

SPECIFICATION

Product : Topview 3330 Smart RGB PKG

Part No. : IWS-L3138-WRGB-IC

Date : 2023. 08. 03 Ver. 0.1

Customer :

Checked By	Checked By	Checked By	Checked By	Approval

Manufacturer : CoAsia Corp.

Checked By	Checked By	Checked By	Checked By	Approval
Approved				



CoAsia Corporation
193, Namdongseo-ro, Namdong-gu, Incheon 21634 KOREA
TEL:+82-32-813-1801, FAX:+82-32-816-1900
URL: <http://www.coasiacorp.co.kr>

1. Features

- IC Built in RGB PKG
- 3 Chip High-Brightness SMD LED
- 3.3 x 3.0 x 1.40 mm (L x W x H), Small Size Surface Mount Type
- 3 constant current mode LED drivers.
- Serial communication with ISELED compliance
- Bi directional, half-duplex, 2MBit/s, serial communication.
- White point calibration D65
- 8 bit brightness resolution for red, green, and blue LED.
- Build-in temperature sensor.
- Temperature compensation on red for constant brightness.
- Build-in diagnostic functions.
- Maximum of 4079 LED's in one chain.
- Qualified according to JEDEC MSL 2.
- Qualification : AEC-Q102 & AEC-Q100 Qualified

2. Applications

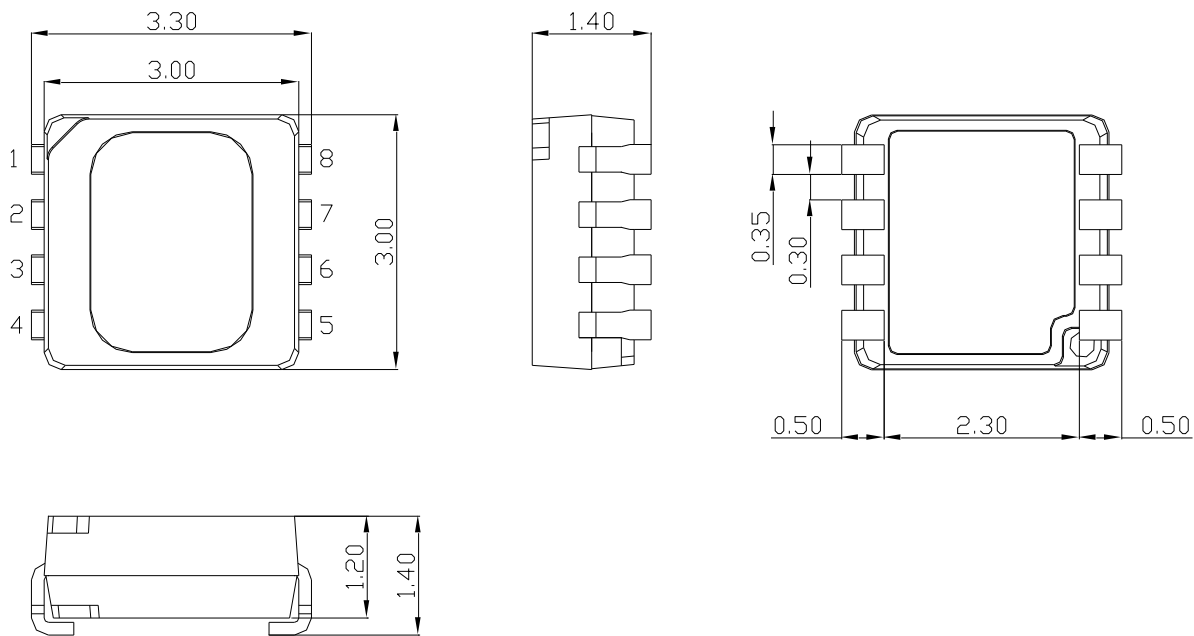
- Automotive: Backlight in Dashboard and Switch
- Automotive: Ambient lighting (Interior lighting)
- Functional lighting
- General lighting

