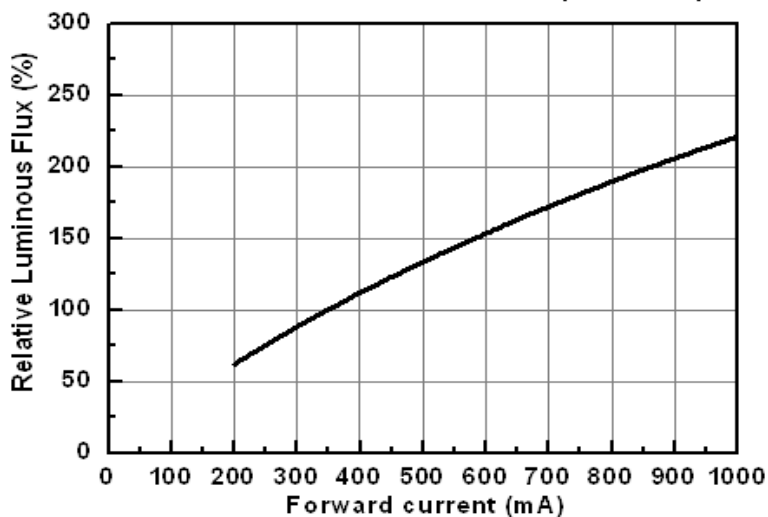


Typical Spatial Distribution

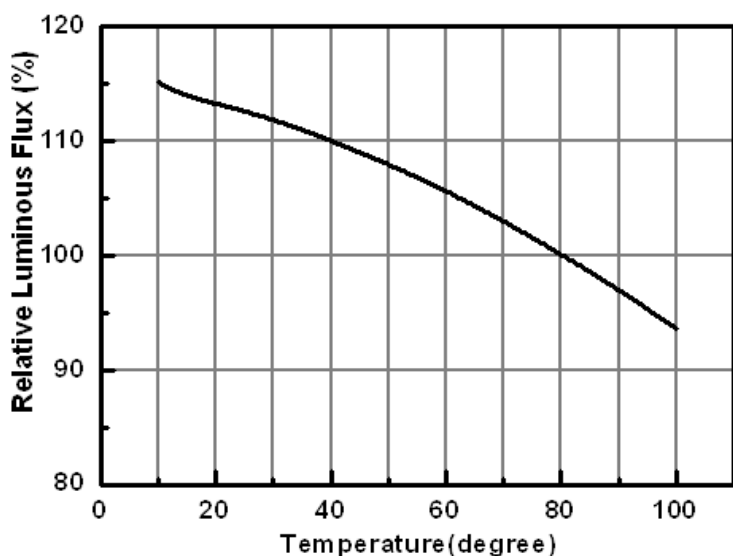




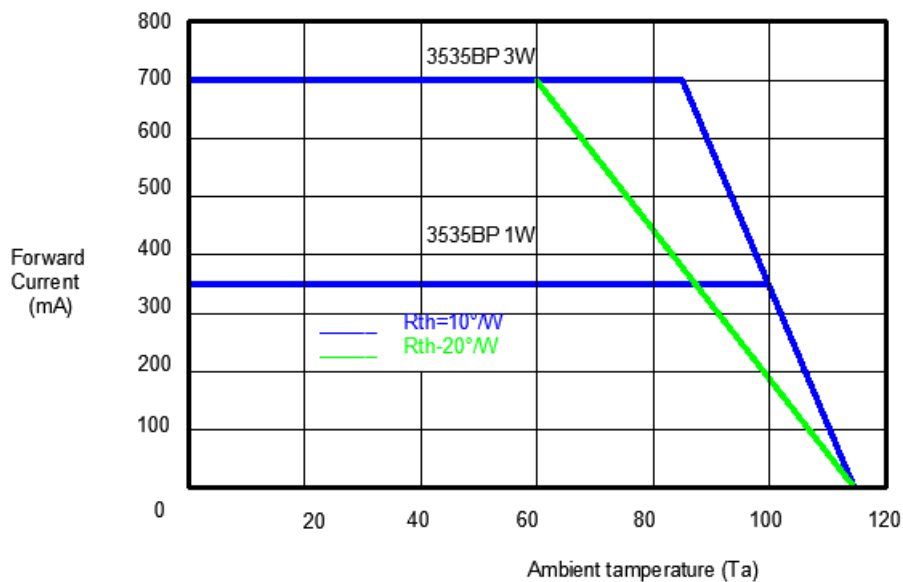
Relative Flux vs.Current (Ta=25°C)

