Technical Data Sheet

Acrich
semiconductor eco lighting

SEOUL SEMICONDUCTOR

RoHS

Preliminary

Specification

Acrich2

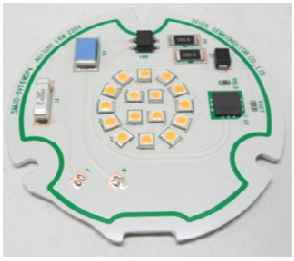
16W

SMJD-3V16W2P4

SSC		Customer
Drawn	Approval	Approval

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www.Acrich.com

Acrich2 16W Down Light



Description

Acrich 2 series designed for AC drive(or operation) doesn't need the converter which is essential for conventional general lighting. Also, its high power factor can show best energy saving effect in many lighting applications.

As there is no need of converter, Acrich 2 series can realize as close life-time as original LED and make a better use of a space in many applications.

Acrich2

Features

- Connect using a AIC directly to AC power
- High Power Efficiency
- High Power Factor
- Low THD
- Long Life Time
- Simplest BOM
- Miniaturization
- Lead Free product
- RoHS compliant

Applications

- Down Light

* The appearance and specifications of the product can be changed for improvement without notice.

[Contents]

1. Characteristics of 16W Down Light
2. Outline dimension
3. Color spectrum
4. Power characteristic
5. Color & Binning
6. Circuit Drawing
7. Part list
8. Cautions for use
9. Handling of silicone resin for LEDs
10. Handling with regards to static electricity
11. Storage before use
12. Guidelines for Acrich module work

1. Characteristics of 16W Down Light

1-1-1. Electro-Optical characteristics of SMJD-3V16W2P4 – 2700K

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	1130	1170		lm
Correlated Color Temperature [3]	CCT		2700		K
CRI	R_a	80	-	-	-
Operating Voltage [4]	v_{opt}		220		V[RMS]
Power Dissipation	P_D		16		W
Operating Frequency	Freq		50 / 60		Hz
Power Factor	PF		Over 0.97		-
View Angle	2Θ 1/2		120		deg.

1-1-2. Electro-Optical characteristics of SMJD-3V16W2P4 – 3000K

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	1140	1180		lm
Correlated Color Temperature [3]	CCT		3000		K
CRI	R_a	80	-	-	-
Operating Voltage [4]	v_{opt}		220		V[RMS]
Power Dissipation	P_D		16		W
Operating Frequency	Freq		50 / 60		Hz
Power Factor	PF		Over 0.97		-
View Angle	2Θ 1/2		120		deg.

1-1-3. Electro-Optical characteristics of SMJD-3V16W2P4 – 5000K

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	1220	1260		lm
Correlated Color Temperature [3]	CCT		5000		K
CRI	R_a	80	-	-	-
Operating Voltage [4]	v_{opt}		220		V[RMS]
Power Dissipation	P_D		16		W
Operating Frequency	Freq		50 / 60		Hz
Power Factor	PF		Over 0.97		-
View Angle	2Θ 1/2		120		deg.

1-1-4. Electro-Optical characteristics of SMJD-3V16W2P4 – 5500K

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	1230	1270		lm
Correlated Color Temperature [3]	CCT		5500		K
CRI	R_a	80	-	-	-
Operating Voltage [4]	v_{opt}		220		V[RMS]
Power Dissipation	P_D		16		W
Operating Frequency	Freq		50 / 60		Hz
Power Factor	PF		Over 0.97		-
View Angle	2Θ 1/2		120		deg.