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3. Outline Drawing and Dimension

Unit : mm, Tolerance : $\pm 0.1\text{mm}$



Note

1. All dimensions are in millimeters
2. All dimensions without tolerances are for reference only

Pin Configuration

Pad	Name	Description
1	PRG	Ground (for LED manufacture)
2	SIO1_N	Serial Communication Master Side, Negative
3	SIO1_P	Serial Communication Master Side, Positive
4	GND	Ground
5	GND	Ground
6	SIO2_P	Serial Communication Slave Side, Positive
7	SIO2_N	Serial Communication Slave Side, Negative
8	Vcc_5V	IC Power Supply (5V)

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4. Absolute Maximum Ratings(T_a = 25 °C)

Parameter	Symbol	Value		Unit
		Min.	Max.	
Vcc Voltage	V _{CC}	-0.25	7.0	V
SIO1_P, SIO1_N SIO2_P, SIO2_N	Vsio1_P, Vsio1_N Vsio2_P, Vsio2_N	-0.48	7.0	V
Electrical Thermal Resistance*1	Rth _{JS}	-	120	K/W
Operating Temperature	T _{opr}	-40	110	°C
Storage Temperature	T _{stg}	-40	125	°C
Junction Temperature	T _j	-	125	°C
ESD Protection HBM	-	-	2.5	kV

*1 Using FR4 PCB (Cu 1oz, 25.4 x 25.4 x 1.6mm)

5. Recommended Operation Conditions

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Vcc Voltage	V _{CC}	4.5	5.0	5.5	V
SIO1_P, SIO1_N	Vsio1_P, Vsio1_N	4.5	5.0	5.5	V

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6. Electro-optical Characteristics(Ta = 25 °C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Dominant Wavelength*1	W _d	Red	619	622	625	nm
		Green	530	533	536	nm
		Blue	462.5	465	468.5	nm
Luminous Intensity*2	I _v	Red	315	360	426	mcd
		Green	790.5	940	1069.5	mcd
		Blue	72	85	108	mcd
		White*4	1260	1400	1540	mcd
View angle*3	2θ _{1/2}	-	-	120	-	degree

*1 Dominant Wavelength has an accuracy of ±2nm

*2 Luminous Intensity is tested by a tester calibrated by CAS 140B(CIE LED_B) and has an accuracy of 10%

*3 Viewing Angle is the angle until 50% of brightness measured from the front part of LED.

*4 D65 (6500K), The above luminous intensity represent brightness at 100%.

6.1 Luminous Intensity Rank

Color	Luminous Intensity (mcd)	
	T/H	LABEL
R	315~426	Typ. 360
G	790.5~1069.5	Typ. 940
B	72~108	Typ. 85
White	1260~1540	Typ. 1400

6.2 Dominant Wavelength Rank

Color	Dominant Wavelength(nm)	
	T/H	LABEL
R	619~625	Typ. 622
G	530~536	Typ. 533
B	462.5~468.5	Typ. 465

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7. Serial Interface

Parameter	Description	Value			Unit
		Min.	Typ.	Max.	
$f_{\text{SI01_P, single ended}}$	Single ended data rate SI01_P	1.40	2.00	2.60	MHz
$f_{\text{SI01_N, single ended}}$	Single ended data rate SI01_N	2.80	4.00	5.20	MHz
$V_{\text{IH, se}}$	Single ended input high Voltage	1.20	-	-	V
$V_{\text{IL, se}}$	Single ended input low Voltage	-	-	1.14	V
$V_{\text{IAMP, diff}}$	Differential input amplitude	150	250	325	mV
$V_{\text{OAMP, diff}}$	Differential output amplitude	175	250	325	mV

8. Current Consumption

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Red	I_{average}	-	8.9	20.5	mA
Green	I_{average}	-	9.4	12.0	mA
Blue	I_{average}	-	6.3	7.0	mA
Driver	I_{drv}	0.9	1.2	1.5	mA

