



YETDA INDUSTRY LTD.

Technical Data Sheet

MODEL NO : B5050RGB4-PLK

5050 Package 5.0*5.0*1.6mm TOP LEDs

Features :

- Package in 8mm tape on 7" diameter reel
- Compatible with automatic placement equipment
- Compatible with reflow solder process

Applications :

- Indicators
- Automotive : backlighting in dashboard and switch
- Backlight for LCD

Dice material	Emitted color	Lens Color
AlGaInP/GaAs	Red	Water transparent
InGaN	Green	
InGaN	Blue	

Electrical/Optical Characteristics(Ta=25°C)

Parameter	Test Condition	Symbol	Value			Unit	
			Min	Typ	Max		
Spectral half bandwidth	IF=12mA	$\Delta \lambda$		20		nm	
			Red	34			
			Green	25			
Dominant wavelength	IF=12mA	λ_D	620	625		nm	
			Green	520	525		
			Blue	465	470		
Forward voltage	IF=12mA	VF	1.8	2.2		V	
			Green	2.8	3.2		
			Blue	2.8	3.2		
Luminous intensity	IF=12mA	Iv	400	500		mcd	
			Green	800	1000		
			Blue	200	300		
Viewing angle at 50% Iv	IF=10mA	2θ 1/2		120		Deg	
Reverse current	VR=5V	IR			10	μA	

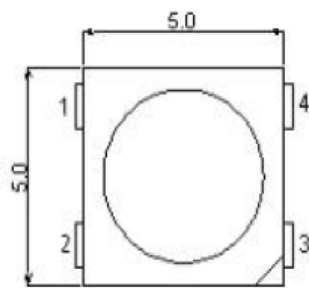


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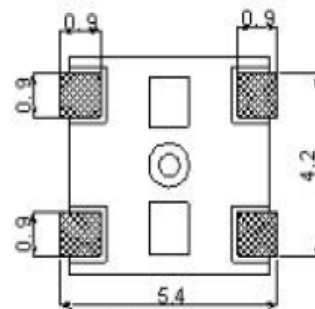
Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Value			Unit
		R	G	B	
Power dissipation	Pd		200		mW
Forward current	I _F	12			mA
Reverse voltage	V _R	5			V
Operating temperature range	Top	-42 ~+80			°C
Storage temperature range	Tstg	-40 ~+80			°C
Peak pulsing current (1/8 duty f=1kHz)	I _{FP}	125			mA

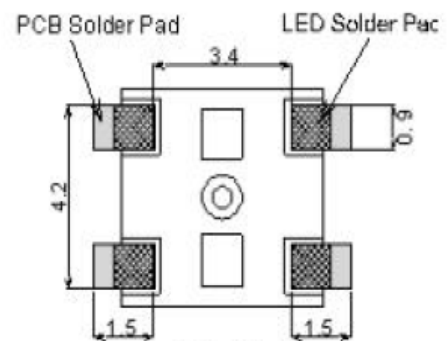
PACKAGING DIMENSIONS (mm):



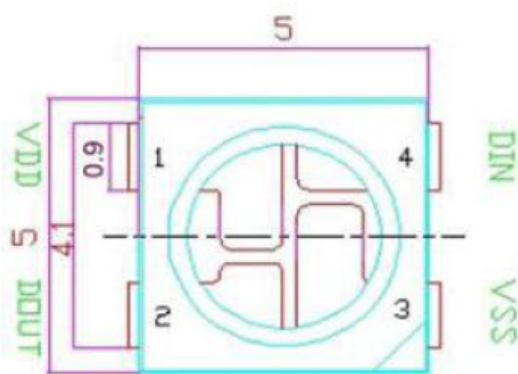
Top View



Back View



Solder Pad



(正面直观图) VDD:(芯片电源) DIN:(数据输入) DOUT:(数据输出)
VSS:(IC 控制系统)

NOTES:

1. All dimensions are in millimeters (inches);
2. Tolerances are ± 0.1 mm (0.004inch) unless otherwise noted.



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The electrical parameters (unless otherwise specified, $T_A = -20 \sim +70 \text{ }^\circ\text{C}$, $V_{DD} = 4.5 \sim 5.5\text{V}$, $V_{SS} = 0\text{V}$):

