

4.5*4.5*1.9T(2Chip)_Z-SMD LED

WHITE COLOR LED

Customer Approval		Model	LMFLC2500Z-WH					
<table><tr><td>Checked By</td><td>Approved By</td></tr><tr><td></td><td></td></tr></table>		Checked By	Approved By			Issued Date	2007 – 05 - 14	
		Checked By	Approved By					
		Description	SMD Type LED					
		Written By	Checked By	Approved by				

Contact Point

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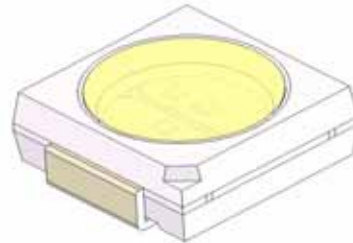
Homepage: www.lumimicro.com



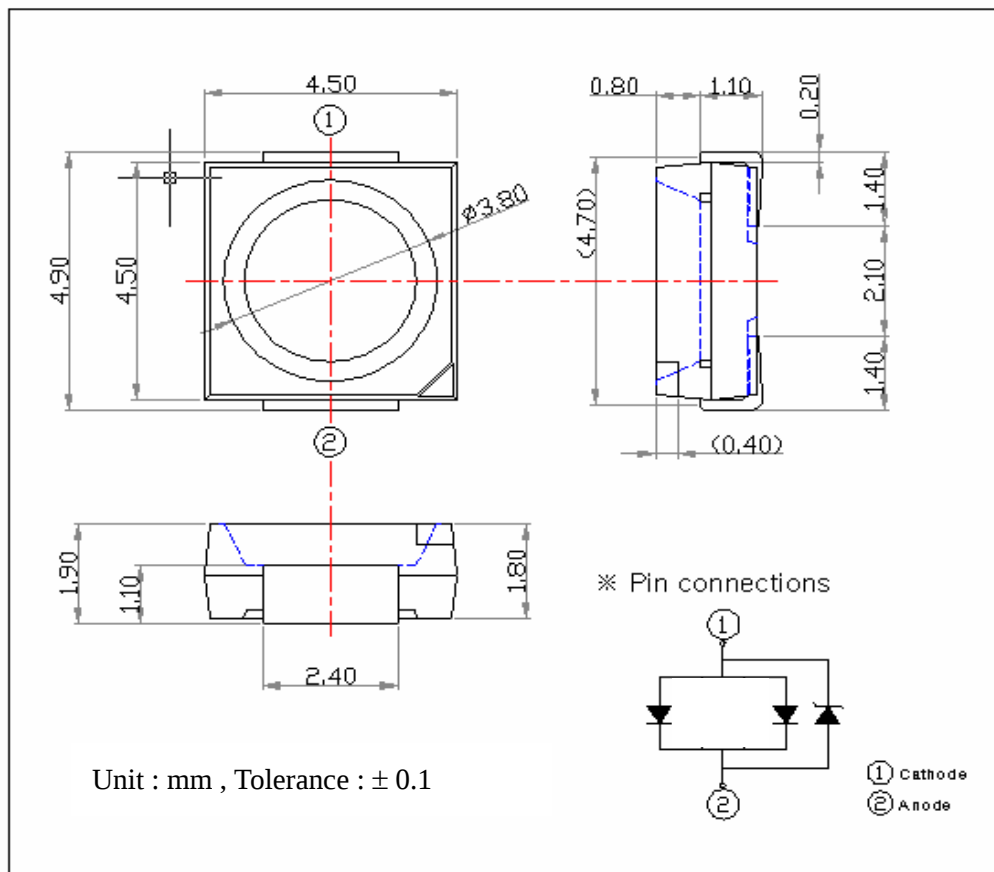
Lumimicro 4549 – Two Chip Specification

Features

- [1] Built-in 2 chip Super-luminosity Chip LED
- [2] Super-luminosity chip LED
- [3] Wide viewing angle
- [4] External dimensions: 4.5 x 4.9 x 1.9t mm
- [5] Lead frame package with individual 2 pin



Outline Dimensions



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Absolute Maximum Rating

Parameter	Color	Symbol	Rating Value	Unit
Forward DC Current	White	IF-1	60	m A
Power Dissipation	White	PD	200	mW
Forward Pulse Current ^{*1}	White	IPF-1	120	m A
ESD Voltage	White	ESD-1	HBM 12,000	V
Storage Temperature	White	TST	-40 to + 120	°C
Soldering Temperature	White	TSD	260C for 10 Seconds	°C

^{*1} : Forward Pulse Current : Pulse Width < 10msec / Duty Ratio < 1/10

Forward Voltage Characteristics [Condition : 40mA – Ta = 25°C]

Color	Item	Rank	Luminous Intensity			Unit
			MIN.	TYP.	Max.	
White	Forward Voltage	2V9	2.8	2.85	2.9	V
	Forward Voltage	3V0	2.9	2.95	3.0	V
	Forward Voltage	3V1	3.0	3.05	3.1	V
	Forward Voltage	3V2	3.1	3.15	3.2	V
	Forward Voltage	3V3	3.2	3.25	3.3	V
	Forward Voltage	3V4	3.3	3.35	3.4	V
	Forward Voltage	3V5	3.4	3.45	3.5	V
	Forward Voltage	3V6	3.5	3.55	3.6	V

