

3528-2PIN-SMD LED

WHITE LED

CUSTOMER :

MODEL LMTP2P32C1YFZ03

Customer Approval		Model	LMTP2P32C1YFZ03	
		Issued Date	2012 - 05 - 24	
Checked By	Approved By	Description	SMD Type LED	
		Written By	Checked By	Approved by

Contact Point

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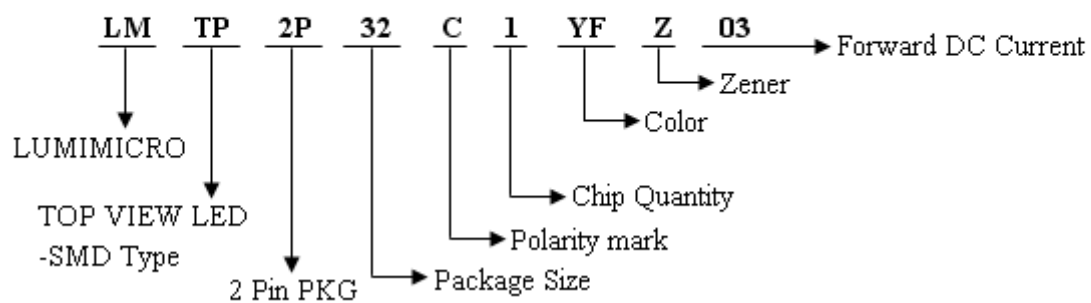
Lumimicro 3228 – One Chip Specification

◆ Lumimicro TOP View LED P/N

LUMIMICRO 3228 TOP VIEW LED Part No.-Explanation

LM	:LUMIMICRO
TP	: TOP VIEW LED -SMD Type
2P	: 4 Pin PKG
32	: Package Size (3.5*2.8*1.9T)
C	: Polarity Mark (A: Anode , C: Cathode)
1	: Chip Quantity
YF	: Color - Bluish White
Z	: Zener (Z: Zener , X: NO Zener)
O3	: Forward DC Current-30mA

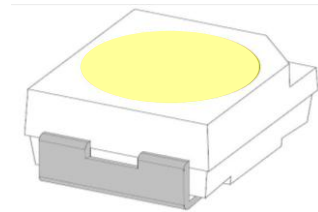
[EX]



Lumimicro 3228 – One Chip Specification

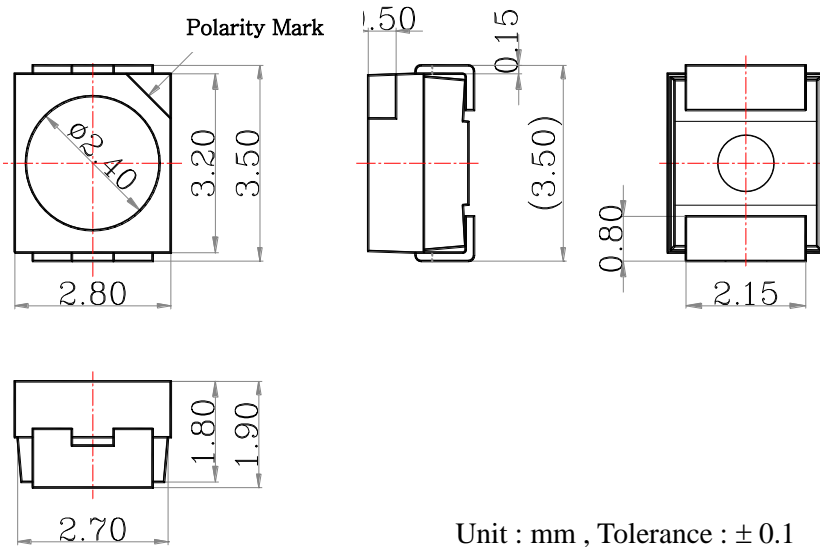
◆ Features

- [1] Built-in 1 chip Super Chip LED
- [2] Super-luminosity chip LED
- [3] Wide viewing angle
- [4] External dimensions: 3.5 x 2.8 x 1.9t mm
- [5] Lead frame package with individual 2 pin

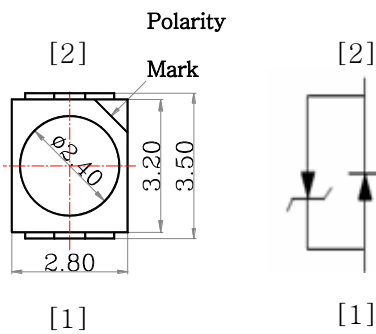


◆ Outline Dimensions

* Outline Dimensions



◆ LED Circuit Diagram



Lumimicro 3228 – One Chip Specification

◆ Absolute Maximum Rating

Parameter	Color	Symbol	Rating Value	Unit
Forward DC Current	Sky Blue	IF-1	30	m A
Forward Power Dissipation	Sky Blue	PF-1	100	m W
Forward Pulse Current ^{*1}	Sky Blue	IPF-1	60	m A
ESD Voltage	Sky Blue	ESD-1	MM 12,000	V
Operating Temperature	Sky Blue	TO	-30 to + 85	°C
Storage Temperature	Sky Blue	TST	-40 to + 100	°C
Soldering Temperature	Sky Blue	TSD	260C for 10 Seconds	°C

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

◆ Electro-optical Spec [Condition : 5mA – Ta = 25°C]

Parameter	Symbol	Condition	Property Value			Unit
			MIN.	TYP.	Max.	
Forward Voltage1	V1	IF=5mA/chip each	2.8	3.0	3.2	V
Forward Voltage2	V2	IF=10uA/chip each	1.8	-	-	V
Luminous Intensity	IV	IF=5mA/chip each	250	-	450	mcd

◆ Peak Luminous Intensity Characteristics[Condition : 5mA – Ta = 25°C]

Color	Rank	Item	Symbol	Luminous Intensity			Unit
				MIN.	TYP.	Max	
Bluish	L1	Luminous Intensity	IV	250		350	mcd
White	L2			350		450	mcd

Measurement Tolerance : + / - 10%

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◆ Forward Voltage Characteristics [Condition : 5mA – Ta = 25°C]

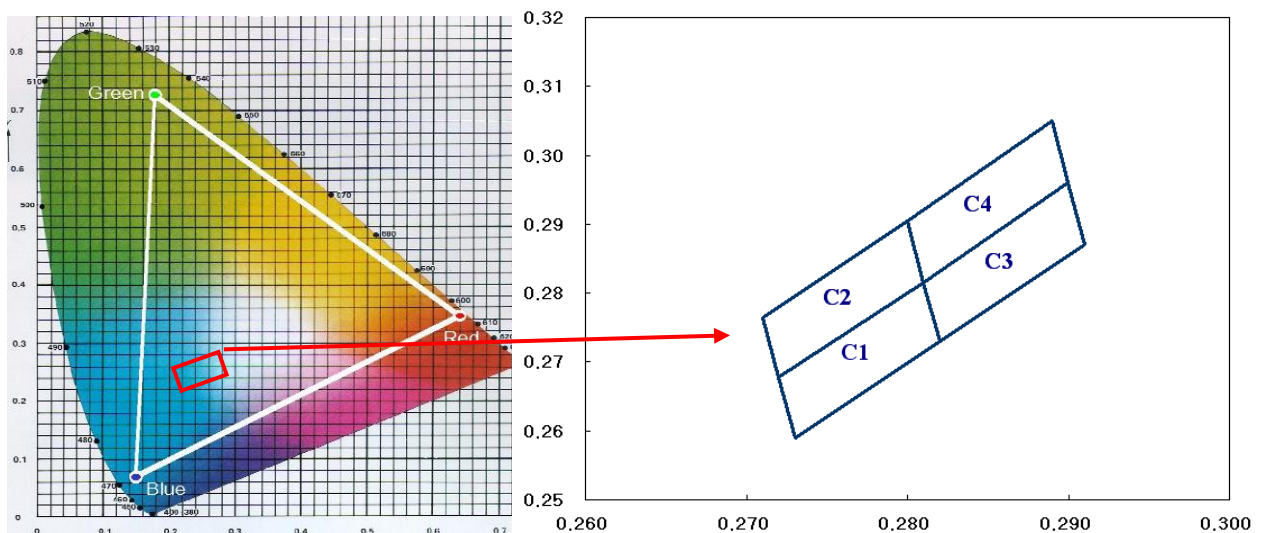
Color	Rank	Item	Symbol	Forward Voltage			Unit
				MIN.	TYP.	Max	
Bluish	V1	Forward Voltage	VF	2.8	2.9	3.0	V
White	V2			3.0	3.1	3.2	V

Measurement Tolerance : +/- 10%

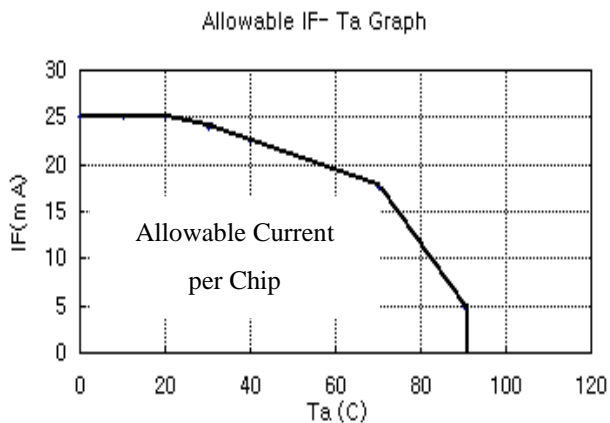
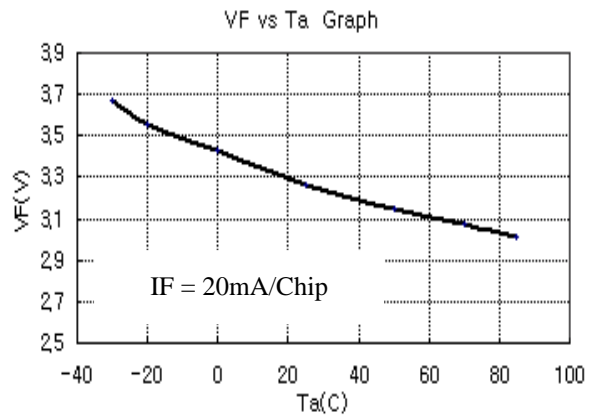
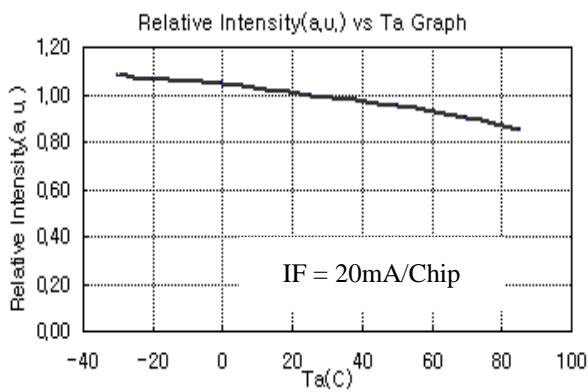
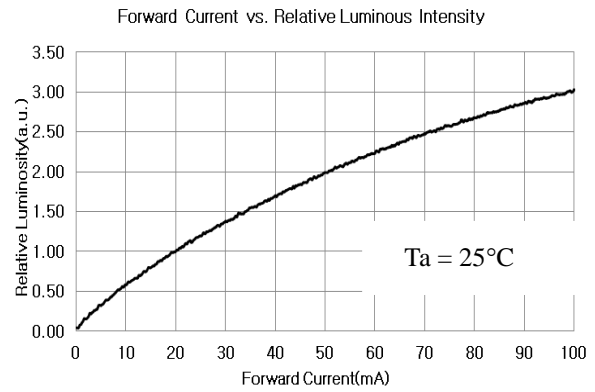
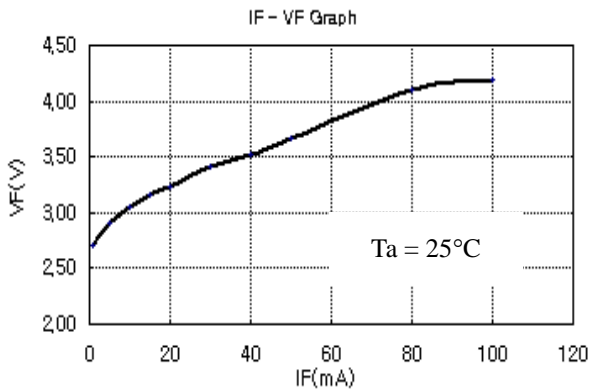
◆ Bluish White Color CIE Bin Spec [Condition : 5mA – Ta = 25°C]

C1		C2		C3		C4	
X	Y	X	Y	X	Y	X	Y
0.273	0.259	0.272	0.2678	0.282	0.273	0.281	0.2815
0.272	0.2678	0.271	0.2765	0.281	0.2815	0.280	0.2905
0.281	0.2815	0.280	0.2905	0.290	0.296	0.289	0.305
0.282	0.273	0.281	0.2815	0.291	0.287	0.290	0.296

LMTP2P32C1YFZ03 C.I.E Graph



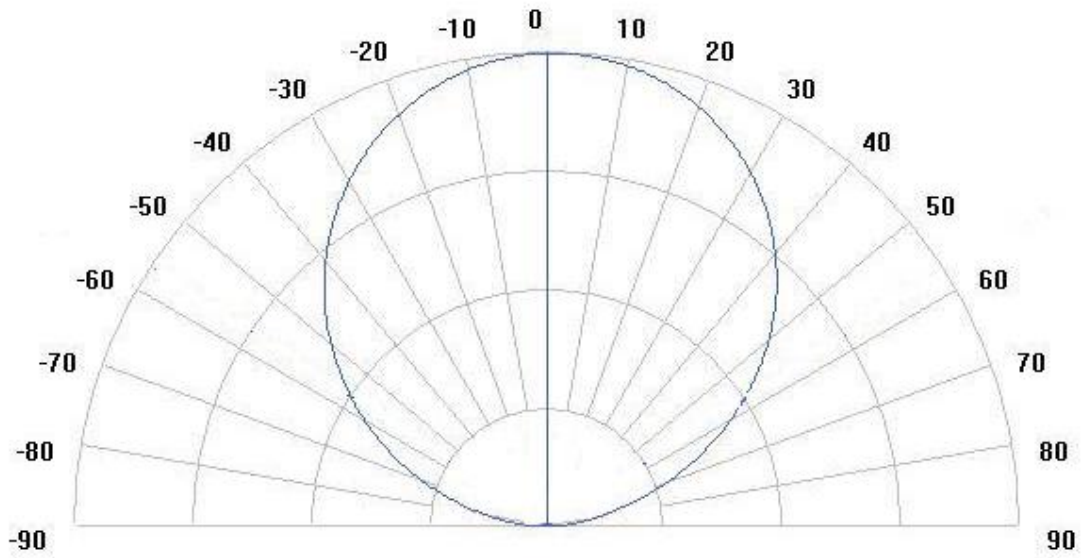
◆ Optical & Electrical Characteristics



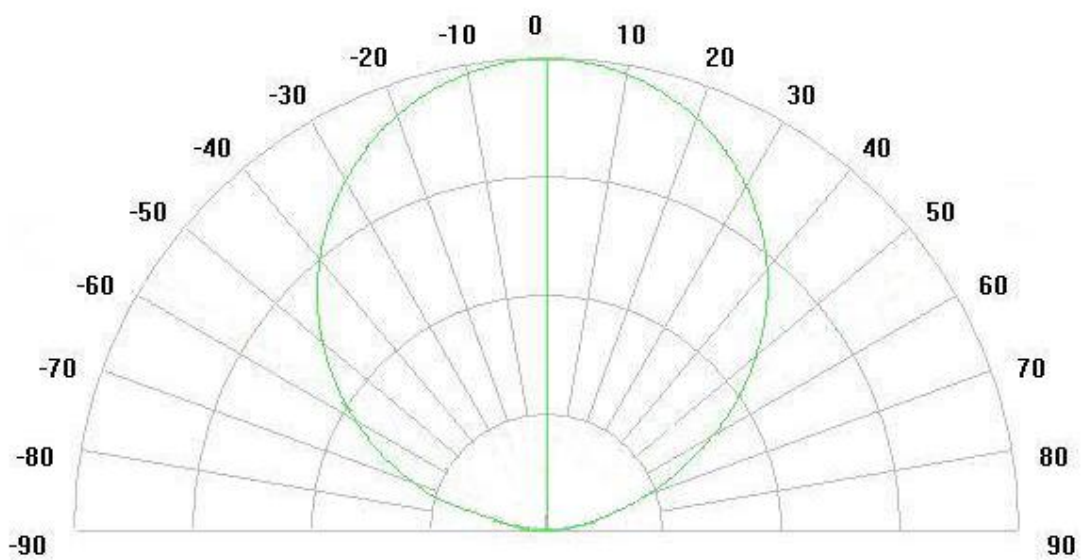
- VF : Forward Voltage(V), IF : Forward Current(m A), Ta : Ambient Temperature(°C)

◆ Directivity

X-Direction



Y-Direction



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◆ Reliability Results

	ITEMS	CONDITION	NOTE	Fail/Sample
1	RESISTANCE TO SOLDERING HEAT (REFLOW SOLDERING)	TSID=260 °C , 10sec (PRE TREATMENT 30 °C, 70%, 168hr)	2TIMES	0/50
2	SOLDERBILITY (REFLOW SOLDERING)	TSID=215 °C±5 °C, 3sec (LEAD SOLDER)	1TIME OVER 95%	0/50
3	THERMAL SHOCK	-40 °C ~ 100 °C, 15min AT EACH TEMP.	20CYCLES	0/50
4	MOISTURE RESISTANCE CYCLE	25 °C ~ 65 °C ~ -10 °C, 90%RH 24hr/ 1cycle	20CYCLES	0/50
5	HIGH TEMPERATURE STORAGE	Ta = 100 °C	1,000HRS	0/50
6	TEMPERATURE HUMIDITY STORAGE	Ta = 60 °C , RH = 90%	1,000HRS	0/50
7	LOW TEMPERATURE STORAGE	Ta = -40 °C	1,000HRS	0/50
8	LIFE TIME 1	20mA @ ROOM TEMP.	1,000HRS	0/50
9	LIFE TIME 2	15mA @ 60 °C, 90%RH	1,000HRS	0/50
10	ON/OFF TEST	IF = 20mA , Pulse Width 2sec, Duty Ratio 1/2	100,000CYCLES	0/50

◆ Failure Criteria

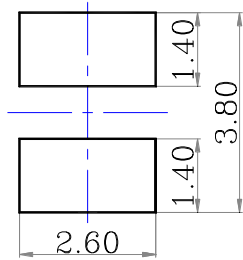
ITEM	SYMBOL	Failure Criteria	
		MIN	MAX
Forward Voltage	VF	-	U.S.L*)×1.2
C.I.E. x, y	x, y	L.S.L*)×0.8	U.S.L*)×1.2
Luminous Intensity	IV	L.S.L*)×0.7	-

U.S.L*) ; Upper Standard Level

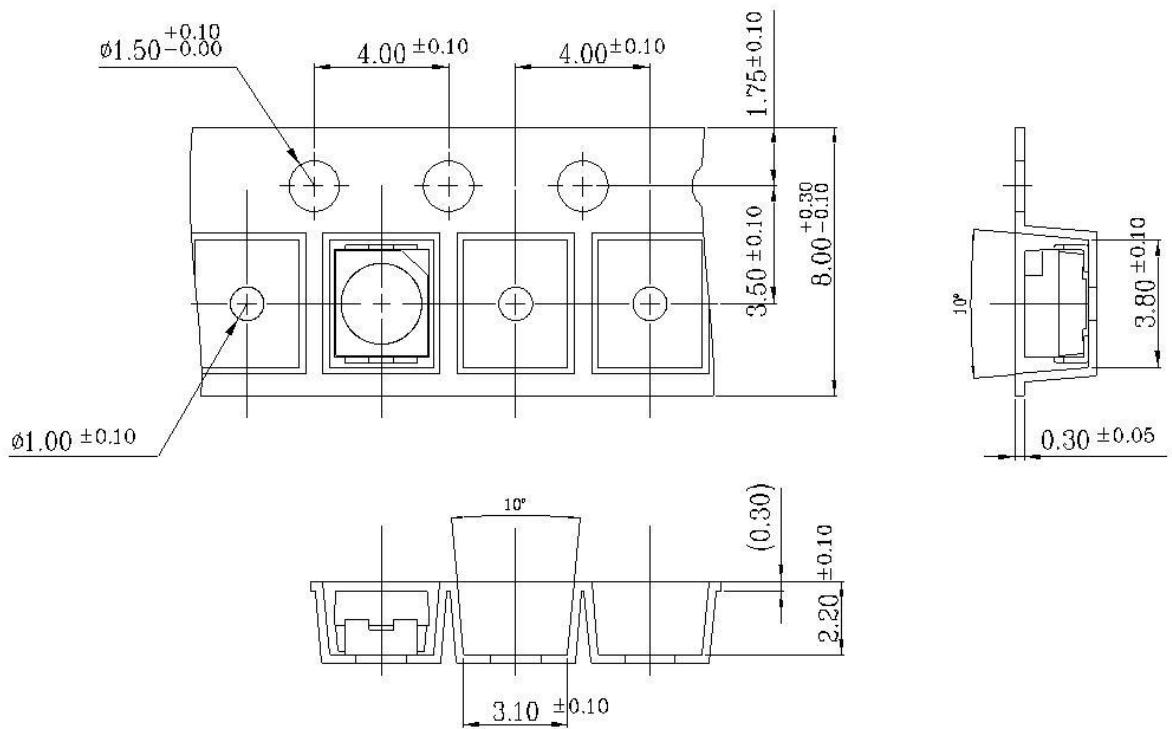
L.S.L*) ; Lower Standard Level

◆ Recommend Pad Pattern

* Recommended Soldering Pad Size

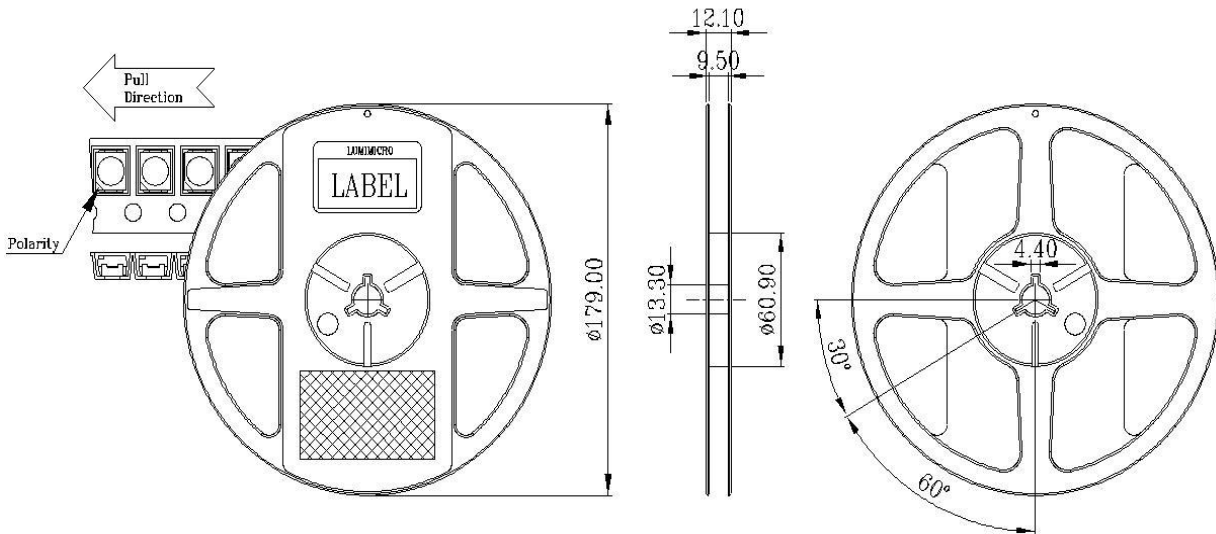


◆ Taping pocket Dimension



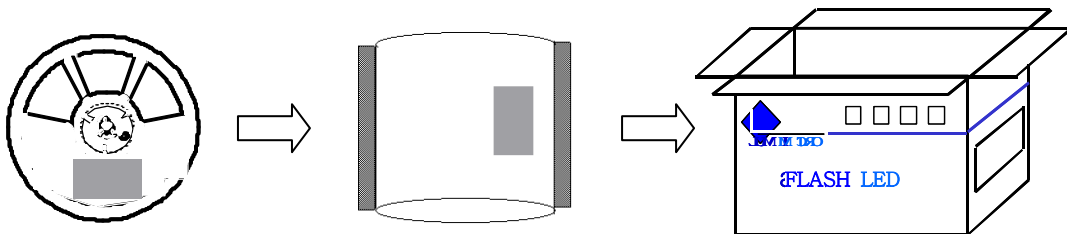
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◆ Reel Dimensions



One Reel	Unit	Tolerance
Max 1,500EA	mm	0.1

◆ Packing Spec



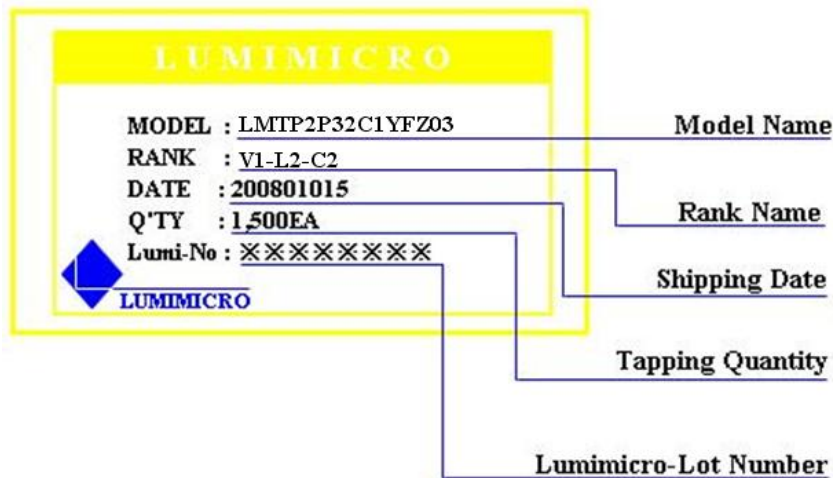
- Aluminum Bag

	Reel in a Bag	Silica in a Bag	Goods QNT in a Bag
Aluminum Bag	1 Reel	1 Silica, 1 Indicator	Max : 1,500ea

- Box Spec.

	Dimensions(Width/Thickness) Unit : mm	Reels in Box	Goods in QNT in Box
Box	275/ 285/ 200	10	Max : 15,000ea

◆ 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.

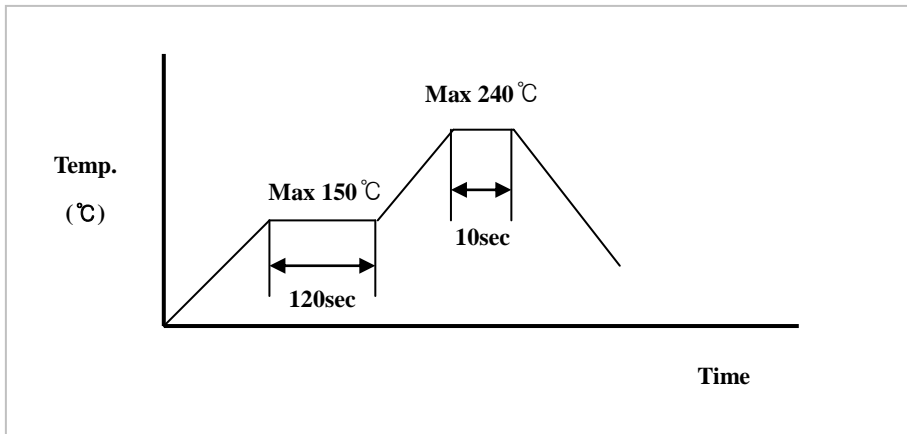
LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3 months or more after being shipped from LUMIMICRO, sealed container with a nitrogen atmosphere should be used for storage.

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. This 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

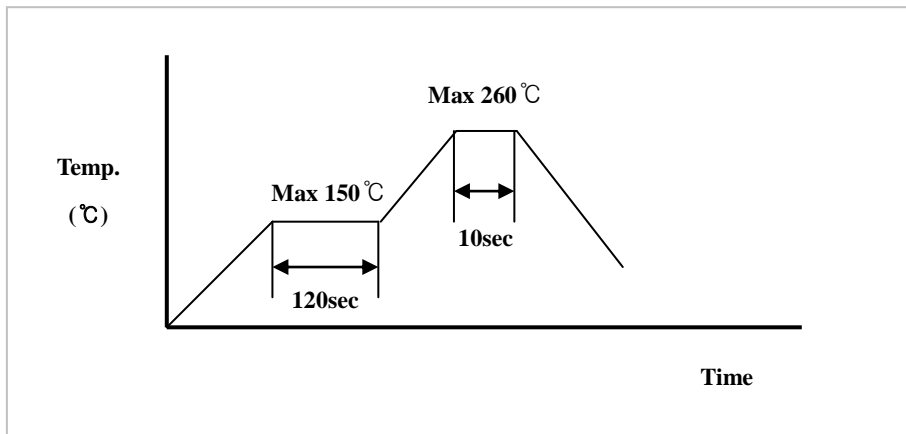
1) Pb Reflow Conditions

- ; 최대 150℃ 온도에서 120초 예열
- ; 최대 240℃ 온도에서 10초 가열



2) Pb-Free Reflow Conditions

- ; 최대 150℃ 온도에서 120초 예열
- ; 최대 260℃ 온도에서 10초 가열



3) 수납조건

- ;최대 340도 이하의 온도에서 인두기로 5초 이내 수납

◆ Test Certification



Test Report No. F690501/LF-CTSAYA07-23702

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Sample No. : AYA07-23702.001
 Sample Description : LED
 Item No./Part No. : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3050A(1996), US EPA 7196A(1992), UV	1	N.D.
Antimony (Sb)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	10	N.D.
Phosphorous (P)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	10	434

Flama Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected (<MDL)
 (2) mg/kg = ppm
 (3) MDL = Method Detection Limit
 (4) - = No regulation
 (5) "" = Qualitative analysis (No Unit)
 (6) Negative = Undetectable / Positive = Detectable