

Top View LEDs YL-5050F-ICRGBC(A)

Preliminary



Features

- Super-luminosity chip LED.
- White SMT package.
- Built in Red, Green, Blue chips and IC.
- Lead frame package with individual 6 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- Pb-free and RoHS compliant version
- 24 bits RGB display.
- 5mA constant current output.

Description

Due to the package design, 5050 has wide viewing angle, and low power consumption. The white LED which was fabricated using blue LEDs and a phosphor, and the phosphor is excited by blue light and emits yellow fluorescence. The mixture of blue light and yellow light results in a white emission. And makes it ideal for light pipe application.

Applications

- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
InGaN	Blue	Water Clear
AlGaInP	Brilliant Red	Water Clear
InGaN	Brilliant Green	Water Clear

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Power supply voltage	Vdd	2.5-5.5	V
Input voltage	VI	-0.5~Vdd+0.5	V
Operating Temperature	T _{opr}	-40 ~ +85	°C
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

LED Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	B	71	-----	180	mcd
		R	140	-----	450	
		G	350	-----	900	
Viewing Angle	2θ _{1/2}	-----	120	-----	deg	I _F =5mA
Dominant Wavelength	λ _d	B	460	-----	475	nm
		R	615	-----	625	
		G	515	-----	530	

Note:

1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. RGB current is at 18mA respectively

Electrical Characteristics (Ta=-20~+70°C, Vdd=4.5~5.5V, Vss=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Input current	I			±1	µA	VI=Vdd/Vss
Input Voltage	V _{IH}	0.7V _{dd}			V	Din, SET
	V _{IL}			0.3V _{dd}	V	Din, SET
Hysteresis Voltage	V _H		0.35		V	Din, SET

Switching Characteristics (Ta=-20~+70°C, Vdd=4.5~5.5V, Vss=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Transmission delay time	t _{PLZ}	-	-	300	ns	CL=15pF, DI>Do, PL=10KΩ
Fall time	t _{FZ}	-	-	120	µs	CL=300pF, OutR/OutG/OutB
Input capacity	C _i	-	-	15	pF	-

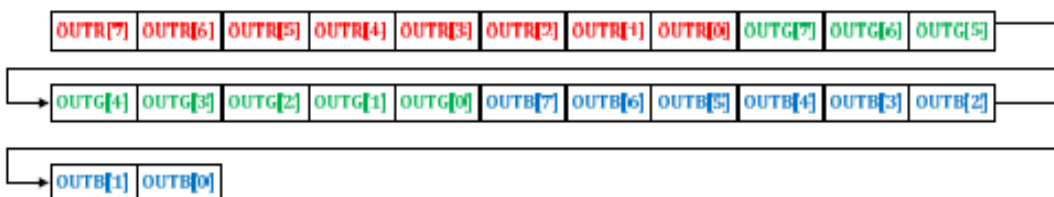
Data transfer time (TH+TL=1.2µs±600ns)

T0H	0 code, high voltage time	0.3µs	±150ns
T1H	1 code, high voltage time	0.9µs	±150ns
T0L	0 code, low voltage time	0.9µs	±150ns
T1L	1 code, low voltage time	0.3µs	±150ns
RES	Low voltage time	Above 50µs	-