Measurement Tolerance: + / - 0.05V

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Peak Luminous Intensity Characteristics [Condition : 40mA – Ta = 25°C]

Color	Part No.	Item	Rank	Luminous Intensity			Unit
				MIN.	TYP.	Max.	
Bluish White	LMFLC2500Z-BW	Luminous Intensity	2L1	2	—	3	cd
			2L2	3	—	4	cd
			2L3	4	—	5	cd
			2L4	5	—	6	cd
			2L5	6		7	cd
			2L6	7		8	cd
Pure White	LMFLC2500Z -PW	Luminous Intensity	2L2	3	—	4	cd
			2L3	4	—	5	cd
			2L4	5	—	6	cd
			2L5	6		7	cd
			2L6	7		8	cd
Yellowish Reddish	LMFLC2500Z -YW	Luminous Intensity	2L2	3	—	4	cd
			2L3	4	—	5	cd
	LMFLC2500Z -RW		2L4	5	—	6	cd
	2L5		6		7	cd	
	2L6		7		8	cd	
Warm White Amber White	LMFLC2500Z -WW LMFLC2500Z -AW	Luminous Intensity	2L1	2	—	3	cd
			2L2	3	—	4	cd
			2L3	4	—	5	cd
			2L4	5	—	6	cd
			2L5	6		7	cd
			2L6	7		8	cd

Measurement Tolerance: + / - 0.5cd

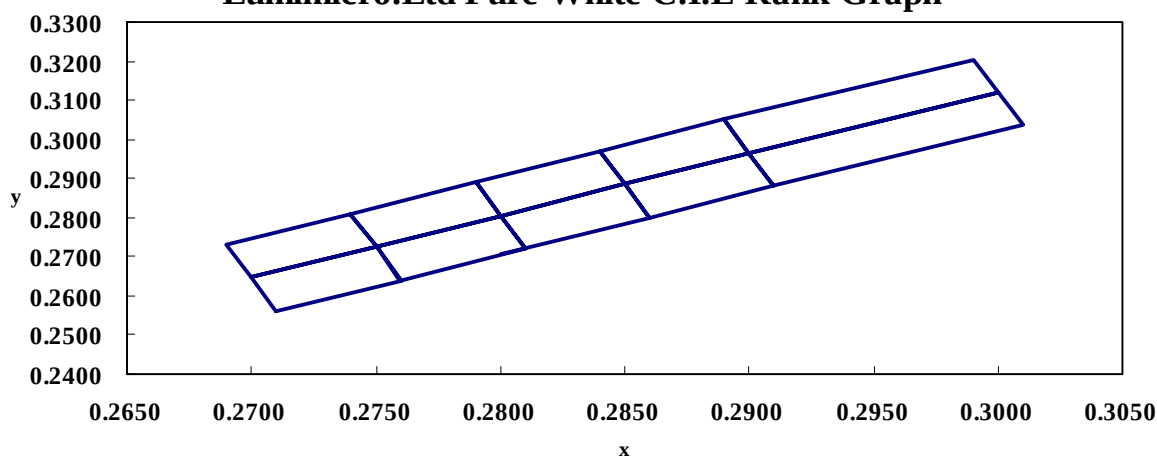
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White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

Bluish White Color C.I.E

14K0H		12K0H		11K0H		9K5H		8K3H	
X	Y	X	Y	X	Y	X	Y	X	Y
0.2700	0.2650	0.2750	0.2725	0.2800	0.2805	0.2850	0.2885	0.2900	0.2965
0.2690	0.2730	0.2740	0.2810	0.2790	0.2890	0.2840	0.2970	0.2890	0.3050
0.2740	0.2810	0.2790	0.2890	0.2840	0.2970	0.2890	0.3050	0.2990	0.3205
0.2750	0.2725	0.2800	0.2805	0.2850	0.2885	0.2900	0.2965	0.3000	0.3120
14K0L		12K0L		11K0L		9K5L		8K3L	
x	y	x	y	x	y	x	y	x	y
0.2710	0.2560	0.2760	0.2640	0.2810	0.2720	0.2860	0.2800	0.2910	0.2880
0.2700	0.2650	0.2750	0.2725	0.2800	0.2805	0.2850	0.2885	0.2900	0.2965
0.2750	0.2725	0.2800	0.2805	0.2850	0.2885	0.2900	0.2965	0.3000	0.3120
0.2760	0.2640	0.2810	0.2720	0.2860	0.2800	0.2910	0.2880	0.3010	0.3035