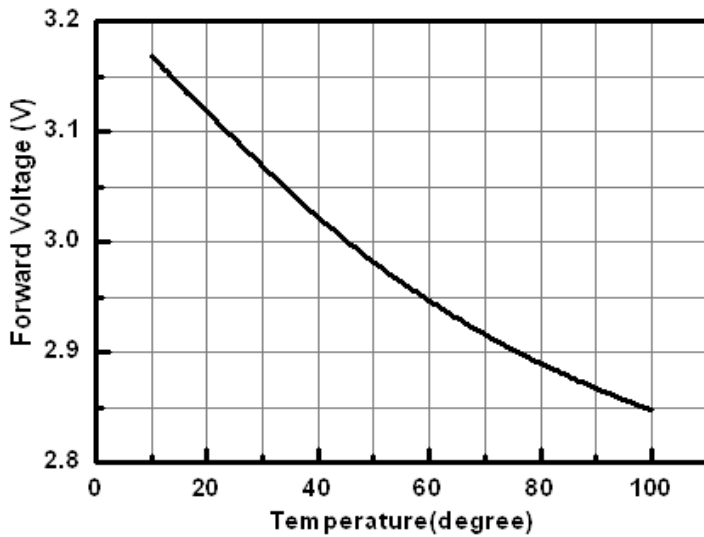


Relative Flux vs.Ambient Temperature (If=350mA)

