

P/N: RF-MK35 SERIES

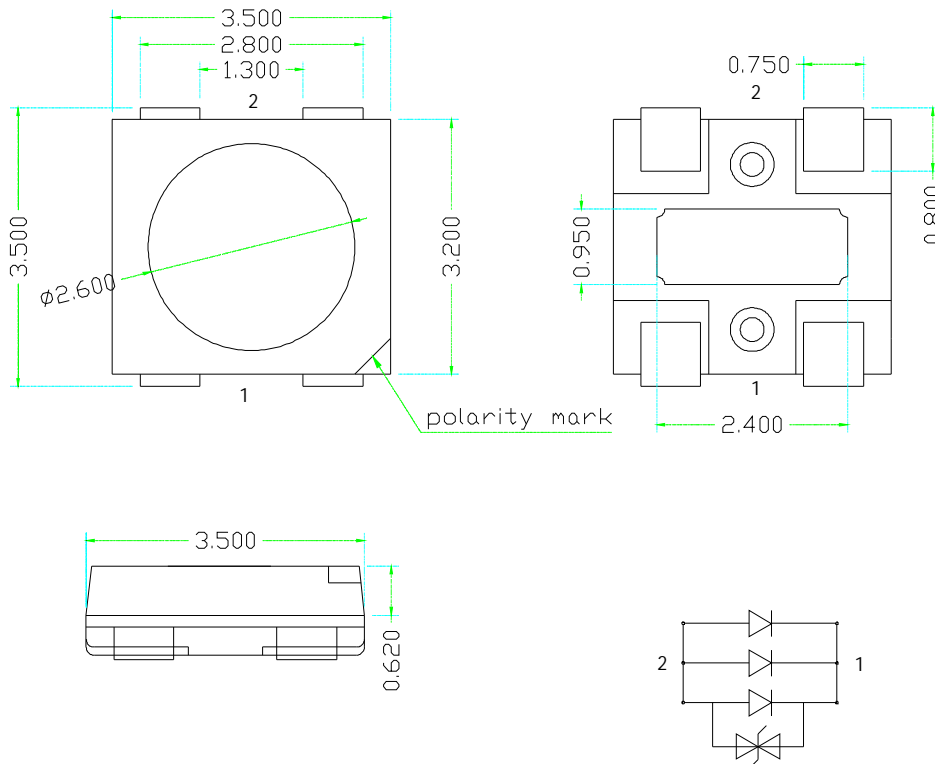
Feature

- ◆ CREE chip inside
- ◆ Super high brightness surface mount LED
- ◆ Viewing angle:120 deg
- ◆ Low thermal resistance
- ◆ 3.50mm×3.50mm×1.15mm SMT-LED
- ◆ RoHS compliant lead-free soldering compatible

Applications

- ◆ Lighting: garden light, architecture lighting, general lighting. etc
- ◆ Backlighting, flash light, architectural lighting.

Package Outline



NOTES:

1. All dimensions are in millimeters;
2. Tolerances are ± 0.2 mm unless otherwise noted.

Absolute maximum ratings at Ta=25°C

Parameter	Symbol	Value	Unit
Power dissipation	Pd	760	mW
Forward DC current	If	200	mA
Reverse DC voltage	Vr	5	V
Operating temperature range	Top	-40 ~+100	°C
Storage temperature range	Tstg	-40~+100	°C
Peak pulsing current	Ifp	1000	mA

Electro-optical characteristics at Ta=25°C

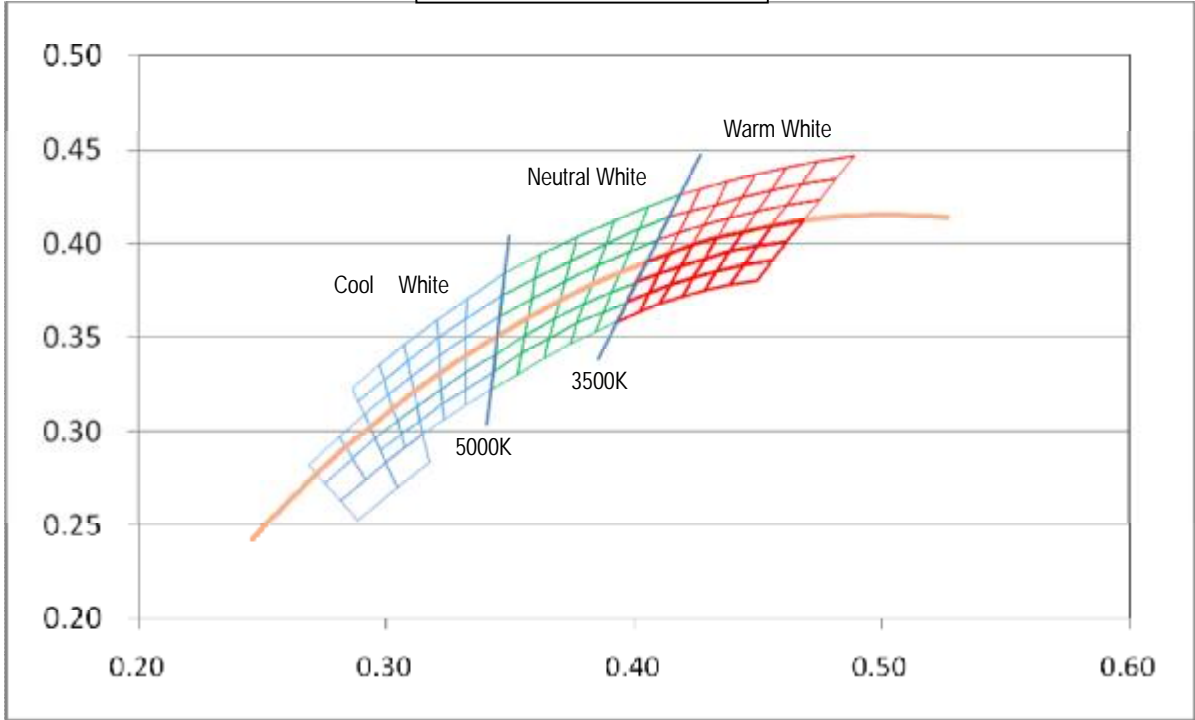
Parameter	Test Condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	If=150mA	Vf	2.8	--	3.8	V
Luminous flux	If=150mA	Φ	30	--	60	lm
Luminous intensity	If=150mA	IV	9500	--	19000	mcd
Reverse current	Vr=5V	Ir	--	--	10	μA
Color Render Index	If=150mA	CRI	60	--	90	--
Correlated Color Temperature	If=150mA	CCT	2600	--	10000	K