Lumimicro.Ltd Pure White C.I.E Rank Graph



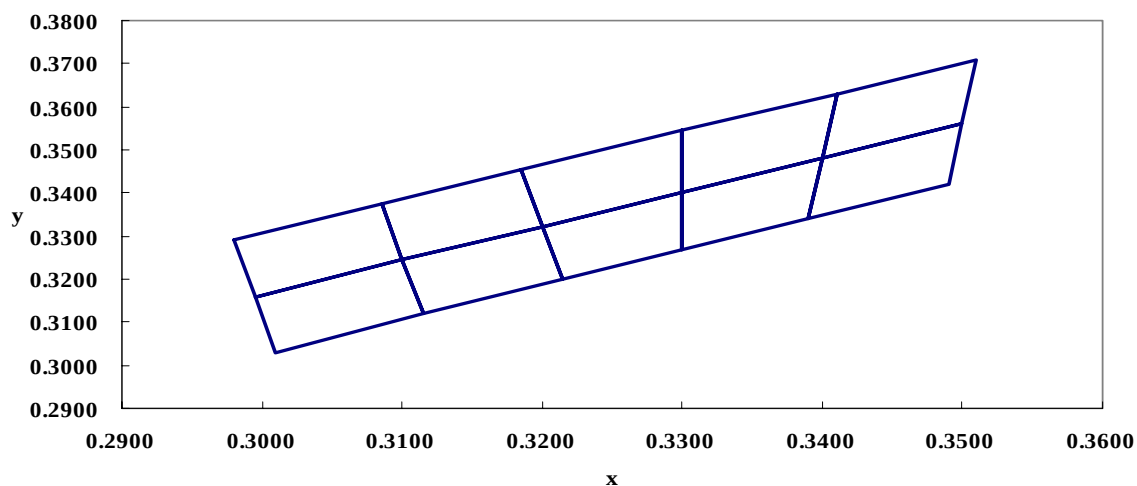
Lumimicro 4549 – Two Chip Specification

White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

Pure White Color C.I.E

7K0H		6K3H		5K7H		5K3H		5K0H	
x	y	x	y	x	y	x	y	x	y
0.2980	0.3290	0.3085	0.3375	0.3185	0.3455	0.3300	0.3545	0.3410	0.3630
0.3085	0.3375	0.3185	0.3455	0.3300	0.3545	0.3410	0.3630	0.3510	0.3710
0.3100	0.3245	0.3200	0.3320	0.3300	0.3400	0.3400	0.3480	0.3500	0.3560
0.2995	0.3160	0.3100	0.3245	0.3200	0.3320	0.3300	0.3400	0.3400	0.3480
7K0L		6K3L		5K7L		5K3L		5K0L	
x	y	x	y	x	y	x	y	x	y
0.2995	0.3160	0.3100	0.3245	0.3200	0.3320	0.3300	0.3400	0.3400	0.3480
0.3100	0.3245	0.3200	0.3320	0.3300	0.3400	0.3400	0.3480	0.3500	0.3560
0.3115	0.3120	0.3215	0.3200	0.3300	0.3270	0.3390	0.3340	0.3490	0.3420
0.3010	0.3030	0.3115	0.3120	0.3215	0.3200	0.3300	0.3270	0.3390	0.3340

Lumimicro.Ltd Pure White C.I.E Rank Graph



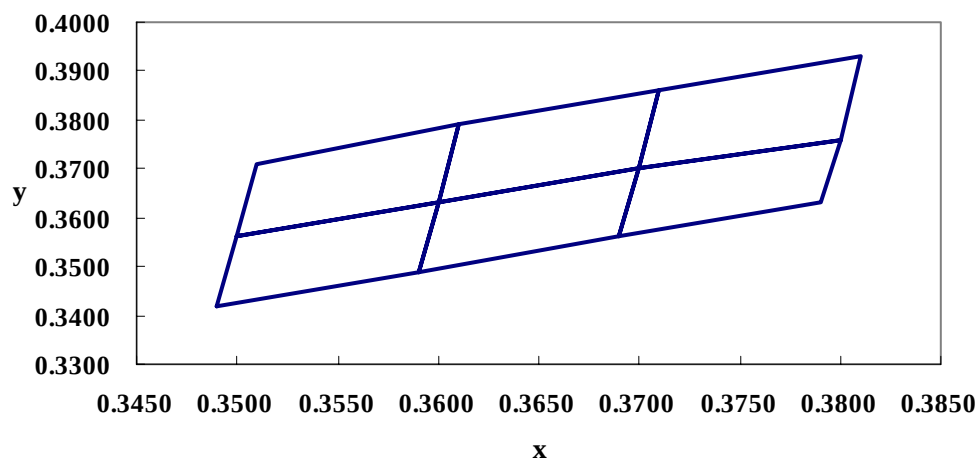
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White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

Yellowish White Color C.I.E

4K7H		4K5H		4K0H	
x	y	x	y	x	y
0.3500	0.3560	0.3600	0.3630	0.3700	0.3700
0.3510	0.3710	0.3610	0.3790	0.3710	0.3860
0.3610	0.3790	0.3710	0.3860	0.3810	0.3930
0.3600	0.3630	0.3700	0.3700	0.3800	0.3760
4K7L		4K5L		4K0L	
x	y	x	y	x	y
0.3490	0.3420	0.3590	0.3490	0.3690	0.3560
0.3500	0.3560	0.3600	0.3630	0.3700	0.3700
0.3600	0.3630	0.3700	0.3700	0.3800	0.3760
0.3590	0.3490	0.3690	0.3560	0.3790	0.3630