1-2 Absolute Maximum Ratings of 16W Down Light

Parameter	Symbol	Value	Unit
Max. Voltage	v_{opt}	264	V[RMS]
Power Dissipation	P_d	23	W
Operating Temperature	T_{opr}	-30 ~ 85	ºC
Storage Temperature	T_{stg}	-40 ~ 100	ºC
ESD Sensitivity	-	±4,000V HBM	-

* Notes :

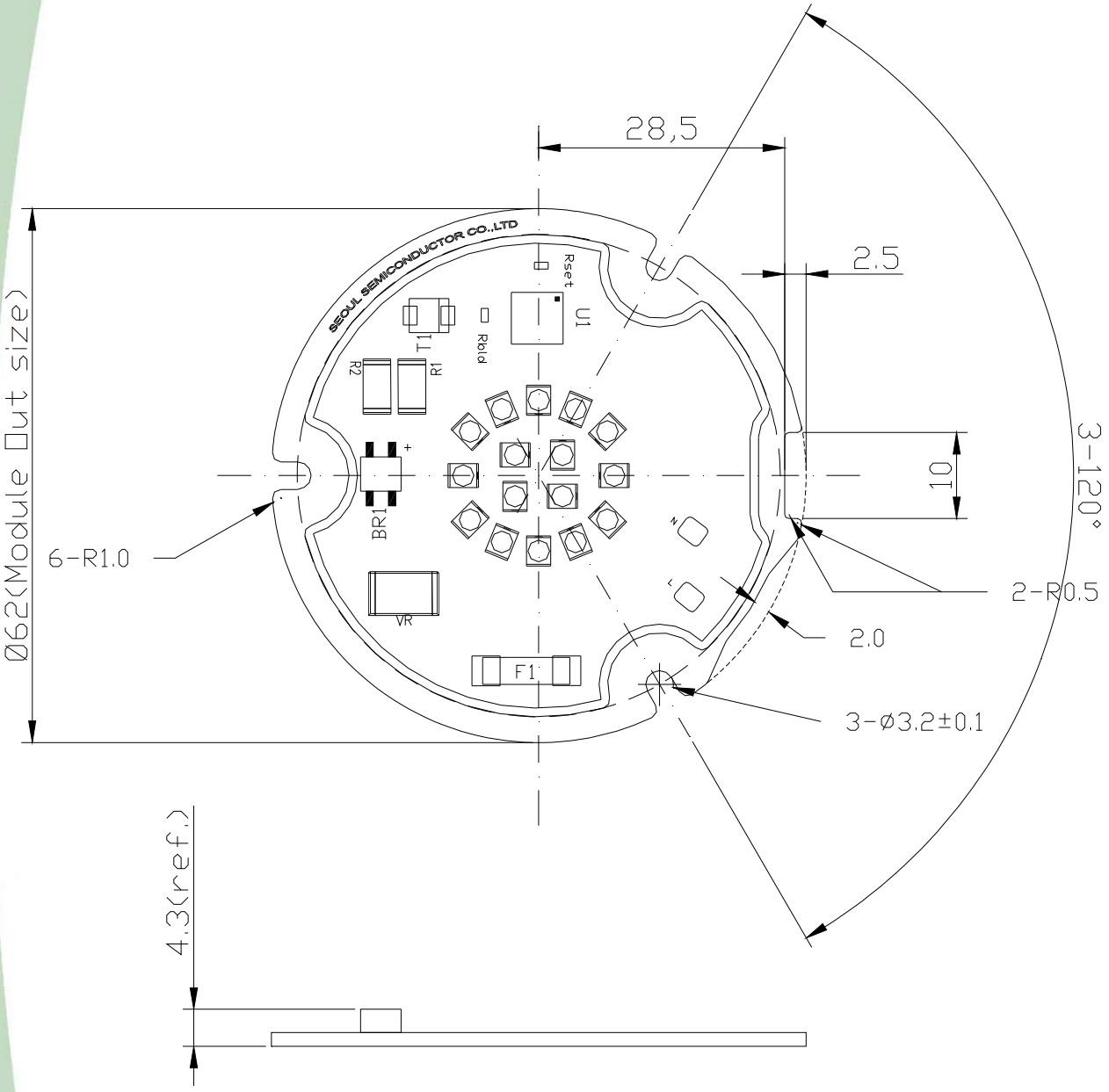
[1] At 220V RMS, Ta=25ºC
Acrich 2 series maintain the tolerance of ±10% on flux and power measurements.

[2] Φ_V is the total luminous flux output measured with an integrated sphere.

[3] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.

[4] 'Operating Voltage' doesn't indicate the maximum voltage which customers use but means tolerable voltage according to each country's voltage variation rate.
It is recommended that the solder pad temperature should be below 70℃.