NOTE: (Tolerance: Φ ±10% , X/Y ±0.01 , Vf ±0.1V)

IFP Conditions : Pulse Width ≤ 10msec. and Duty ≤ 1/10.

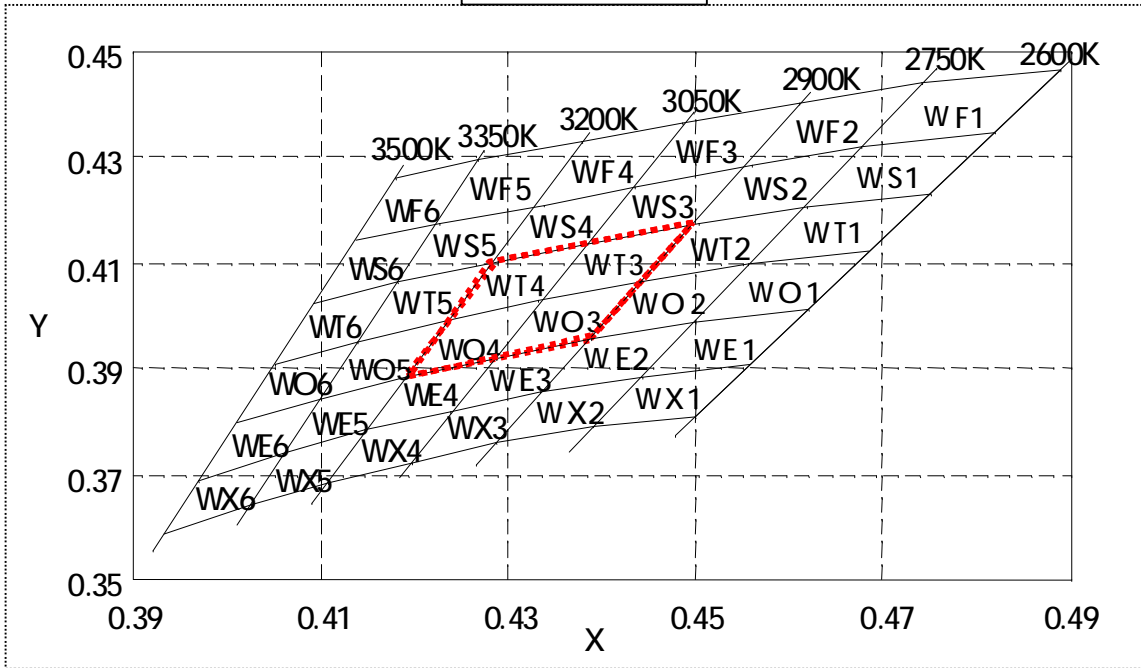
Bin Information

PW Series Bin Information

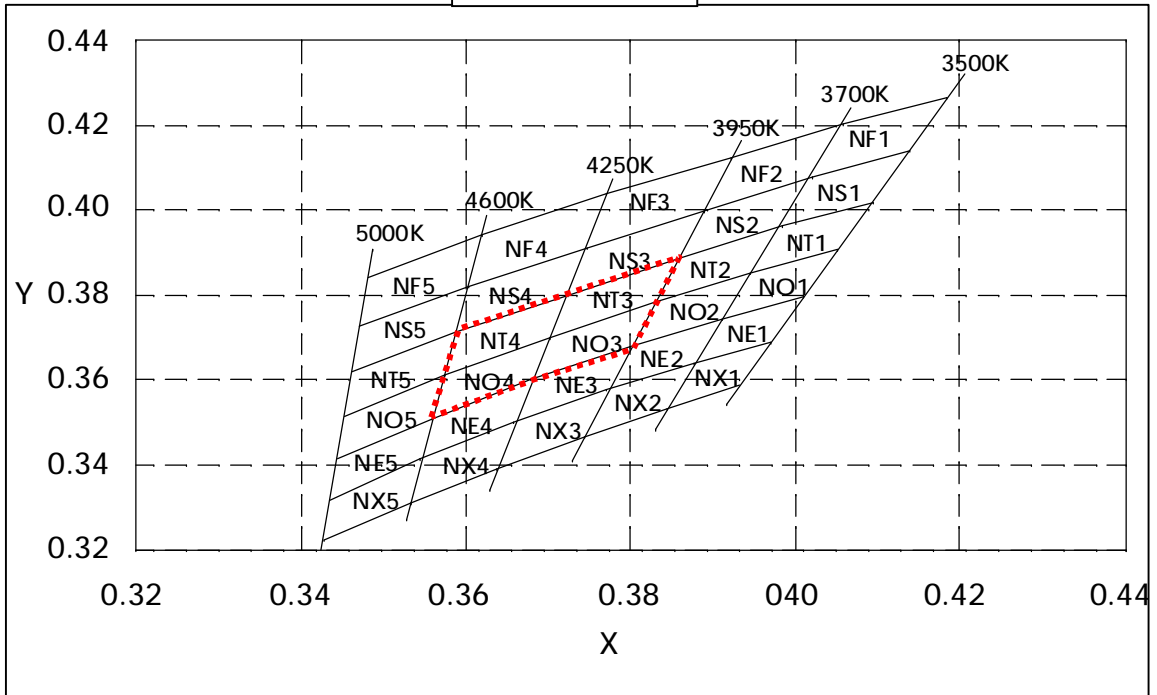


Detail Information

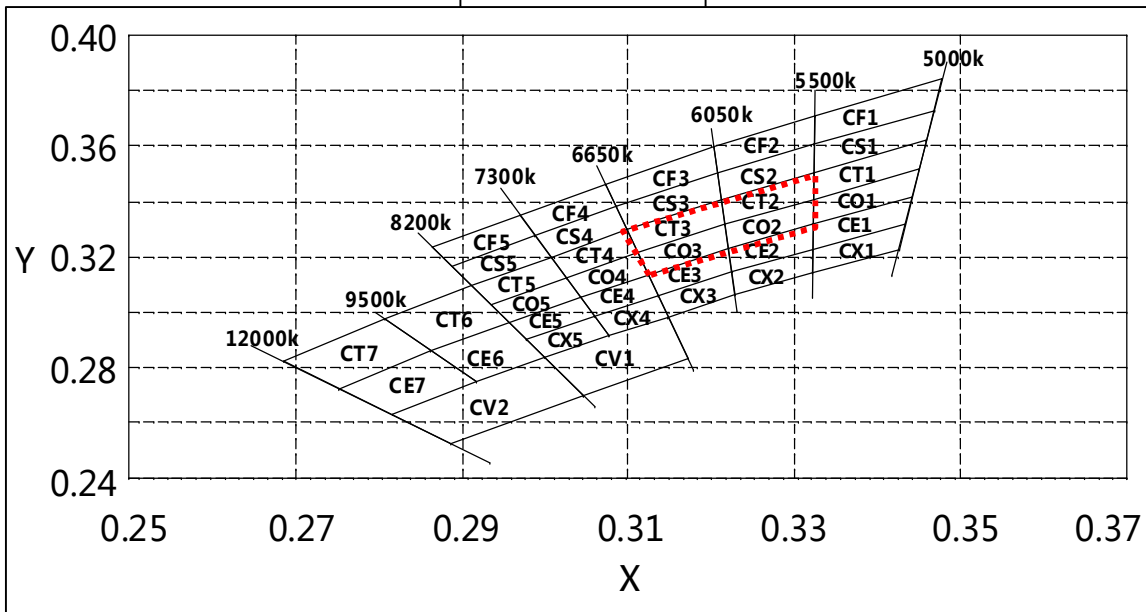
IM BIN Structure



WN BIN Structure



WM BIN Structure



Note:  is high bin

Bin data:

BIN CODE	X	Y	BIN CODE	X	Y	BIN CODE	X	Y
WF1	0.4889	0.4466	WS1	0.4817	0.4347	WT1	0.4749	0.4232
	0.4742	0.4436		0.4677	0.4319		0.4615	0.4205
	0.4677	0.4319		0.4615	0.4205		0.4556	0.4095
	0.4817	0.4347		0.4749	0.4232		0.4682	0.4120
	0.4889	0.4466		0.4817	0.4347		0.4749	0.4232
WF2	0.4742	0.4436	WS2	0.4677	0.4319	WT2	0.4615	0.4205
	0.4613	0.4400		0.4553	0.4284		0.4496	0.4171
	0.4553	0.4284		0.4496	0.4171		0.4440	0.4063
	0.4677	0.4319		0.4615	0.4205		0.4556	0.4095
	0.4742	0.4436		0.4677	0.4319		0.4615	0.4205
WF3	0.4613	0.4400	WS3	0.4553	0.4284	WT3	0.4496	0.4171
	0.4489	0.4367		0.4435	0.4246		0.4383	0.4136
	0.4435	0.4246		0.4383	0.4136		0.4334	0.4030
	0.4553	0.4284		0.4496	0.4171		0.4440	0.4063
	0.4613	0.4400		0.4553	0.4284		0.4496	0.4171