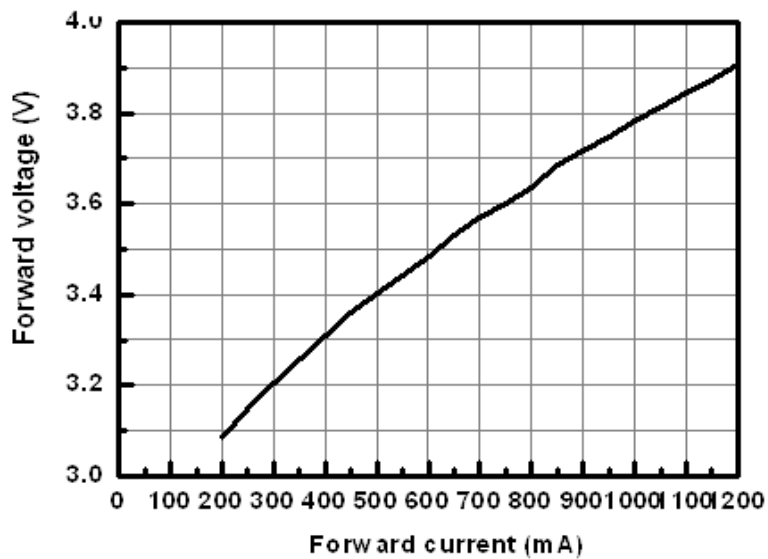


Thermal Design



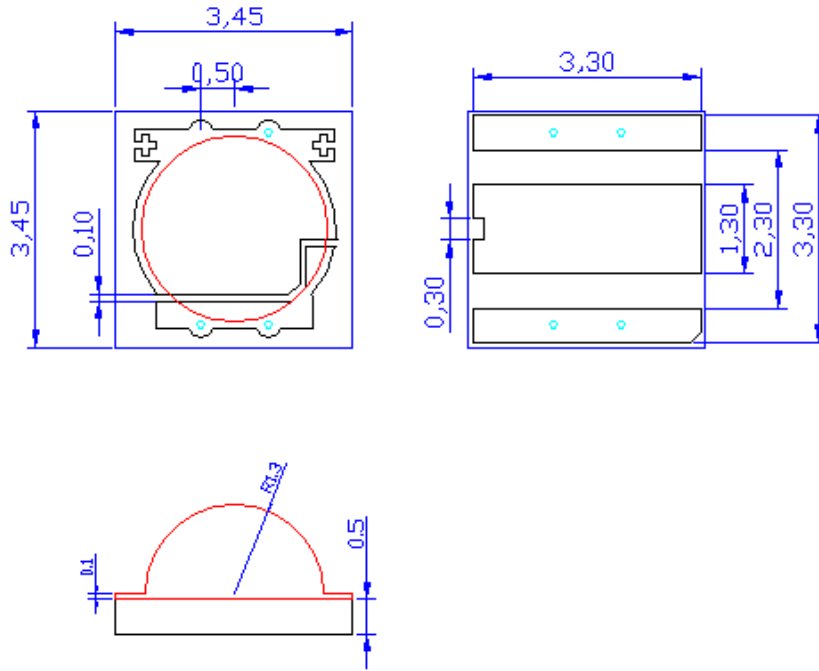


Electrical Characteristics (Ta=25°C)



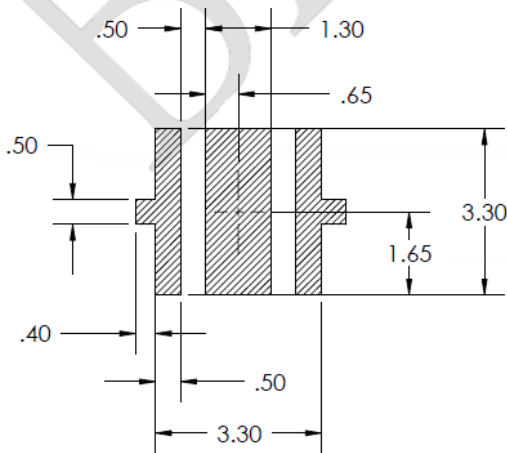
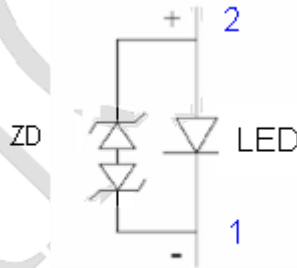


OUTLINE DIMENSIONS

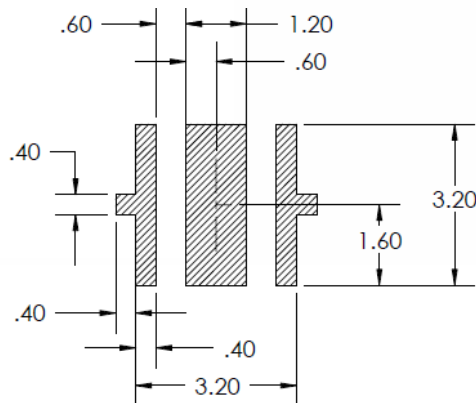


- § All dimensions are in millimeters.
- § Tolerance is ± 0.13 mm unless other specified

Circuit Type



RECOMMENDED PCB SOLDER PAD



RECOMMENDED STENCIL PATTERN
(HATCHED AREA IS OPENING)