Parameter	Symbol	Min	Typical	Max	Unit	Test conditions
The chip supply voltage	VDD	---	5.2	---	V	---
R/G/B port pressure	VDS,MAX	---	---	26	V	---
DOUT drive capability	IDOH	---	49	---	mA	DOUT connect ground, the maximum drive current
	IDOL	---	-50	---	mA	DOUT connect +, the largest current
The signal input flip threshold	VIH	3.4	---	---	V	VDD=5.0V
	VIL	---	---	1.6	V	
The frequency of PWM	FPWM	---	1.2	---	KHZ	---
Static power consumption	IDD	---	1	---	mA	---

The dynamic parameters ($T_a = 25 \text{ }^\circ\text{C}$):

Parameter	Symbol	Min	Typical	Max	Unit	Test conditions
The speed of data transmission	fDIN	---	800	---	KHZ	The duty ratio of 67% (data 1)
DOUT transmission delay	TPLH	---	---	500	ns	DIN→DOUT
	TPHL	---	---	500	ns	
IOUT Rise/Drop Time	Tr	---	100	---	ns	VDS=1.5 IOUT=13mA
	Tf	---	100	---	ns	



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Typical Electro-Optical Characteristics Curve:Red

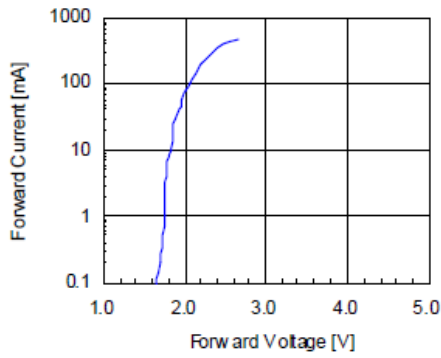


Fig 3. Forward Voltage vs. Temperature

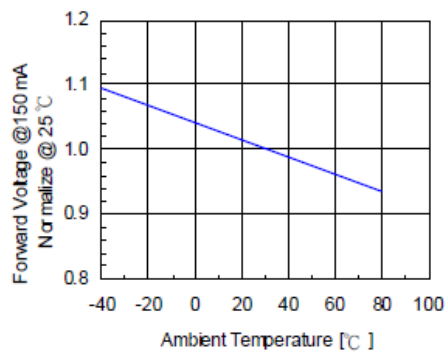


Fig 5. Relative Intensity vs. Wavelength

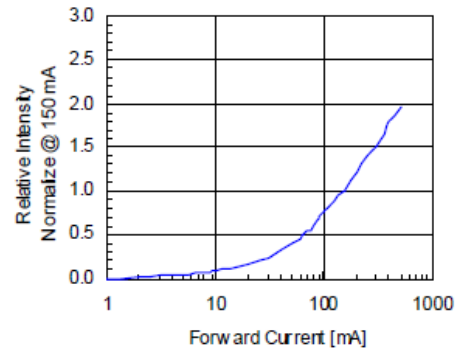
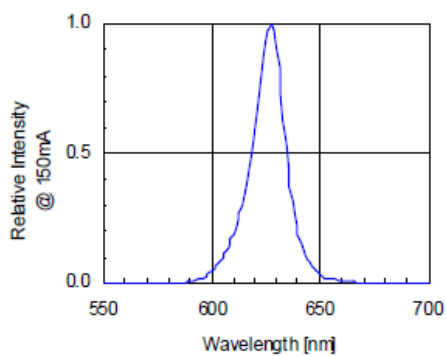
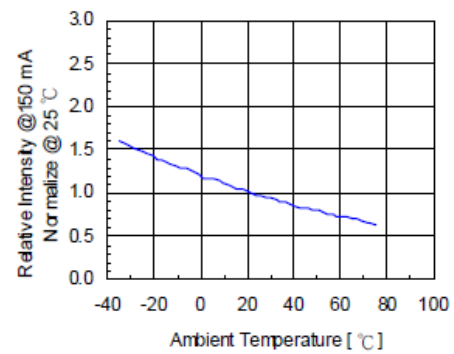