WF4	0.4489	0.4367	WS4	0.4435	0.4246	WT4	0.4383	0.4136
	0.4380	0.4330		0.4330	0.4206		0.4282	0.4097
	0.4330	0.4206		0.4282	0.4097		0.4235	0.3993
	0.4435	0.4246		0.4383	0.4136		0.4334	0.4030
	0.4489	0.4367		0.4435	0.4246		0.4383	0.4136
WF5	0.4380	0.4330	WS5	0.4330	0.4206	WT5	0.4282	0.4097
	0.4267	0.4293		0.4223	0.4171		0.4180	0.4059
	0.4223	0.4171		0.4180	0.4059		0.4139	0.3950
	0.4330	0.4206		0.4282	0.4097		0.4235	0.3993
	0.4380	0.4330		0.4330	0.4206		0.4282	0.4097
WF6	0.4267	0.4293	WS6	0.4223	0.4171	WT6	0.4180	0.4059
	0.4184	0.4261		0.4137	0.4138		0.4093	0.4020
	0.4137	0.4138		0.4093	0.4020		0.4051	0.3906
	0.4223	0.4171		0.4180	0.4059		0.4139	0.3950
	0.4267	0.4293		0.4223	0.4171		0.4180	0.4059
W01	0.4682	0.4120	WE1	0.4618	0.4013	WX1	0.4555	0.3909
	0.4556	0.4095		0.4498	0.3989		0.4442	0.3886
	0.4498	0.3989		0.4442	0.3886		0.4388	0.3787
	0.4618	0.4013		0.4555	0.3909		0.4495	0.3808
	0.4682	0.4120		0.4618	0.4013		0.4555	0.3909
W02	0.4556	0.4095	WE2	0.4498	0.3989	WX2	0.4442	0.3886
	0.4440	0.4063		0.4387	0.3958		0.4335	0.3857
	0.4387	0.3958		0.4335	0.3857		0.4285	0.3758
	0.4498	0.3989		0.4442	0.3886		0.4388	0.3787
	0.4556	0.4095		0.4498	0.3989		0.4442	0.3886

