

3535 Ceramic

12W High Power LED Package

NLW3535AV7

12V LED

Specification



Anhui Retop Electronics Co., Ltd.

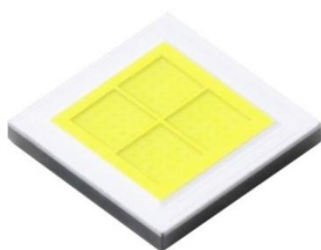
Product: NLW3535AV7

Version: A

Date : 2023-6-10



NLW3535AV7



Product Features

- Ceramic Package
- High efficacy for cost effective solutions
- high quality lighting solution
- Industry-leading thermal resistance
- Excellent Lumen maintenance requirements

Product Applications

- Portable lighting/ Flashlight
- Directional lighting
- Spot lighting
- Architectural lighting
- Automotive lighting
- Outdoor and Indoor lighting

Specification(IF=350mA, @85°C)

CCT	CRI	Luminous Flux	Forward voltage		Viewing Angle	Thermal Resistance
	Typ.	Min.	Typ.	Max.	Typ.	Typ.
	350mA	350mA@85°C	350mA	350mA		
3000K	70	510-550	11.2V	12.2V	120°	2.5°C/W
4000K	70	590-635	11.2V	12.2V	120°	2.5°C/W
5000K	70	590-635	11.2V	12.2V	120°	2.5°C/W
5700K	70	550-590	11.2V	12.2V	120°	2.5°C/W
6500K	70	550-590	11.2V	12.2V	120°	2.5°C/W

Notes:

1. 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;
2. ETI maintains a testing tolerance of $\pm 7\%$ on flux and power measurements, ± 0.007 on chromaticity (CCx, CCy), ± 3 on CRI measurements, Voltage, $\pm 0.1V$ on voltage testing.

Absolute Maximum Ratings

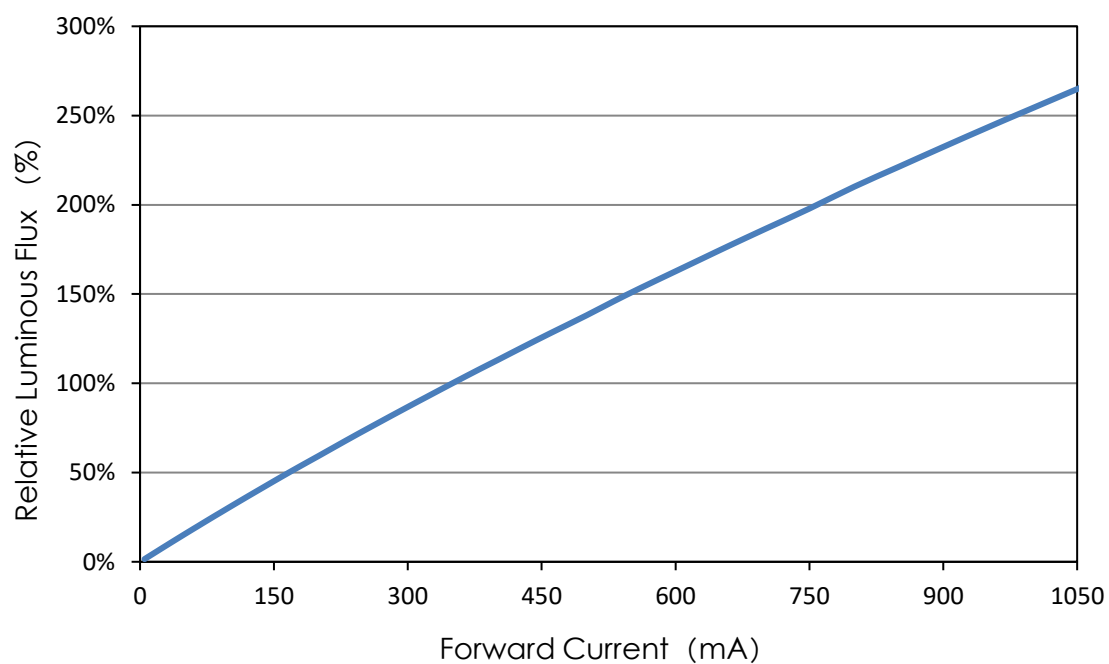
Item	Symbol	Absolute Maximum Rating
Junction Temperature (°C)	T_j	150°C
Operating Temperature (°C)	T_{opr}	-40°C - 105°C
Storage Temperature (°C)	T_{stg}	-40°C - 125°C
Forward Current	I_F	1050mA
Pulse Forward Current	I_{FM}	1500mA
Reverse Voltage	V_R	No Reverse Operation Design

