WS2850B-4020
Intelligent control LED integrated light source

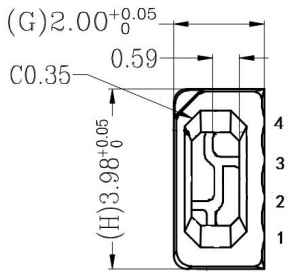
Features and Benefits

- Adopts original certified chip, pure copper bracket, it has good heat dissipation and reliable quality.
- Anti - vulcanizing Glue, excellent air tightness, high-temperature resistance.
- RGB chip has good consistency in wavelength and brightness.
- Side-view bracket design.

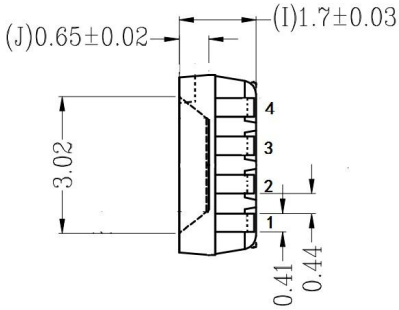
Applications

- LED fan products, digital electronic products.
- LED Point Light source, LED pixel screen, LED irregular-shaped screen,various electronic products and electrical equipment etc.

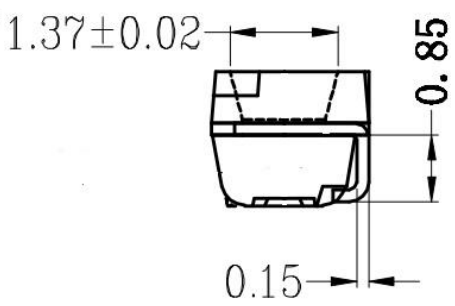
Mechanical Dimensions （Unit:mm）



Top View

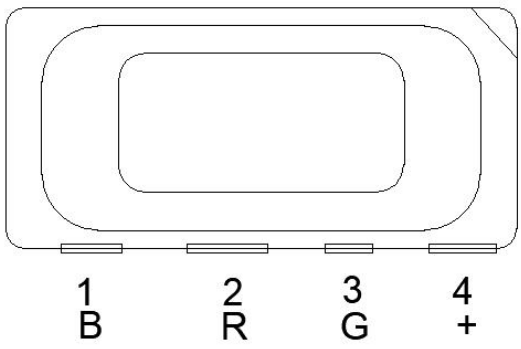


Side View

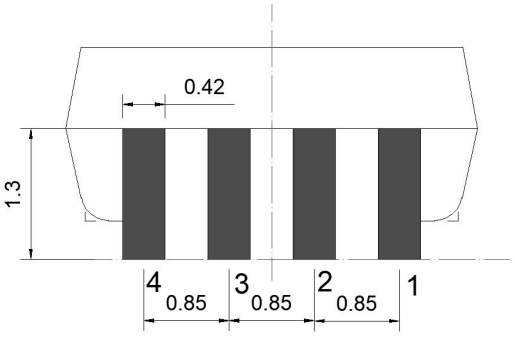


Side View

PIN Configuration



Recommend Solder Pad Design



PIN Function

NO.	Symbol	PIN Name
1	B-	Blue negative electrode
2	R-	Red negative electrode
3	G-	Green negative electrode
4	+	Common anode

Electrical Characteristics（Ambient temperature = 25℃）

Parameter	Color	Min	Tpy	Max	Unit	Conditions
Forward Voltage	GB	2.8		3.4	V	IF=20mA
	R	1.8		2.4		
Brightness	R	400		600	mcd	
	G	1000		1500		
	B	300		500		
Luminous angle	RGB		120	----	deg	
Reverse Leakage Current	RGB			5	uA	VR=5V
Domain Wavelength	R	620		630	nm	IF=20mA
	G	515		525		
	B	465		475		

Top SMD LED Using Instructions

1. **Summary**

To make the best use of WORLDSEMI's LED, please refer to the below precautions, they are of same usage method as other electronic components.

2. Cautions

2.1. Dust & Cleaning

The surface of the LED is encapsulated with modified epoxy resin because it plays a very good role in protecting the optical performance and aging resistance. The modified epoxy resin is easy to stick with dust and must be kept clean. When there's a certain amount of dust on the surface of the LED, it won't affect brightness, but dust proof should be taken care of. Promoting the use of unsealed package in preference to others and the assembled LEDs should be placed in a clean container.

Avoid using the organic solvents to clean the dust on the LED surface and it's necessary to confirm whether the cleaning fluid will dissolve the LED.

Do not clean the LEDs by the ultrasonic. Some parameters affecting the LED performance must be evaluated if have no alternative but to the ultrasonic cleaning method, such as ultrasonic power, baking time and assembly conditions, etc.

