Technical Datasheet

DLM/100C/16W/XXX/230V/F201

- Ver0.5 -

DLM/100C/16W/XXX/230V/F201

Flicker Free
Low SVM

- Compatible with most TRIAC dimmers
- High Power Factor (>0.95)
- Low THD(< 25%)
- 50mA Inrush Current (10W)
- 77mA Inrush Current (16W)
- No Photo-biological Hazard (RG1)
- Uniform Full Dimming
- Low Percent Flicker
- Low SVM
- Low Pst

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LUMENS

1. Product Description

*** Description**

- The DLM(Downlight) series module is designed for the high power operation to get the high flux output applications.
- It incorporates the state of the art SMD LEDs with high reliability and semiconductor AC direct drive ICs.
- It is ideal for the indoor or down light applications.

*** Features**

- High performance, High brightness
- No emission of harmful short wavelength light(No UV radiation)
- High power conversion efficiency(>0.85)
- High power factor (>0.95)
- Low THD(≤ 25%)
- Low EMI
- RoHS compliant
- No photo-biological hazard –Group 1 (Low risk) (RG1)
- Starting current 44 [mA] @ 60ms (10W)
- Starting current 63 [mA] @ 60ms (16W)
- Low Percent Flicker
- Low SVM
- Low Pst

*** Applications**

- Down Light (Indoor Lighting)

2. Absolute Maximum Ratings

Parameters	Symbol	Min Value	Max Value	Unit
Maximum power dissipation	Pd	-	17.6	W
Maximum operation voltage	Vop	-	250	V
Operation temperature	Top	-40	+85	℃
Storage temperature	Tst	-40	+100	℃

➢ Operation temperature is not related to the lifetime.

3. Product Name Method

(ex. Eggdrop)

Product Family	PCB Size/shape		Power	CRI+CCT		Input Voltage	Management Code				Version
EDC	57	C	XXW	X	XX	XXXV	F	2	0	1	V0_1
'EDC'=EggDrop	Ø33	'C'=Circular	10W	'7'=70↑	'27'=2700K	'120V'=120Vac					
'DLM'=DownLight	Ø38	'R'=Rectangular	15W	'8'=80↑	'30'=3000K	'220V'=220Vac					
	Ø47	'D'=Donut	ETC.	'9'=90↑	'35'=3500K	'230V'=230Vac					
	Ø57	ETC.			'40'=4000K	ETC.					
	Ø80				'50'=5000K						
'LNM'=Linear Bar		280X20			'57'=5700K						
		560X20									

1) Additional explanation

Product Section		Product Description PCB Size>Shape>Watt>CRI+CCT>InputVoltage>Management Code
EggDrop	EDC	EDC_57C_XXW_XXX_XXXV_F201_V0_1
DownLight	DLM	DLM_80D_XXW_XXX_XXXV_A101_V0_1
Linear Bar	LNM	LNM_280X20_XXW_XXX_XXXV_C101_V0_1

4. Electro-optical Characteristics (Tc=25℃)

Power Dissipation		10W						16W						Unit	Condition
Parameters	Symbol	Module			Module + Cover			Module			Module + Cover				
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
Luminous Flux	Φv	980	1070	-	930	1010	-	1520	1664	-	1440	1568		lm	2700K,CRI80
		1040	1130	-	980	1070	-	1616	1760	-	1520	1664			3000K,CRI80
		1060	1150	-	1000	1090	-	1648	1792	-	1552	1696			3500K,CRI80
		1080	1170	-	1020	1110	-	1680	1824	-	1584	1728			4000K,CRI80
		1090	1190	-	1030	1120	-	1712	1856	-	1616	1744			5000K,CRI80
		1110	1210	-	1050	1140	-	1744	1888	-	1648	1776			5700K,CRI80
		890	980	-	840	920	-	1376	1520	-	1296	1424			2700K,CRI90
		950	1040	-	890	980	-	1472	1616	-	1376	1520			3000K,CRI90
		970	1060	-	910	1000	-	1504	1648	-	1408	1552			3500K,CRI90
		990	1080	-	930	1020	-	1536	1680	-	1440	1584			4000K,CRI90
		1000	1100	-	940	1030	-	1568	1712	-	1472	1600			5000K,CRI90
Efficiency	lm/W	98	107	-	93	101	-	95	104	-	90	98	-	lm/W	2700K,CRI80
		104	113	-	98	107	-	101	110	-	95	104	-		3000K,CRI80
		106	115	-	100	109	-	103	112	-	97	106	-		3500K,CRI80
		108	117	-	102	111	-	105	114	-	99	108	-		4000K,CRI80
		109	119	-	103	112	-	107	116	-	101	109	-		5000K,CRI80
		111	121	-	105	114	-	109	118	-	103	111	-		5700K,CRI80
		89	98	-	84	92	-	86	95	-	81	89	-		2700K,CRI90
		95	104	-	89	98	-	92	101	-	86	95	-		3000K,CRI90
		97	106	-	91	100	-	94	103	-	88	97	-		3500K,CRI90
		99	108	-	93	102	-	96	105	-	90	99	-		4000K,CRI90
		100	110	-	94	103	-	98	107	-	92	100	-		5000K,CRI90