WO3	0.4440	0.4063	WE3	0.4387	0.3958	WX3	0.4335	0.3857
	0.4334	0.4030		0.4285	0.3921		0.4238	0.3822
	0.4285	0.3921		0.4238	0.3822		0.4193	0.3721
	0.4387	0.3958		0.4335	0.3857		0.4285	0.3758
	0.4440	0.4063		0.4387	0.3958		0.4335	0.3857
WO4	0.4334	0.4030	WE4	0.4285	0.3921	WX4	0.4238	0.3822
	0.4235	0.3993		0.4190	0.3886		0.4146	0.3785
	0.4190	0.3886		0.4146	0.3785		0.4103	0.3682
	0.4285	0.3921		0.4238	0.3822		0.4193	0.3721
	0.4334	0.4030		0.4285	0.3921		0.4238	0.3822
WO5	0.4235	0.3993	WE5	0.4190	0.3886	WX5	0.4146	0.3785
	0.4139	0.3950		0.4099	0.3843		0.4060	0.3739
	0.4099	0.3843		0.4060	0.3739		0.4023	0.3642
	0.4190	0.3886		0.4146	0.3785		0.4103	0.3682
	0.4235	0.3993		0.4190	0.3886		0.4146	0.3785
WO6	0.4139	0.3950	WE6	0.4099	0.3843	WX6	0.4060	0.3739
	0.4051	0.3906		0.4009	0.3796		0.3970	0.3689
	0.4009	0.3796		0.3970	0.3689		0.3931	0.3587
	0.4099	0.3843		0.4060	0.3739		0.4023	0.3642
	0.4139	0.3950		0.4099	0.3843		0.4060	0.3739

bin code	X	Y	bin code	X	Y	bin code	X	Y
NF1	0.4184	0.4261	NS1	0.4137	0.4138	NT1	0.4093	0.4020
	0.4058	0.4200		0.4019	0.4074		0.3981	0.3960
	0.4019	0.4074		0.3981	0.3960		0.3944	0.3850
	0.4137	0.4138		0.4093	0.4020		0.4051	0.3906
	0.4184	0.4261		0.4137	0.4138		0.4093	0.4020
NF2	0.4058	0.4200	NS2	0.4019	0.4074	NT2	0.3981	0.3960
	0.3920	0.4121		0.3888	0.3996		0.3857	0.3887
	0.3888	0.3996		0.3857	0.3887		0.3826	0.3781
	0.4019	0.4074		0.3981	0.3960		0.3944	0.3850
	0.4058	0.4200		0.4019	0.4074		0.3981	0.3960
NF	0.3920	0.4121	NS3	0.3888	0.3996	NT3	0.3857	0.3887
	0.3770	0.4035		0.3745	0.3909		0.3722	0.3799
	0.3745	0.3909		0.3722	0.3799		0.3699	0.3699
	0.3888	0.3996		0.3857	0.3887		0.3826	0.3781
	0.3920	0.4121		0.3888	0.3996		0.3857	0.3887
NF4	0.3770	0.4035	NS4	0.3745	0.3909	NT4	0.3722	0.3799
	0.3618	0.3945		0.3601	0.3818		0.3586	0.3710
	0.3601	0.3818		0.3586	0.3710		0.3572	0.3609
	0.3745	0.3909		0.3722	0.3799		0.3699	0.3699
	0.3770	0.4035		0.3745	0.3909		0.3722	0.3799



NF5	0.3618	0.3945	NS5	0.3601	0.3818	NT5	0.3586	0.3710
	0.3479	0.3841		0.3469	0.3728		0.3460	0.3620
	0.3469	0.3728		0.3460	0.3620		0.3450	0.3516
	0.3601	0.3818		0.3586	0.3710		0.3572	0.3609
	0.3618	0.3945		0.3601	0.3818		0.3586	0.3710
NO1	0.4051	0.3906	NE1	0.4009	0.3796	NX1	0.3970	0.3689
	0.3944	0.3850		0.3909	0.3743		0.3875	0.3641
	0.3909	0.3743		0.3875	0.3641		0.3843	0.3531
	0.4009	0.3796		0.3970	0.3689		0.3931	0.3587
	0.4051	0.3906		0.4009	0.3796		0.3970	0.3689
NO2	0.3944	0.3850	NE2	0.3909	0.3743	NX2	0.3875	0.3641
	0.3826	0.3781		0.3797	0.3679		0.3769	0.3579
	0.3797	0.3679		0.3769	0.3579		0.3742	0.3468
	0.3909	0.3743		0.3875	0.3641		0.3843	0.3531
	0.3944	0.3850		0.3909	0.3743		0.3875	0.3641
NO3	0.3826	0.3781	NE3	0.3797	0.3679	NX3	0.3769	0.3579
	0.3699	0.3699		0.3677	0.3603		0.3656	0.3500
	0.3677	0.3603		0.3656	0.3500		0.3636	0.3388
	0.3797	0.3679		0.3769	0.3579		0.3742	0.3468
	0.3826	0.3781		0.3797	0.3679		0.3769	0.3579
NO4	0.3699	0.3699	NE4	0.3677	0.3603	NX4	0.3656	0.3500
	0.3572	0.3609		0.3558	0.3510		0.3544	0.3416
	0.3558	0.3510		0.3544	0.3416		0.3531	0.3308
	0.3677	0.3603		0.3656	0.3500		0.3636	0.3388
	0.3699	0.3699		0.3677	0.3603		0.3656	0.3500
NO5	0.3572	0.3609	NE5	0.3558	0.3510	NX5	0.3544	0.3416
	0.3450	0.3516		0.3442	0.3415		0.3433	0.3318
	0.3442	0.3415		0.3433	0.3318		0.3425	0.3225
	0.3558	0.3510		0.3544	0.3416		0.3531	0.3308
	0.3572	0.3609		0.3558	0.3510		0.3544	0.3416

