

Doc. No: LUMI 5630 One Chip- 110307- SPEC

TOP VIEW LED

White LED

(Preliminary)

Customer		Model	LMETPY56WH1CZ-HC	
		Issued Date	2011 – 03– 07	
Checked By	Approved By	Description	Chip Type White LED	
		Written By	Checked By	Approved by

Contact Point

Lumimicro Co., Ltd

64-1 Bongmu-ri, Namsa-myeon, Cheoin-gu, Yongin-si

Gyeonggi-Do, Korea

TEL : +8231-213-9200, FAX : +8231-213-9210

Homepage : www.lumimicro.com



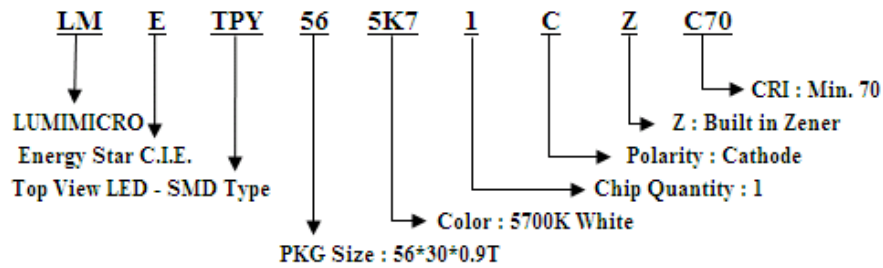
Lumimicro 5630 – One Chip Specification

◆ Lumimicro TOP VIEW LED P/N

LUMIMICRO Top View LED Part No. Explanation

LM	: LUMIMICRO. Ltd
E	: Energy Star C.I.E. Standard
TPY	: Top View LED - SMD Type
56	: Package Size (5.6*3.0*0.9T)
WH	: White Color (Energy Star C.I.E. 6500K ~ 2700K)
1	: Chip Quantity
C	: Polarity (A : Anode / C : Cathode)
Z	: Built in Zener (X : NO ZENER / Z : ZENER)
HC	: High CRI (Min 70)

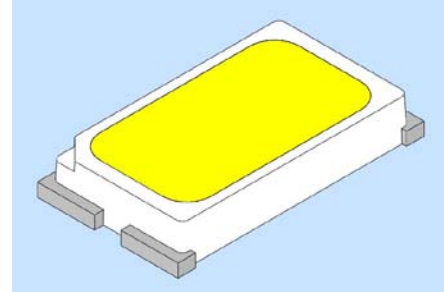
[EX]



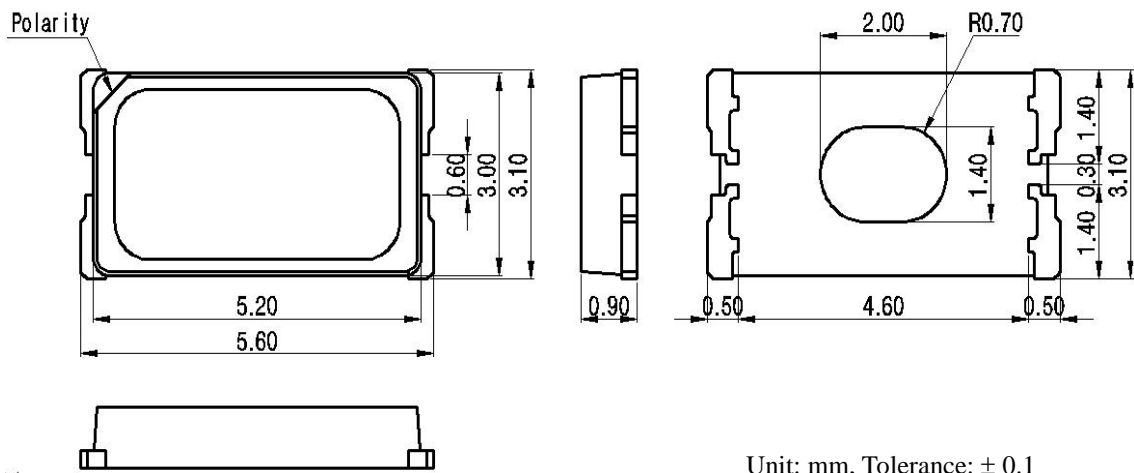
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◆ Features

