

# **NLW3535AV4 LED Package of Specifications**



**Anhui Retop Electronics Co.,Ltd**

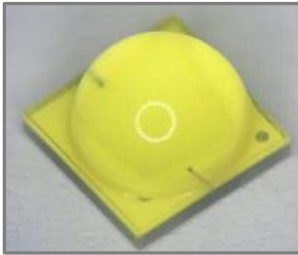
**Product: NLW3535AV4**

**Version:V1.1**

**Date :2018-10-10**



## NLW3535AV4



### Product Features

- High efficacy for cost effective solutions
- high quality lighting solution
- Industry-leading thermal resistance
- Reflow solder able-JEDEC J-STD-020C
- Excellent Lumen maintenance requirements

### Product Applications

- Outdoor lighting
- Indoor lighting
- Working lighting

### Product Specification

CCT (K)	CRI	Flux		Forward voltage		Viewing Angle	Thermal resistance
	Typ @350mA	Typ @350mA	Typ @700mA	Typ @350mA	Max @350mA	Typ	Typ
4000K	70	168	302	2.75	3.0	125 °	2.5°C/W
5700K	70	172	309	2.75	3.0	125 °	2.5°C/W
6500K	70	175	315	2.75	3.0	125 °	2.5°C/W

Notes :

1. Photoelectric parameters :Test Current =350mA, Test Time =20ms, Ambient Temperature = 25 °C ;
2. The viewing angle is 50 % center light intensity angle,Optical simulation software light source data of ProSource\Lighttools\TracePro\ASAP\Zemax etc can be provided ;
- 3.ETI maintains a testing tolerance of ±7% on flux and power measurements, ±0.007 on chromaticity (CCx, CCy), ±3on CRI measurements,Voltage, ±0.1V on voltage testing

## Absolute Maximum Ratings

Item	Symbol	Absolute Maximum Rating
Junction Temperature (°C)	$T_j$	150°C
Operating Temperature (°C)	$T_{op}$	-40°C - 100°C
Storage Temperature (°C)	$T_{stg}$	-40°C - 100°C
Forward Current	$I_F$	2000mA
Pulse Forward Current	$I_{FM}$	2500mA
Reverse Voltage	$V_R$	No Reverse Operation Design
Electrostatic Discharge	ESD (HBM)	8000V

Notes :

1. Maximum Forward Current and Maximum Pulse Current require the junction temperature to be lower than the rated junction temperature ;
2. IFM condition Pulse width at 50ms and duty cycle at 0.016;
3. Built-in ESD protection diode.

## Luminance binning comparison between at 25°C and at 85°C

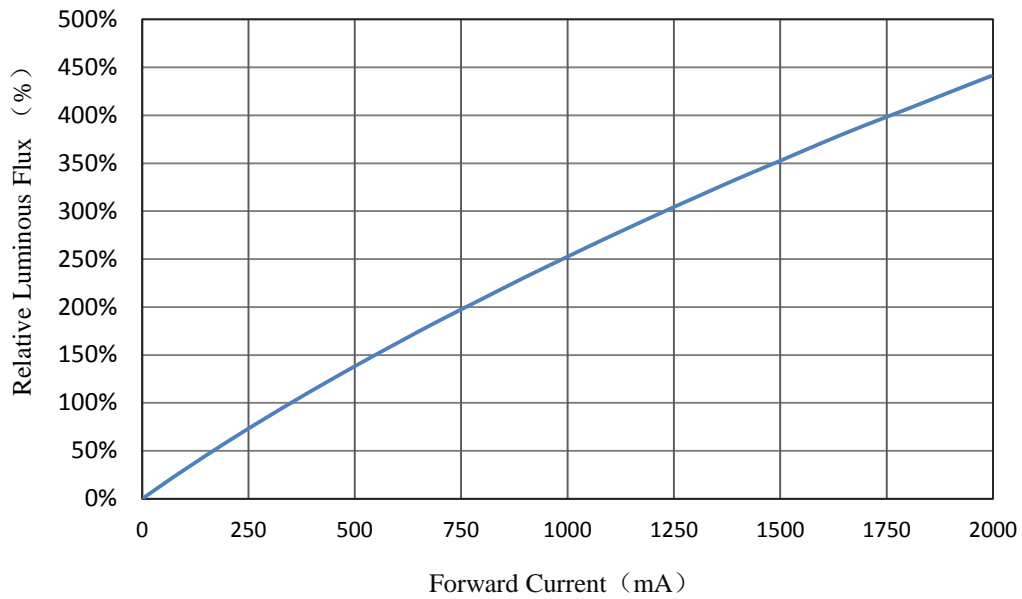
Color temp.	Luminance range (lm) @25°C		Luminance range (lm) @85°C	
	4000~6500K	S4	164-172	S2
S5		172-182	S3	156-164
S6		182-200	S4	164-172
T2		200-220	S5	172-182

