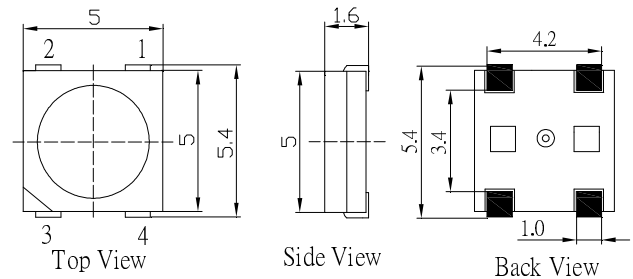


# CONTROLLED R/G/B/W LED

## ■Features

- Top SMD internal integrated high quality external control line serial cascade constant current IC. control circuit and the chip in SMD 5050 components, to form a complete control of pixel, color mixing uniformity and consistency
- built-in data shaping circuit, a pixel signal is received after wave shaping and output waveform distortion will not guarantee a line;
- The built-in power on reset and reset circuit, the power does not work;
- gray level adjusting circuit (256 level gray scale adjustable)
- red drive special treatment, color balance
- line data transmission;
- plastic forward strengthening technology, the transmission distance between two points over 10M Using a typical data transmission frequency of 800 Kbps, when the refresh rate of 30 frames per sec

## ■Outline Dimension



NO.	Symbol	Function description
1	VDD	Power supply LED
2	DOUT	Control data signal output
3	VSS	Ground
4	DIN	Control data signal input

Unit:mm  
Tolerance:±0.20mm  
unless otherwise noted

## ■Applications

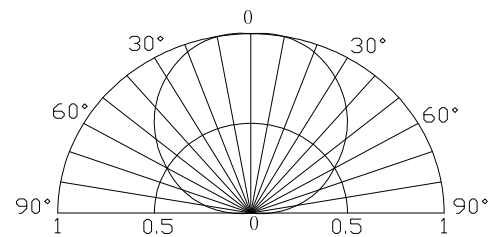
- Full color LED string light, LED full color module, LED super hard and soft lights, LED guardrail tube, LED appearance / scene lighting
- LED point light, LED pixel screen, LED shaped screen, a variety of electronic products, electrical equipment etc..

## ■Absolute Maximum Rating

(Ta=25°C VSS=0V)

Item	Symbol	Value	Unit
Power supply voltage	V <sub>DD</sub>	+3.5~+5.5	V
Logic input voltage	V <sub>IN</sub>	-0.5~V <sub>DD</sub> +0.5	V
Working temperature	T <sub>opt</sub>	-40~+85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +105	°C
ESD pressure	V <sub>ESD</sub>	4K	V
Lead Soldering Temperature	T <sub>sol</sub>	260°C/10sec	-

## ■Directivity



## ■LED characteristic parameter

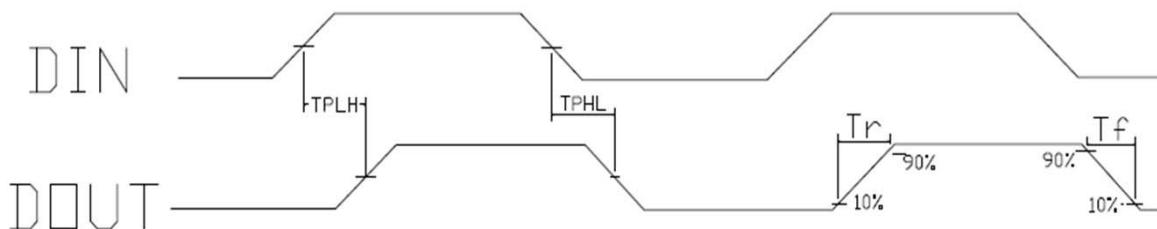
Emitting color	Wavelength (nm)/CCT(K)
Red	620-630
Green	515-525
Blue	460-470
White	6000-7000K

■The electrical parameters (unless otherwise specified, TA=-20 ~ +70 °C, VDD=4.5 ~ 5.5V, VSS=0V):

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 (Ta=25 °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	---	---	40	ns	VDS=1.5 IOUT=9mA
	Tf	---	---	80	ns	