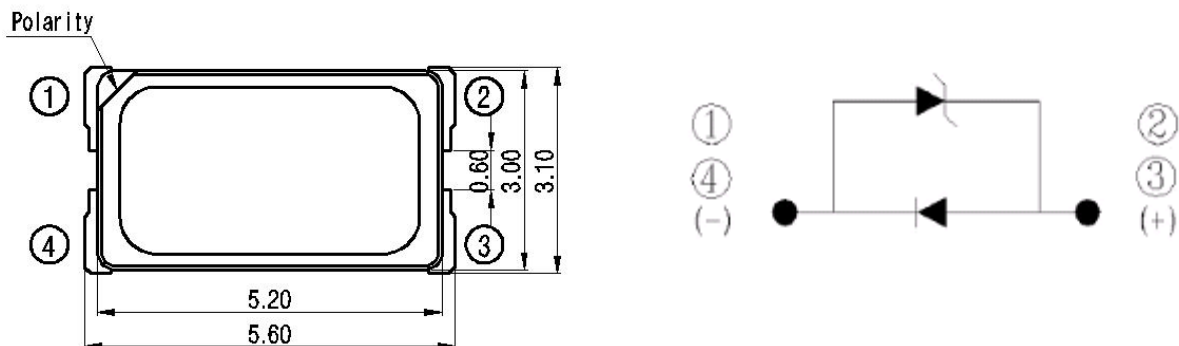
- [1] Built-in One Chip LED
- [2] Wide viewing angle
- [3] External dimensions: 5.6 x 3.0 x 0.9 t mm
- [4] Lead frame package with individual 2 pin



◆ Outline Dimensions



◆ LED Circuit Diagram



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◆ Absolute Maximum Rating

Parameter	Color	Symbol	Rating Value	Unit
Forward DC Current	White	IF-1	150	mA
Power Dissipation	White	PD	450	mW
Forward Pulse Current ^{*1}	White	IPF-1	300	mA
ESD Voltage	White	ESD-1	HBM 12,000	V
Operating Temperature	White	TO	-30 to + 85	°C
Storage Temperature	White	TST	-40 to + 100	°C
Soldering Temperature	White	TSD	260°C for 10 Seconds	°C

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

◆ Forward Voltage Characteristics [Condition: IF=60 mA Ta = 25°C]

Color	Item	Rank	Forward Voltage			Unit
			MIN.	TYP.	Max.	
White	Forward Voltage	2V9	2.8		2.9	V
	Forward Voltage	3V0	2.9		3.0	V
	Forward Voltage	3V1	3.0		3.1	V
	Forward Voltage	3V2	3.1		3.2	V

Measurement Tolerance: ± 0.05V

◆ Peak Luminous Intensity Characteristics [Condition: IF=60 mA Ta = 25°C]

Color	Item	Rank	Luminous Intensity			Unit
			MIN.	TYP.	Max.	
White	Luminous Intensity	EL1	6.5		7.5	cd
	Luminous Intensity	EL2	7.5		8.5	cd
	Luminous Intensity	EL3	8.5		9.5	cd

Measurement Tolerance: ± 10%

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◆ Color Rendering Index Characteristics [Condition: IF=60 mA Ta = 25°C]

Color	Item	Symbol	Color Rendering Index			Unit
			MIN.	TYP.	MAX.	
White	Color Rendering Index	C70	70	–	75	Ra
	Color Rendering Index	C75	75	–	80	Ra
	Color Rendering Index	C80	80	–	85	Ra
	Color Rendering Index	C90	90	–	–	Ra

Measurement Tolerance: ± 2 Ra

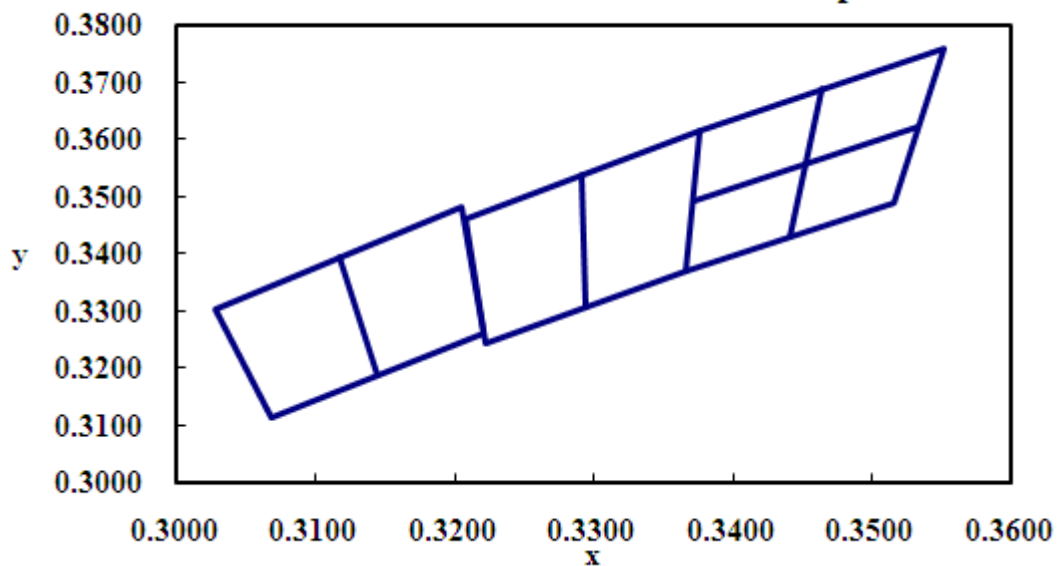
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◆ White Color Energy Star C.I.E. Characteristics [Condition : IF=60mA Ta = 25°C]

☞ 6K5~5K0 White Color Energy Star C.I.E.