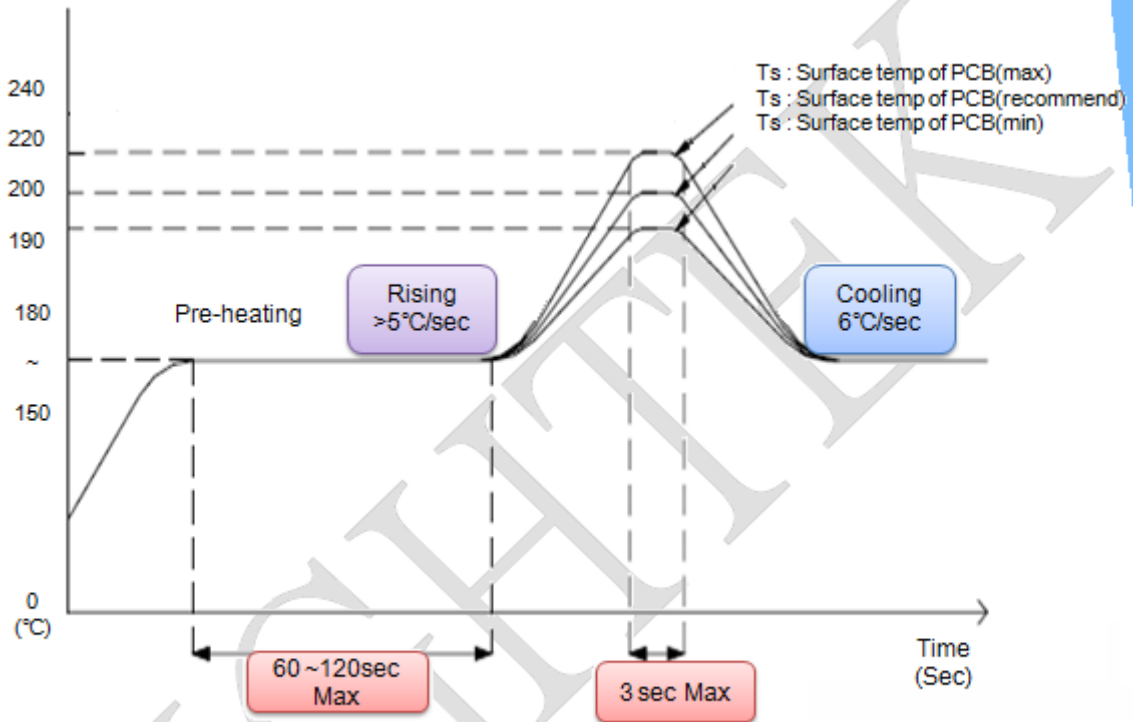
ps.Suggest stencil t =0.12 mm



➤ **REFLOW PROFILE**

IR reflow soldering Profile

Lead Free solder



NOTES:

1. We recommend the reflow temperature $200^{\circ}\text{C} (\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 210°C .
2. Don't stress the silicone resin while it is exposed to high temperature.
3. Number of reflow process shall be 1 time.

**TEST ITEMS AND RESULTS OF RELIABILITY**

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Temperature Cycle	-40°C 30min ↑↓25°C (5 min) 100°C 30min	100 cycles	0/22	JEITA ED-4701 300 303
Thermal Shock	-40°C 30min ↑↓5sec 110°C 30min	100 cycles	0/22	JEITA ED-4701 200 303
High Temperature Storage	T _a =85°C	1000 hrs	0/22	EIAJED-4701 200 201
Humidity Heat Storage	T _a =85°C RH=85%	1000 hrs	0/22	EIAJED-4701 100 103
Low Temperature Storage	T _a =-40°C	1000 hrs	0/22	EIAJED-4701 200 202
Life Test	T _a =25°C I _f =500mA	1000 hrs	0/22	Tested with Brightek standard
High Humidity Heat Life Test	60°C RH=90% I _f =500mA	1000 hrs	0/22	Tested with Brightek standard
Low Temperature Life Test	T _a =-40°C I _f =500mA	1000 hrs	0/22	Tested with Brightek standard
ESD(HBM)	1KV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883D

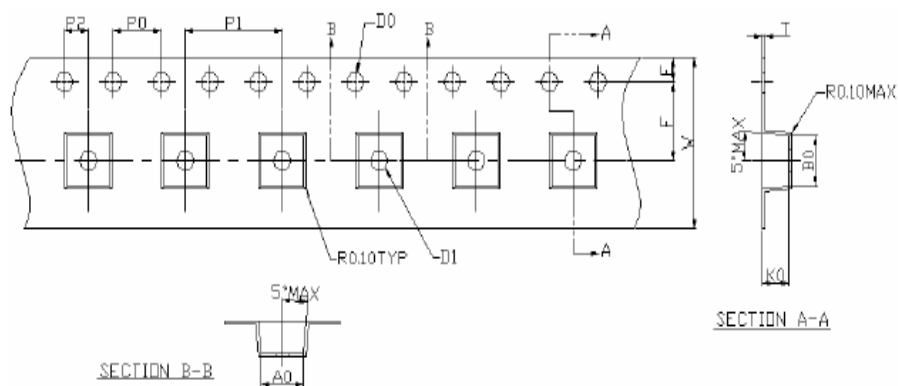
***Criteria for Judging the Damage**

Item	Symbol	Condition	Criteria for Judgement	
			MIN	MAX
Forward Voltage	VF	I _f =350mA	-	USL ^{*1} ×1.1
Reverse Current	IR	VR=5V	-	100μA
Luminous Intensity	I _v	I _f =350mA	LSL ^{*2} ×0.7	-