Notes:

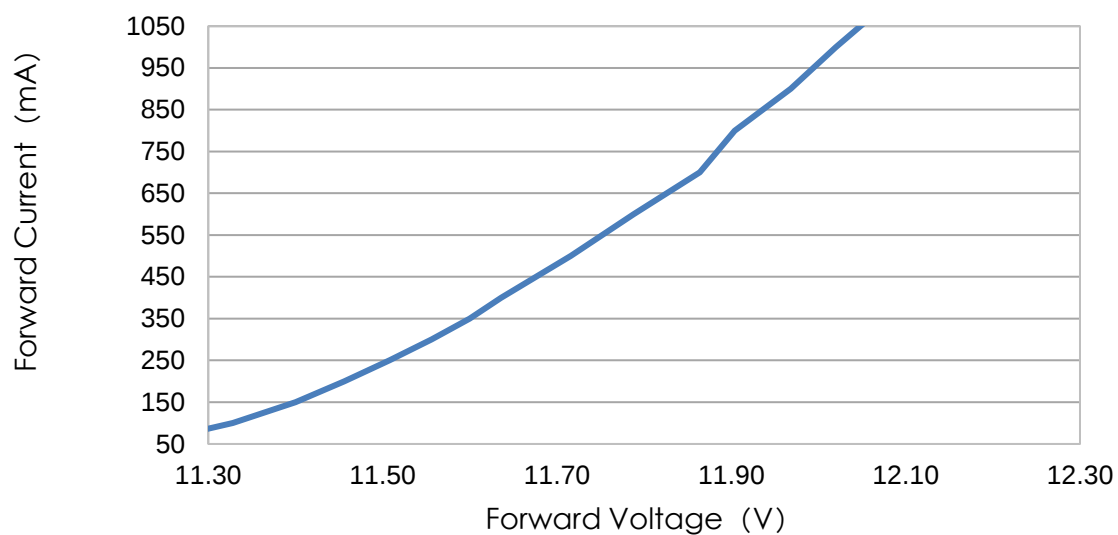
1. Maximum Forward Current and Maximum Pulse Current require the junction temperature to be lower than the rated junction temperature;
2. IFM condition Pulse width at 50ms and duty cycle at 0.016;