Fig 4. Relative Intensity vs. Temperature





Typical Electro-Optical Characteristics Curve: Green

Fig 1. Forward Current vs. Forward Voltage

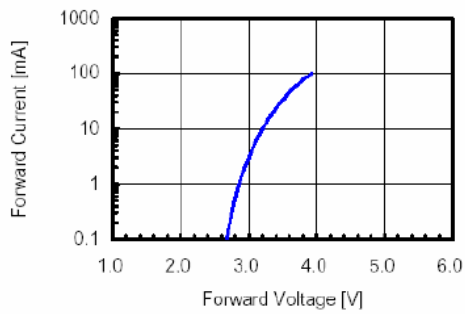


Fig 2. Relative Intensity vs. Forward Current

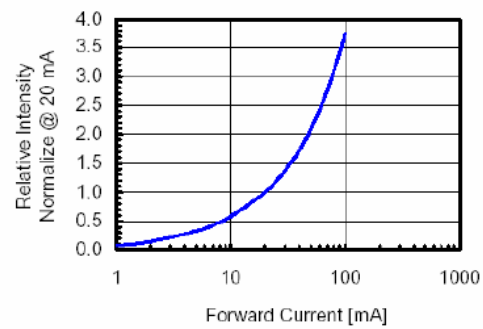


Fig 3. Forward Voltage vs. Temperature

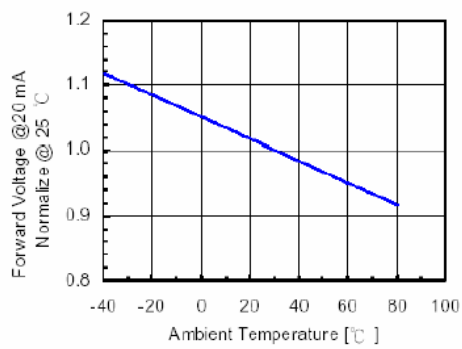


Fig 4. Relative Intensity vs. Temperature

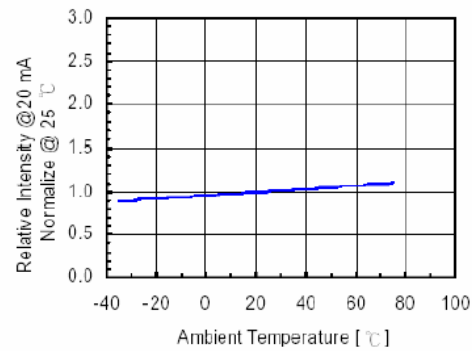
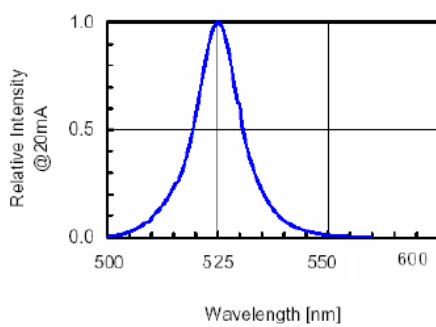


Fig 5. Relative Intensity vs. Wavelength





Typical Electro-Optical Characteristics Curve: Blue

Fig 1. Forward Current vs. Forward Voltage

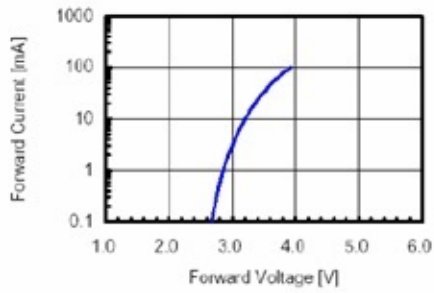


Fig 2. Relative Intensity vs. Forward Current

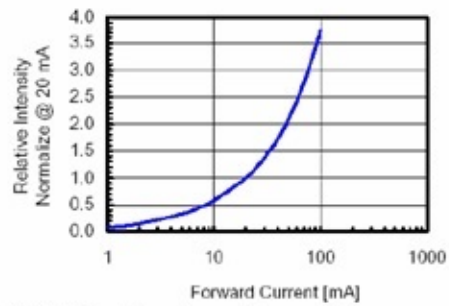


Fig 3. Forward Voltage vs. Temperature

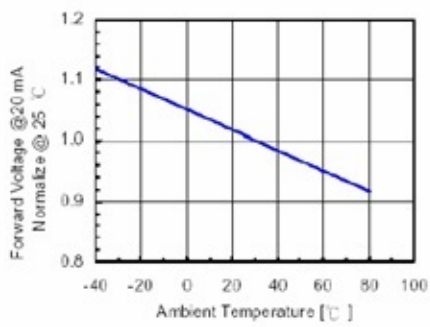


Fig 4. Relative Intensity vs. Temperature

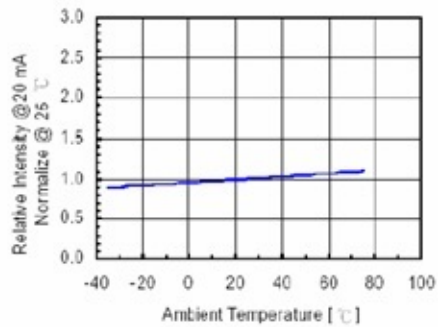
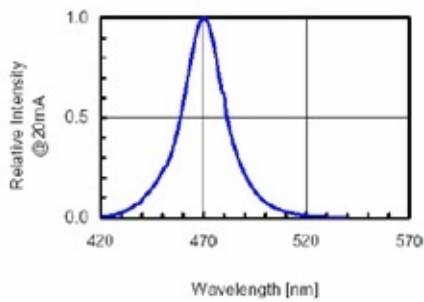


Fig 5. Relative Intensity vs. Wavelength

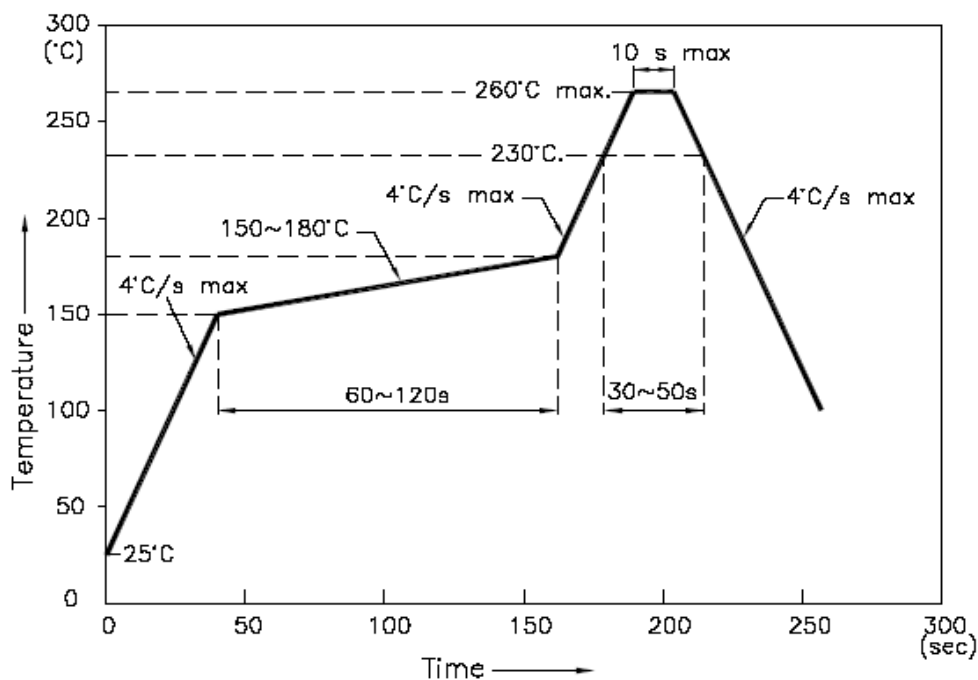




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Precautions For Use :
Over - current - proof
Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen)
Storage
1. The operation of temperature and R.H. are : $5^{\circ}\text{C} \sim 30^{\circ}\text{C}$, 60%R.H. Max.
2. Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a dampproof box with desiccating reagent. Considering the tape life, we suggest our customers to use our products within 1.5 year (from production date) .
3. It's recommended to bake before soldering when the package is unsealed after 72 hrs. The condition is : $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 15hrs.

■ Reflow Temp/Time



NOTES:

1. We recommend the reflow temperature $245^{\circ}\text{C} (\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. dont cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.



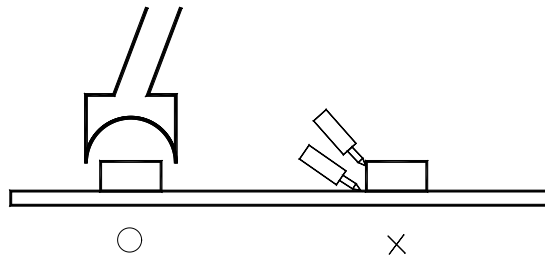
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■Soldering iron

Basic spec is $\leq 5\text{sec}$ when 260°C . If temperature is higher, time should be shorter ($+10^{\circ}\text{C} \rightarrow -1\text{sec}$). Power dissipation of iron should be smaller than 20W , and temperatures should be controllable. Surface temperature of the device should be under 230°C .

■Rework

1. Customer must finish rework within 5 sec under 260°C .
2. The head of iron can not touch copper foil
3. Twin-head type is preferred.



- Avoid rubbing or scraping the resin by any object, during high temperature, for example reflow 、 solder etc.