Lumimicro Yellowish White C.I.E GRAPH



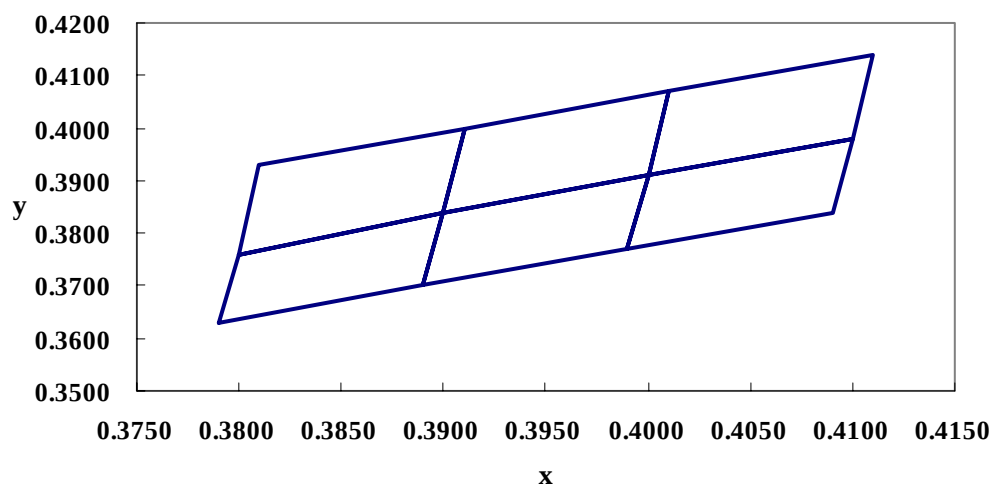
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White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

Reddish White Color C.I.E

3K8H		3K6H		3K4H	
x	y	x	y	x	y
0.3800	0.3760	0.3900	0.3840	0.4000	0.3910
0.3810	0.3930	0.3910	0.4000	0.4010	0.4070
0.3910	0.4000	0.4010	0.4070	0.4110	0.4140
0.3900	0.3840	0.4000	0.3910	0.4100	0.3980
3K8L		3K6L		3K4L	
x	y	x	y	x	y
0.3790	0.3630	0.3890	0.3700	0.3990	0.3770
0.3800	0.3760	0.3900	0.3840	0.4000	0.3910
0.3900	0.3840	0.4000	0.3910	0.4100	0.3980
0.3890	0.3700	0.3990	0.3770	0.4090	0.3840

Lumimicro.Ltd Reddish White C.I.E GRAPH



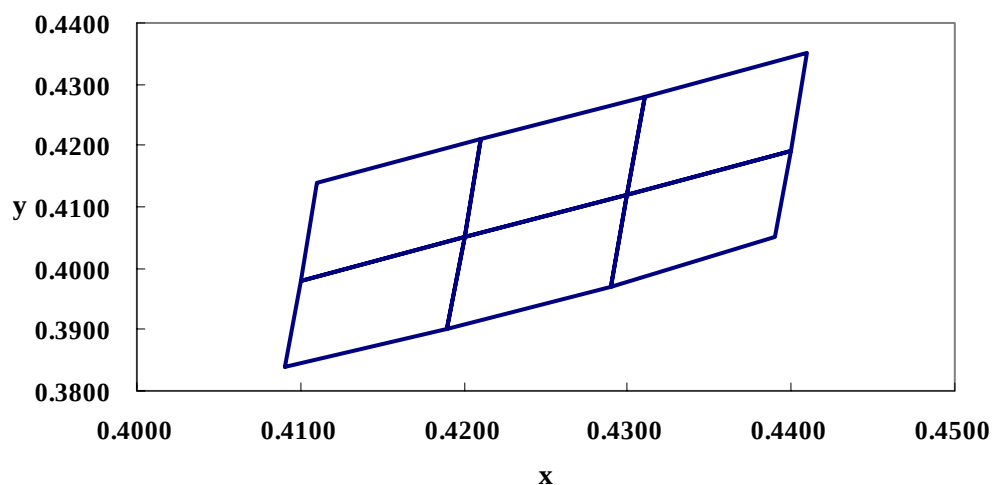
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White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

Amber White Color C.I.E

3K2H		3K0H		2K9H	
x	y	x	y	x	y
0.4100	0.3980	0.4200	0.4050	0.4300	0.4120
0.4110	0.4140	0.4210	0.4210	0.4310	0.4280
0.4210	0.4210	0.4310	0.4280	0.4410	0.4350
0.4200	0.4050	0.4300	0.4120	0.4400	0.4190
3K2L		3K0L		2K9L	
x	y	x	y	x	y
0.4090	0.3840	0.4190	0.3900	0.4290	0.3970
0.4100	0.3980	0.4200	0.4050	0.4300	0.4120
0.4200	0.4050	0.4300	0.4120	0.4400	0.4190
0.4190	0.3900	0.4290	0.3970	0.4390	0.4050