6K5A		5K7A		5K0A		5K0B	
X	Y	X	Y	X	Y	X	Y
0.3116	0.3392	0.3291	0.3539	0.3463	0.3688	0.3551	0.376
0.3028	0.3304	0.3207	0.3462	0.3376	0.3616	0.3463	0.3688
0.3068	0.3113	0.3222	0.3243	0.3371	0.3493	0.3452	0.3558
0.3144	0.3187	0.3294	0.3306	0.3452	0.3558	0.3533	0.3623
6K5B		5K7B		5K0C		5K0D	
X	Y	X	Y	X	Y	X	Y
0.3205	0.3481	0.3376	0.3616	0.3452	0.3558	0.3533	0.3623
0.3116	0.3392	0.3291	0.3539	0.3371	0.3492	0.3452	0.3558
0.3144	0.3187	0.3294	0.3306	0.3366	0.3369	0.3440	0.3428
0.3221	0.3261	0.3366	0.3369	0.34405	0.3428	0.3515	0.3487

Lumimicro Ltd. 6K5~5K0 C.I.E. Graph



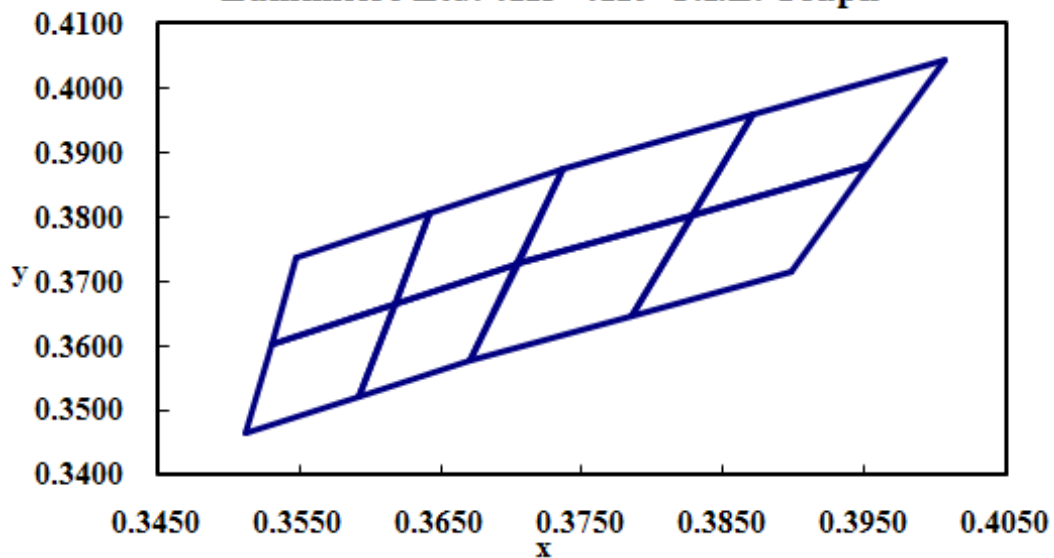
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◆ White Color Energy Star C.I.E. Characteristics [Condition : : IF= 60mA – Ta = 25°C]

☞ 4K5K~4K0 White Color Energy Star C.I.E.

4K5A		4K5B		4K0A		4K0B	
X	Y	X	Y	X	Y	X	Y
0.3530	0.3601	0.3618	0.3666	0.3703	0.3726	0.3827	0.3801
0.3548	0.3736	0.3642	0.3805	0.3736	0.3874	0.3871	0.3960
0.3642	0.3805	0.3736	0.3874	0.3871	0.3960	0.4006	0.4044
0.3618	0.3666	0.3705	0.3726	0.3827	0.3801	0.3952	0.3880
4K5C		4K5D		4K0C		4K0D	
X	Y	X	Y	X	Y	X	Y
0.3512	0.3465	0.3591	0.3521	0.3670	0.3578	0.3784	0.3647
0.3530	0.3601	0.3618	0.3666	0.3703	0.3726	0.3827	0.3801
0.3618	0.3666	0.3705	0.3726	0.3827	0.3801	0.3952	0.3880
0.3591	0.3521	0.3670	0.3578	0.3784	0.3647	0.3898	0.3716