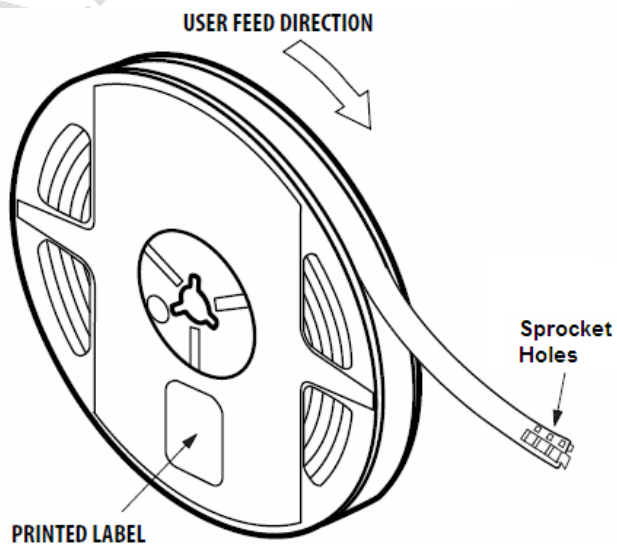
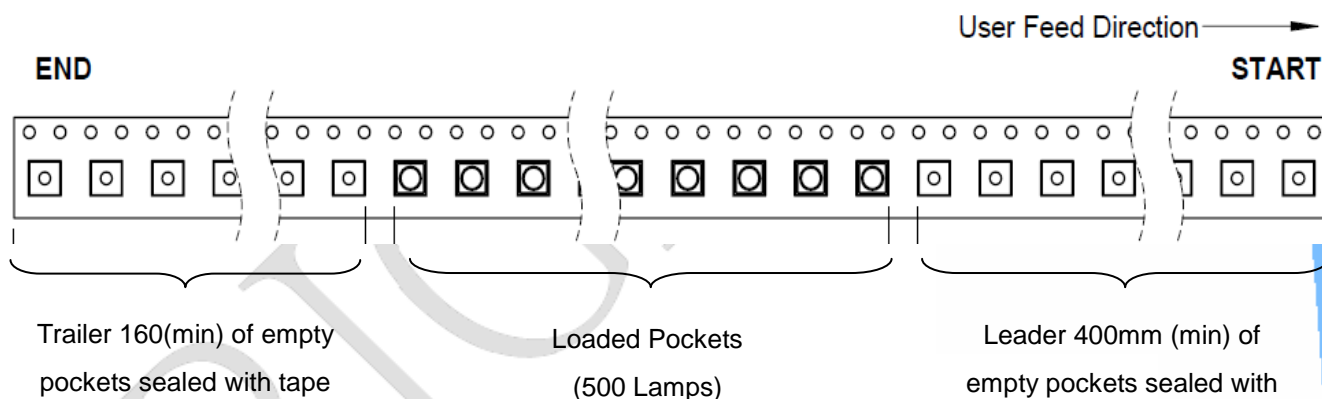
[Note]^{*1}USL: Upper Specification Level^{*2}LSL: Lower Specification Level