Lumimicro.Ltd Amber White C.I.E GRAPH

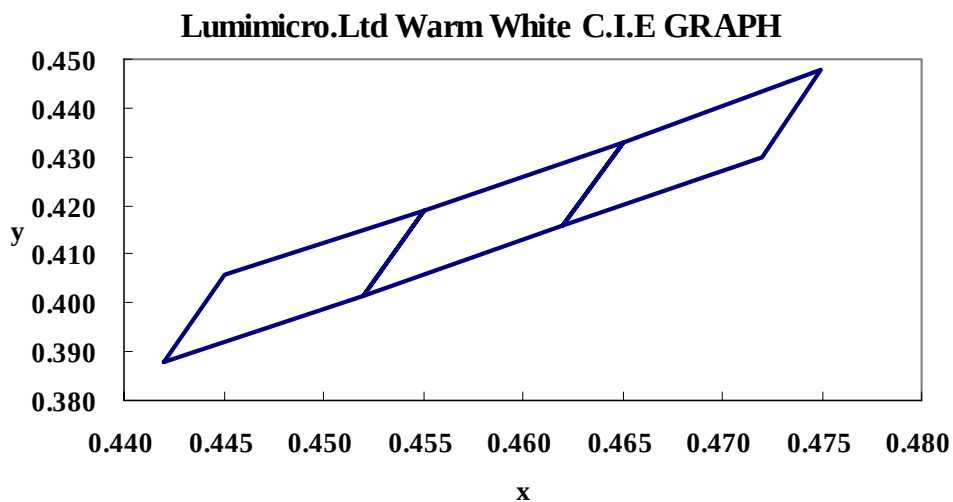


Lumimicro 4549 – Two Chip Specification

White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

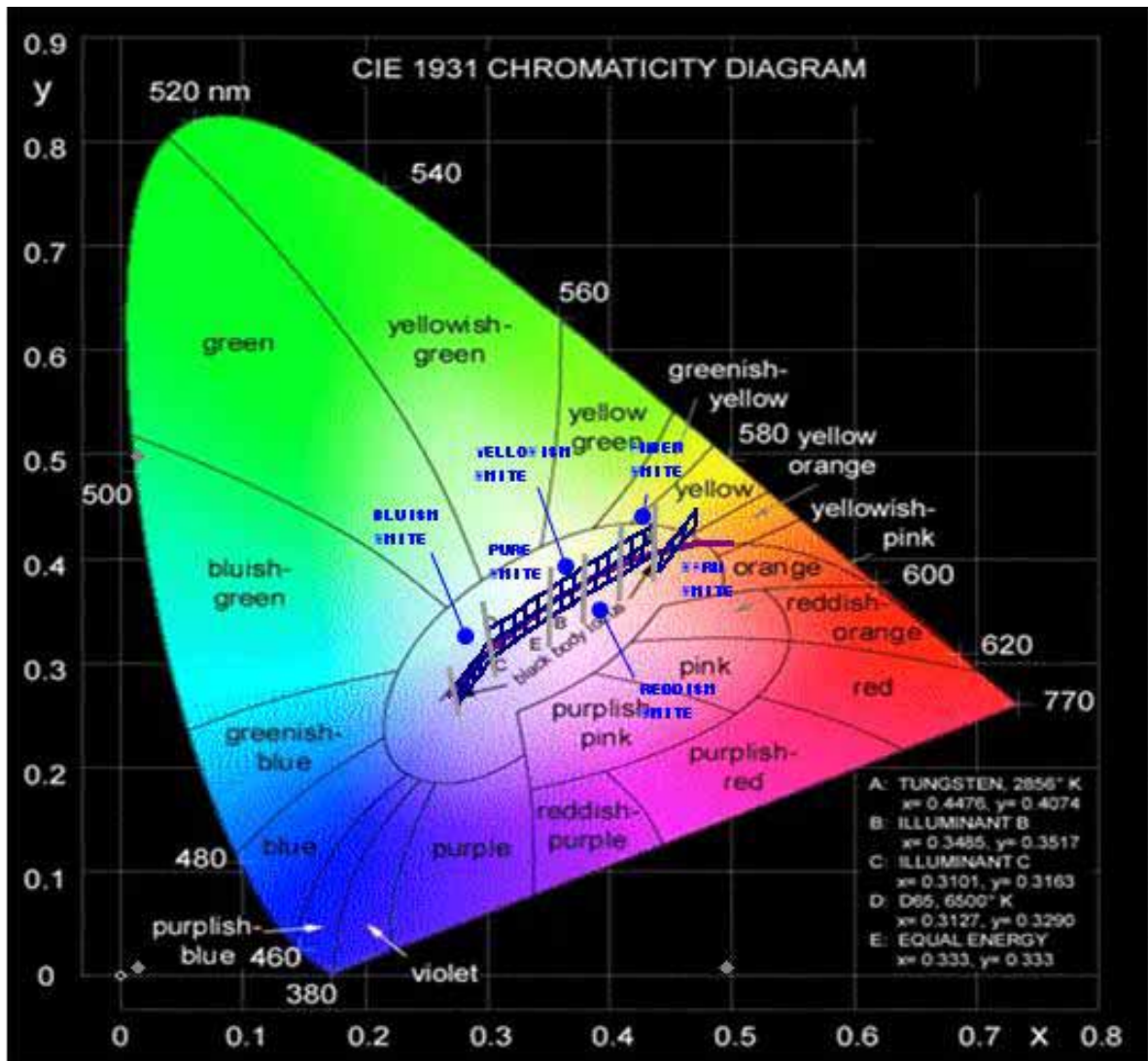
Warm White Color C.I.E

2K8		2K7		2K6	
X	Y	X	Y	X	Y
0.4420	0.3880	0.4520	0.4015	0.4620	0.4160
0.4450	0.4060	0.4550	0.4190	0.4650	0.4330
0.4550	0.4190	0.4650	0.4330	0.4750	0.4480
0.4520	0.4015	0.4620	0.4160	0.4720	0.4300



White Color C.I.E Characteristics [Condition : 40mA – Ta = 25°C]

White Color C.I.E Graph



Reliability Results

	ITEMS	CONDITION	NOTE	Fail/sample
1	RESISTANCE TO SOLDERING HEAT (REFLOW SOLDERING)	TSID=240 °C, 10SEC (PRE TREATMENT 30 °C, 70%, 168hrs)	2 TIMES	0/20
2	SOLDERBILITY (REFLOW SOLDERING)	TSID=215 °C ± 5 °C, 3 SEC (LEAD SOLDER)	TIME OVER 95%	0/20