* @ RGB set (255,255,255)

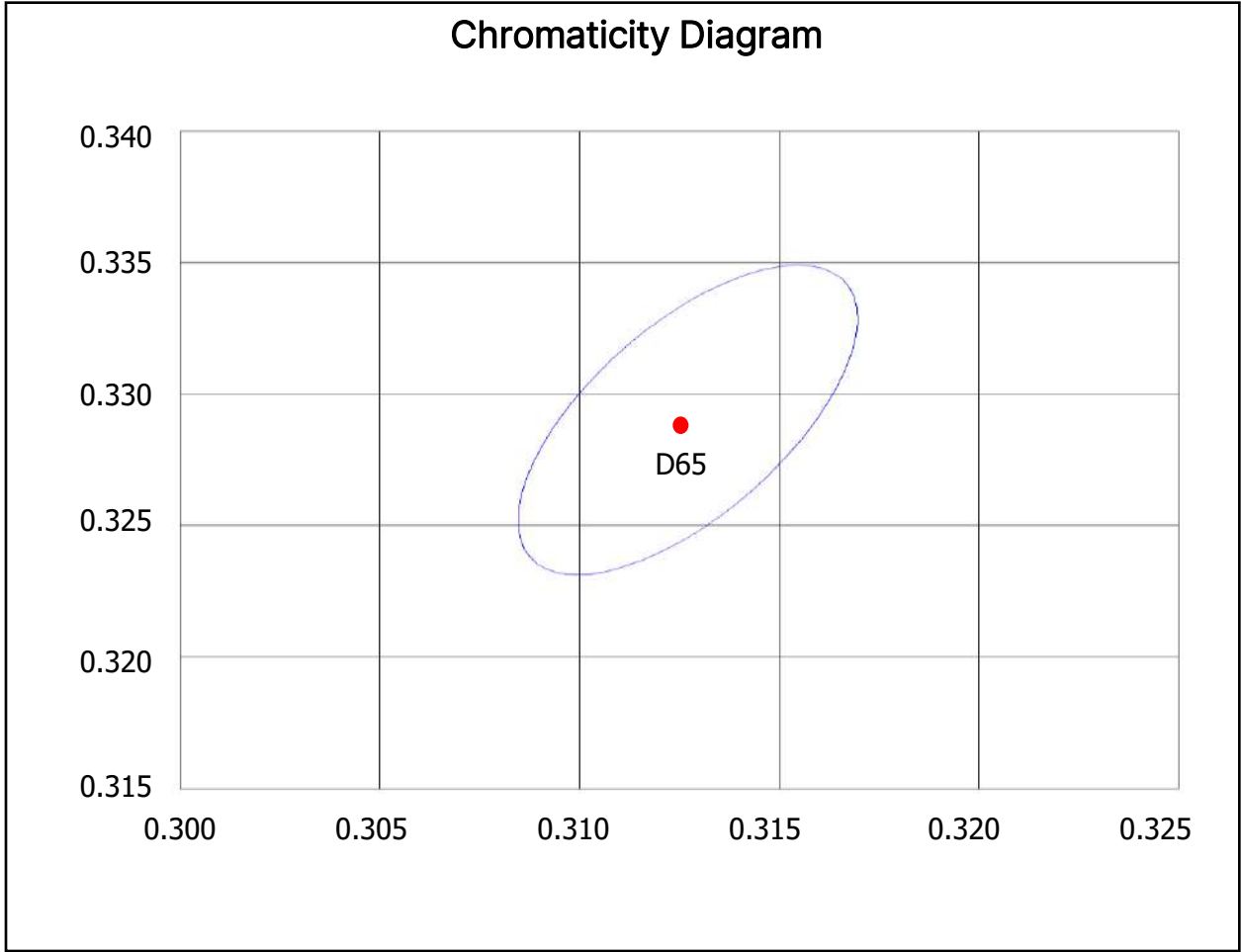
9. Power-On-Reset (POR)