2. Outline Dimension

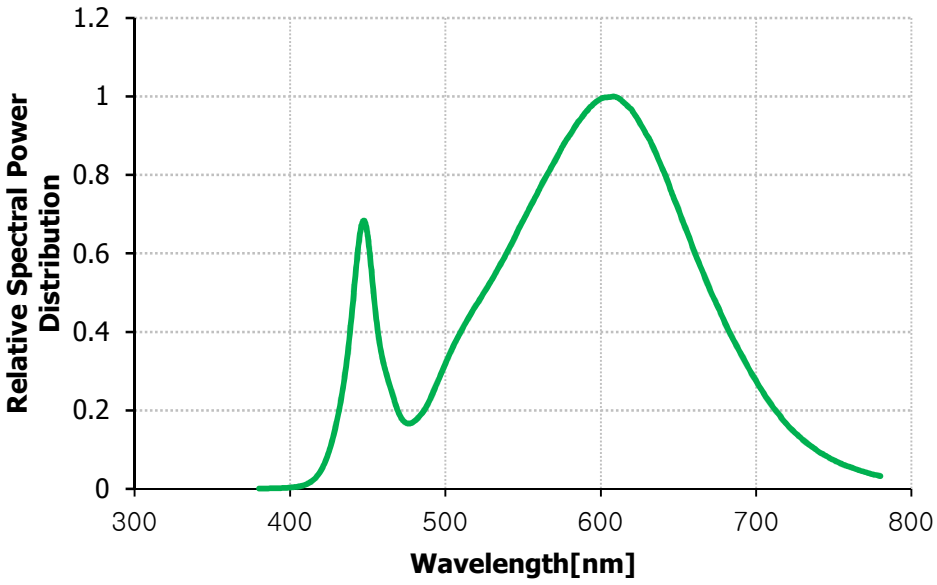


* Notes :

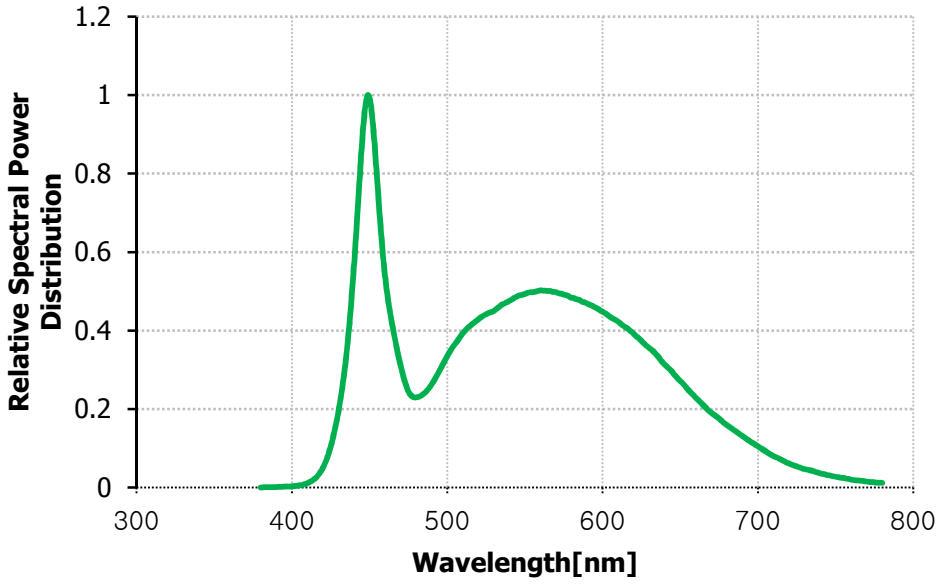
[1] All dimensions are in millimeters. (Tolerance = ±0.2mm)
[2] Scale : none