Lumimicro Ltd. 4K5~4K0 C.I.E. Graph



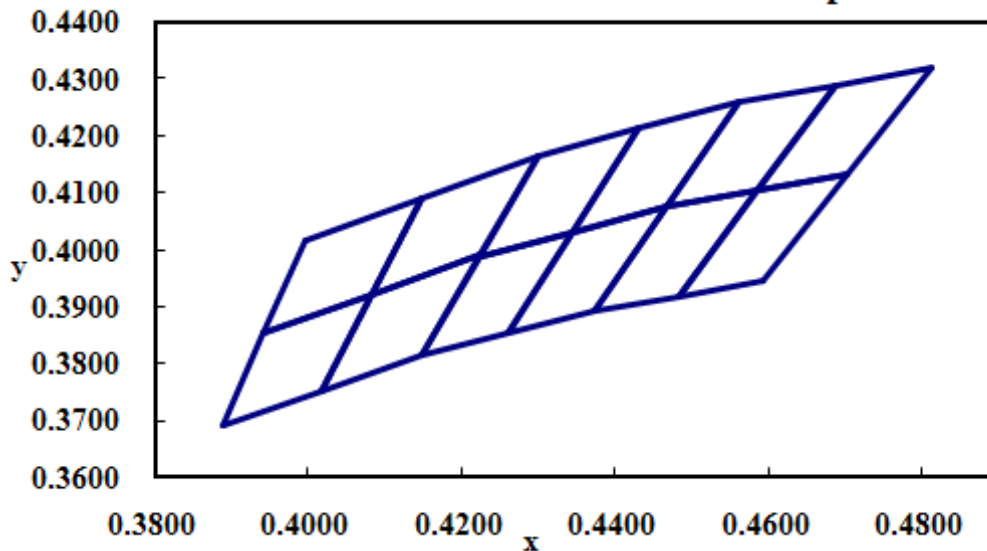
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◆ White Color Energy Star C.I.E. Characteristics [Condition : : IF= 60mA – Ta = 25°C]

☞ 3K5~2K7 White Color Energy star C.I.E.

3K5A		3K5B		3K0A		3K0B		2K7A		2K7B	
X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.3942	0.3853	0.4083	0.3921	0.4344	0.4031	0.4468	0.4077	0.4467	0.4077	0.4585	0.4104
0.3996	0.4015	0.4148	0.4090	0.4431	0.4213	0.4562	0.4260	0.4562	0.4260	0.4688	0.4290
0.4148	0.4090	0.4299	0.4165	0.4299	0.4165	0.4431	0.4213	0.4688	0.4290	0.4813	0.4319
0.4083	0.3921	0.4223	0.3990	0.4223	0.3990	0.4344	0.4031	0.4585	0.4104	0.4703	0.4132
3K5C		3K5D		3K0C		3K0D		2K7C		2K7D	
X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.3889	0.3690	0.4018	0.3752	0.4260	0.3854	0.4373	0.3893	0.4373	0.3893	0.4483	0.3918
0.3942	0.3853	0.4083	0.3921	0.4344	0.4031	0.4468	0.4077	0.4467	0.4077	0.4585	0.4104
0.4083	0.3921	0.4223	0.3990	0.4223	0.3990	0.4344	0.4031	0.4585	0.4104	0.4703	0.4132
0.4018	0.3752	0.4147	0.3814	0.4147	0.3814	0.4260	0.3854	0.4483	0.3918	0.4593	0.3944

Lumimicro Ltd. 3K5~2K7 C.I.E. Graph



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◆ Reliability Items

ITEMS	CONDITION	NOTE	Fail /Sample
1 RESISTANCE TO SOLDERING HEAT (REFLOW SOLDERING)	TSID=260°C, 10sec (PRE TREATMENT 30°C, 70%, 168hr)	2TIMES	0/30
2 THERMAL SHOCK	-20°C ~ 100°C, 15min AT EACH TEMP.	100CYCLES	0/30
3 MOISTURE RESISTANCE CYCLE	25°C ~ 65°C ~ -10°C, 90%RH 24hr/ 1cycle	500HRS	0/30
4 HIGH TEMPERATURE STORAGE	Ta = 100°C	500HRS	0/30
5 TEMPERATURE HUMIDITY STORAGE	Ta = 60°C, RH = 90%	1,000HRS	0/30
6 LOW TEMPERATURE STORAGE	Ta = -40°C	1,000HRS	0/30
7 ROOM TEMPERATURE LIFE TEST	Ta = 25°C, IF=120mA/chip each*	1,000HRS	0/30
8 HIGH TEMPERATURE HUMIDITY LIFE TEST	60°C, RH=90%, IF=120mA/chip each*	500HRS	0/30
9 LOW TEMPERATURE LIFE TEST	Ta = -20°C, IF=120mA/chip each*	1,000HRS	0/30
10 HIGH TEMPERATURE LIFE TEST	Ta = 85°C, IF=120mA/chip each*	500HRS	0/30