## The color coordinate difference in value between 25°C and at 85°C

Color temp.	$\Delta X$	$\Delta Y$	$\Delta T_c$ (K)
2200	<0.002	<0.002	<50
2700	<0.002	<0.002	<50
3000	<0.003	<0.004	<50
4000	<0.004	<0.005	<50
5000	<0.002	<0.003	<100
5700	<0.002	<0.002	<100
6500	<0.003	<0.004	<150

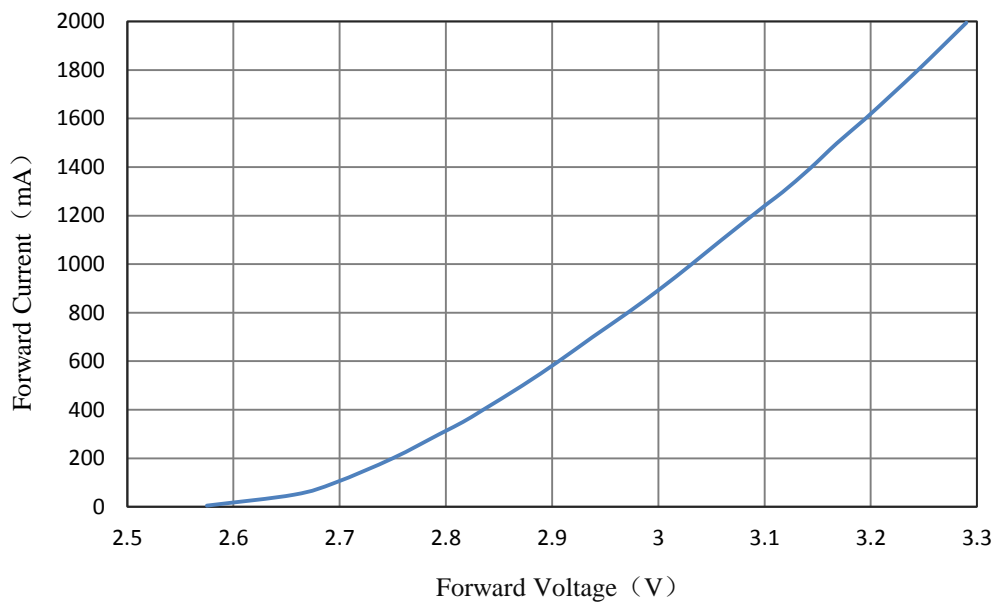
## Product Characteristic Curve

### Relative Luminous Flux VS Forward Current



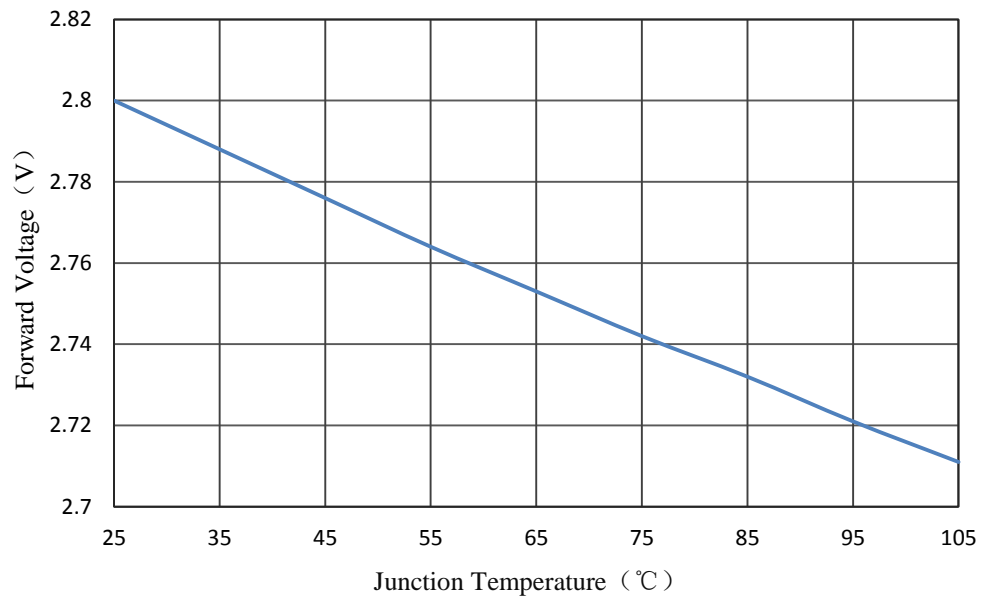