Product Characteristic Curve

Relative Luminous Flux VS. Forward Current

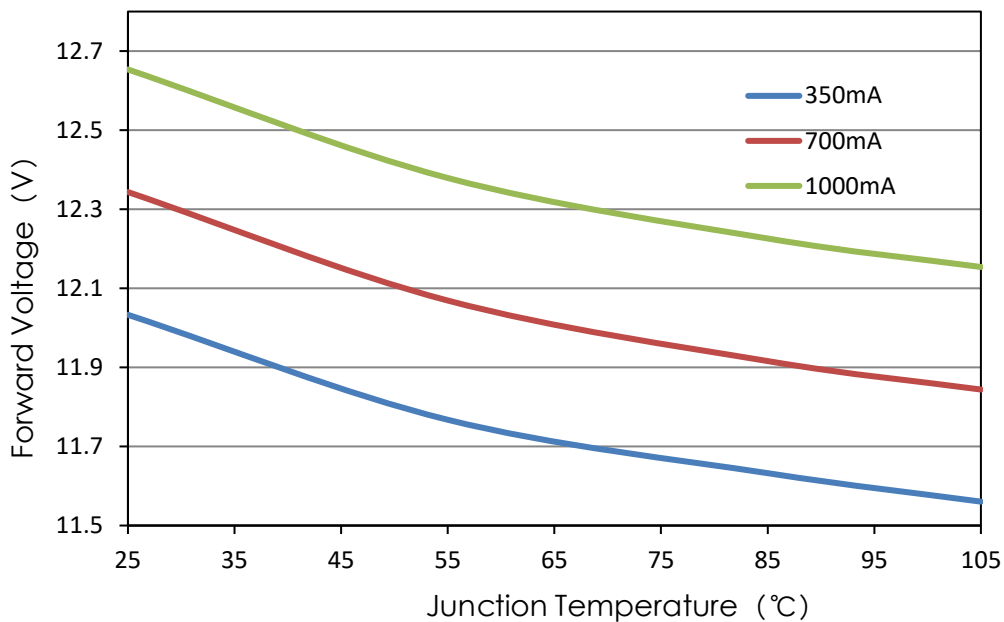


Forward Current VS. Forward Voltage

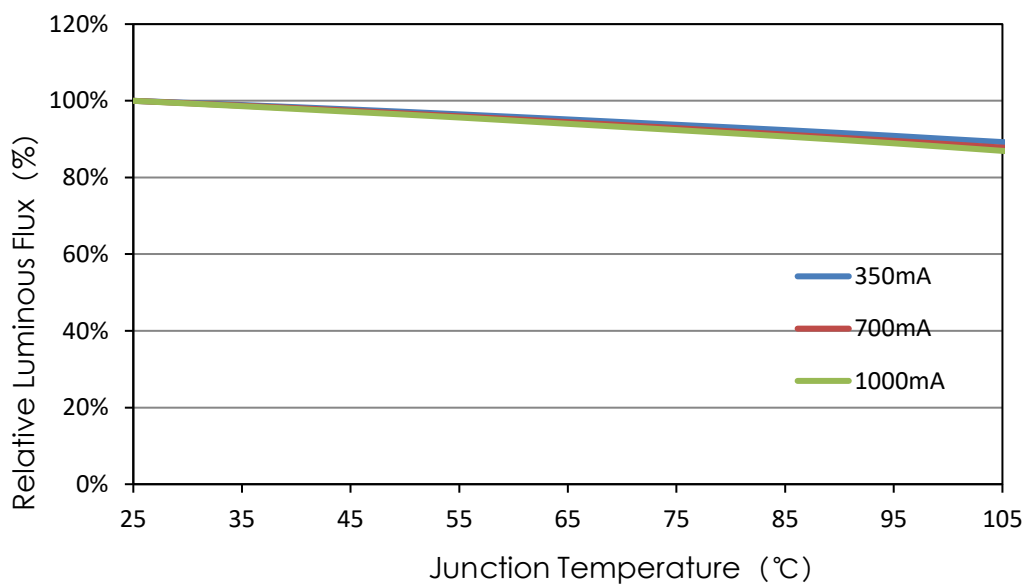


Product Characteristic Curve

Forward Voltage VS. Junction Temperature