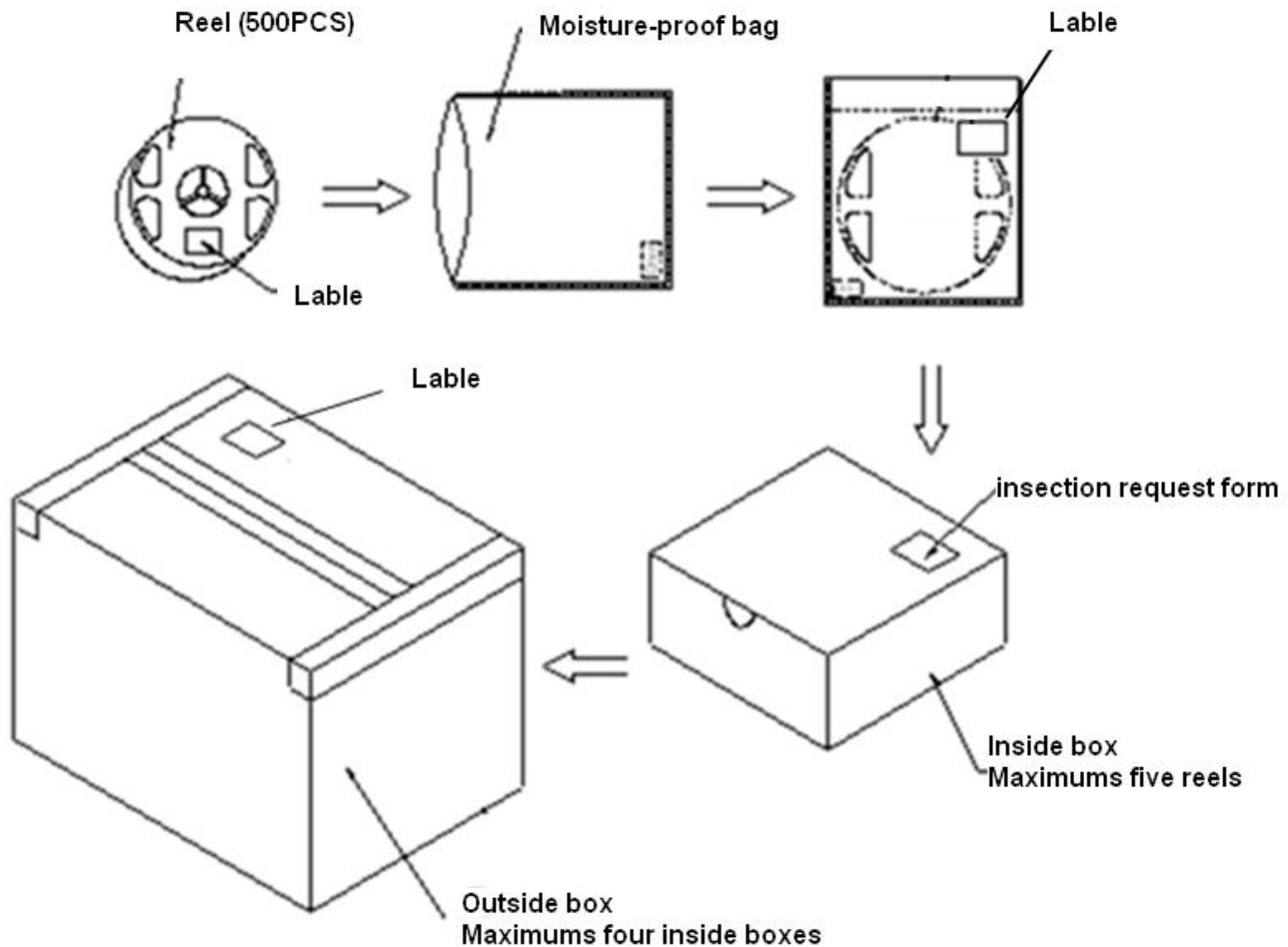


Tape and Reel



Item	Specification	Tol.(+/-)
W	12.00	±0.30
E	1.75	±0.10
F	5.50	±0.10
D0	1.50	+0.1 -0
D1	1.50	±0.10
P0	4.00	±0.10
P1	8.00	±0.10
P2	2.00	±0.10
P0 x 10	40.00	±0.20
t	0.30	±0.05
A0	3.67	±0.10
B0	3.60	±0.10
K0	2.20	±0.10



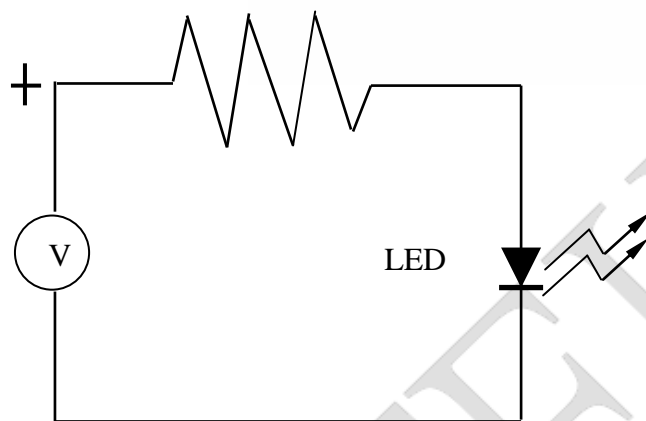


NOTES:

Reeled products (numbers of products are 500pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, five moisture-proof bag of maximums (total maximum number of products are 2,500pcs) packed in an inside box (size: about 240mm x about 195mm x about 100mm) and four inside boxes of maximums are put in the outside box (size: about 410mm x about 255mm x about 240mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. And quantity should appear on the insertion request form on the cardboard box.) .