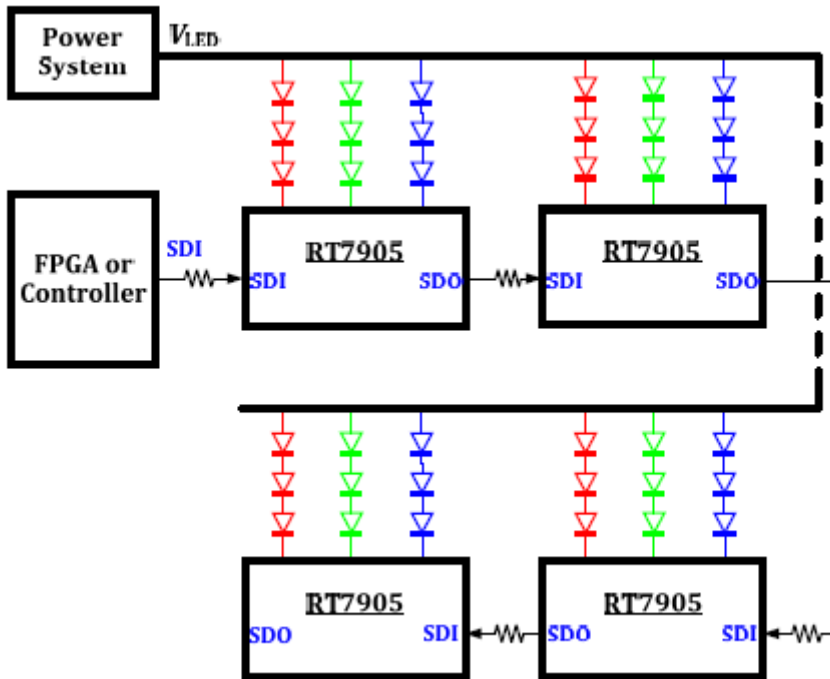
Data communication



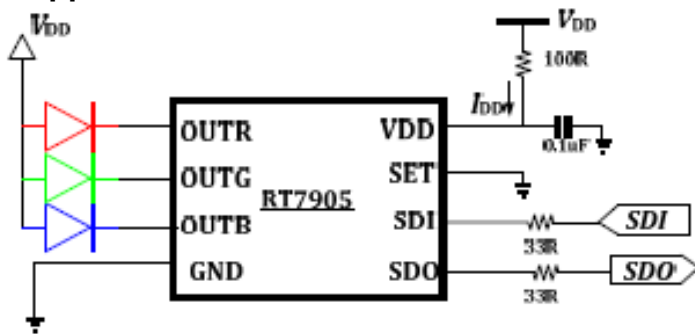
Single data in 24 bits for RGB



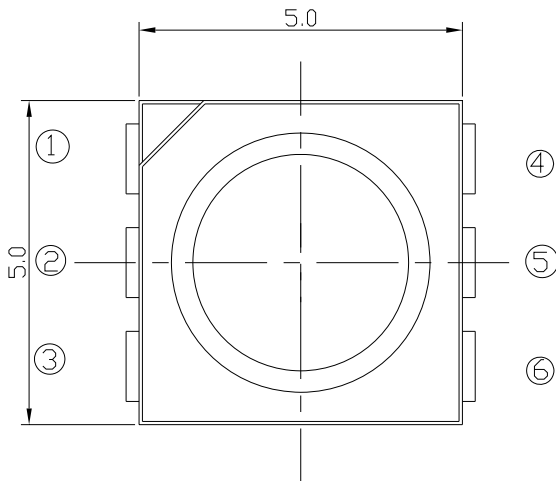
Cascading connection



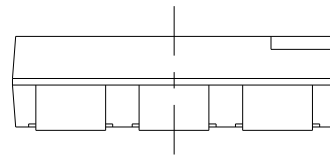
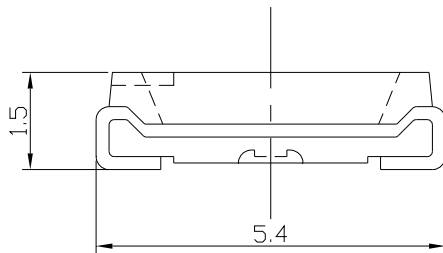
5V application circuit