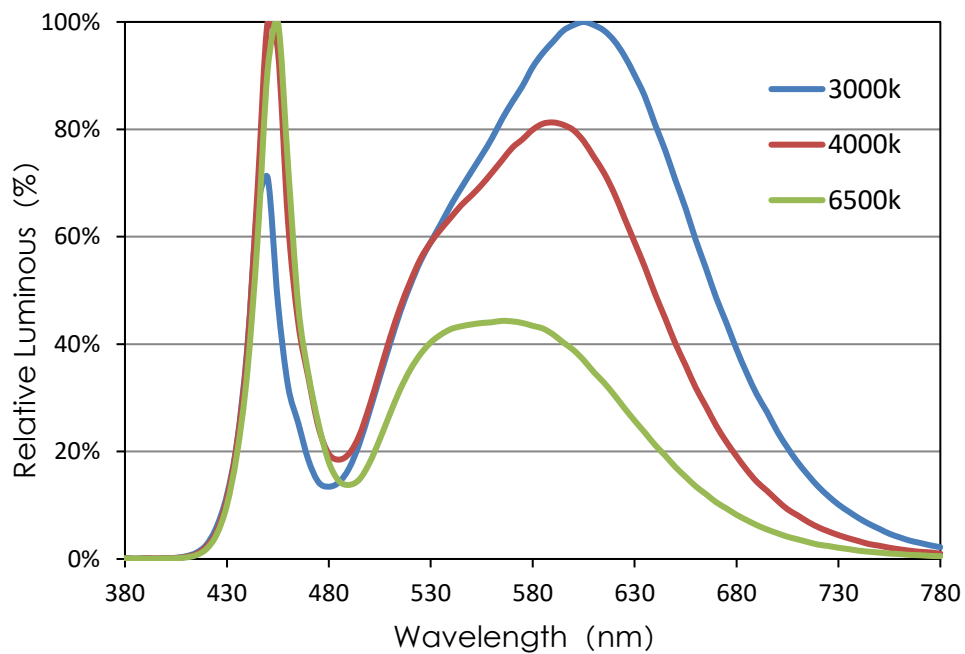


Relative Luminous Flux VS. Junction Temperature

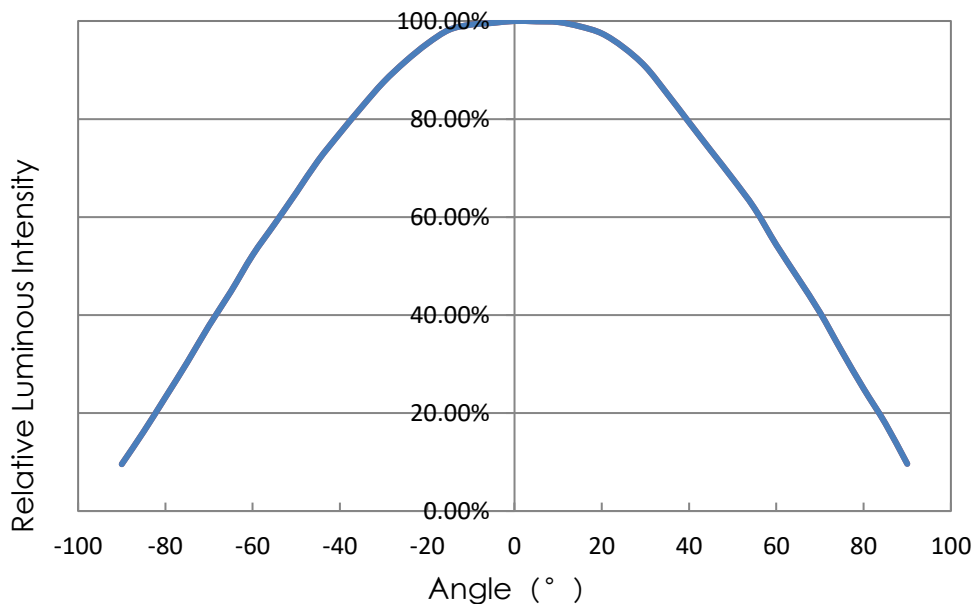


Product Characteristic Curve

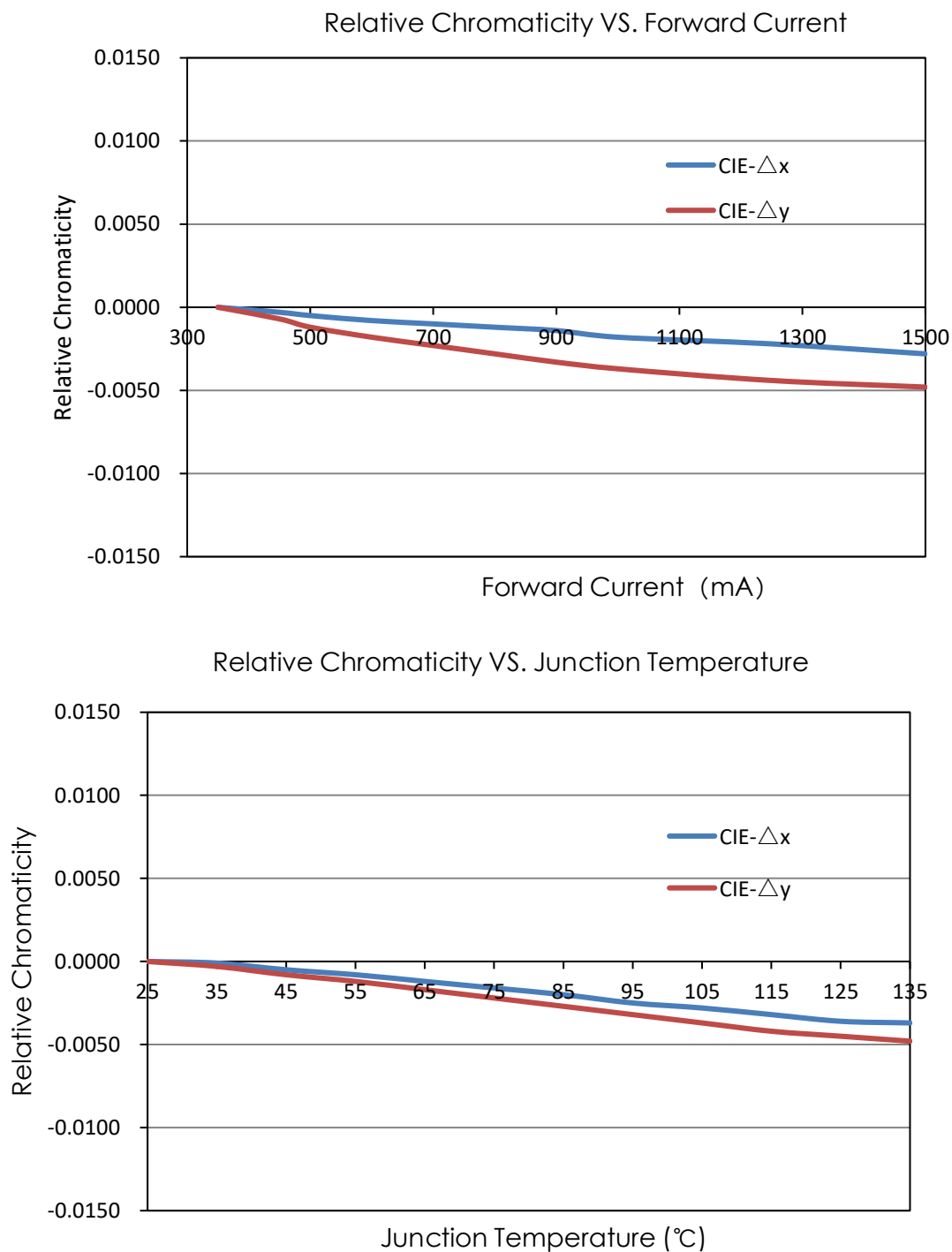
Spectral Curve



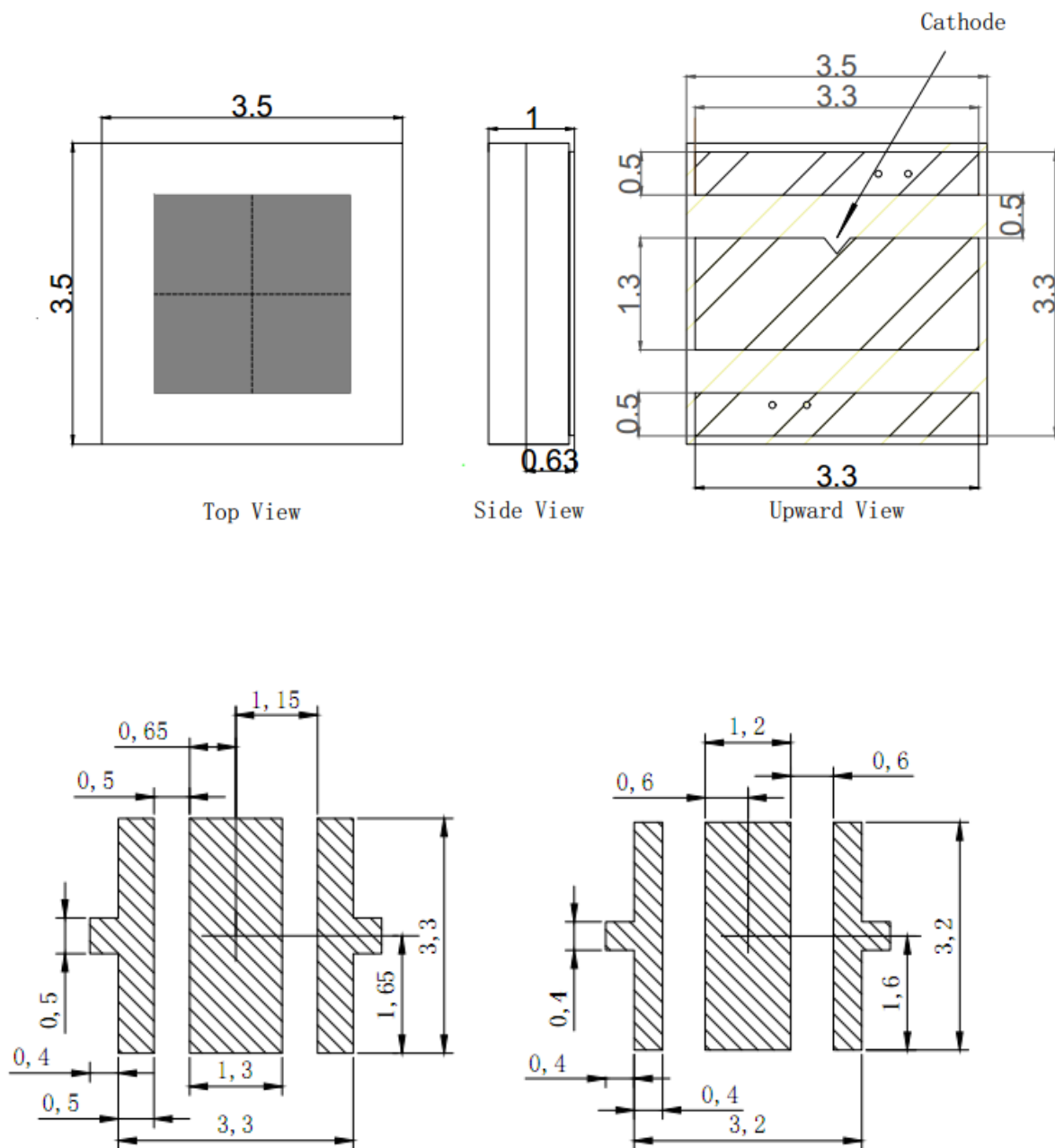