*) ; Tested with LUMIMICRO standard circuit board

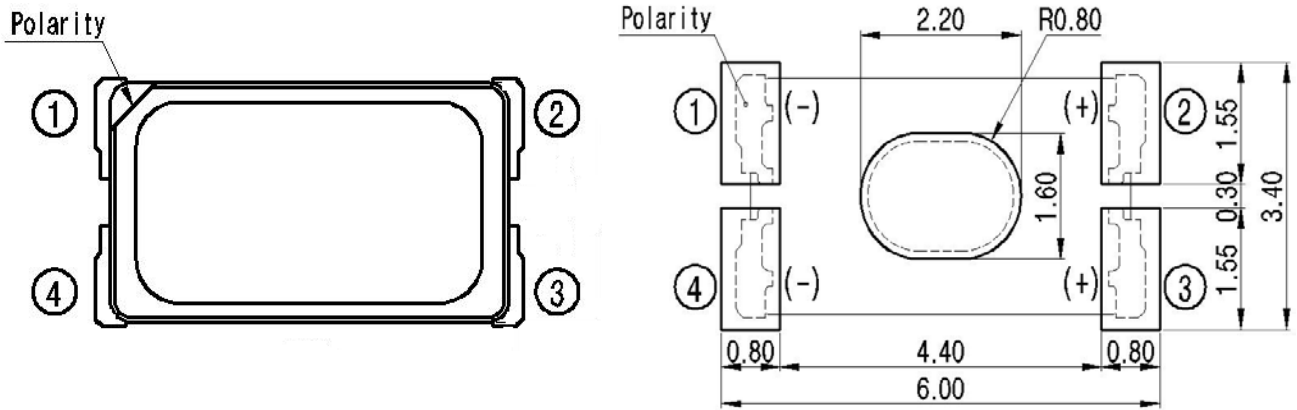
◆ Failure Criteria

ITEM	SYMBOL	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*)×0.7	-

U.S.L*) ; Upper Standard Level

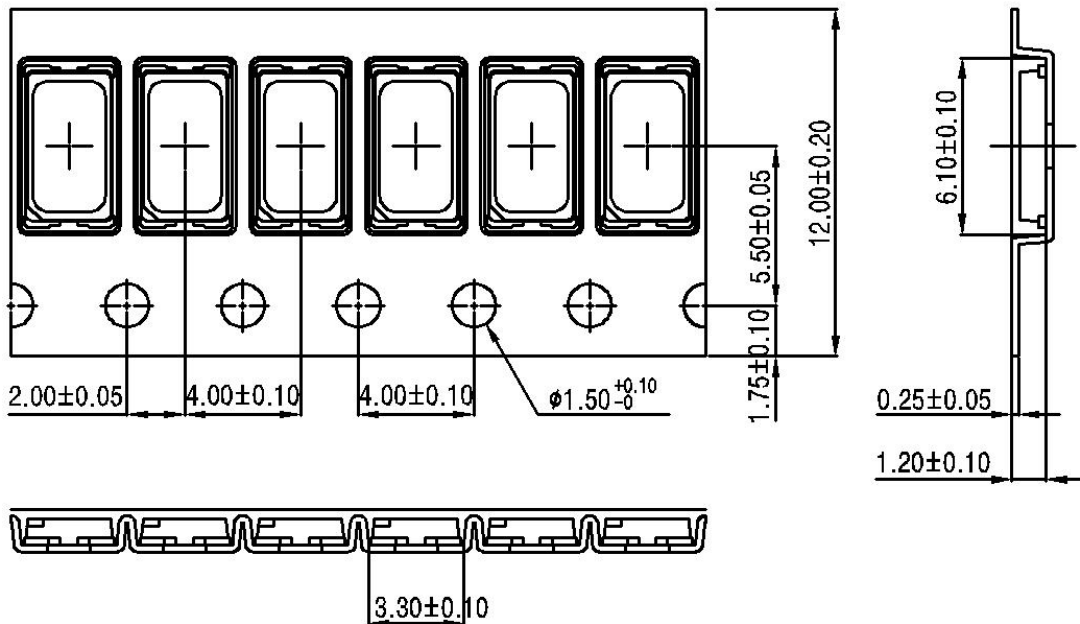
L.S.L*) ; Lower Standard Level

◆ Recommended Pad Pattern



*Unit: mm

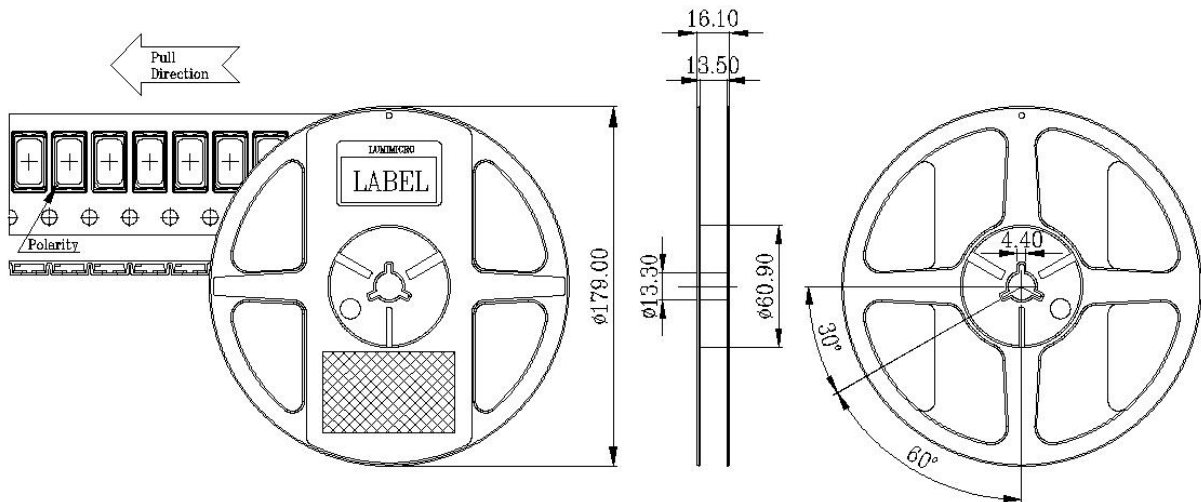
◆ Taping pocket Dimension



*Unit : mm

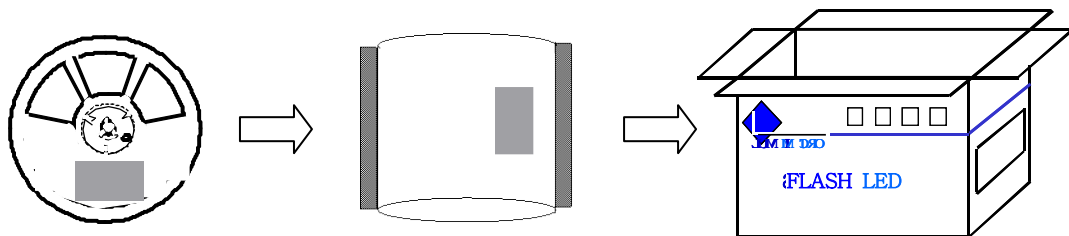
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◆ Reel Dimensions



One Reel	Unit	Tolerance
Max 2,000EA	mm	0.1

◆ Packing Spec



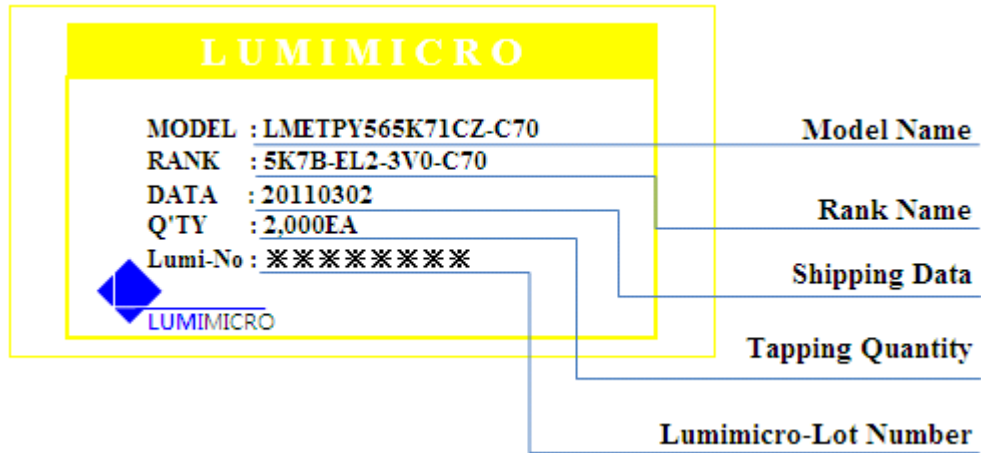
- Aluminum Bag

	Reel in a Bag	Silica in a Bag	Goods QNT in a Bag
Aluminum Bag	1 Reel	1 Silica , 1 Indicator	Max : 2,000pcs

- Box Spec.

	Dimensions(Width/Thickness) Unit : mm	Reels in Box	Goods in QNT in Box
Box	275/ 285/ 200	10	Max : 20,000pcs

◆ 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.

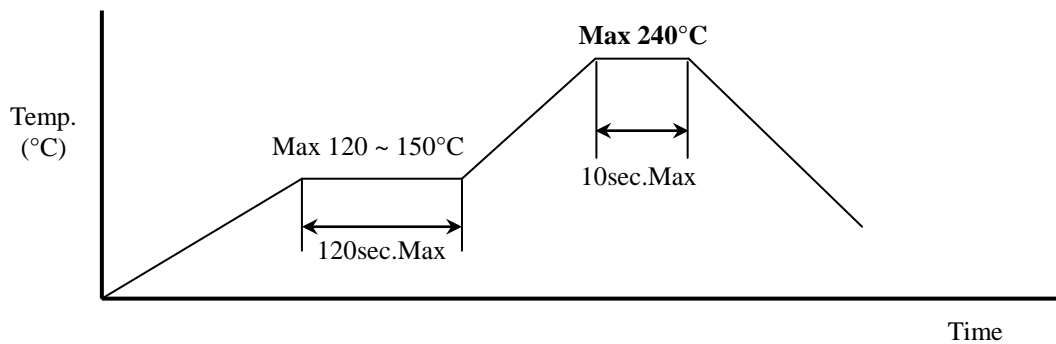
Repack unused Products with anti-moisture packing, fold to close any opening and then store in dry place. The appearance and specifications of the product may be modified for improvement without notice. These LEDs are sensitive to the static electricity and surge. It is recommended to use a wrist band 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 240°C max. for 10 seconds max.

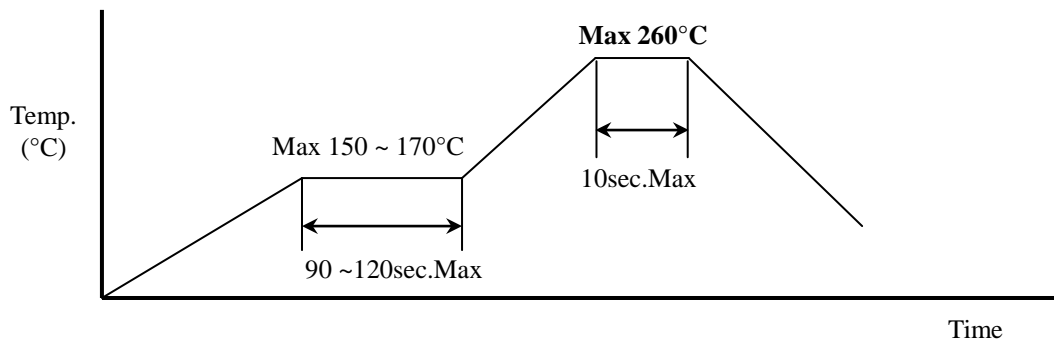


Recommended Solder Paste : Alloy- 63Sn/37Pb Model: OL107B,

2. Pb free Reflow Conditions

Preliminary heating to be at 170°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 @MAX340°C, under soldering iron.

◆ Test Certification



CTK Co., Ltd.

386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-100
Tel: +82-31-339-9970 Fax: +82-31-339-9855
www.e-ctk.com

Test Report

Applicant Name: LUMIMICRO
Address: 2F 685, Buk-ri, Namsa-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea

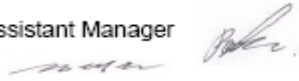
Test Report No.: CTK0911-RS-000410
Date of Issue: Nov. 17, 2009

Sample Name: TWIN TYPE LED (3230, 5630, 5252 SIZE)

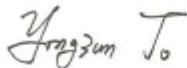
Receipt Date: Nov. 04, 2009
Test Performing Date: Nov. 17, 2009

Test Performed: CTK Co., Ltd. tested the sample and item(s) which were selected by applicant with following result

Test Results: Refer to following page.

Tested by Jae Won Park, Assistant Manager
Dae Soon Kim 

CTK Co., Ltd.



Yongjun Jo / Lab. Manager

Test Report No : CTK0911-RS-000410
Date : 11. 17. 2009

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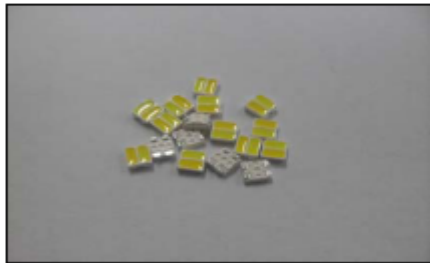
◆ Test Certification



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1. TEST RESULTS

1) TWIN TYPE LED (3230, 5630, 5252 SIZE)

Heavy Metals					
Test Items	Unit	Test Results	MDL	Test Methods	
Pb	mg/kg	N.D	5.0	IEC 62321_ AAS	
Cd		N.D	0.5	IEC 62321_ ICP-OES	
Hg		N.D	1.0		
Cr ⁶⁺		N.D	0.2	IEC 62321_ UV/Vis Spectrometer	
Flame Retardants					
Test Items		Unit	Test Results	MDL	Test Methods
PBBs	Bromobiphenyl	mg/kg	N.D	20.0	IEC 62321_ GC/MS
	Dibromobiphenyl		N.D	20.0	
	Tribromobiphenyl		N.D	20.0	
	Tetrabromobiphenyl		N.D	20.0	
	Pentabromobiphenyl		N.D	20.0	
	Hexabromobiphenyl		N.D	20.0	
	Heptabromobiphenyl		N.D	20.0	
	Octabromobiphenyl		N.D	20.0	
	Nonabromobiphenyl		N.D	20.0	
	Decabromobiphenyl		N.D	50.0	
PBDEs	Bromodiphenyl ether	mg/kg	N.D	20.0	IEC 62321_ GC/MS
	Dibromodiphenyl ether		N.D	20.0	
	Tribromodiphenyl ether		N.D	20.0	
	Tetrabromodiphenyl ether		N.D	20.0	
	Pentabromodiphenyl ether		N.D	20.0	
	Hexabromodiphenyl ether		N.D	20.0	
	Heptabromodiphenyl ether		N.D	20.0	
	Octabromodiphenyl ether		N.D	20.0	
	Nonabromodiphenyl ether		N.D	20.0	
	Decabromodiphenyl ether		N.D	50.0	

Test Report No : CTK0911-RS-000410
 Date : 11. 17. 2009

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- TWIN TYPE LED (3230, 5630, 5252 SIZE)

Halogen Contents				
Test Items	Unit	Test Results	MDL	Test Methods
Fluorine (F)	mg/kg	N.A	50	EN 14582_IC
Chlorine (Cl)		N.D	50	EN 14582_IC
Bromine (Br)		N.D	50	EN 14582_IC
Iodine (I)		N.A	50	EN 14582_IC

Test Items	Unit	Test Results	MDL	Test Methods
Perfluorooctyl acid (PFOA) [CAS No. : 335-67-1]	mg/kg	N.A	-	-
Perfluorooctanesulfonate (PFOS) [CAS No. : 1763-23-1]		N.D	1.0	In-House method _LC/MS/MS

* MDL : Method Detection Limit , N.D : Not Detected, N.A : Not Applicable

◆ Test Certification



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Tel: +82-31-339-9970 Fax: +82-31-339-9855
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Test Report

Applicant Name: LUMIMICRO
Address: 2F 685, Buk-ri, Namsa-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea


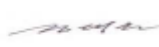
Test Report No.: CTK0911-RS-000405
Date of Issue: Nov. 17, 2009

Sample Name: TWIN TYPE LED (3230, 5630, 5252 SIZE)

Receipt Date: Nov. 04, 2009
Test Performing Date: Nov. 17, 2009

Test Performed: CTK Co., Ltd. tested the sample and item(s) which were selected by applicant with following result

Test Results: Refer to following page.

Tested by Seung Hyup Baek 
Dae Soon Kim 

CTK Co., Ltd.



Yongjun Jo / Lab. Manager

Test Report No : CTK0911-RS-000405
Date : 11. 17. 2009

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◆ Test Certification



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 www.e-ctk.com

1. TEST RESULTS

1) TWIN TYPE LED (3230, 5630, 5252 SIZE)

SVHC				
Test Items	Unit	Test Results	MDL	Test Methods
Cobalt dichloride (Co) ¹⁾ (CAS No.: 007646-79-9)	mg/kg	N.D	5.0	US EPA 3052_ ICP-OES
Diarsenic pentaoxide (As) ²⁾ (CAS No.: 001303-28-2)		N.D	10.0	US EPA 3052_ ICP-OES
Diarsenic trioxide (As) ²⁾ (CAS No.: 001327-53-3)		N.D		
Triethyl arsenate (As) ²⁾ (CAS No.: 015606-95-8)		N.D		
lead hydrogen arsenate (Pb) ²⁾ (CAS No.: 007784-40-9)		N.D	5.0	US EPA 3052_ ICP-OES
Sodium dichromate, dihydrate ²⁾ (CAS No.: 007789-12-0)		N.D	0.5	ISO 3613_ UV-Vis
Anthracene (CAS No.: 000120-12-7)	mg/kg	N.D	0.2	ZEK01.2-08_GC/MS
4,4'-Diaminodiphenylmethane (CAS No.:000101-77-9)	mg/kg	N.D	5.0	KS K 0147 : 1999_GC/MS
Dibutyl phthalate (DBP) (CAS No.:000084-74-2)	mg/kg	N.D	5.0	KS M 1991_GC/MS
Bis (2-ethyl(hexyl)phthalate) (DEHP) (CAS No.:000117-81-7)	mg/kg	N.D		
Benzyl butyl phthalate (BBP) (CAS No.:000085-68-7)	mg/kg	N.D		
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene) (CAS No.:000081-15-2)	mg/kg	N.D	10.0	US EPA 3550C_GC/MS
Hexabromocyclododecane (HBCDD) (CAS No.:025637-99-4)	mg/kg	N.D	5.0	US EPA 3540C_GC/MS
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.:085535-84-8)	mg/kg	N.D	50	US EPA 3540C_GC/MS
Bis (tributyltin)oxide ³⁾ (CAS No.:000056-35-9)	mg/kg	N.D	50	US EPA 3052_ICP-OES



* MDL : Method Detection Limit , N.D : Not Detected

¹⁾ Calculated concentration of cobalt dichloride is based on the identified heavy metal and anion result.

²⁾ Calculated concentration of diarsenic pentaoxide, diarsenic trioxide, triethyl arsenate, lead hydrogen arsenate and sodium dichromate are based on the identified heavy metal result.

³⁾ Calculated concentration of Bis (tributyltin)oxide³⁾ are based on the identified heavy metal result.

Test Report No : CTK0911-RS-000405
 Date : 11. 17. 2009

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