2.2. Moisture-proof packaging

TOP SMD LEDs are moisture sensitive components. LEDs are packaged in aluminum foil bag to prevent the from absorbing moisture during transport and storage. A desiccant is placed in the bags to absorb moisture. If the LED absorbs moisture, then it evaporates and expands when in reflow process, which may break the colloid from the bracket and damage the optical performance of LED. For this reason, moisture-proof packaging is to prevent the from absorbing moisture during transport and storage. The moisture resistance rating of WORLDSEMI's LED is: **LEVEL 6**.

Tabel I - IPC/JEDEC J-STD-020 Moisture/Reflow Sensitivity Classification

MSL Level	Workshop Life	
	Time	Conditions
LEVEL1	Unlimited	≤30℃/85%RH
LEVEL2	1 Year	≤30℃/60%RH
LEVEL2a	4 Weeks	≤30℃/60%RH
LEVEL3	168 Hours	≤30℃/60%RH
LEVEL4	72 Hours	≤30℃160%RH
LEVEL5	48 Hours	≤30℃/60%RH
LEVEL5a	24 Hours	≤30℃/60%RH
LEVEL6	Take-out and Use immediately	≤30℃/60%RH

2.3. Storage and Duration

a. Room temperature sealed storage: 20℃～30℃, 40%～60%RH, product is valid for **THREE months**.
b. Moisture-proof sealed storage: 20℃～30℃, 25%～60%RH, product is valid for **SIX months**.
c. Use up with 4 hours after removing from packages. (Environmental conditions for temperature <30℃, relative humidity<60%)

2.4. Dehumidification Operation

We would recommend to do dehumidification if they exceed the valid storage period of products or dampened due to other reasons. Requirement: **75℃/>24H**.

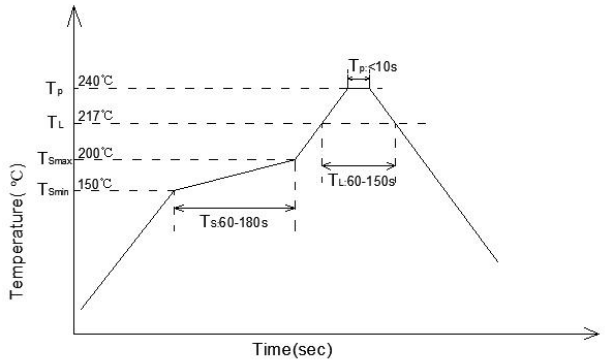
3. Management of secondary SMT process

It's necessary to do moisture-proof treatment when the secondary reflow carried out that followed the first reflow. It can't be more than 2 hours to be exposed at condition of "<30℃/60%RH" and dehumification operation is requested for a longer interval reflow. For instance, place in a drying box or a container with desiccant, and dehumidify it before the secondary reflow(Low temperature baking operation: **70℃-75℃, ≥12 hours**).

4. SMT Reflow

Refer to the parameters listed below, the experimental results prove that the TOP SMD LED meets the JEDEC J-STD-020C standards. As a general guideline, it is recommended to follow the SMT reflow temperature curve recommended by the solder paste manufacturer.

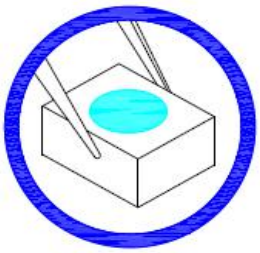
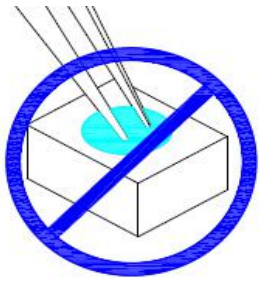
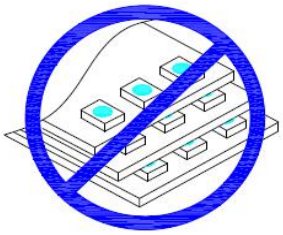
Curve Description	Lead-free
The lowest preheat temperature (Tsmin)	150℃
The highest preheat temperature (Tsmax)	200℃
Preheating time (Tsmin to Tsmax) (ts)	60-180 S
Average rate of temperature rise (Tsmax to Tp)	<3℃/S
LIQUID REGION temperature (TL)	217℃
LIQUID REGION Holding Time (tL)	60-150 S
Peak Temperature (Tp)	240℃
High Temperature Region(Tp=-5℃) Holding	<10 S
Cooling Rate	<6℃/S
Room Temperature to Peak Holding Time	<6 min



Remarks: 1. These general guidelines may not apply to all PCB designs and reflow soldering configurations.

2. All temperatures referred are measured on the surface of the package body.

5. Assembly Precautions

1. Clip the LED from its side.	2. Neither directly touch the gel surface with the hand or sharp instrument, it may damage its internal circuit.
	
3. Not to be double stacked, it may damage its internal circuit.	4. Can not be stored in or applied in the acidic sites of PH<7.
	

Modify Record

Version No.	Status Bar	Modify Content Summary	Date	Reviser	Approved
V1.0	N	New	20180716	Shen JinGuo	Yin HuaPing

Remarks: Initial version: V1.0； Version number plus "0.1" after each revision;