## Product Characteristic Curve

### Forward Current VS Forward Voltage



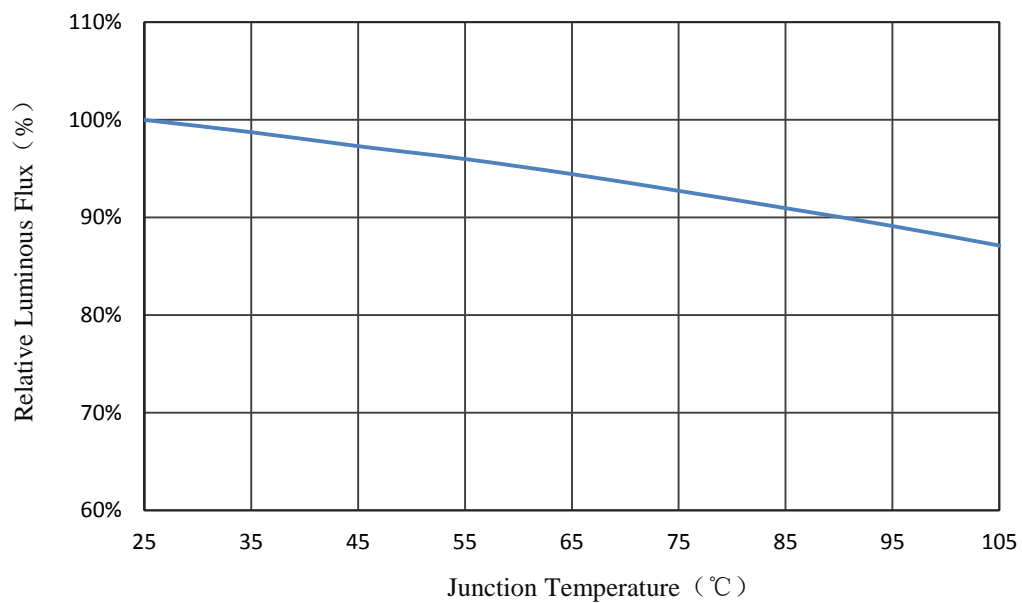
## Product Characteristic Curve

### Forward Voltage VS Junction Temperature



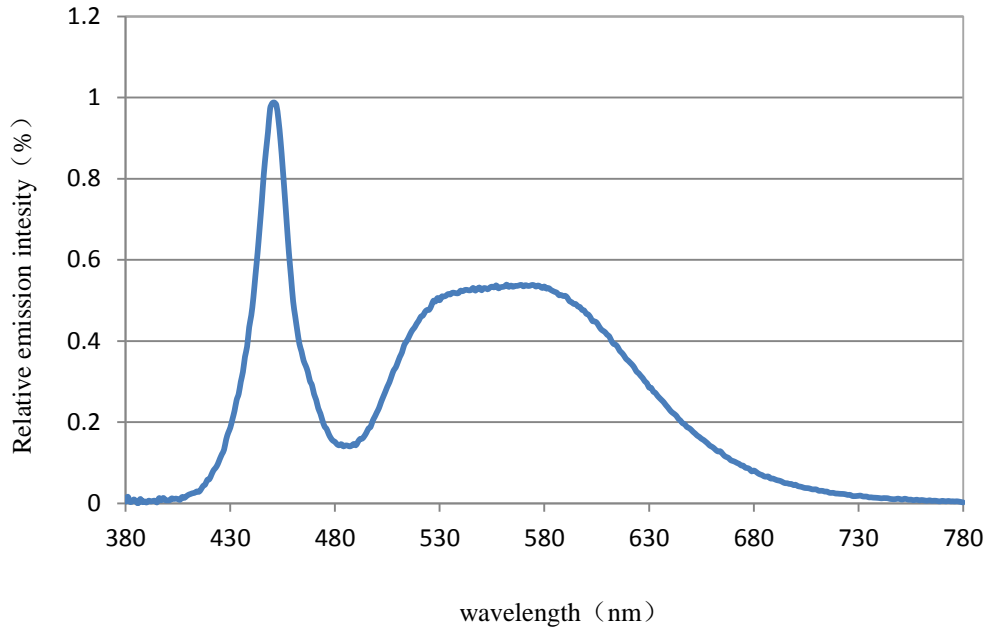
## Product Characteristic Curve

### Relative Luminous Flux VS Junction Temperature



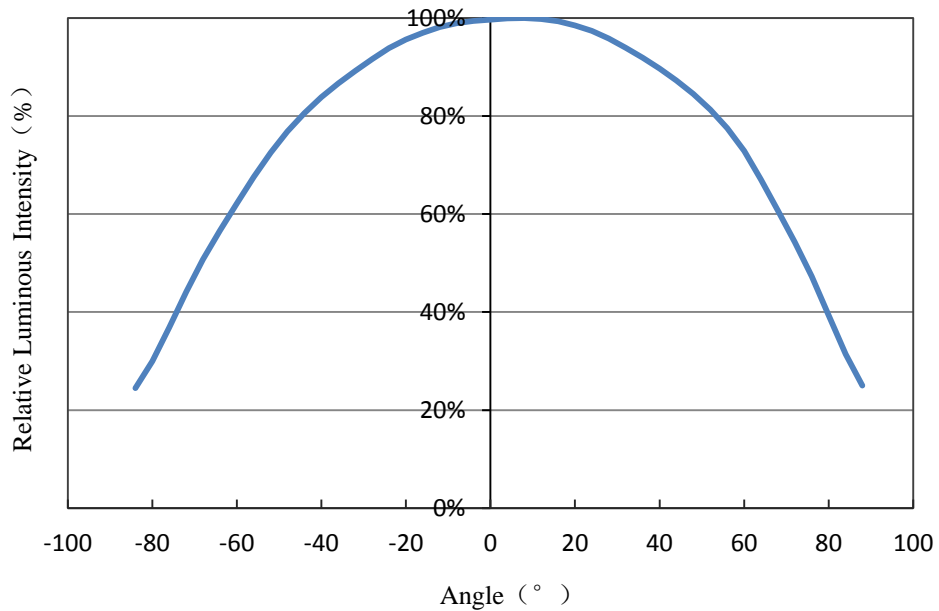