Relative Luminous Intensity VS. Angle



Product Characteristic Curve

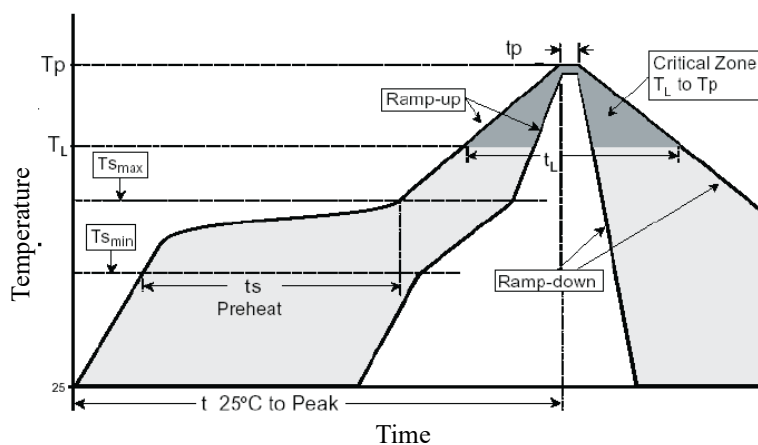


Mechanical Dimensions:

Unit: mm Tolerance: $3.5 \times 3.5 \pm 0.1$ 

Recommended PCB Solder PAD Recommended Stencil Pattern