(1) At 220~240Vac, T_c = 25ºC

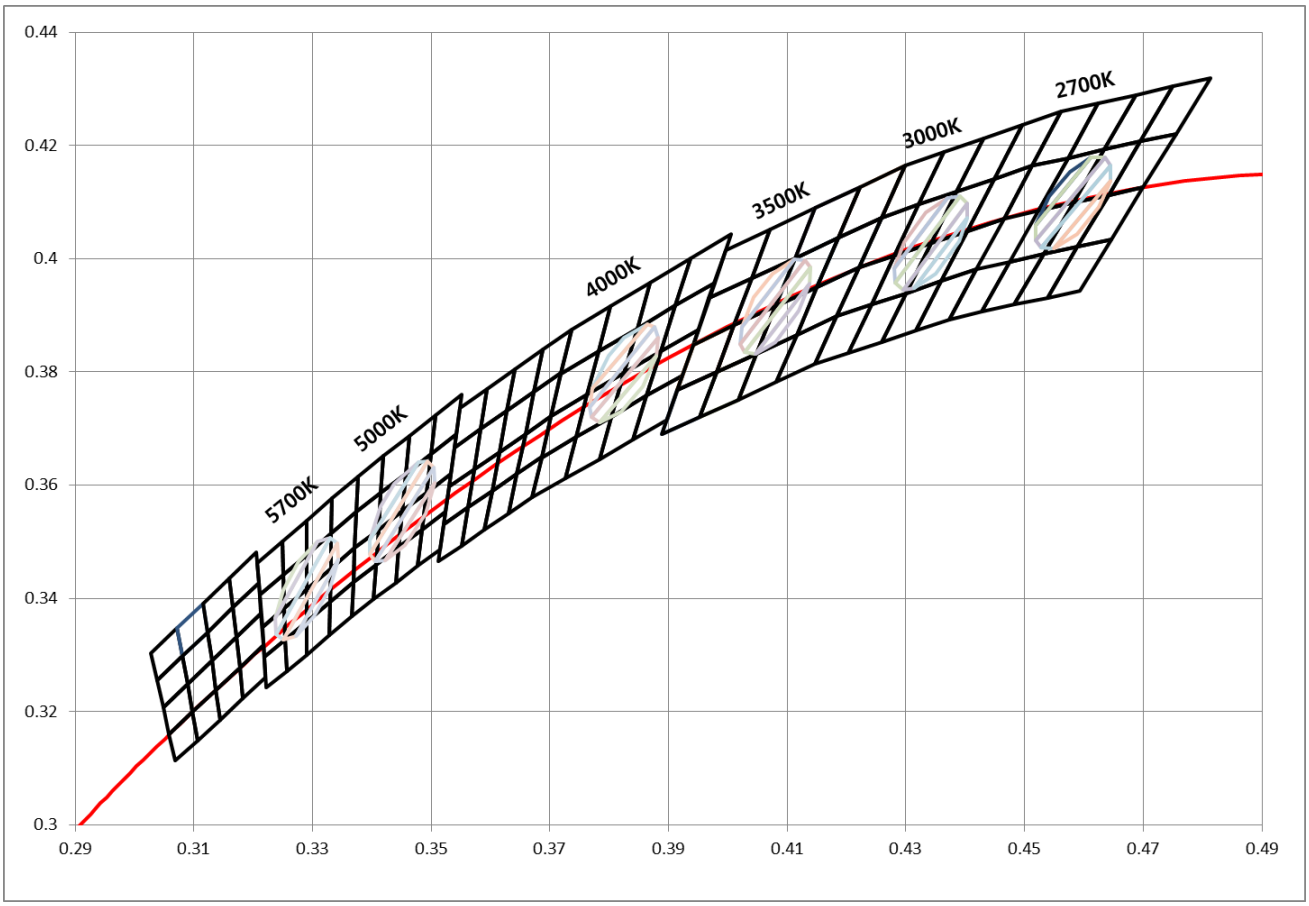
(2) Φv is the total luminous flux output measured with an integrated sphere.

- Measurement accuracy : **CRI(**±3), **Φv**(±3%), **Vf**(±3.0V)

Viewing Angle FWHM		2θ1/2	110	120	130	deg	Vop=220~230V
Operation Voltage		Vop	220 ~ 230 V			Vac	
10W	Power Dissipation	Pd	9	10	11	W	Vop=220~230V
	Rated Current	Ira	43	46	-	mA	Vop=220~230V
16W	Power Dissipation	Pd	14.4	16	17.6	W	Vop=220~230V
	Rated Current	Ira	62	69	-	mA	Vop=220~230V
Operation Frequency		Fop	50 / 60			Hz	Vop=220~230V
Power Factor		PF	Over 0.95			V	Vop=220~230V
Current THD		ATHD	Less than 25%				Vop=220~230V
Percent Flicker		%	Less than 10%				Vop=220~230V
SVM			Less than 0.4				Vop=220~230V
Pst			Less than 1.0				Vop=220~230V

5. CIE Chromaticity Diagram

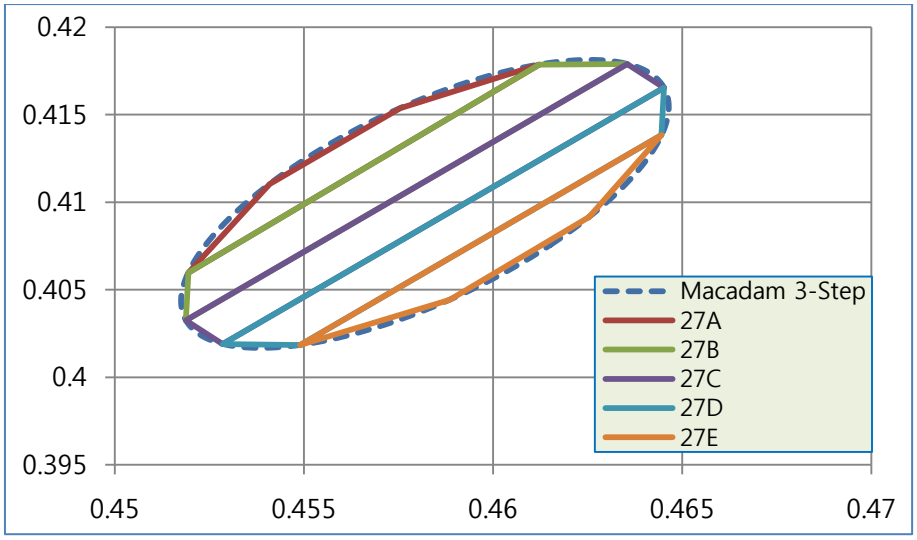
※ Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.