**Product Characteristic Curve**

**Relative emission intensity VS wavelength**



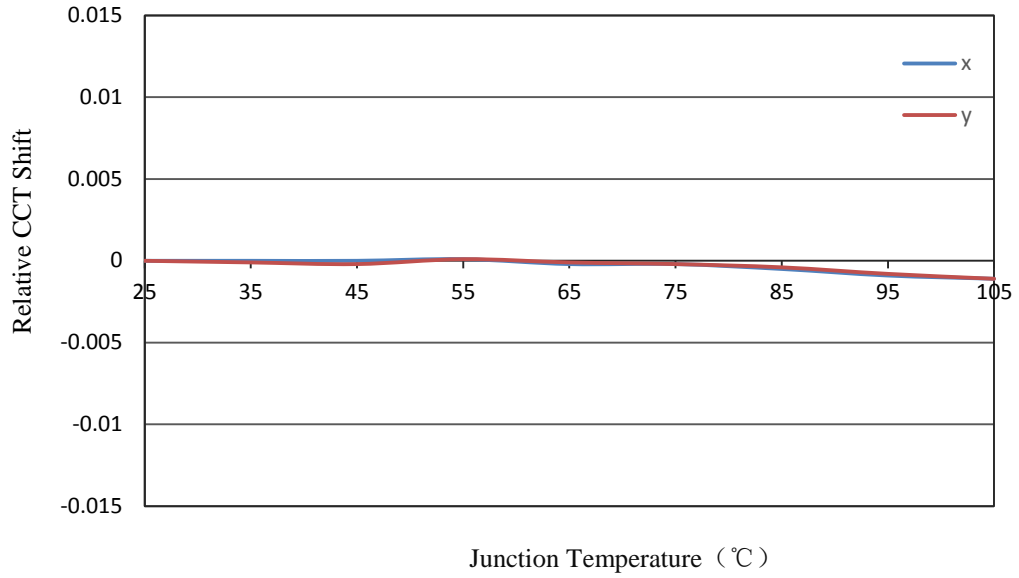
**Product Characteristic Curve**

**Relative Luminous Intensity VS Angle**



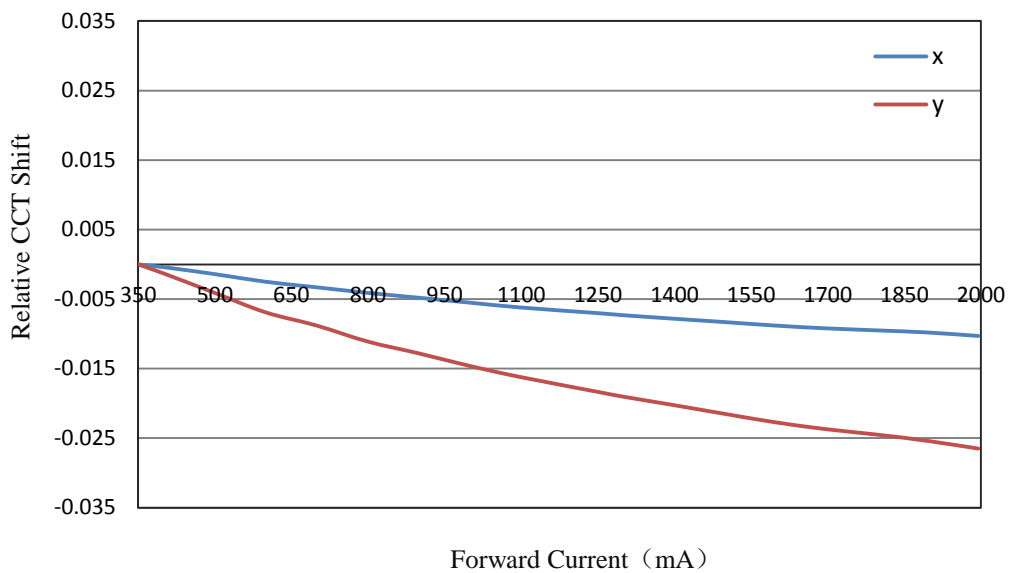
**Product Characteristic Curve**

**Relative CCT Shift VS Junction Temperature**



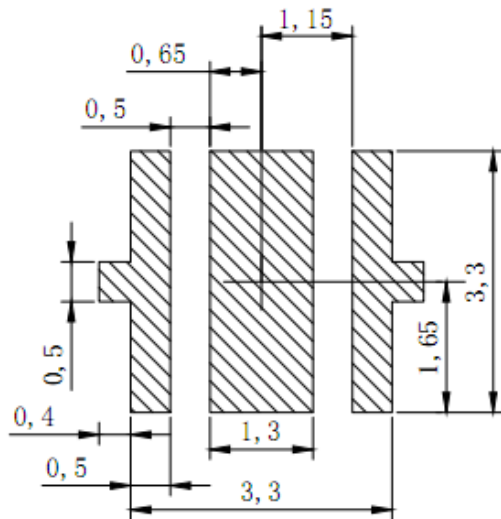
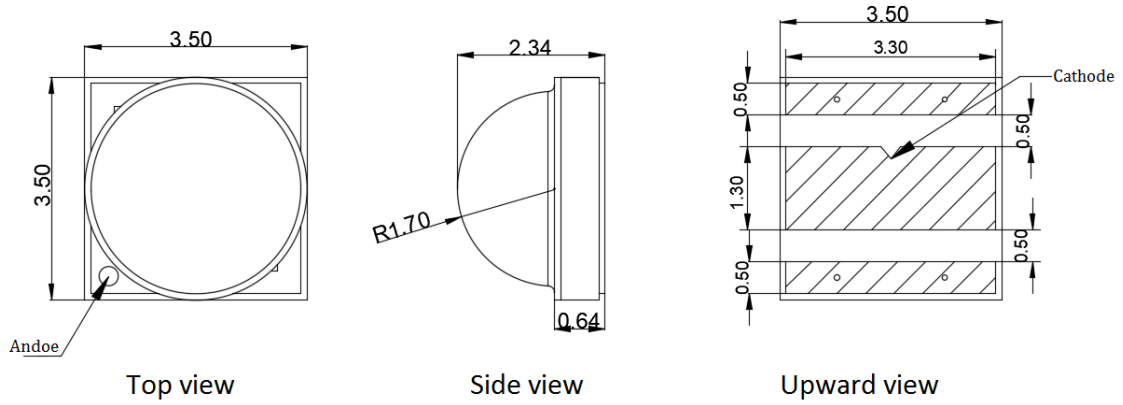
**Product Characteristic Curve**

