YUJILEDS® Multichromatic series LED datasheet

YJ-RGB5050H-G01

Surface Mount Device

Applications

- High-end architectural lighting
- Photographic/broadcast lighting
- Photoelectric device and relevant research

Features

- Multiple color solution
- Full-color gamut of red, green and blue
- 5.0 mm × 5.5mm package

About Yujileds®

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P3180002.00

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General description

YUJILEDS® Multichromatic series 5050 3-in-1 LED combines red, green and blue dies in one package. The compact package and high output make the LED suitable for a wide variety of applications demanding higher color quality distribution, and it also simplify the optical design.

The Multichromatic series 5050 LED also supports the unique service/certification by Yujileds® as described below.

RoHS Compliance	**RoHS 2011/65/EU compliance**
CE Compliance	**CE compliance**
REACH Compliance	**REACH compliance (Phosphor)**

Ordering information

PART NUMBER	PRODUCT CODE	COLOR
YJ-RGB5050H-G01	P3180002.00	R, G, B

Characteristics

Electrical-optical characteristics (T_A = 25°C, 60mA)

COLOR	PARAMETER	SYMBOL	VALUE			UNIT
			MIN.	TYP.	MAX.	
Red	**Forward voltage**	V_F	1.9	-	2.4	V
	Radiant power	Φ_e	41	-	47	mW
	Dominant wavelength	λ	615	-	630	nm
	View angle	$2\theta_{1/2}$	-	120	-	Deg
Green	**Forward voltage**	V_F	2.7	-	3.5	V
	Radiant power	Φ_e	29	-	36	mW
	Dominant wavelength	λ	515	-	530	nm
	View angle	$2\theta_{1/2}$	-	120	-	Deg
Blue	**Forward voltage**	V_F	2.8	-	3.5	V
	Radiant power	Φ_e	67	-	77	mW
	Dominant wavelength	λ	450	-	465	nm
	View angle	$2\theta_{1/2}$	-	120	-	Deg

Characteristics

Absolute maximum ratings (T_A = 25°C)

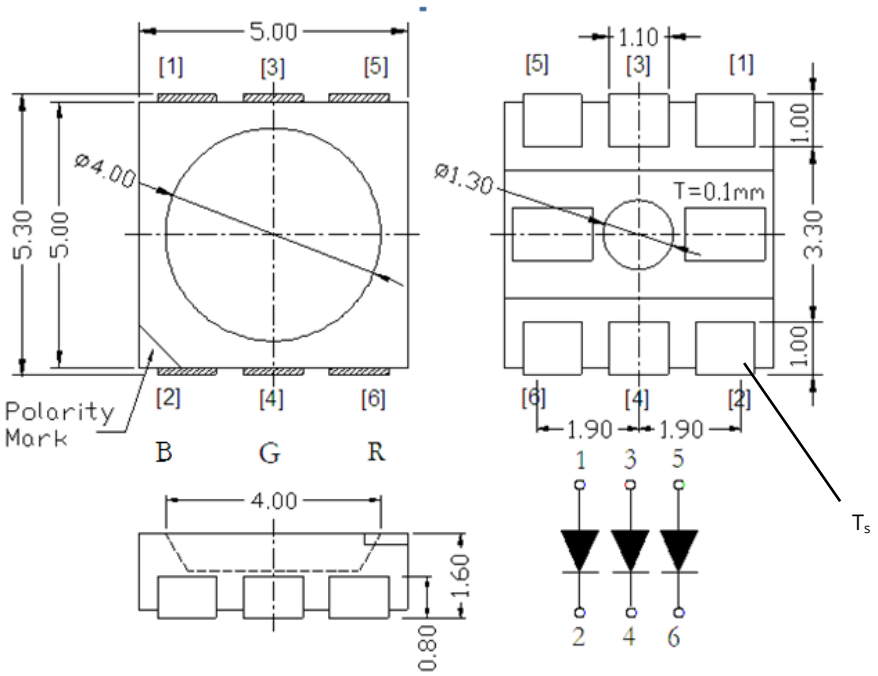
PARAMETER	SYMBOL	RED	GREEN	BLUE	UNIT
Power Consumption (Simultaneous)	P_D		630		mW
DC Forward Current (individual)	I_F	70	80	120	mA
DC Forward Current (Simultaneous)	I_F	60	60	60	mA
Reverse Voltage	V_R		5		V
Solder Point Temperature[1]			85		°C
Operating Temperature	T_{opr}		-25 ~ +85		°C
Storage Temperature	T_{stg}		-35 ~ +85		°C
Soldering Temperature	T_{sol}		260 ± 5		°C
Reflow Cycles Allowed	-		3		-