(1) Chromaticity coordinate groups are measured with an accuracy of ±0.01

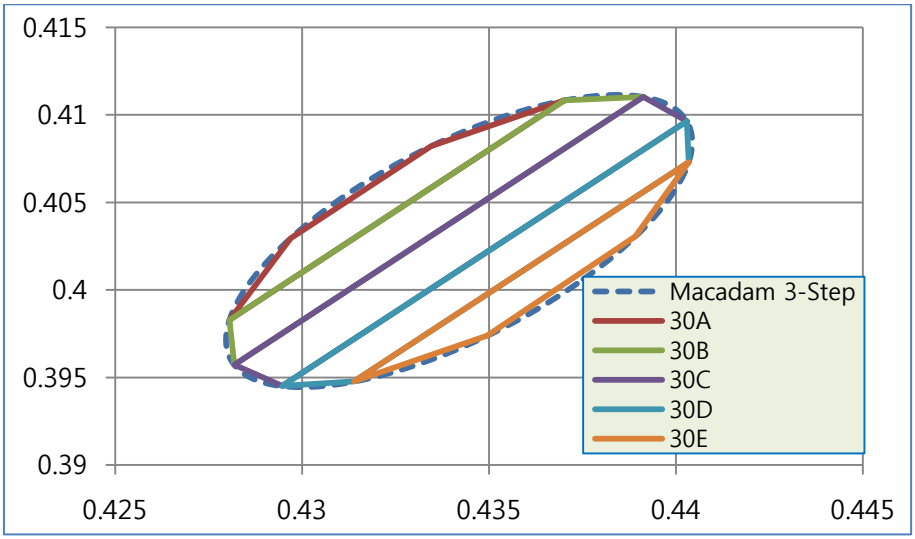
6. Chromaticity Coordinates

6-1. 2700K



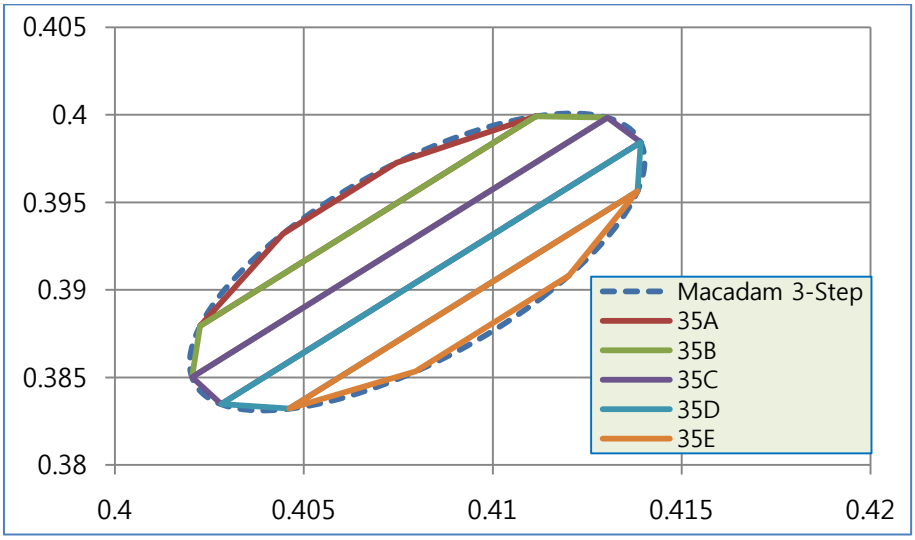
27A		27B		27C		27D		27E	
X	Y	X	Y	X	Y	X	Y	X	Y
0.4612	0.4179	0.4636	0.4179	0.4645	0.4165	0.4645	0.4138	0.4625	0.4092
0.4576	0.4154	0.4612	0.4179	0.4636	0.4179	0.4645	0.4165	0.4645	0.4138
0.4541	0.4110	0.4519	0.4060	0.4519	0.4033	0.4528	0.4019	0.4549	0.4018
0.4519	0.4060	0.4519	0.4033	0.4528	0.4019	0.4549	0.4018	0.4588	0.4044
0.4612	0.4179	0.4636	0.4179	0.4645	0.4165	0.4645	0.4138	0.4625	0.4092

6-2. 3000K



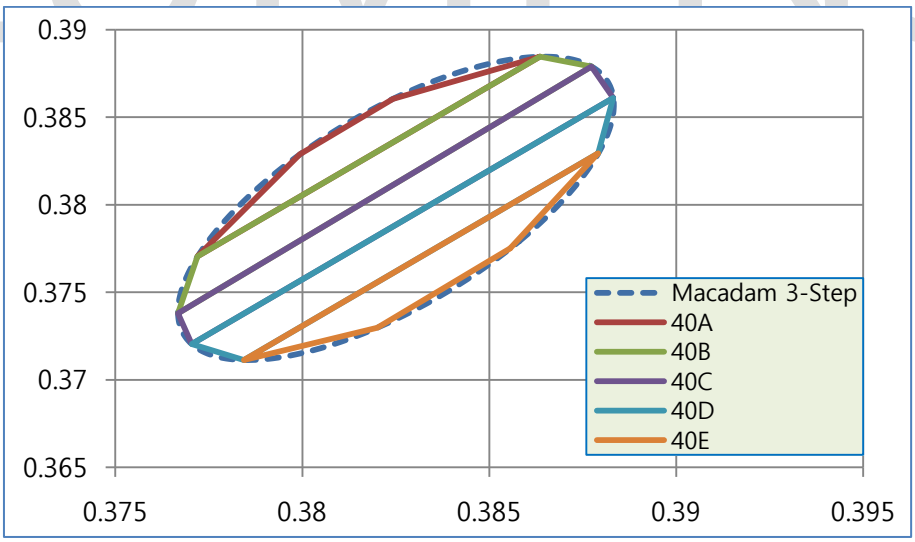
30A		30B		30C		30D		30E	
X	Y	X	Y	X	Y	X	Y	X	Y
0.4370	0.4108	0.4391	0.4110	0.4403	0.4097	0.4403	0.4073	0.4389	0.4031
0.4334	0.4082	0.4370	0.4108	0.4391	0.4110	0.4403	0.4097	0.4403	0.4073
0.4297	0.4030	0.4281	0.3983	0.4282	0.3957	0.4295	0.3945	0.4314	0.3948
0.4281	0.3983	0.4282	0.3957	0.4295	0.3945	0.4314	0.3948	0.4350	0.3974
0.4370	0.4108	0.4391	0.4110	0.4403	0.4097	0.4403	0.4073	0.4389	0.4031

6-3. 3500K



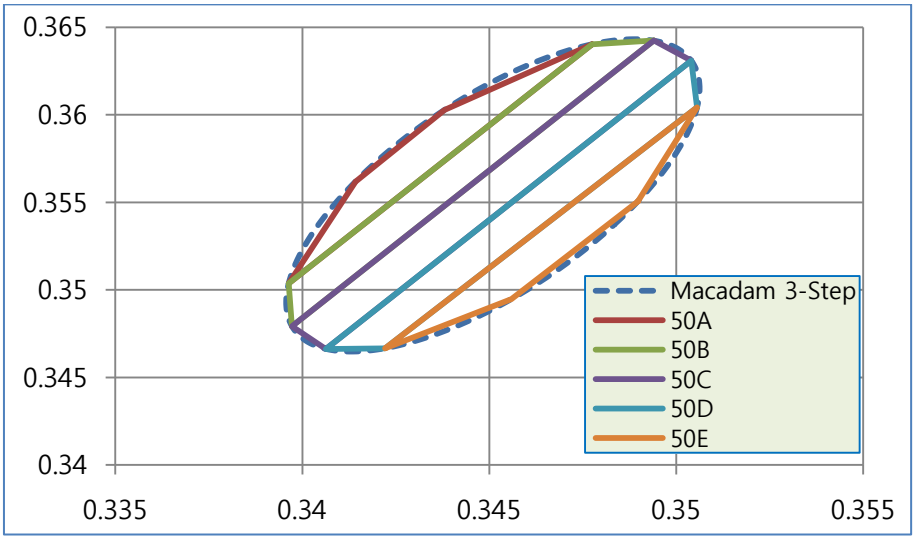
35A		35B		35C		35D		35E	
X	Y	X	Y	X	Y	X	Y	X	Y
0.4111	0.3999	0.4130	0.3998	0.4139	0.3984	0.4138	0.3956	0.4120	0.3908
0.4075	0.3973	0.4111	0.3999	0.4130	0.3998	0.4139	0.3984	0.4138	0.3956
0.4044	0.3932	0.4023	0.3879	0.4020	0.3850	0.4028	0.3835	0.4046	0.3832
0.4023	0.3879	0.4020	0.3850	0.4028	0.3835	0.4046	0.3832	0.4080	0.3853
0.4111	0.3999	0.4130	0.3998	0.4139	0.3984	0.4138	0.3956	0.4120	0.3908

6-4. 4000K



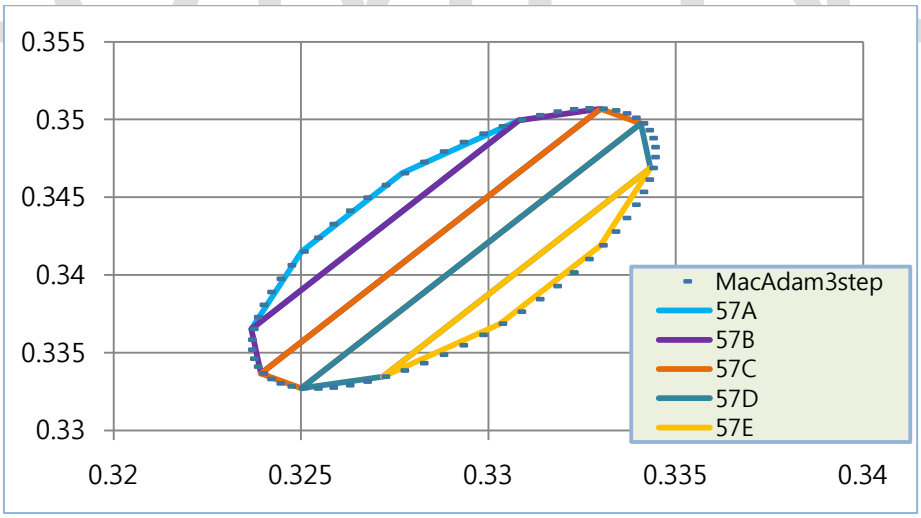
40A		40B		40C		40D		40E	
X	Y	X	Y	X	Y	X	Y	X	Y
0.3864	0.3885	0.3877	0.3879	0.3883	0.3861	0.3879	0.3829	0.3856	0.3775
0.3824	0.3861	0.3864	0.3885	0.3877	0.3879	0.3883	0.3861	0.3879	0.3829
0.3799	0.3829	0.3772	0.3771	0.3767	0.3738	0.3770	0.3720	0.3784	0.3711
0.3772	0.3771	0.3767	0.3738	0.3770	0.3720	0.3784	0.3711	0.3820	0.3730
0.3864	0.3885	0.3877	0.3879	0.3883	0.3861	0.3879	0.3829	0.3856	0.3775

6-5. 5000K



50A		50B		50C		50D		50E	
X	Y	X	Y	X	Y	X	Y	X	Y
0.3478	0.3640	0.3494	0.3642	0.3504	0.3631	0.3506	0.3604	0.3490	0.3550
0.3438	0.3603	0.3478	0.3640	0.3494	0.3642	0.3504	0.3631	0.3506	0.3604
0.3414	0.3562	0.3396	0.3504	0.3397	0.3479	0.3406	0.3466	0.3422	0.3467
0.3396	0.3504	0.3397	0.3479	0.3406	0.3466	0.3422	0.3467	0.3456	0.3495
0.3478	0.3640	0.3494	0.3642	0.3504	0.3631	0.3506	0.3604	0.3490	0.3550

6-6. 5700K

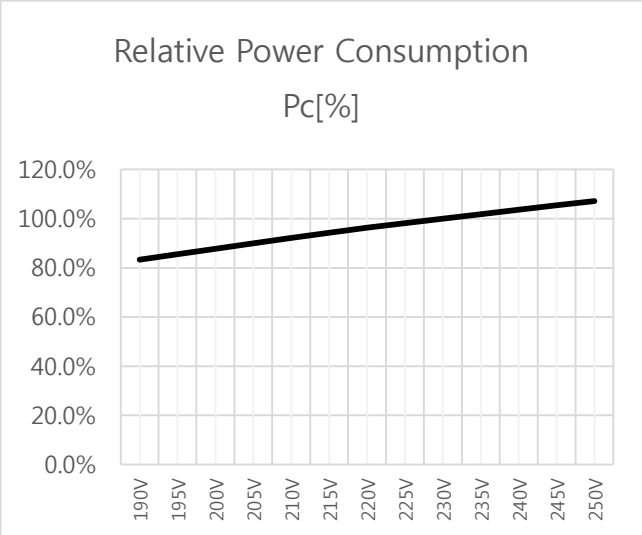


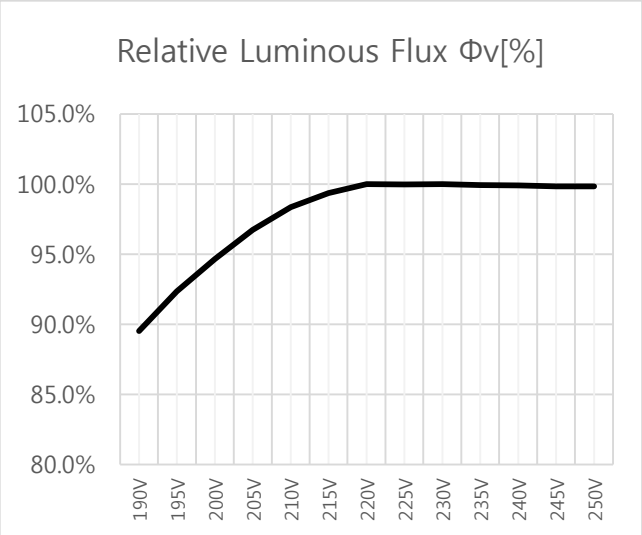
57A		57B		57C		57D		57E	
X	Y	X	Y	X	Y	X	Y	X	Y
0.3311	0.3501	0.3330	0.3507	0.3342	0.3495	0.3344	0.3472	0.3333	0.3428
0.3280	0.3469	0.3311	0.3501	0.3330	0.3507	0.3342	0.3495	0.3344	0.3472
0.3248	0.3411	0.3236	0.3362	0.3239	0.3337	0.3252	0.3327	0.3269	0.3333
0.3236	0.3362	0.3239	0.3337	0.3252	0.3327	0.3269	0.3333	0.3300	0.3365
0.3311	0.3501	0.3330	0.3507	0.3342	0.3495	0.3344	0.3472	0.3333	0.3428

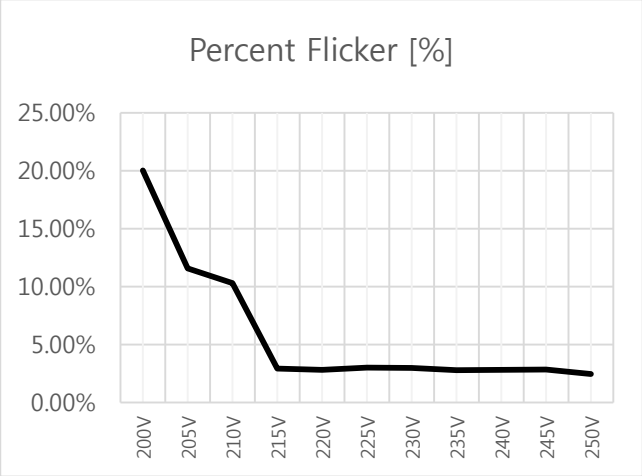
7. Characteristic Graphs

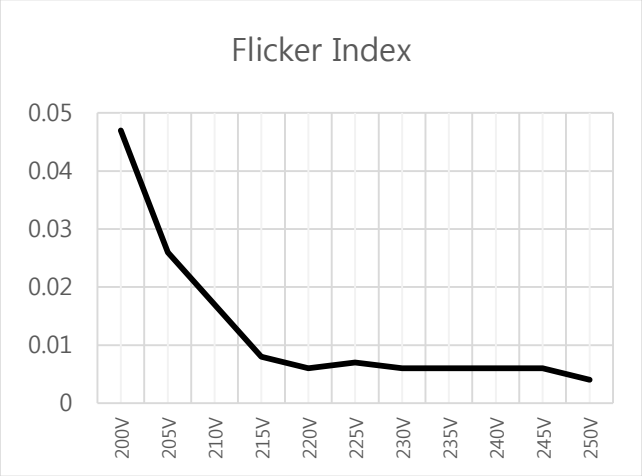
7-1 Voltage Characteristics(Ta=25℃)

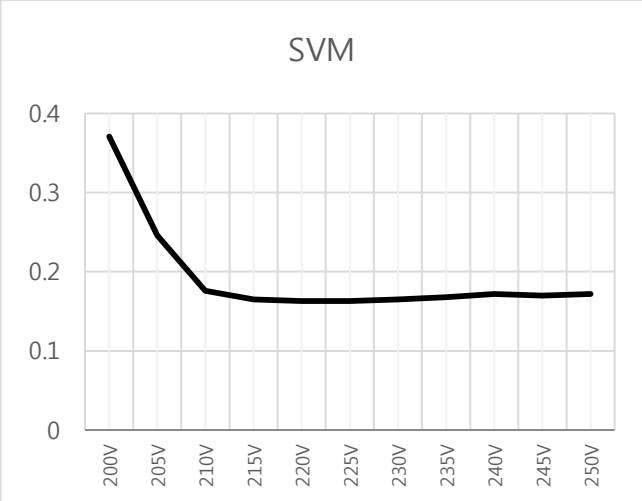
※ Module temperature and tolorence of capacitor may vary flickering properties.

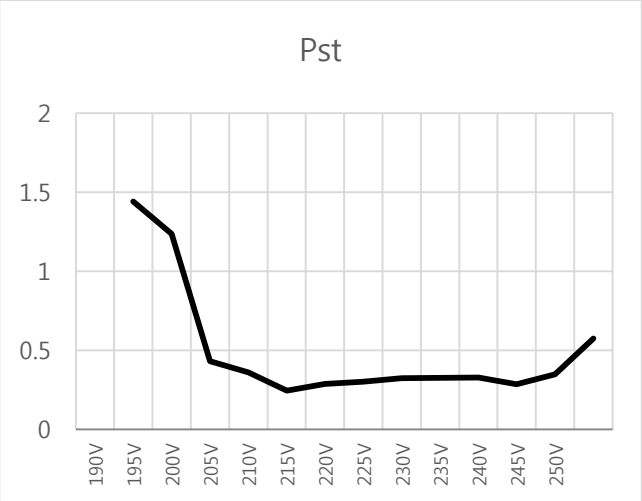




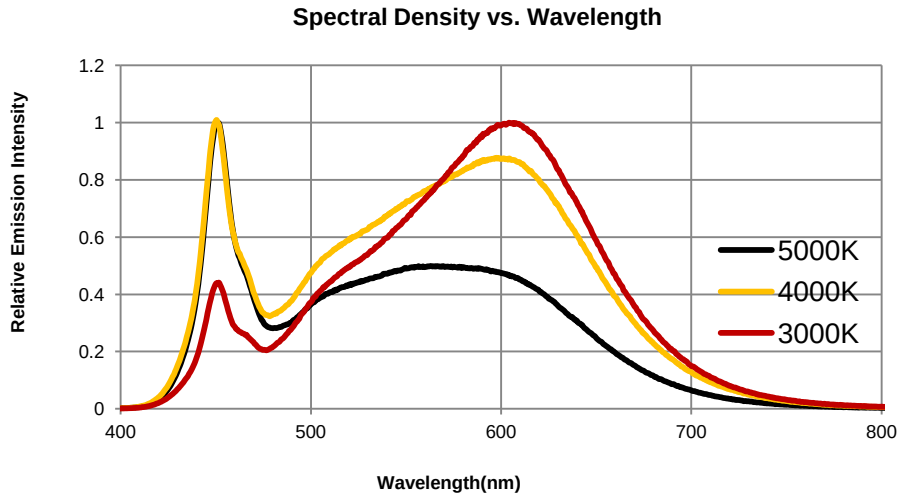




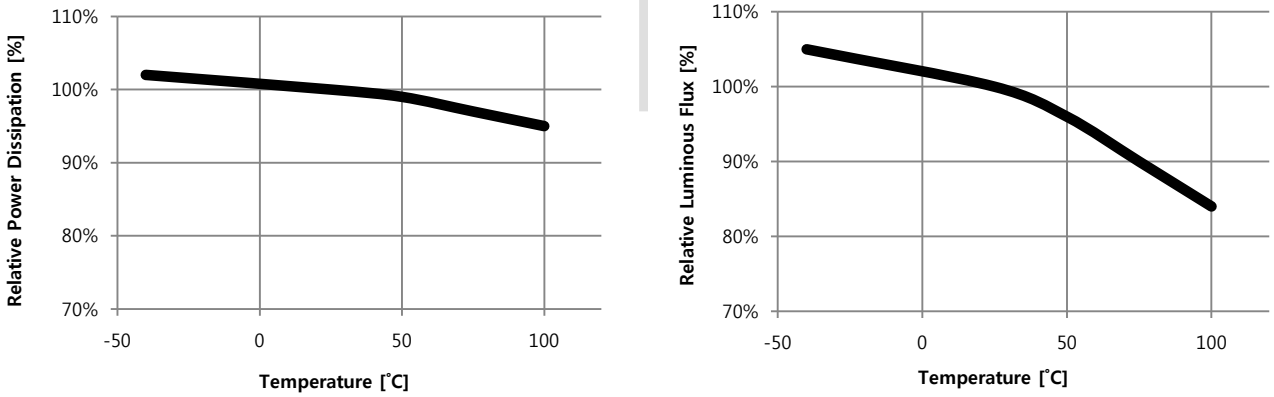




7-2 Spectrum Characteristics(Ta=25℃)

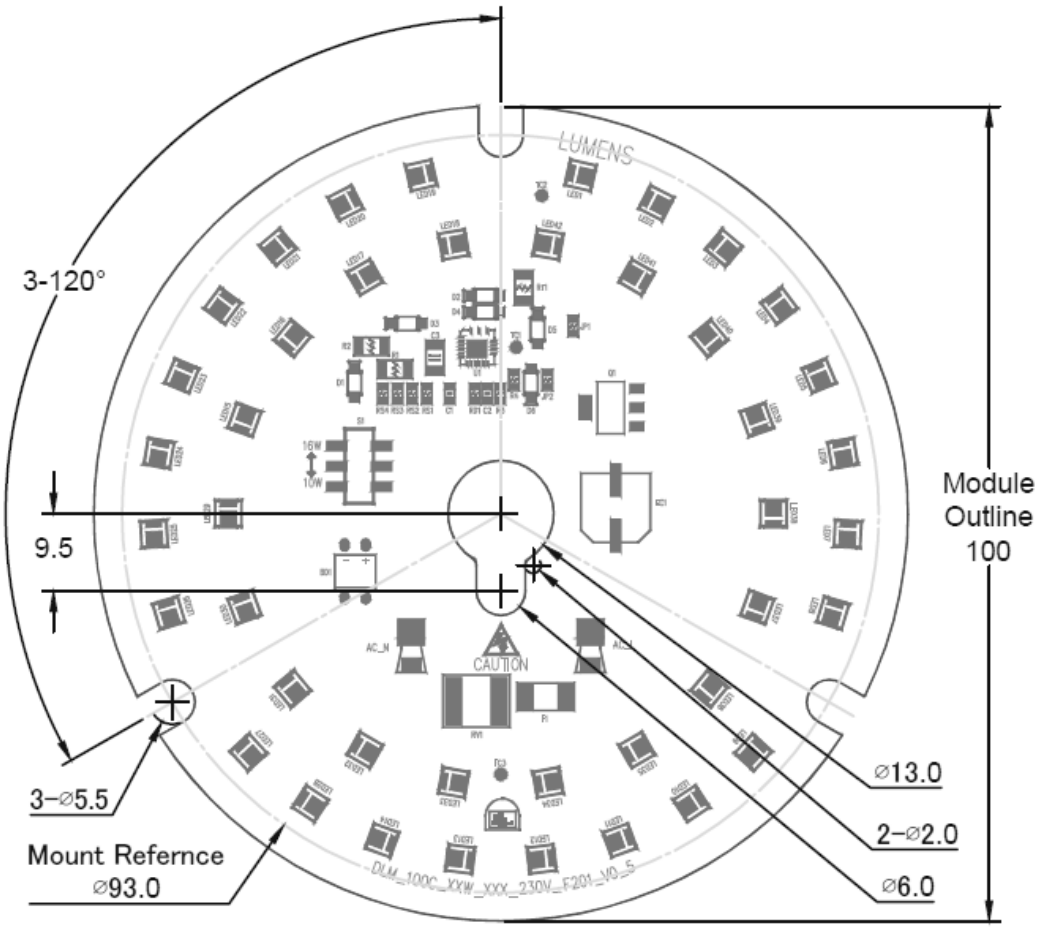


7-3 Temperature Characteristics



8. Outline Dimensions

8-1 PCB Dimensions



Unit : mm

1) Outline Diameter : 100Φ , Height : 7.6mm (Include PCB)
2) Tolerance - All measurements are ± 0.2 mm unless otherwise indicated.

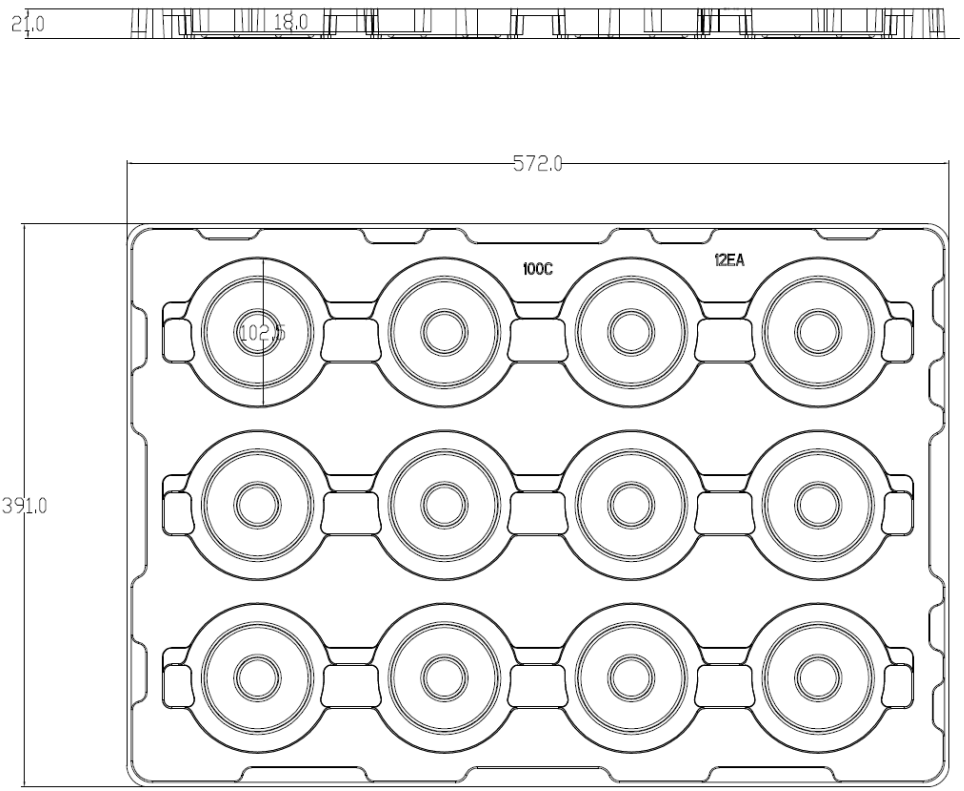
9. Package And Marking Of Product

A. Tray Information

Size : 572mm x 391mm × 21.1mm
Color : Clear
Surface Resistivity : 10^6 ~ 10^9 Ω/Sq.

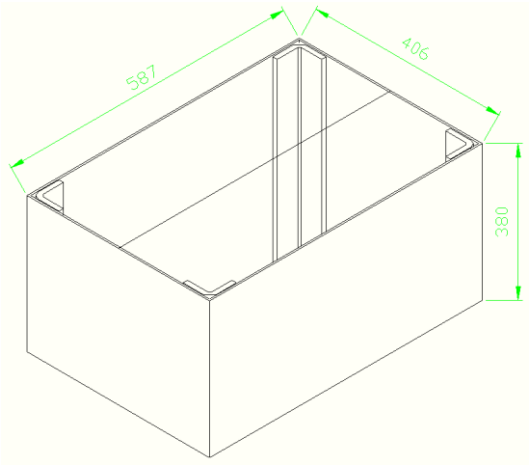
B. Package

12 pcs are packed in one tray.

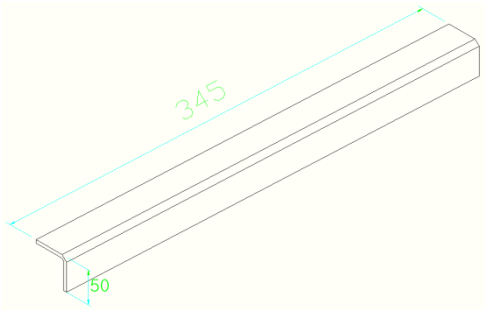


C. Box Packing Specifications

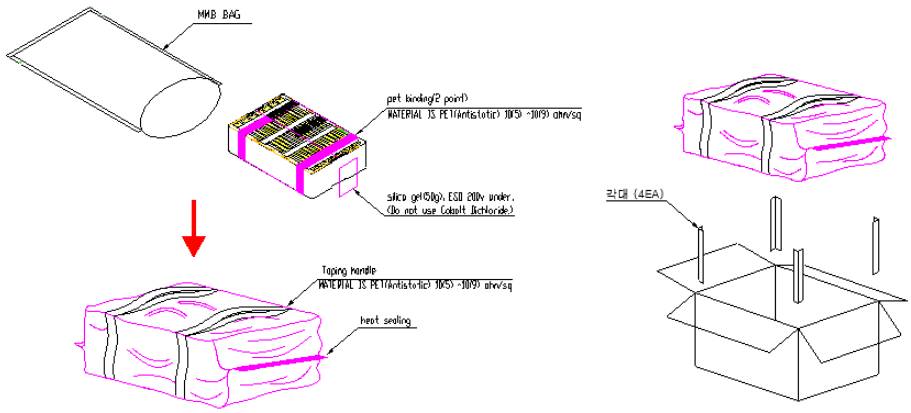
Tray products (numbers of products are 12 pcs) packed.
There is no product on the top tray
21 Tray (total maximum number of products are 240pcs) packed in a box.



587 X 406 X 380 mm

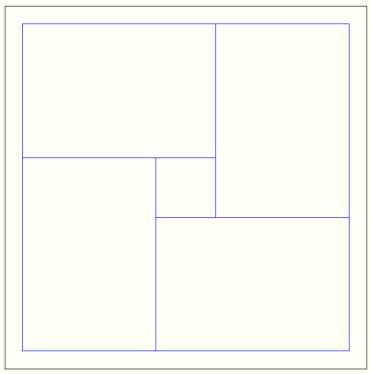


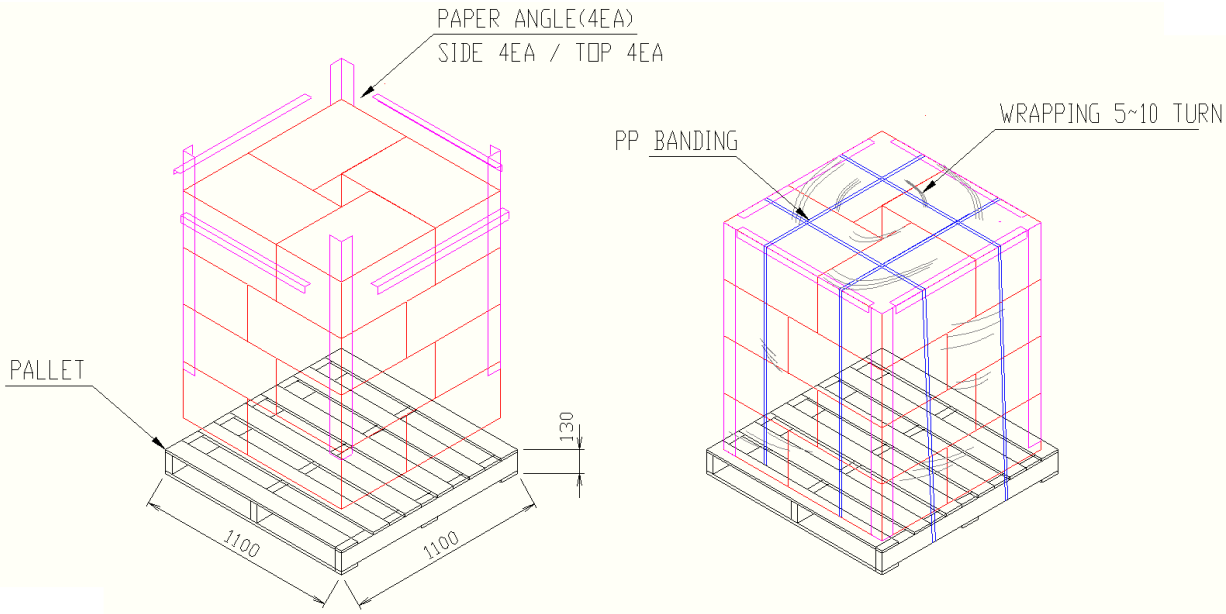
50 X 50 X 345 mm



D. Pallet Loading

Box is stacked by 4 layers on the Pallet.
Each layer has 4 boxes

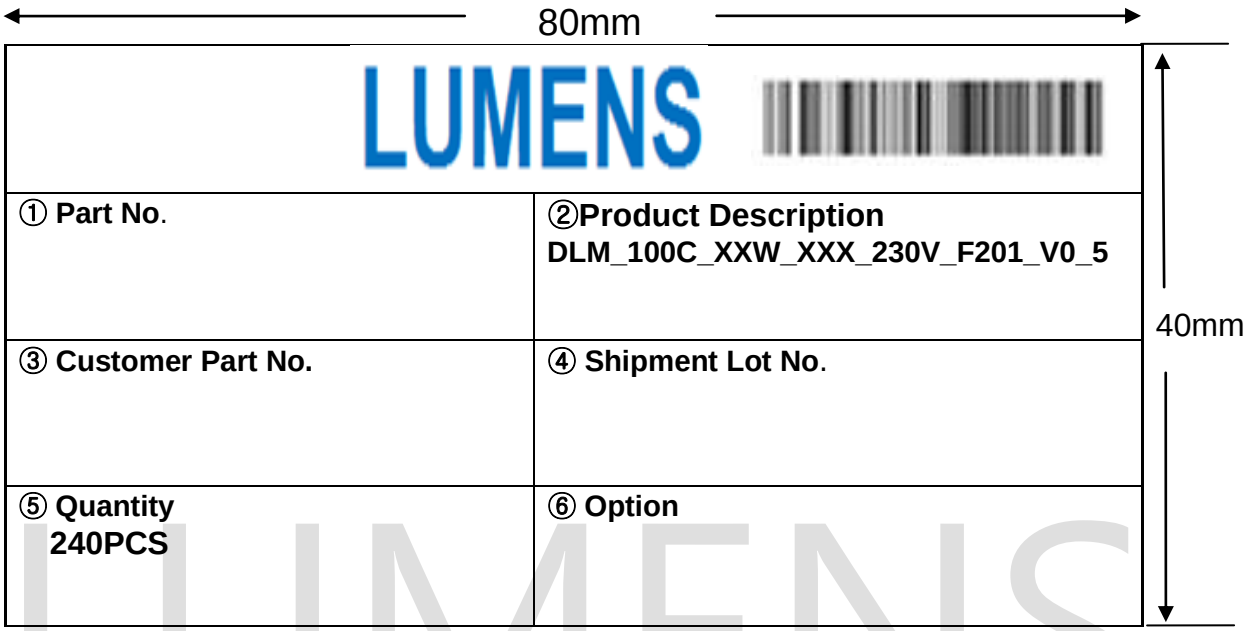




Size : 993mm(W) X 993mm(L) X 1,520mm(H)

E. BOX Label

Specifying Customer, Model, Customer Part No, Lot No, Quantity
On both trays and boxes, the same label is attached.



<Example>

1. PART No
2. Model Name.
3. Customer Part NO
4. Shipment Lot No.
5. Quantity.

F. Shipment Lot No. Indication

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Marking	C	G	X	-	1	0	0	2	0	2	-	A	0	0	1
Meaning	COB	SMT Site	Default	Default	Packing Year/Month/Day						Default	Default	Packing serial No.		
Ciphers	1	1			6								3		
How to Use	C : COB	G : K2			1st~2nd : Last two digits of Year 3rd~4th : Month(01~12) 5th~6th : Day(01~31)								001		

10. Cautions

- The LED Module itself and all its components may not be mechanically stressed.
- Make sure proper discharge prior to starting work.
- DO NOT touch any of the circuit board, components or terminals with body or metal while circuit is active.
- Installation of LED Module needs to be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installation.
- DO NOT add or change wires while circuit is active.
- DO NOT make any modification on module.
- DO NOT use adhesives to attach the LED that outgas organic vapor.
- DO NOT use together with the materials containing Sulfur.
- The LED Module needs to be mounted on a heat sink providing adequate thermal dissipation.
- DO NOT exceed the values given in this specification
- Be cautious when soldering to board so as not to create a short between different trace patterns.
- Keep cautions not to apply higher voltage above the maximum rating. Otherwise damage may occur.
- Pay attention not to exceed the maximum operation temperature of 85℃ at the Tc1 Point when the modules are used in an enclosed environment.
  (Tc1 Temperature Condition ≤ 85℃)
  (Tc1 + 30℃ ≒ Maximum LES temperature(T_j)) : Depends on specification of heat sink
- DO NOT assemble in conditions of high moisture and/or oxidizing gas such as CI, H2S, NH3, SO2, NOx, etc.
- The module should also not be installed in end equipment without ESD (Electrical Static Discharge) protection.
- Damage by corrosion will not be allowed as defect claim. Lumens LED Module is recommended for Indoor use only.
- Great care should be taken not to see directly the operated lighting LED. If not the intense light should cause the damage to eye. Use proper goggles to protect your eyes during operation.
- Long time exposure to sunlight or UV can cause the lens to discolor.
- Moisture-Proof package
  1. When moisture is absorbed into the LED light engine it may vaporize and expand products during manufacturing. There is a possibility that this may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture-proof pack is used to keep moisture to a minimum in the package.
  2. A pack of a moisture-absorbent material (silica gel) is inserted into the shielding bag. The silica gel changes its color from blue to pink as it absorbs moisture.
- Storage Conditions
  1. Before opening the package: The LED light engines should be kept at 30℃ or less and 90% RH or less. The LED light engines should be used within a year. When storing the LED light engines, moisture-proof packaging with moisture-absorbent material (silica gel) is recommended.
  2. After opening the package: The LED light engines should be kept at 30℃ or less and 70% RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LED light engines 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 LED light engines to the original moisture-proof bag and to reseal the moisture-proof bag again.
  3. Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condens ation can occur.
- Basic insulation is based on 240Vac.

NOTE :

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