**Relative CCT Shift VS Forward Current**

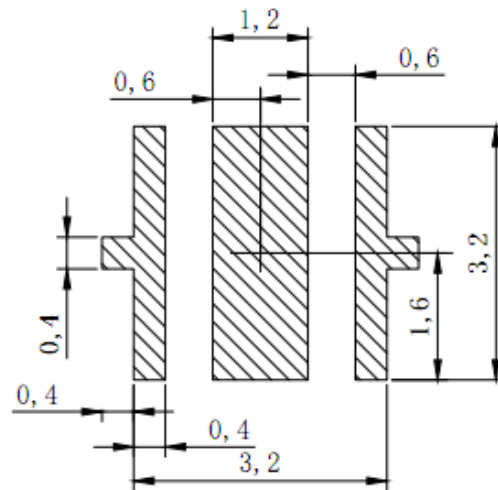


**Mechanical Dimensions:**

**Unit: mm Tolerance:  $\pm 0.1$**



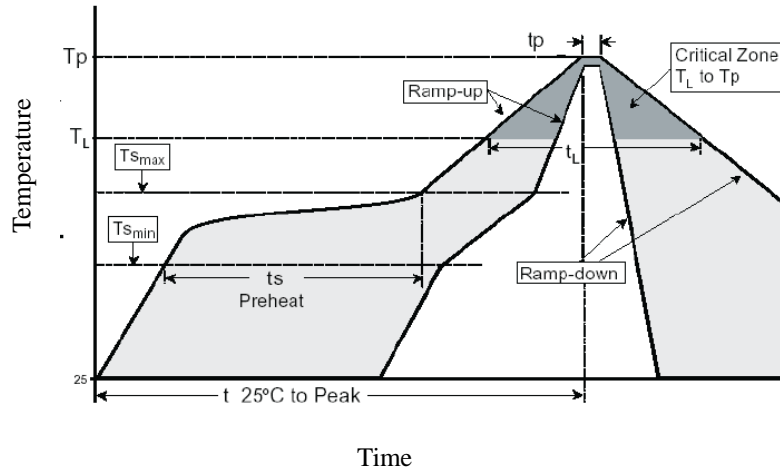
Recommended PCB Solder PAD



Recommended Stencil Pattern



### Recommended Reflow Profile

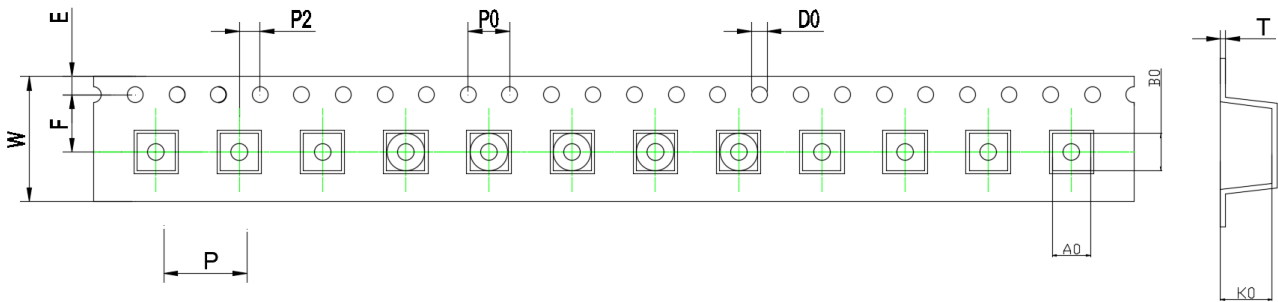


Profile Feature	Lead-Based Solder	Lead-Free Solder
Average Ramp-Up Rate (Ts max to Tp)	3°C/ s Max	3°C/ s Max
Preheat: Temperature Min (Tsmmin )	100°C	150°C
Preheat: Temperature Max (Tsmmax)	150°C	200°C
Preheat Time (Tsmmin to Ts max)	60-120s	60-180s
Time Maintain Above: Temperature (TL)	183°C	217°C
Time Maintain Above: Time ( tL)	60-150s	60-150s
Peak/Classification Temperature (Tp)	215°C	260°C
Time within 5°C of Peak Temperature (tP)	10-30s	20-40s