■ Test circuit



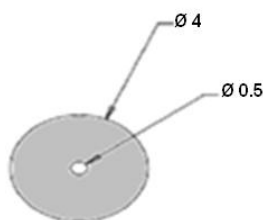
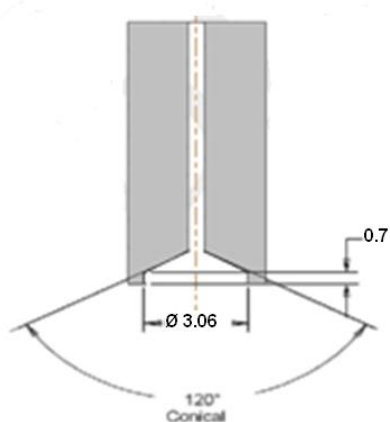
■ Handling precautions

1、 The following items are recommended when handling LEDs

- 1.1 The lens of LEDs should not be exposed to dust and debris. Excessive dust and debris may cause a drastic decrease in light output.
- 1.2 Avoid mechanical stress on LED lens
- 1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage
- 1.4 Pick & place tool was recommended to use for the remove of LEDs from the factory tape & reel packaging

2、 Pick & Place Nozzle

The pickup tool was recommended and shown as below



Unit : mm

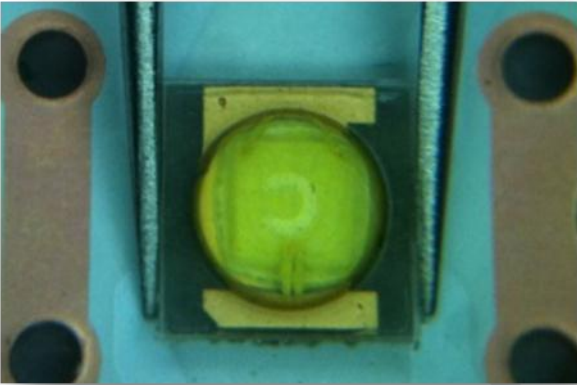
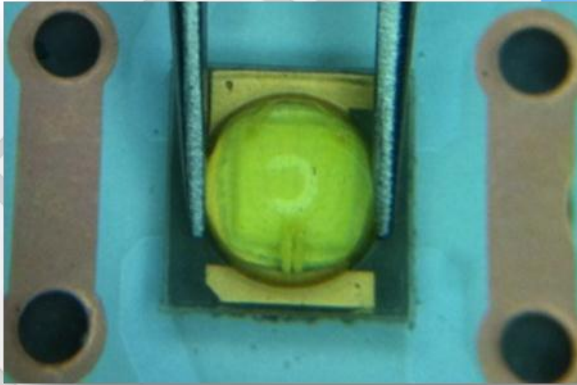
Tolerance : ± 0.1



3、 Lens handling

Please follow the guideline to grab LEDs

- 3.1 Use tweezers to grab LEDs
- 3.2 Do not touch lens with the tweezers
- 3.3 Do not touch lens with fingers
- 3.4 Do not apply more than 4N of lens (400g) directly onto the lens

Correct (√)	Wrong (X)
	

4、 Lens cleaning

In the case where a minimal level of dirt and dust particles can't be guaranteed, a suitable cleaning solution can be applied to the lens surface

- 4.1 Try a gentle swabbing using a lint-free swab
- 4.2 If needed, the use of lint-free swab and isopropyl alcohol used gently removes dirt from the lens surface.
- 4.3 Do not use other solvents as they may directly react with the LED assembly
- 4.4 Do not use ultrasonic cleaning that the LED will be damaged

5、 Carrier Tape Handling

The following items are recommended when handling the Carrier tape of LEDs

- 5.1 Do not twist the carrier tape
- 5.2 The inward bending diameter should not smaller than 6cm for carrier tape.
- 5.3 Do not bend the tape outward.