Recommended Reflow Profile



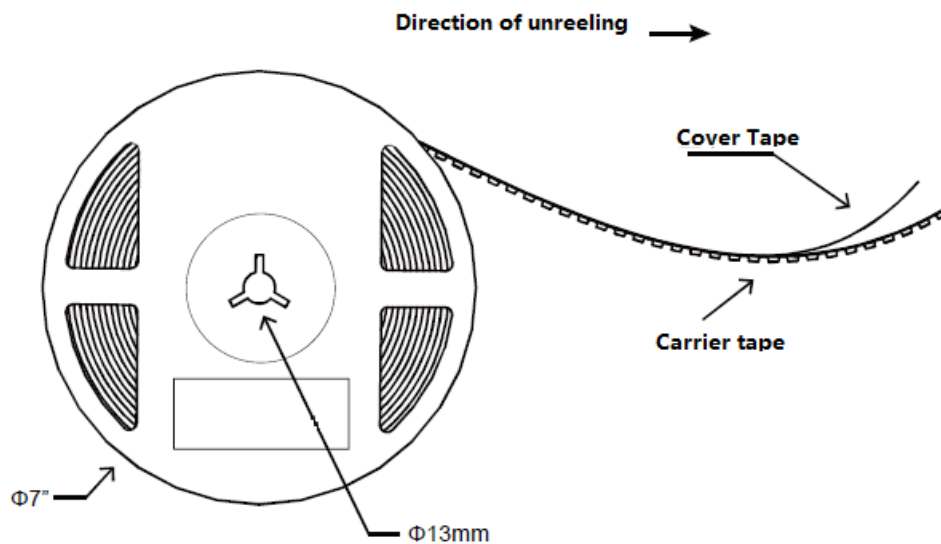
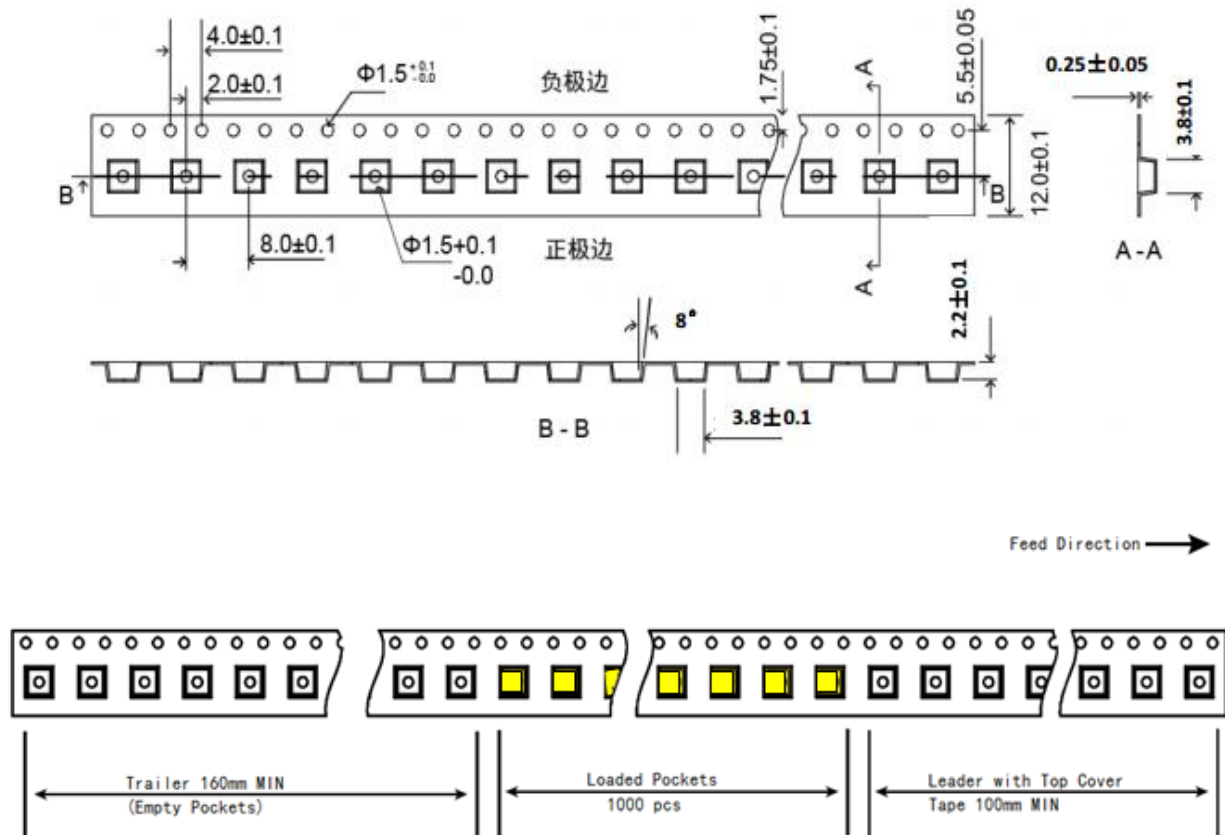
Profile Feature	Lead-Based Solder	Lead-Free Solder
Average Ramp-Up Rate (Tsmax to Tp)	3°C/ s Max	3°C/ s Max
Preheat: Temperature Min (Tsmi n)	100°C	150°C
Preheat: Temperature Max (Tsmax)	150°C	200°C
Preheat Time (Tsmi n to Ts max)	60-120s	60-180s
Time Maintain Above: Temperature (TL)	183°C	217°C
Time 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: 1. The soldering condition refers to J-STD-020D.