Ramp-Down (Tp to TL)	6°C/s Max	6°C/s Max
Time 25 °C to peak Temperature	6min Max	8min Max

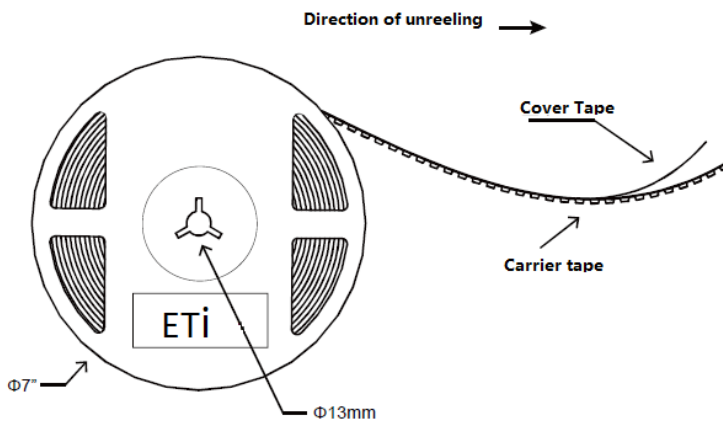
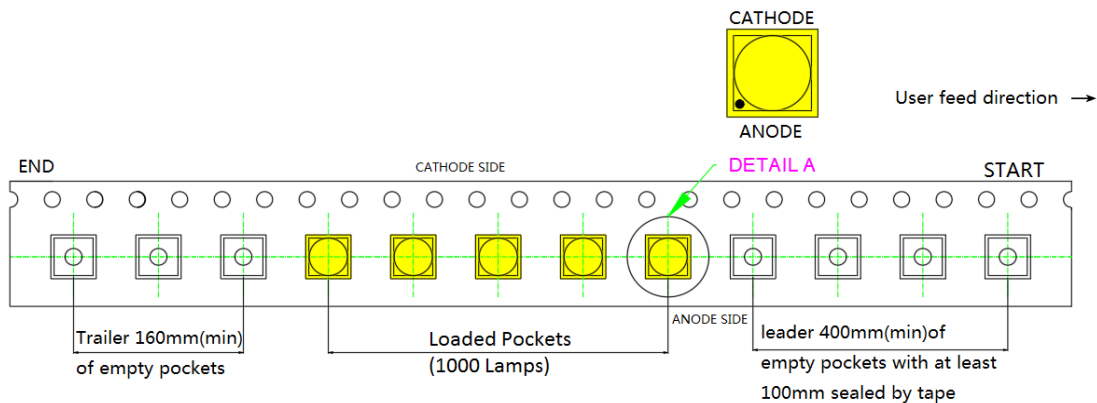
Notes:

After tests confirmed in no more than 30°C under the condition of 85% relative humidity (RH), ETi NLW LED the plant life is not restricted. Moisture determination is included in the 85°C/ 85% relative humidity under the condition of moisture absorption first 168 hours, then 3 times of reflow soldering, and visual inspection and electrical inspections at each stage. ETi advice: before used immediately, will be kept in a sealed moisture-proof bag NLW LED. ETi also suggested: immediately after use will all unused LED back to seal moisture bag and sealing the bag.