Parameter	Min.	Typ.	Max.	Units
V_{POR}	4.0	4.2	4.4	V

10. Undervoltage-lockout

Parameter	Min.	Typ.	Max.	Units
V_{uvlo}	3.2	3.3	3.4	V

11. Color Coordinates Group



Rank	Description	x	y	a	b	theta
D65	Macadams 3steps	0.3127	0.3290	0.00669	0.00285	58.57

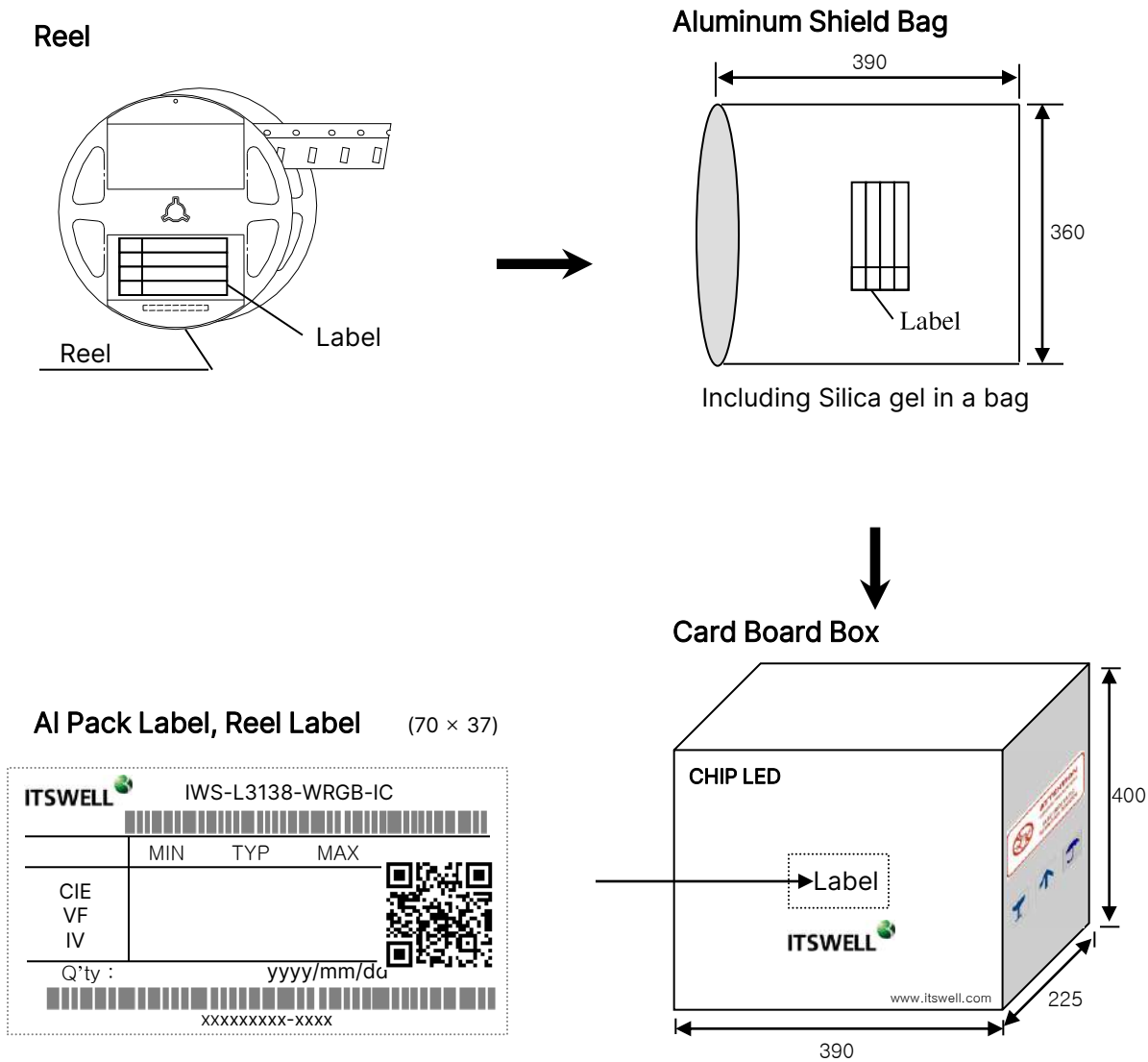
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13. Packing Dimension