1. See page **Package material and dimension**.

Package material and dimension

Package layout

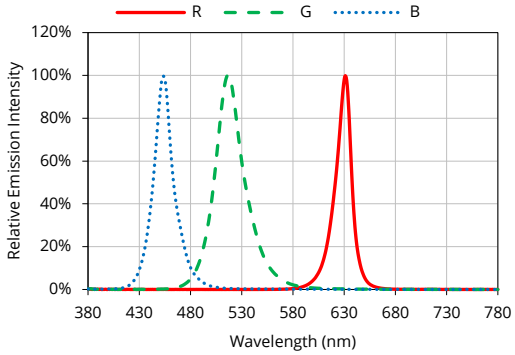
All dimensions in mm, tolerance unless mentioned is ±0.1mm.



Characteristic graph

Typical spectral power distribution (T_A = 25°C) (normalized)

All characteristic curves are for reference only and not guaranteed.



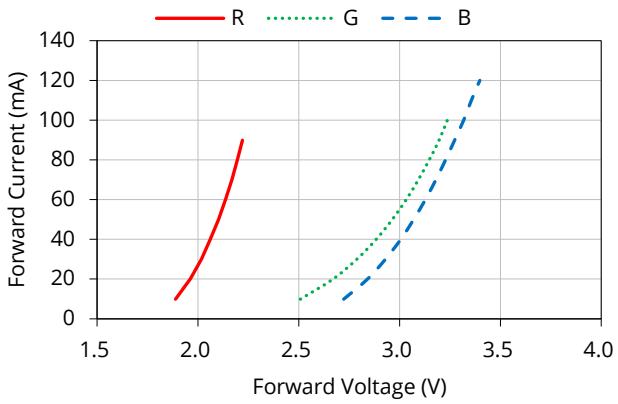
Characteristic graph

Forward current

All characteristic curves are for reference only and not guaranteed.

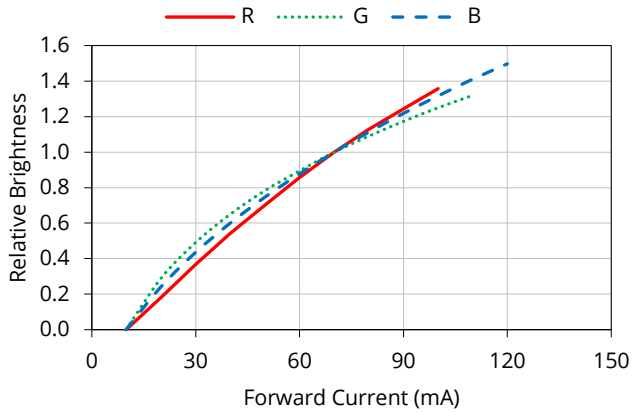
Vs. forward voltage

(T_A = 25°C)



Vs. relative radiant flux / luminous flux

(T_A = 25°C)



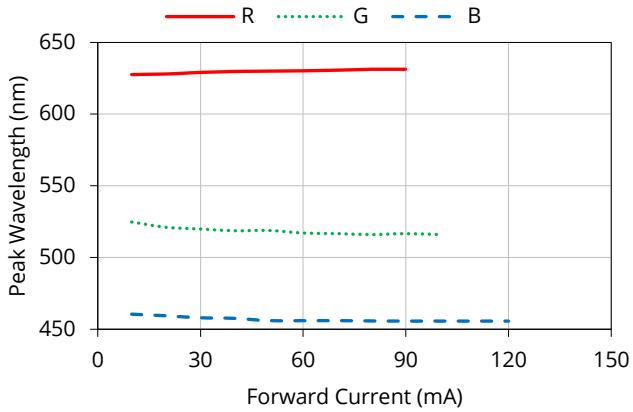
Characteristic graph

Forward current (continued)

All characteristic curves are for reference only and not guaranteed.

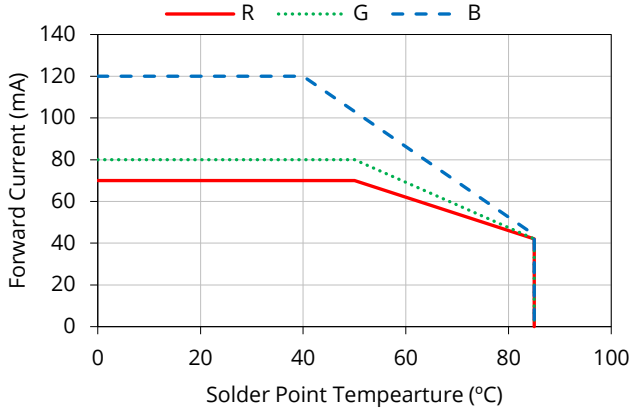
Vs. relative dominant wavelength shift / chromaticity shift

(T_A = 25°C)



Derating based on solder point

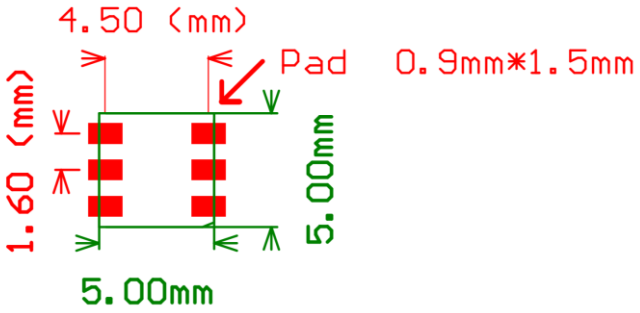
Note: De-rating curves are meant for recommendation only and are not meant to provide guarantees of product stability and longevity.



Solder and reflow profile

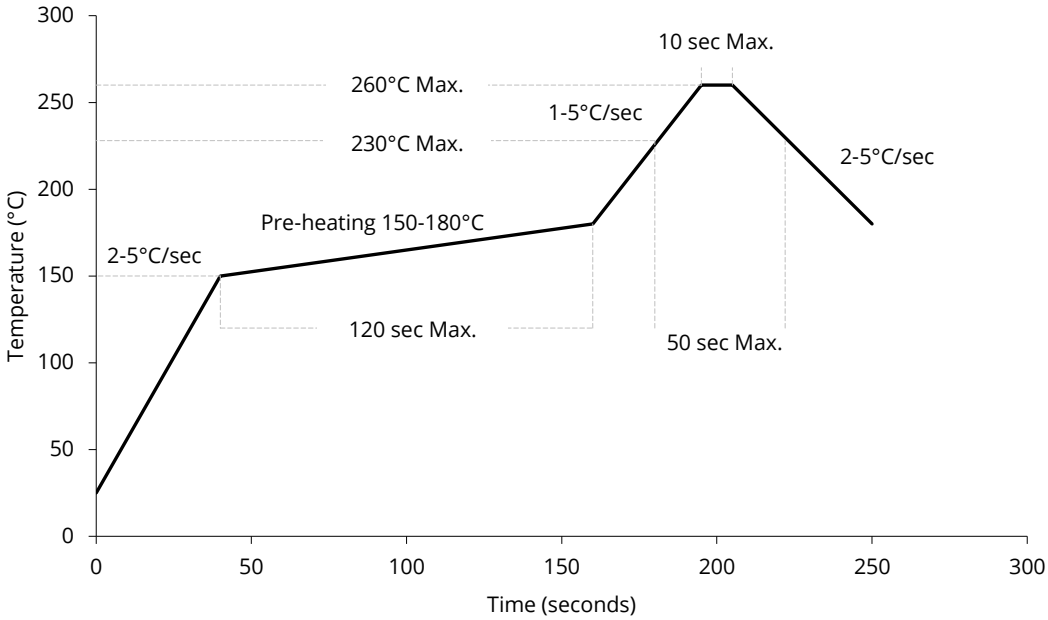
Recommended solder pad layout

All dimensions in mm, tolerance unless mentioned is ±0.1mm.



Reflow profile

Soldering ramp-up time (Pb-FREE).



Note: Soldering paste with the melting point at 230°C is recommended.

SMT instruction

Problems caused by improper selection of collet

Choosing the right collet is important in ensuring product quality after SMT. LEDs are different from other electronic components, as they are not only concerned with electrical output but also optical output. This characteristic makes LEDs more fragile in the process of SMT. If the collet's lowering height is not well set, it will bring damage to the gold wire at the time of collet's pick-and-place process which can cause the LED to not illuminate, flicker or contribute to other quality problems, some of which may not be immediately detectable.

Collet selection

During SMT, please choose the appropriate collet in order to avoid damage the gold wire inside the LED or insufficient suction. Setting the height of the collet is crucial in order to avoid damage to the top view SMD. If the collet setting is set to too low of an altitude, the collet will press down on the SMD, causing damage or breakage to the encapsulant and cause distortion or breakage of the gold wire.

Other notes of caution

- No pressure should be exerted to the epoxy shell of the SMD under high temperature.
- Do not scratch or wipe the lens since the lens and gold wire inside are rather fragile and cross out easy to break.
- LED should be used as soon as possible when being taken out of the original package, and should be stored in anti-moisture and anti-ESD package.
- This usage and handling instructions are for reference only.