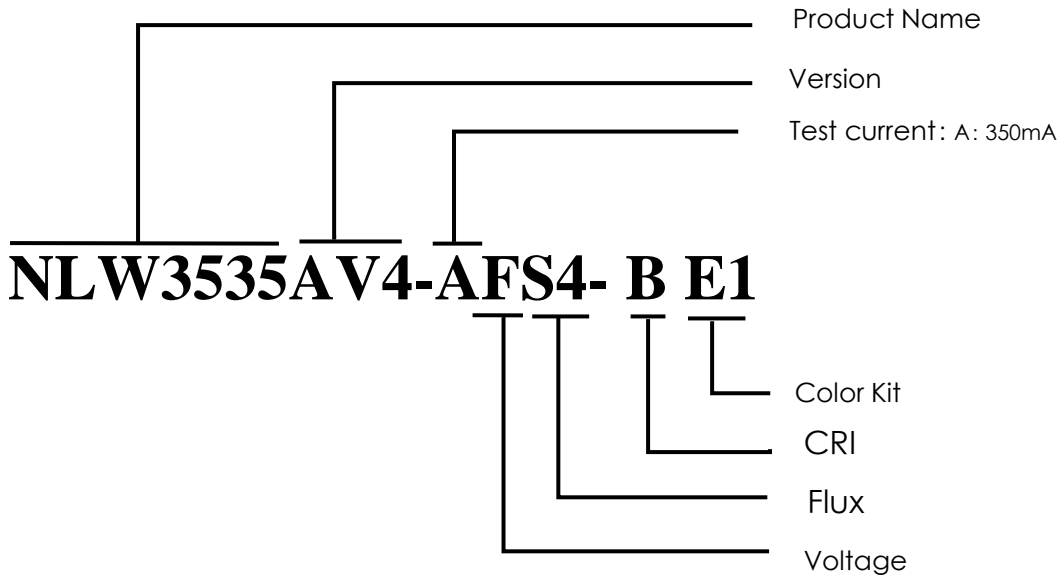
Tap and Reel Dimensions (mm):



symbol	AO	BO	KO	PO	P	P2
Spec	3.90±0.1	3.90±0.1	2.48±0.1	4.00±0.10	8.0±0.1	2.00±0.10
symbol	W	T	E	F	DO	D1
Spec	12.0±0.3	0.2±0.05	1.75±0.10	5.5±0.1	1.50 <sup>+0.1</sup> <sub>-0</sub>	1.50±0.10



**Product Name Description**



**NLW3535AV4-AFS4-B E1**

**Voltage Specification**

Voltage	Max	Min	Unit
F	2.75	3.00	V

**CRI Specification**

CRI	Specification
B	CRI70

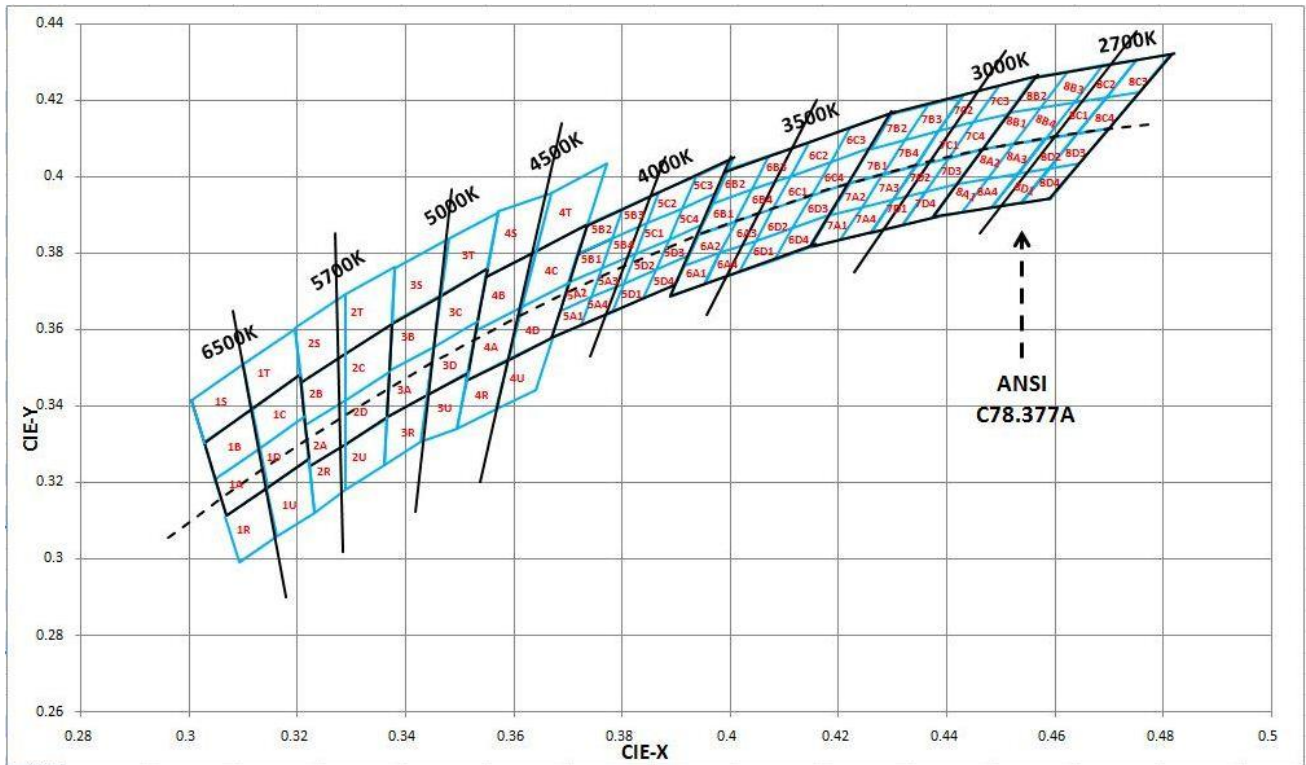
**Color Kit**

Color Kit	CCT	Unit
E5	4000	K
E2	5700	K
E1	6500	K

**Flux Specification**

Flux	Max	Min	Unit
R5	139	148	Lm
S2	148	156	Lm
S3	156	164	Lm
S4	164	172	Lm
S5	172	182	Lm
S6	182	200	Lm
T2	200	220	Lm

**Color Group Description :**



Notes:

Ambient Temperature: 25°C

Forward Current: 350mA

Tolerance: ±0.007 on chromaticity (CCx, CCy)

Test Time: 20ms

### Performance Groups—Chromaticity

Region	x	y	Region	x	y	Region	x	y	Region	x	y
1A	0.3048	0.3207	1B	0.3028	0.3304	1C	0.3115	0.3391	1D	0.3130	0.3290
	0.3130	0.3290		0.3115	0.3391		0.3205	0.3481		0.3213	0.3373
	0.3144	0.3186		0.3130	0.3290		0.3213	0.3373		0.3221	0.3261
	0.3068	0.3113		0.3048	0.3207		0.3130	0.3290		0.3144	0.3186
1R	0.3068	0.3113	1S	0.3005	0.3415	1T	0.3099	0.3509	1U	0.3144	0.3186
	0.3144	0.3186		0.3099	0.3509		0.3196	0.3602		0.3221	0.3261
	0.3161	0.3059		0.3115	0.3391		0.3205	0.3481		0.3231	0.3120
	0.3093	0.2993		0.3028	0.3304		0.3115	0.3391		0.3161	0.3059
2A	0.3215	0.3350	2B	0.3207	0.3462	2C	0.3290	0.3538	2D	0.3290	0.3417
	0.3290	0.3417		0.3290	0.3538		0.3376	0.3616		0.3371	0.3490
	0.3290	0.3300		0.3290	0.3417		0.3371	0.3490		0.3366	0.3369
	0.3222	0.3243		0.3215	0.3350		0.3290	0.3417		0.3290	0.3300
2R	0.3222	0.3243	2S	0.3196	0.3602	2T	0.3290	0.3690	2U	0.3290	0.3300
	0.3290	0.3300		0.3290	0.3690		0.3381	0.3762		0.3366	0.3369
	0.3290	0.3180		0.3290	0.3538		0.3376	0.3616		0.3361	0.3245
	0.3231	0.3120		0.3207	0.3462		0.3290	0.3538		0.3290	0.3180
5A	0.3702	0.3722	5B	0.3736	0.3874	5C	0.3870	0.3958	5D	0.3825	0.3798
	0.3825	0.3798		0.3870	0.3958		0.4006	0.4044		0.3951	0.3876
	0.3783	0.3646		0.3825	0.3798		0.3951	0.3876		0.3898	0.3716
	0.3670	0.3578		0.3702	0.3722		0.3825	0.3798		0.3783	0.3646
5A1	0.3670	0.3578	5A2	0.3686	0.3649	5A3	0.3744	0.3685	5A4	0.3726	0.3612
	0.3686	0.3649		0.3702	0.3722		0.3763	0.3760		0.3744	0.3685
	0.3744	0.3685		0.3763	0.3760		0.3825	0.3798		0.3804	0.3721
	0.3726	0.3612		0.3744	0.3685		0.3804	0.3721		0.3783	0.3646
5B1	0.3702	0.3722	5B2	0.3719	0.3797	5B3	0.3782	0.3837	5B4	0.3763	0.3760
	0.3719	0.3797		0.3736	0.3874		0.3802	0.3916		0.3782	0.3837
	0.3782	0.3837		0.3802	0.3916		0.3869	0.3958		0.3847	0.3877
	0.3763	0.3760		0.3782	0.3837		0.3847	0.3877		0.3825	0.3798
5C1	0.3825	0.3798	5C2	0.3847	0.3877	5C3	0.3912	0.3917	5C4	0.3887	0.3836
	0.3847	0.3877		0.3869	0.3958		0.3937	0.4001		0.3912	0.3917
	0.3912	0.3917		0.3937	0.4001		0.4006	0.4044		0.3978	0.3958
	0.3887	0.3836		0.3912	0.3917		0.3978	0.3958		0.3950	0.3875
5D1	0.3783	0.3646	5D2	0.3804	0.3721	5D3	0.3863	0.3758	5D4	0.3840	0.3681
	0.3804	0.3721		0.3825	0.3798		0.3887	0.3836		0.3863	0.3758
	0.3863	0.3758		0.3887	0.3836		0.3950	0.3875		0.3924	0.3794
	0.3840	0.3681		0.3863	0.3758		0.3924	0.3794		0.3898	0.3716

**Performance Groups—Chromaticity :**

Color	Kit	Chromaticity Bins
Neutral White	E5	5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4,5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4
Cool White	E2	2A,2B,2C,2D
Cool White	E1	1A,1B,1C,1D

**Ordering Description**

White LEDs have performance distribution and been classified into multiple color groups. It is recommended to order products in combination of color groups.

Color group classification for reference: E5, E2, E1.