Unit :mm



	Dimensions (mm)	Reel / Box	Q'ty / Box(pcs)
Reel	Φ330mm, 13mm Width	–	4,000 Max
Al Shield Bag	390x360	–	4,000 Max
Card board Box	390 x 400 x 225	10 Max	40,000 Max

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14. Aluminum Zipper Bag

 This bag contains MOISTURE and E.S.D SENSITIVE DEVICE	 본 알루미늄 백은 습기와 E.S.D에 민감한 소자를 담고 있습니다.
- Before opening the package, the LEDs should be kept at 5°C~30°C and less 70% RH or less. - After opening please check if RH indicator does something wrong. If its color is not Pink at RH 10% or Blue at 20%, LEDs should be backed for min. (Baking 48hrs at 60°C) - Please keep the remained LEDS to your desiccators on condition of under 10% RH. - Best method is to desiccate LEDs as Reel condition with RH indicator after baking min. 48hrs at 60°C and store them up in Al bag. - Always use LEDS after checking RH indicator when you reuse them. (Please use them after baking if RH indicator is not Pink at RH 10% or Blue at 20%) - Please work LED mounting last during SMT. - Advise that LEDs are used within 12hrs after opening. (Please use them ASAP during extremely humid condition such as rainy season.)	- 미 개봉 보관 시 온도 5°C~30°C, 습도 70% RH이하에서 보관하세요. - 개봉시 습도지시카드의 변색 유/무를 확인 후 사용하세요. 습도 지시카드 10%에서 Pink 이거나 20%에서 Blue가 아닐 경우 Baking후 사용. (Baking 조건 : 60°C , 48 hr ↑) - 사용 후 남은 잔량은 제습 보관함(데시케이터)에 10% RH 이하로 보관하세요. - Reel 상태로 60°C, 48 hr ↑ Baking 실시 후 습도지시카드와 같이 Al Bag에 넣어 밀봉 보관하는 것이 가장 좋은 방법임. - 재 사용시 습도지시카드 변색 유/무를 확인 후 사용. (10%에서 Pink 이거나 20%에서 Blue가 아닐 경우 Baking후 사용) - SMT 작업 시 LED 실장은 맨 마지막에 작업하세요. - 개봉한 제품은 12시간 이내에 실장 권고합니다. (특히 습기가 많은 우기 시 최단 시간에 사용 바랍니다.)

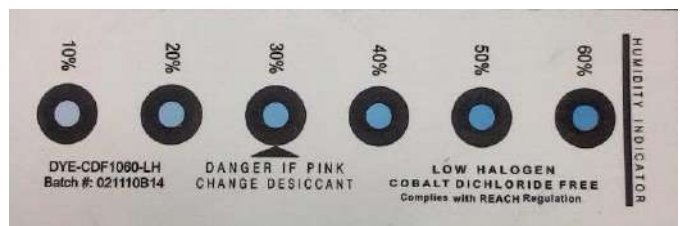
■ Important

This Al Zipper bag is designed to protect the enclosed products from moisture and ESD. Once opened, the products should be soldered onto the printed circuit board immediately. When not in use, please do not leave the products unprotected by the Al Zipper Bag. To repack unused products, please ensure the zip-lock is completely sealed with the dry pack left inside.

■ 주의사항

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14.1 Aluminum Zipper Bag and Humidity Indicator



15. Spec. Review History

[illegible]