bin code	x	y	bin code	x	y	bin code	x	y	bin code	x	y
CF1	0.3479	0.3841	CS1	0.3469	0.3728	CT1	0.3460	0.3620	CO1	0.3450	0.3516
	0.3325	0.3706		0.3324	0.3604		0.3324	0.3505		0.3323	0.3409
	0.3324	0.3604		0.3324	0.3505		0.3323	0.3409		0.3322	0.3317
	0.3469	0.3728		0.3460	0.3620		0.3450	0.3516		0.3442	0.3415
	0.3479	0.3841		0.3469	0.3728		0.3460	0.3620		0.3450	0.3516
CF2	0.3325	0.3706	CS2	0.3324	0.3604	CT2	0.3324	0.3505	CO2	0.3323	0.3409
	0.3204	0.3597		0.3208	0.3501		0.3213	0.3408		0.3217	0.3318
	0.3208	0.3501		0.3213	0.3408		0.3217	0.3318		0.3221	0.3231
	0.3324	0.3604		0.3324	0.3505		0.3323	0.3409		0.3322	0.3317
	0.3325	0.3706		0.3324	0.3604		0.3324	0.3505		0.3323	0.3409

CF3	0.3204	0.3597	CS3	0.3208	0.3501	CT3	0.3213	0.3408	CO3	0.3217	0.3318
	0.3073	0.3463		0.3087	0.3377		0.3100	0.3294		0.3112	0.3214
	0.3087	0.3377		0.3100	0.3294		0.3112	0.3214		0.3124	0.3136
	0.3208	0.3501		0.3213	0.3408		0.3217	0.3318		0.3221	0.3231
	0.3204	0.3597		0.3208	0.3501		0.3213	0.3408		0.3217	0.3318
CF4	0.3073	0.3463	CS4	0.3087	0.3377	CT4	0.3100	0.3294	CO4	0.3112	0.3214
	0.2970	0.3354		0.2989	0.3276		0.3008	0.3200		0.3025	0.3126
	0.2989	0.3276		0.3008	0.3200		0.3025	0.3126		0.3043	0.3054
	0.3087	0.3377		0.3100	0.3294		0.3112	0.3214		0.3124	0.3136
	0.3073	0.3463		0.3087	0.3377		0.3100	0.3294		0.3112	0.3214
CF5	0.2970	0.3354	CS5	0.2989	0.3276	CT5	0.3008	0.3200	CO5	0.3025	0.3126
	0.2862	0.3235		0.2887	0.3165		0.2910	0.3096		0.2933	0.3029
	0.2887	0.3165		0.2910	0.3096		0.2933	0.3029		0.2955	0.2965
	0.2989	0.3276		0.3008	0.3200		0.3025	0.3126		0.3043	0.3054
	0.2970	0.3354		0.2989	0.3276		0.3008	0.3200		0.3025	0.3126
CE1	0.3442	0.3415	CE5	0.3043	0.3054	CT6	0.2910	0.3096	CX4	0.3136	0.3061
	0.3322	0.3317		0.2955	0.2965		0.2807	0.2976		0.3059	0.2985
	0.3322	0.3228		0.2977	0.2901		0.2863	0.2860		0.3076	0.2917
	0.3433	0.3318		0.3059	0.2985		0.2955	0.2965		0.3148	0.2987
	0.3442	0.3415		0.3043	0.3054		0.2910	0.3096		0.3136	0.3061
CE2	0.3322	0.3317	CE6	0.2955	0.2965	CT7	0.2807	0.2976	CX5	0.3059	0.2985
	0.3221	0.3231		0.2863	0.2860		0.2685	0.2826		0.2977	0.2901
	0.3225	0.3147		0.2916	0.2749		0.2751	0.2726		0.2998	0.2840
	0.3322	0.3228		0.2998	0.2840		0.2863	0.2860		0.3076	0.2917
	0.3322	0.3317		0.2955	0.2965		0.2807	0.2976		0.3059	0.2985
CE3	0.3221	0.3231	CE7	0.2863	0.2860	CX2	0.3322	0.3228	CV1	0.3148	0.2987
	0.3124	0.3136		0.2751	0.2726		0.3225	0.3147		0.2998	0.2840
	0.3136	0.3061		0.2814	0.2632		0.3229	0.3066		0.3045	0.2705
	0.3225	0.3147		0.2916	0.2749		0.3321	0.3141		0.3172	0.2835
	0.3221	0.3231		0.2863	0.2860		0.3322	0.3228		0.3148	0.2987
CE4	0.3124	0.3136	CX1	0.3433	0.3318	CX3	0.3225	0.3147	CV2	0.2998	0.2840
	0.3043	0.3054		0.3322	0.3228		0.3136	0.3061		0.2814	0.2632
	0.3059	0.2985		0.3321	0.3141		0.3148	0.2987		0.2886	0.2528
	0.3136	0.3061		0.3425	0.3225		0.3229	0.3066		0.3045	0.2705
	0.3124	0.3136		0.3433	0.3318		0.3225	0.3147		0.2998	0.2840