3	THERMAL SHOCK	-20 °C ~ 100 °C, 15min AT EACH TEMP.	20CYCLES	0/20
4	MOISTURE RESISTANCE CYCLE	25 °C ~ 65 °C ~ -10 °C, 90%RH 24hrs/1cycle	500 HRS	0/20
5	HIGH TEMPERATURE STORAGE	T _a = 100 °C	500 HRS	0/20
6	TEMPERATURE HUMIDITY STORAGE	T _a = 60 °C, RH=90%	500 HRS	0/20
7	LOW TEMPERATURE STORAGE	T _a = -40 °C	500 HRS	0/20
8	LIFE TIME 1	20mA @ ROOM TEMP.	500 HRS	0/20
9	LIFE TIME 2	15mA @ 60 °C, 90%RH	300 HRS	0/20
10	LIFE TIME 3	20mA @ -40 °C	500 HRS	0/20
11	ON / OFF TEST	IF = 60mA, Pulse Width 0.2sec, Duty Ratio 1/2	200,000Cycles	0/20

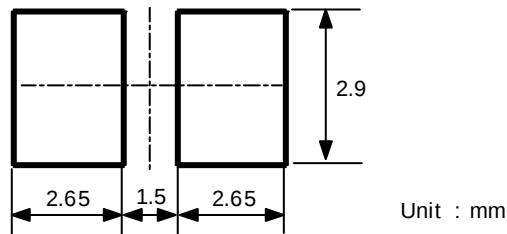
* Criteria For Failure

Item	Stmbol	Failure Criteria	
		Min	Max
Forward Voltage	VF	—	U.S.L*)×1.1
C.I.E. x,y	x,y	L.S.L*)×0.8	U.S.L*)×1.2
Luminous Intensity	IV	L.S.L*)×0.5	—

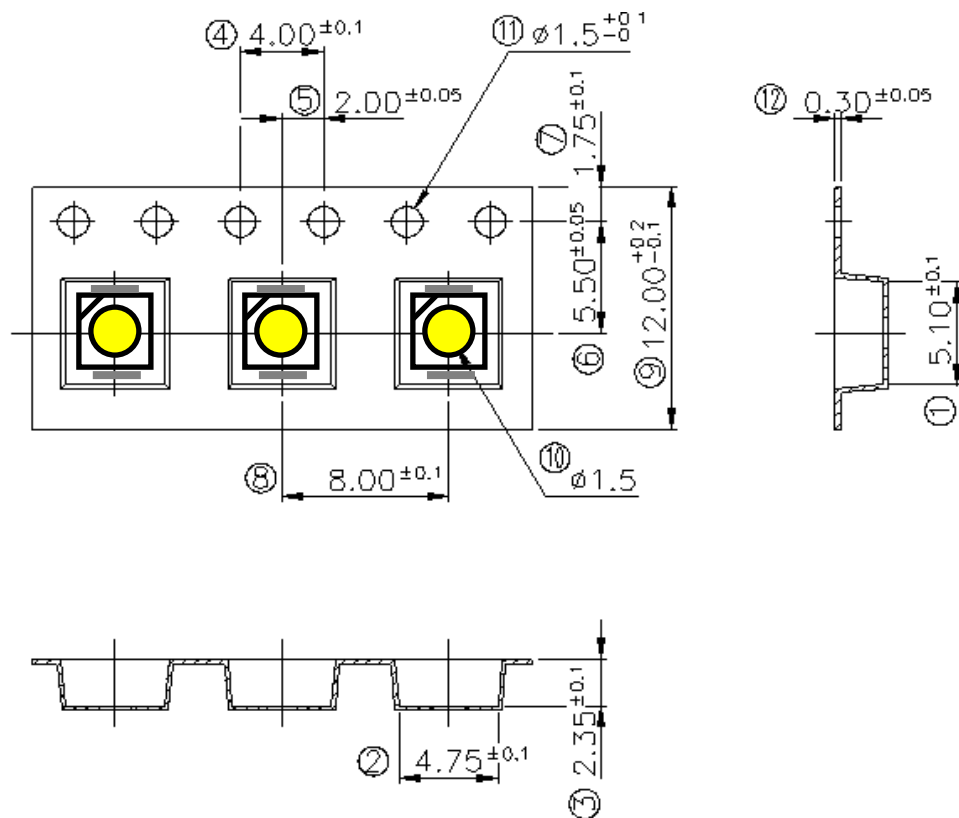
U.S.L*) : Upper Standard Level

L.S.L*) : Lower Standard Level

Recommended Pad Pattern

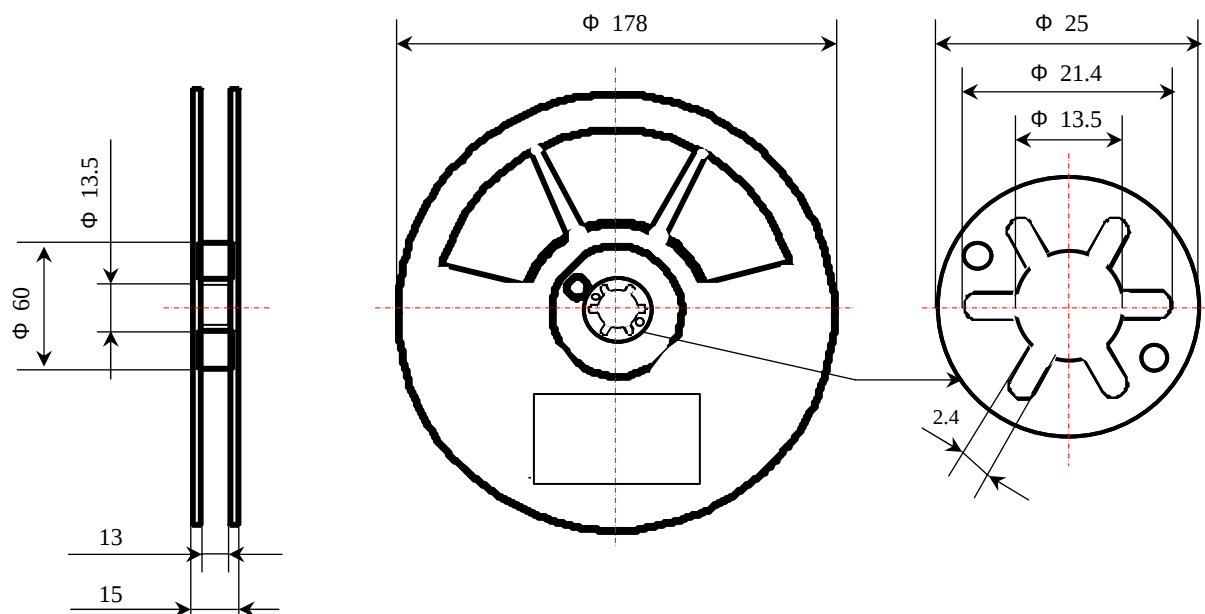


Taping pocket Dimension



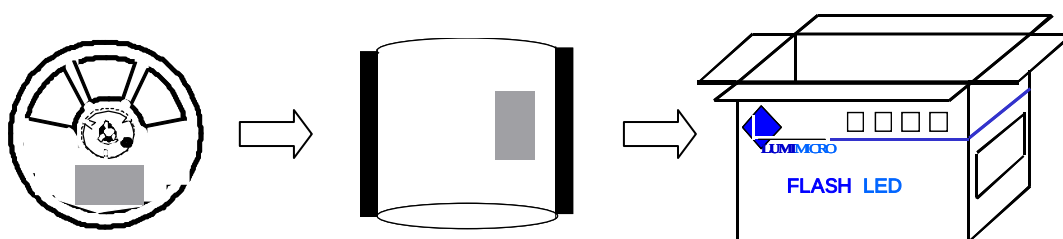
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Reel Dimensions