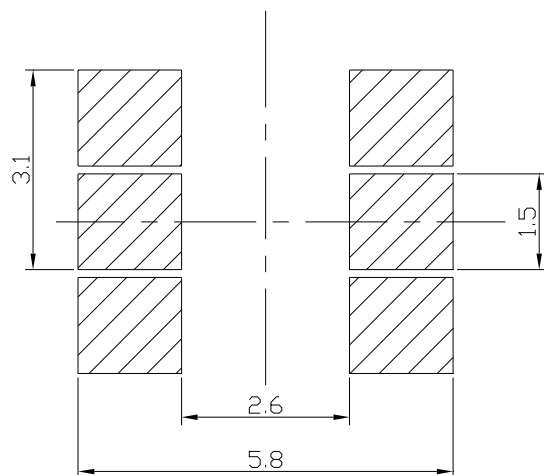
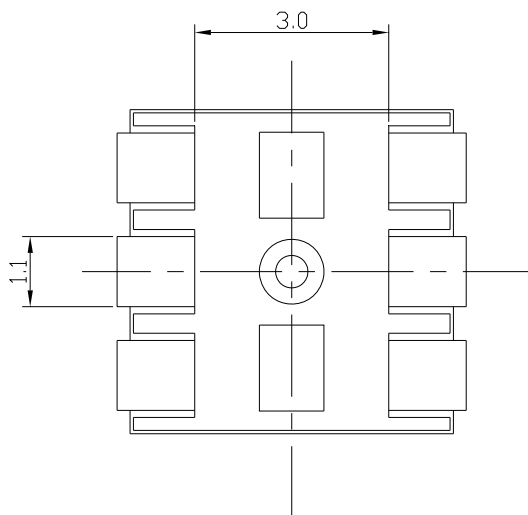
Package Dimension



- 1. Do
- 2. Di
- 3. Vcc
- 4. Vss
- 5. Vdd

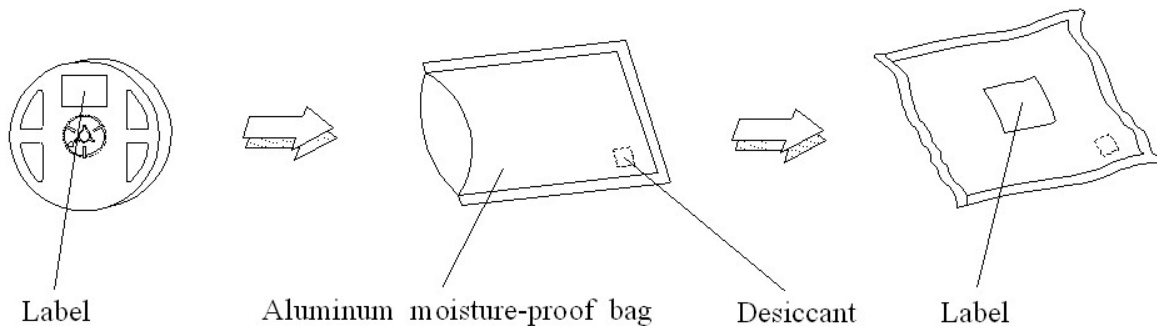


Recommend soldering pad design



Note: Tolerances unless mentioned ± 0.1 mm. Unit = mm

Moisture Resistant Packing Process

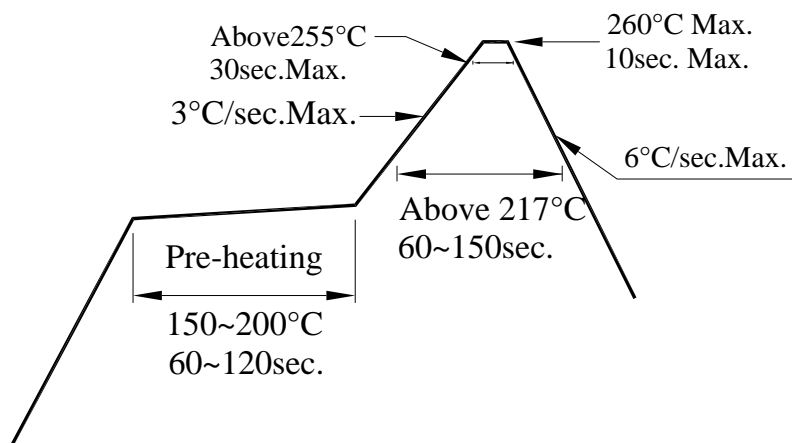


Note: Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

Precautions for Use

1. Over-current-proof

1.1 Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).



2. Storage

- 2.1 Do not open moisture proof bag before the products are ready to use.
- 2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.
- 2.3 After opening the package: The LED's floor life is 168 hours under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.
- 2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.
Baking treatment : $60\pm 5^\circ\text{C}$ for 24 hours.

3. Soldering Condition

- 3.1 Pb-free solder temperature profile
- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact YesLED before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

Revision History

Rev.	Modified date	File modified contents
1	2016/07/21	New Spec