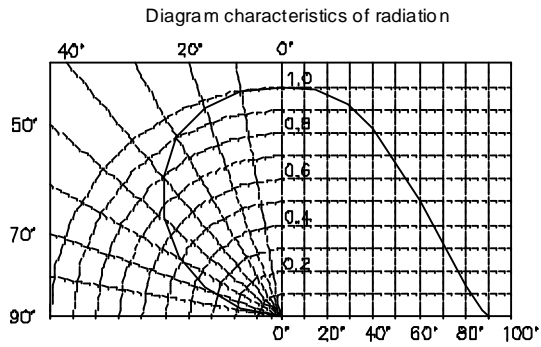
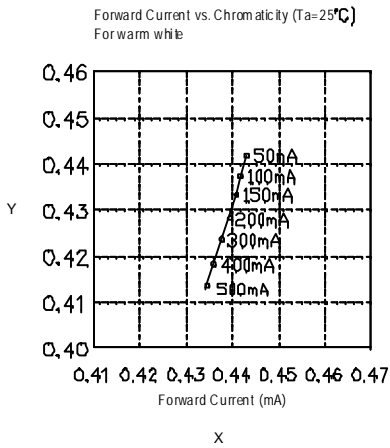
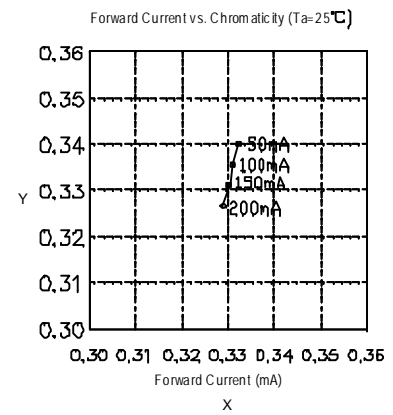
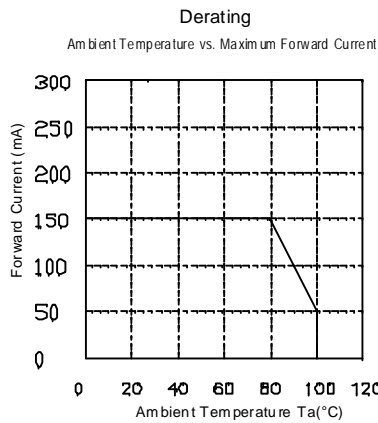
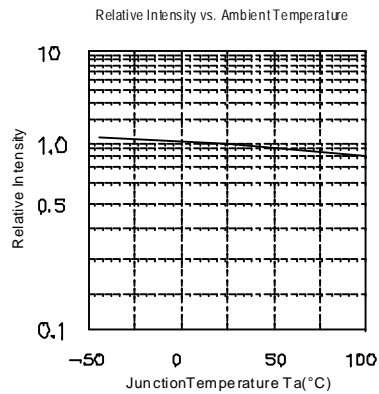
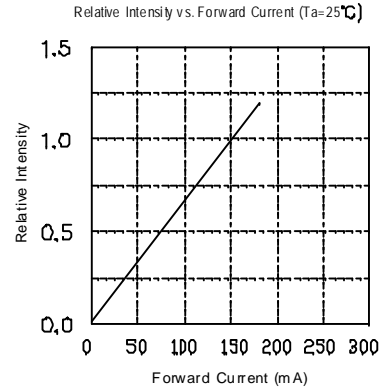
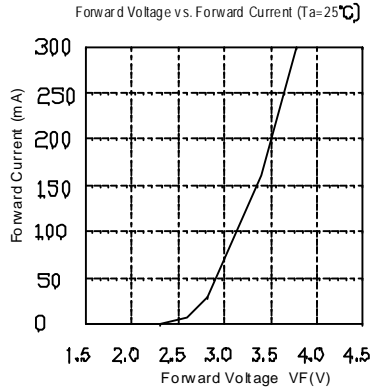
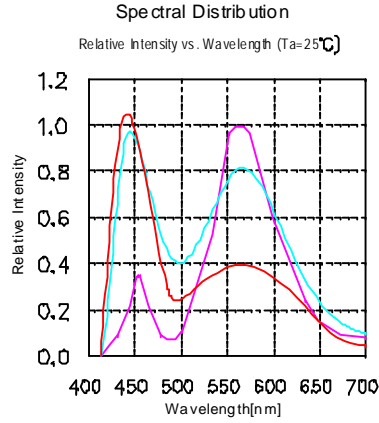
Lumilous flux(LM) BIN:

CODE	min	max	Q14	35	40
Q11	20	25	Q15	40	45
Q12	25	30	Q16	45	50
Q13	30	35	Q17	50	55

VF BIN:

code	min	max
V7	2.80	3
V8	3	3.2
V9	3.20	3.4
V10	3.4	3.6
V11	3.60	3.8

Optical characteristics curves



Reflow profile

n Soldering condition

- Recommended soldering conditions

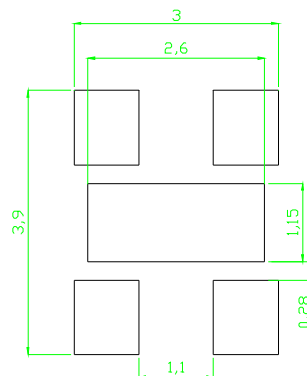
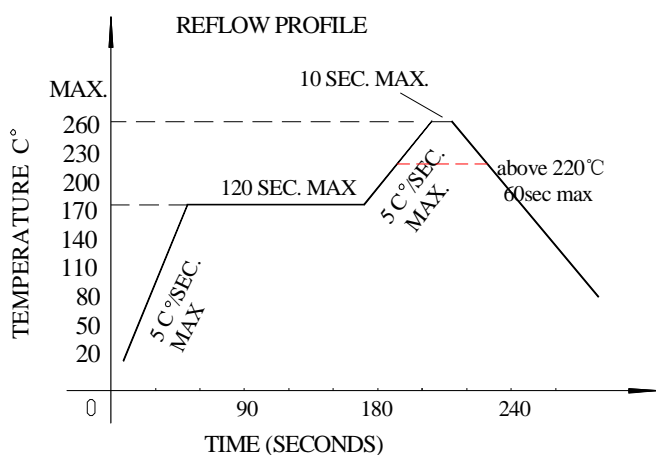
Reflow Soldering		Hand Soldering	
Pre-heat	160~180°C	Temperature	300°C Max.
Pre-heat time	120 seconds Max.	Soldering time	3 second Max. (one time only)
Peak temperature	260°C Max.		
Soldering time	10 seconds Max.		
Condition	Refer to Temperature-profile		

- After reflow soldering rapid cooling should be avoided

n Temperature-profile (Surface of circuit board)

Use the following conditions shown in the figure.

RECOMMEND PAD DESIGN (Units: mm)



1. Reflow soldering should not be done more than two times
2. When soldering ,do not put stress on the LEDs during heating

n Soldering iron

1. When hand soldering, keep the temperature of the iron under 300°C, and at that temperature keep the time under 3 sec.
2. The hand soldering should be done only a time
3. The basic spec is ≤ 5 sec. when the temperature of 260°C, do not contact the resin when hand soldering



Reliability

(1)TEST ITEMS AND RESULTS

Type	Test Item	Ref. Standard	Test Conditions	Note	Number of Damaged
Environmental Sequence	Resistance to Soldering Heat(Reflow Soldering)	JESD22-B106	Tsld=260°C,10sec	2 times	0/100
	Temperature Cycle	JESD22-A104	-40°C 30min ↑↓5min 100°C 30min	200 cycle	0/100
	Thermal Shock	JESD22-A106	-40°C 15min ↑↓ 100°C 15min	500 cycle	0/100
	High Temperature Storage	JESD22-A103	Ta=100°C	1000 hrs	0/100
	Low Temperature Storage	JESD22-A119	Ta=-40°C	1000 hrs	0/100
	Power temperature cycling	JESD22-A105	On 5min -40°C>15min ↑↓ ↑↓<15min Off5min 100°C>15min	100 cycle	0/100
Operation Sequence	Life Test	JESD22-A108	Ta=25°C IF=150mA	1000 hrs	0/100
	High Temperature Life Test	JESD22-A108	Ta=85°C IF=150mA	1000 hrs	0/100
	High Humidity Heat Life Test	JESD22-A101	60°C RH=90% IF=150mA	1000 hrs	0/100

(2)CRITERIA FOR JUDGING THE DAMAGE

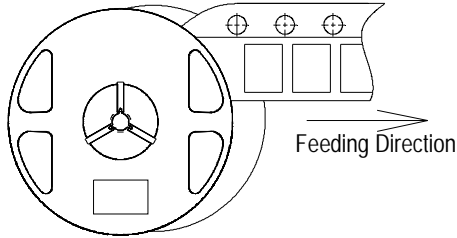
Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	IF=75mA	-	U.S.L*)×1.1
Reverse Current	IR	VR=5V	-	U.S.L*)×2.0
Luminous flux	Φ	IF=75mA	L.S.L**)×0.7	-