2. Moisture sensitivity level 2.

Tape and Reel

Standard Quantity : 1000 pcs , Min Quantity : 100 pcs , All dimensions in mm, Tolerance : ± 0.1 。



Part Number Nomenclature

NLW3535AV7-AFD4- B E1

① ②③ ④ ⑤ ⑥

① : Product Name

② : Test Current A: 350mA

③ : Voltage Bin

④ : Luminous Flux Bin

⑤ : CRI Rank: B 70Ra

⑥ : Color Kit

Voltage

Rank	Min.	Max	Unit
F	11.0	12.2	V

CRI

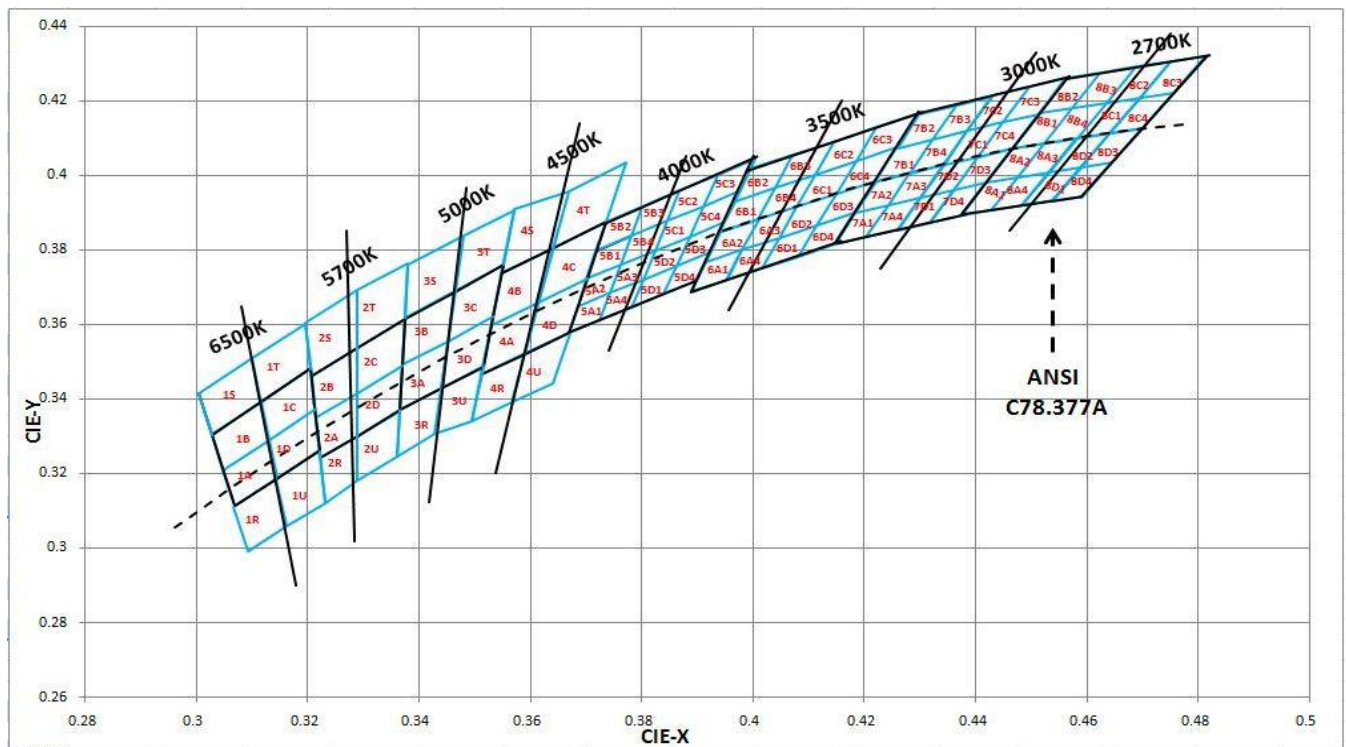
Rank	CRI
B	70Ra

Color Kit	CCT	Unit
E1	6500	K
E2	5700	K
E3	5000	K
E4	4500	K
E5	4000	K
E6	3500	K
E7	3000	K
E8	2700	K
E10	2200	K

Luminous Flux (Ts=85℃)

Rank	Min.	Max.	Unit
A2	330	355	Lm
A4	355	380	Lm
B2	380	410	Lm
B4	410	440	Lm
C2	440	475	Lm
C4	475	510	Lm
D2	510	550	Lm
D4	550	590	Lm
E2	590	635	Lm
E4	635	680	Lm

Color Group Description:



Performance Groups—Chromaticity

CCT	Bin Code	x	y	Bin Code	x	y	Bin Code	x	y	Bin Code	x	y
6500K	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
5700K	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
5000K	3A	0.3371	0.3490	3B	0.3376	0.3616	3C	0.3463	0.3687	3D	0.3451	0.3554
		0.3451	0.3554		0.3463	0.3687		0.3551	0.3760		0.3533	0.3620
		0.3440	0.3427		0.3451	0.3554		0.3533	0.3620		0.3515	0.3487
		0.3366	0.3369		0.3371	0.3490		0.3451	0.3554		0.3440	0.3427
4500K	4A	0.3530	0.3597	4B	0.3548	0.3736	4C	0.3641	0.3804	4D	0.3615	0.3659
		0.3615	0.3659		0.3641	0.3804		0.3736	0.3874		0.3702	0.3722
		0.3590	0.3521		0.3615	0.3659		0.3702	0.3722		0.3670	0.3578
		0.3512	0.3465		0.3530	0.3597		0.3615	0.3659		0.3590	0.3521
4000K	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

Tolerance: ± 0.007 on chromaticity (CCx, CCy)

Forward Current: 350mA

Test Time: 20ms

Ambient Temperature: 25°C

Performance Groups—Chromaticity

Color	Kit	Chromaticity Bins
Cool White	E1	1A,1B,1C,1D
	E2	2A,2B,2C,2D
	E3	3A,3B,3C,3D
Neutral White	E4	4A,4B,4C,4D
	E5	5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4,5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4
	E6	6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4,6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4
Warm White	E7	7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4,7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4
	E8	8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4,8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4
Amber	E10	E1A,E1B,E1C,E1D

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:

E1, E2, E3, E4, E5, E6, E7, E8, E10.