One Reel	Unit	Tolerance
Max 750EA	mm	0.1

Packing Spec



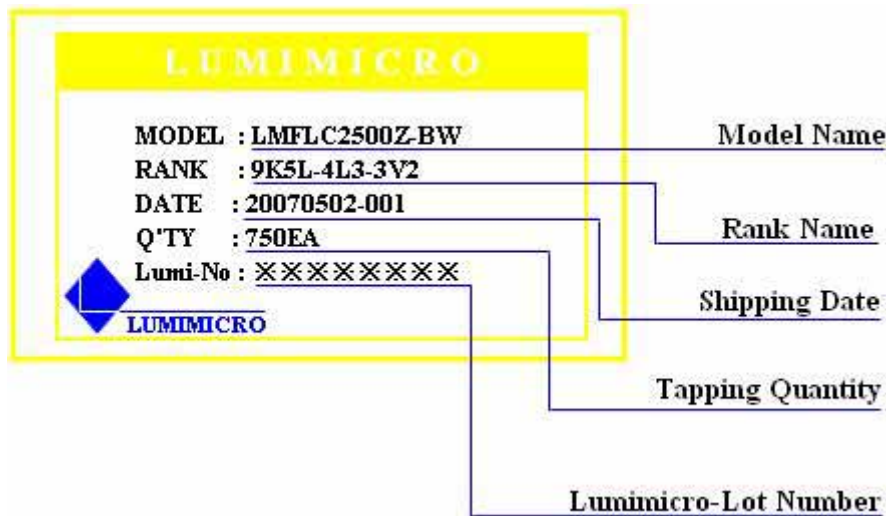
- Aluminum Bag

	Reel in a Bag	Silica in a Bag	Goods QNT in a Bag
Aluminum Bag	1 Reel	1 Silica	Max : 750ea

- Box Spec.

	Dimensions(Width/Thickness) Unit : mm	Reels in Box	Goods in QNT in Box
Box	275/ 285/ 200	10	Max : 7,500ea

Label Spec



Precautions For Use

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.

When the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.

LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3 months or more after being shipped from LUMIMICRO, sealed container with a nitrogen atmosphere should be used for storage.

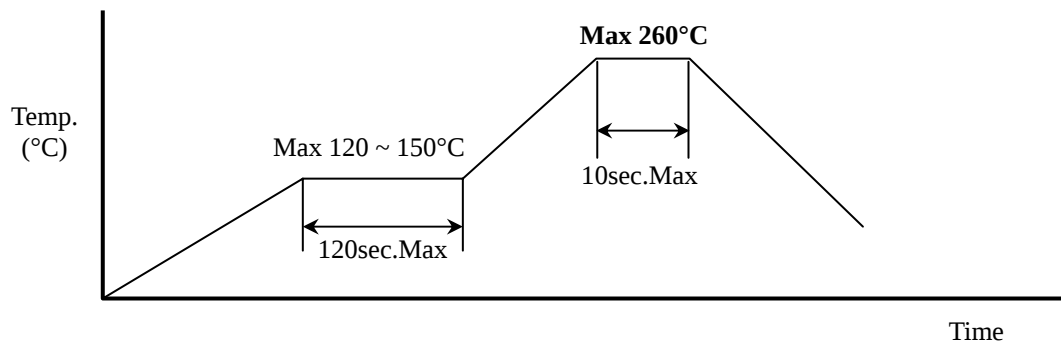
The LEDs must be dip soldered within seven days after opening the moisture-proof packing. Repack unused Products with anti-moisture packing, fold to close any opening and then store in dry place. The appearance and specifications of the product may be modified for improvement without notice. These LEDs are sensitive to the static electricity and surge. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. If Over voltage which exceeds the absolute maximum rating is applied to LEDs, it will cause damage in LEDs and result in destruction. Damaged LEDs will show some unusual characteristics such as remarkably increased leak current, turn-on voltage becomes lower and the LEDs get unlighted at low current.

Soldering Condition

1. Reflow Conditions (With Pb)

Preliminary heating to be at 150°C max. for 2 minutes max.

Soldering heat to be at 260°C max. for 10 seconds max.

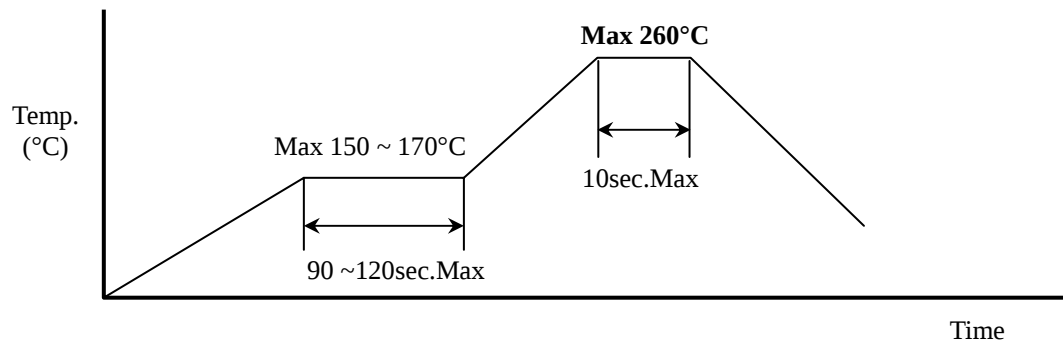


Recommended Solder Paste : Alloy- 63Sn/37Pb Model: OL107B,

2. Pb free Reflow Conditions

Preliminary heating to be at 150°C max. for 2 minutes max.

Soldering heat to be at 260°C max. for 10 seconds max.



Recommended Pb free Paste Alloy: 96.5Sn/3Ag/0.5Cu. - Model: OL204

3. For Manual Soldering

Not more than 5seconds @MAX300°C, under soldering iron.