3. Color spectrum

Relative Spectral Power Distribution at Ta=25°C 2700K, 3000K

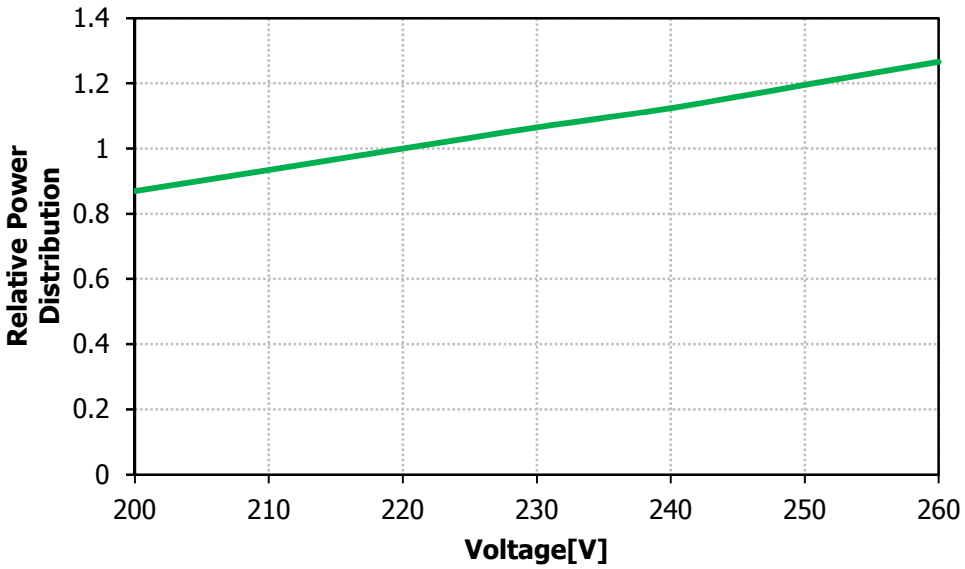


Relative Spectral Power Distribution at Ta=25°C 5000K , 5500K

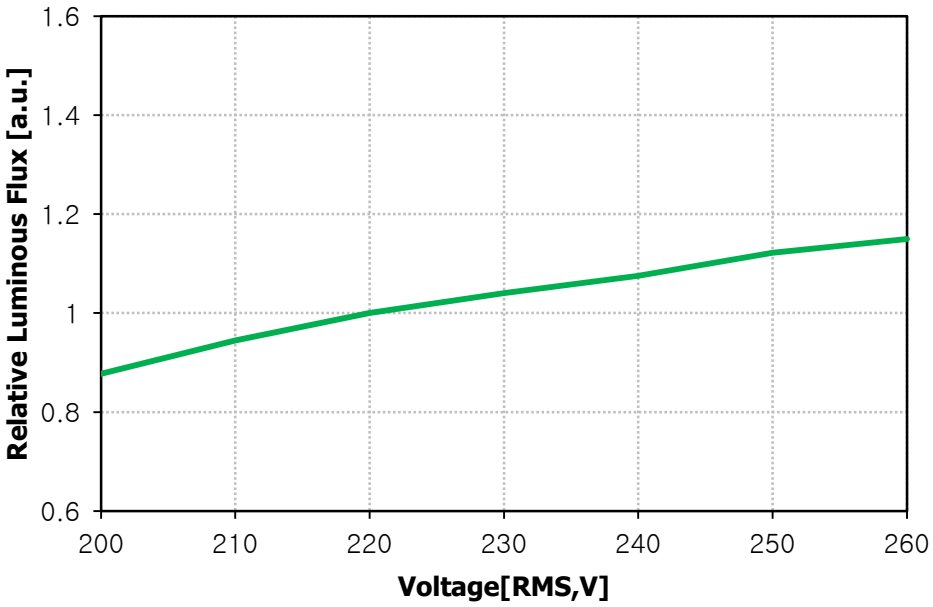


4. Power characteristic

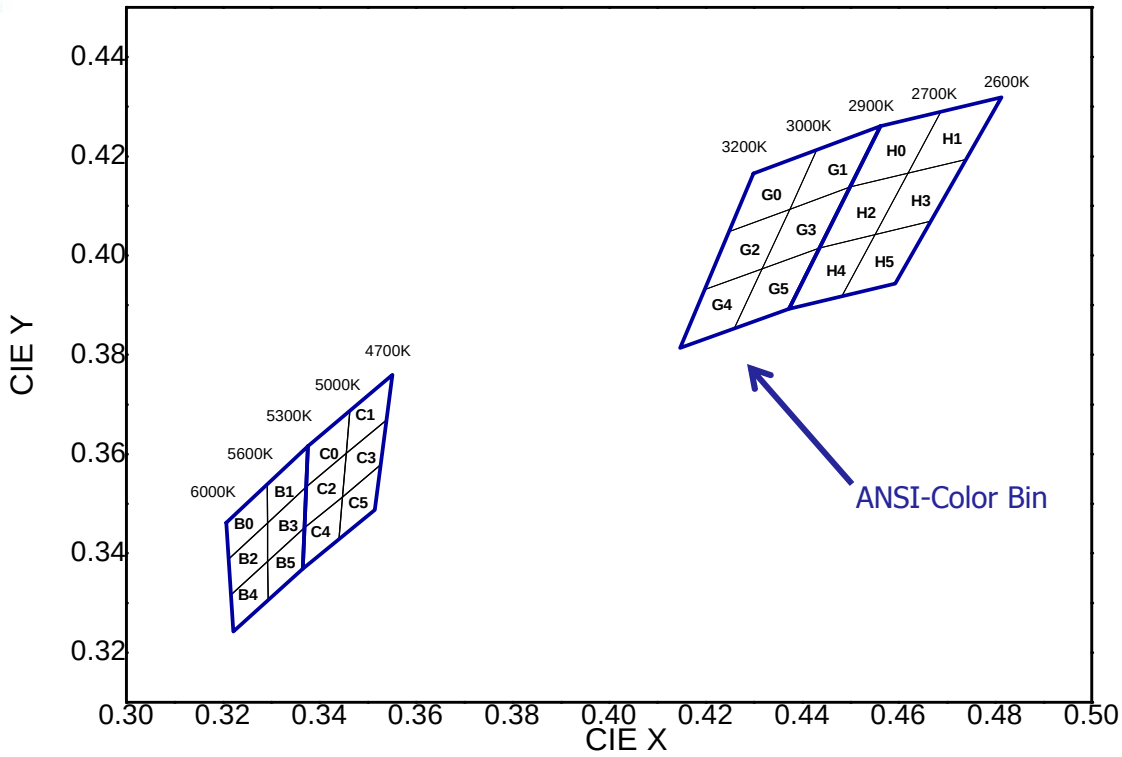
Relative Power Distribution vs. Voltage at Ta=25°C



Relative Luminous flux vs. Forward Voltage, Ta=25°C



5. Color & Binning



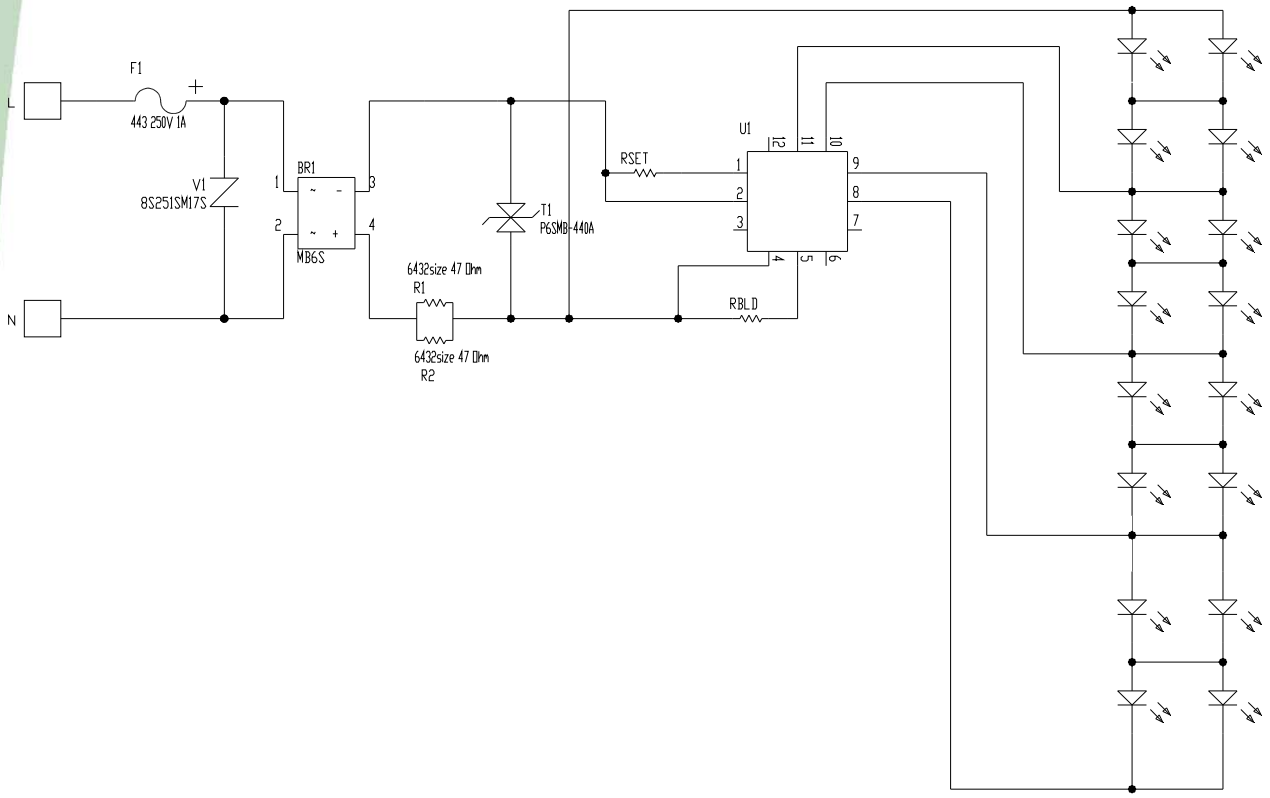
Bin code	X	Y	Bin code	X	Y	Bin code	X	Y
G0	0.4299	0.4165	G1	0.4430	0.4212	G2	0.4248	0.4048
	0.4248	0.4048		0.4374	0.4093		0.4198	0.3931
	0.4374	0.4093		0.4499	0.4138		0.4317	0.3973
	0.4430	0.4212		0.4562	0.4260		0.4374	0.4093
G3	0.4374	0.4093	G4	0.4198	0.3931	G5	0.4317	0.3973
	0.4317	0.3973		0.4147	0.3814		0.4259	0.3853
	0.4436	0.4015		0.4259	0.3853		0.4373	0.3893
	0.4499	0.4138		0.4317	0.3973		0.4436	0.4015
H0	0.4562	0.4260	H1	0.4687	0.4289	H2	0.4499	0.4138
	0.4499	0.4138		0.4620	0.4166		0.4436	0.4015
	0.4620	0.4166		0.4740	0.4194		0.4551	0.4042
	0.4687	0.4289		0.4810	0.4319		0.4620	0.4166
H3	0.4620	0.4166	H4	0.4436	0.4015	H5	0.4551	0.4042
	0.4551	0.4042		0.4373	0.3893		0.4483	0.3919
	0.4666	0.4069		0.4483	0.3919		0.4593	0.3944
	0.4740	0.4194		0.4551	0.4042		0.4666	0.4069

* Measurement Uncertainty of the Color Coordinates : ± 0.01

Bin code	X	Y	Bin code	X	Y	Bin code	X	Y
B0	0.3207	0.3462	B1	0.3292	0.3539	B2	0.3212	0.3389
	0.3212	0.3389		0.3293	0.3461		0.3217	0.3316
	0.3293	0.3461		0.3373	0.3534		0.3293	0.3384
	0.3292	0.3539		0.3376	0.3616		0.3293	0.3461
B3	0.3293	0.3461	B4	0.3217	0.3316	B5	0.3293	0.3384
	0.3293	0.3384		0.3222	0.3243		0.3294	0.3306
	0.3369	0.3451		0.3294	0.3306		0.3366	0.3369
	0.3373	0.3534		0.3293	0.3384		0.3369	0.3451
C0	0.3376	0.3616	C1	0.3463	0.3687	C2	0.3373	0.3534
	0.3373	0.3534		0.3456	0.3601		0.3369	0.3451
	0.3456	0.3601		0.3539	0.3669		0.3448	0.3514
	0.3463	0.3687		0.3552	0.3760		0.3456	0.3601
C3	0.3456	0.3601	C4	0.3369	0.3451	C5	0.3448	0.3514
	0.3448	0.3514		0.3366	0.3369		0.3440	0.3428
	0.3526	0.3578		0.3440	0.3428		0.3514	0.3487
	0.3539	0.3669		0.3448	0.3514		0.3526	0.3578

* Measurement Uncertainty of the Color Coordinates : ± 0.01

6. Circuit Drawing



7. Part list

No.	Part Name	Description	Reference	Q'ty	Remark
1	LED	SAW8WA2A	L1	16ea	
2	IC	6.0X6.0mm (DT3001TB)	U1	1ea	
3	TVS	P6SMB440A	T1	1ea	
5	Resistor	91ohm, 6432 size	R1, R2	2ea	
6	Varistor	8S17SM251S	V1	1ea	
7	Bridge	MB6S	BR1	1ea	
8	Resistor	1608 size	Rset	1ea	
9	Resistor	1608 size	Rbld	1ea	
10	PCB	Ø62	-	1ea	

8. Cautions for use

- Please attach a varistor for protecting surge according to the application note
- Please attach a resistance according to the application note
- Please note Acrich runs on high voltage so use caution when near the leads or if a dome is inadvertently removed while circuit is active
- Please do not touch any of the circuit board, components or terminals with bare hands or metal while circuit is electrically active.
- Please do not add or change wires while Acrich circuit is active
- Please do not touch wire on solder pad at driving AC source
- The appearance and specifications of the product may be modified for improvement without notice.
- Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- Attaching LEDs, do not use adhesives that outgas organic vapor.
- Please do not use together with the materials containing Sulfur
- Please do not assemble under the condition of moisture and oxidizing gas in the air(Cl, H2S,NH3,SO2,NOX,etc)
- Please do not make any modification on module.
- Please be cautious as soldering in order to avoid short between different patterns.

9. Handling of silicone resin for LEDs

- Acrich series is encapsulated with silicone resin for high optical efficiency.
- Please do not touch the silicone resin area with sharp objects such as pincette(tweezers).
- Finger prints on silicone resin area may affect the performance.
- Please store LEDs in covered containers as it is dust sensitive.
- Excessive force more than 3000gf to the silicone lens can result in fatal or permanent damage with LEDs.
- Please do not cover the silicone resin area with any other resins such as epoxy, urethane, etc.

10. Handling with regards to static electricity

- The Acrich2 modules use an integrated circuit (IC) which can be damaged when exposed to static electricity. Please handle using equipment that prevents static electricity. Do not touch unless ESD protection is used.
- The Acrich2 modules should also not be installed in end equipment with out ESD protection.

11. Storage before use

- Do not impact or place pressure on this product because even a small amount of pressure can damage the product. The product should also not be placed in high temperatures, high humidity or direct sunlight since the device is sensitive to these conditions.

(1) Please, confirm the lists below, when storing it in a long term.

* It should be stored in the anti-static bag that Seoul-Semiconductor packed without opening it.

* If you opened it in order to prevent humidity, you should seal it and not let the air and humidity into the bag.

12. Guidelines for Acrich module work

- Discharge the lighting system minimum 2~3 times prior to starting work.
- Use only the tested instruments, and insulated tools rated for the voltage and current specified.
- Wear rubber made gloves and rubber bottom shoes or sneakers.
- Do not wear any conductive items (such as jewelry) which could accidentally contact electric circuits.
- Perform several tests with power off and the lighting system unplugged.
- Faults, lightning, or switching transients can cause voltage surges in excess of the normal ratings.
- Internal component failure can cause excessive voltages.
- Stored or residual electricity in long wire could be hazardous. Make sure proper discharge prior to starting work.