U.S.L.: Upper Standard Level

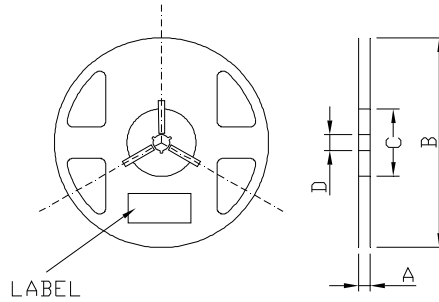
L.S.L.: Lower Standard Level

Packaging Specifications

● Feeding Direction

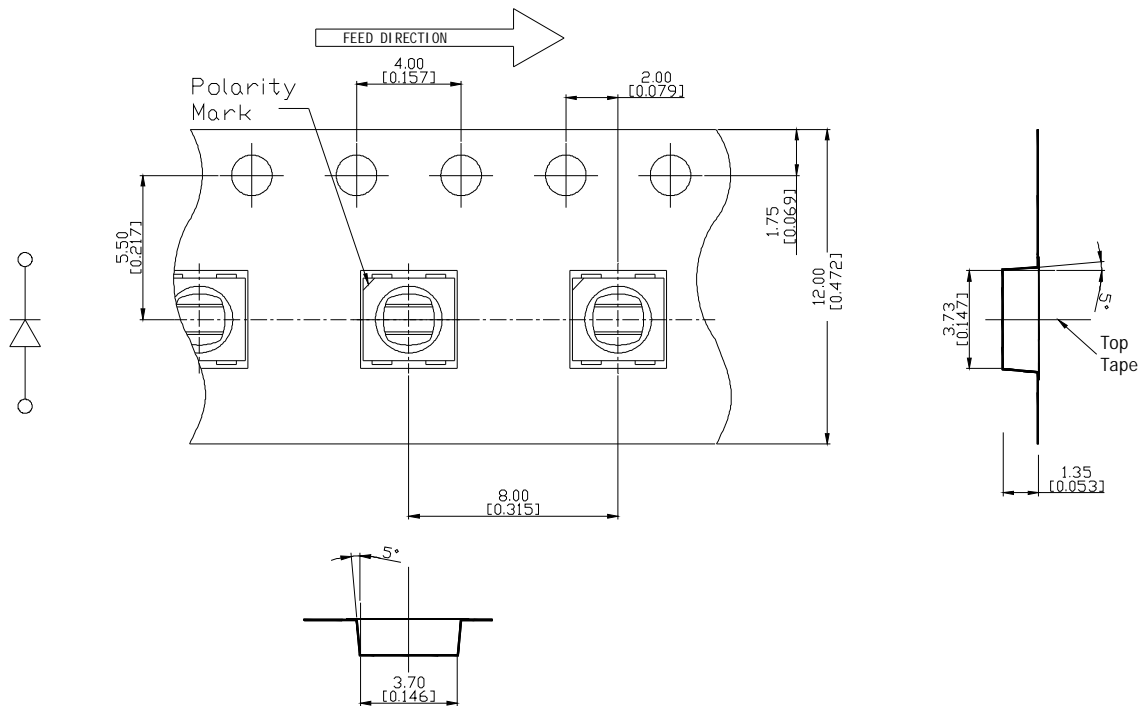


● Dimensions of Reel (Unit: mm)



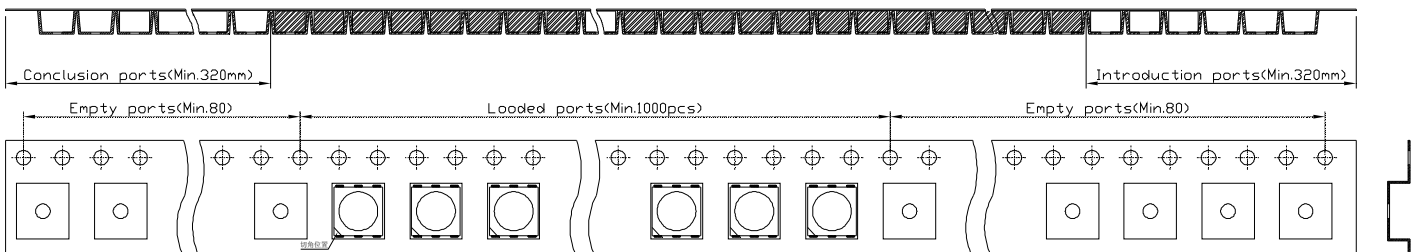
A	12 ± 0.1mm
B	178 ± 1mm
C	60 ± 1mm
D	13.0 ± 0.5mm

● Dimensions of Tape (Unit: mm)



● Arrangement of Tape

Feeding Direction →

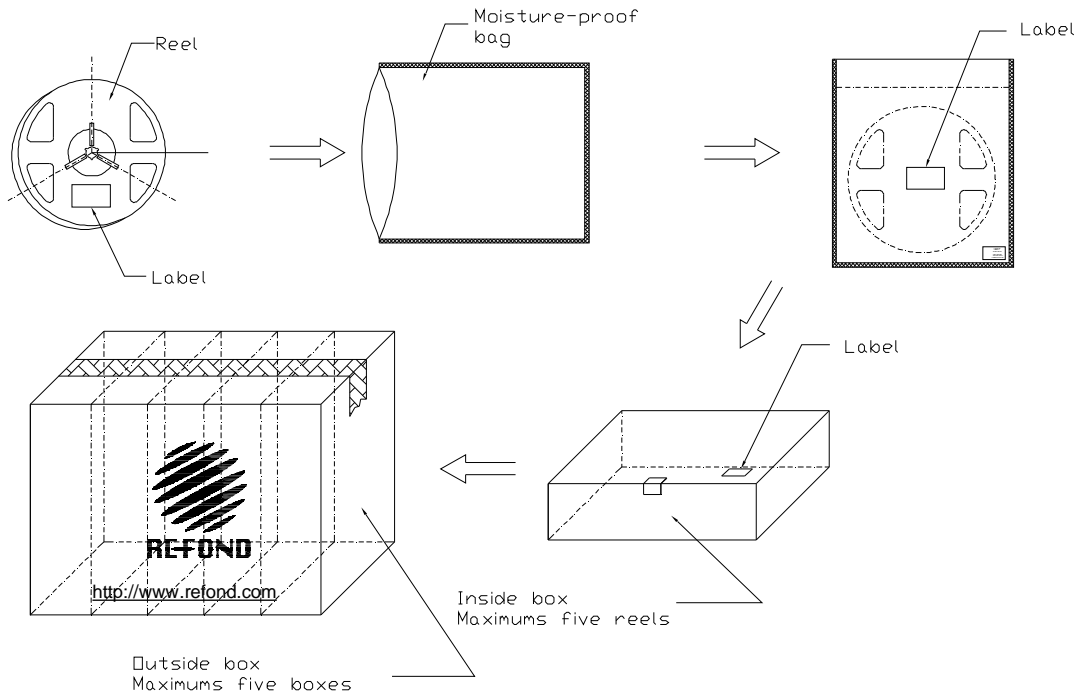


NOTES

1. Empty component pockets are sealed with top cover tape;
2. The maximum number of missing lamps is two;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.
4. 1,500 pcs/ Reel



Packaging specifications



Label

PART NO.	
LOT NO.	
BIN CODE:	QTY: PCS
	DATE:

CAUTIONS

Package specifications

Reeled products (numbers of products are 1,500pcs) 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 7,500pcs) packed in an inside box (size: about 250mm x about 250 x about 68mm) and Five inside boxes of maximums are put the outside box (size: about 360mm x about 265mm x about 255mm) 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 label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has three steps.

Storage conditions

Before opening the package:

The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

After opening the package:

The LEDs should be kept at 30°C or less and 50%RH or less. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.