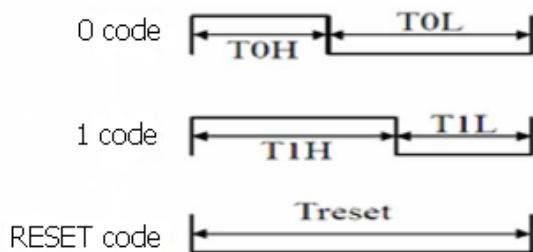


■The data transmission time ( $T_H+T_L=1.25\mu s\pm 600ns$ ):

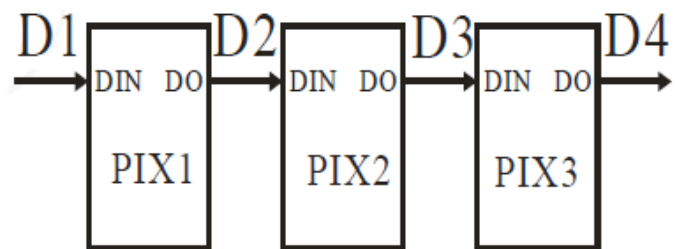
T0H	0 code, high level time	0.3 $\mu s$	$\pm 0.15\mu s$
T0L	0 code, low level time	0.9 $\mu s$	$\pm 0.15\mu s$
T1H	1 code, high level time	0.6 $\mu s$	$\pm 0.15\mu s$
T1L	1 code, low level time	0.6 $\mu s$	$\pm 0.15\mu s$
Trst	Reset code, low level time	80 $\mu s$	

■Timing waveform:

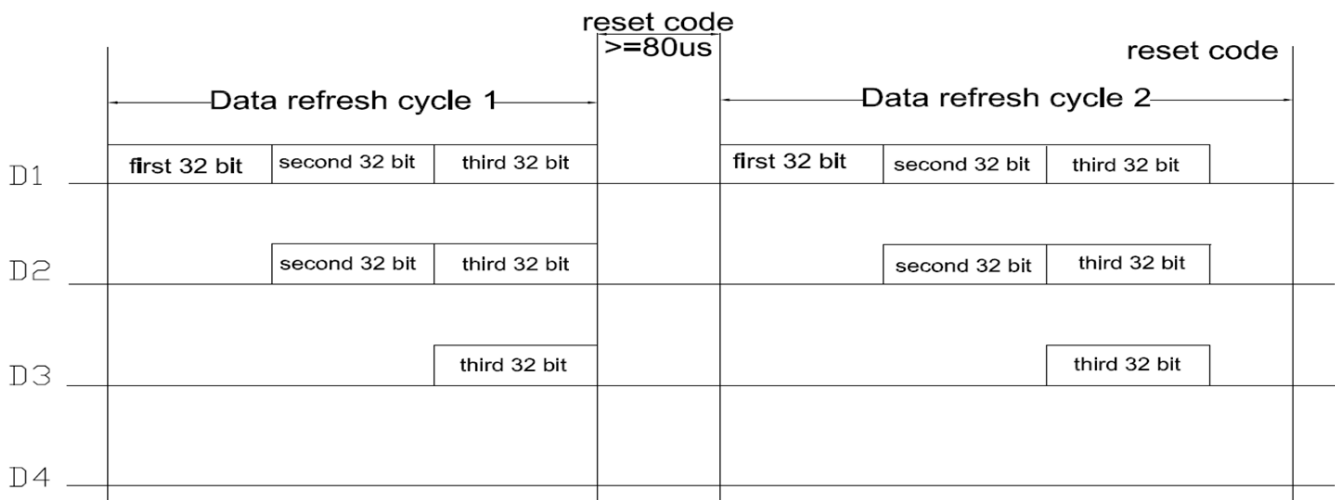
Input code:



Connection mode:



■The method of data transmission:



Note: the D1 sends data for MCU, D2, D3, D4 for data forwarding automatic shaping cascade circuit.

■The data structure of 32bit:

R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4
G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
W7	W6	W5	W4	W3	W2	W1	W0				

Note: high starting, in order to send data (R7 - R6 - ..... ..W0)

■The typical application circuit:

