

PRODUCTS DATASHEET

Products Name: 5V 5050 WS2813B Addressable RGB Led Strip

Series Name: 144 WS2813B Led Pixel Strip

Model No. : HC-F5V-144LED-WS2813B-W-IP30
HC-F5V-144LED-WS2813B-W-IP60
HC-F5V-144LED-WS2813B-W-IP65

HC-F5V-144LED-WS2813B-B-IP30
HC-F5V-144LED-WS2813B-B-IP60
HC-F5V-144LED-WS2813B-B-IP65

Design	Audit	Date	Version
Spring	Spring	2017-07-11	V1.0

Catalog:

No.	Content	Remark
1	Products Feature Description	
2	Model No.&Specification	
3	Products&Application Picture	
4	Products Basic Parameters	
5	IC Data transfer protocol	
6	Physical Dimension	
7	Controller&Wire Distributions	

1、 Products Feature Description

1).Control Principle :

One IC control one LED and form a circuit(a group);

Via controlling IC,controller can control the circuit inside FPCB,thus controlling LED strip to change different of effects:flashing,Chase,jump,clockwise/anti-clockwise/single color/multiple color horse racing, monochrome Happy Valley, color Happy Valley, single led chase from beginning to end, water, simulation lightning;

This type led strip's changing effect are not limited to currently 94 effects built-in controller,according to customer requirements,support customize effects as well;

For screen type,it can display text,letters, pictures, flash etc;

2).Environmental Friendly&Safety:

Adopt high quality&brightness SMD 5050 LED;

With low power consumption, small generates heat, glare-free, shock-resistant and so on. Low voltage DC 5V volt power supply, safety and high reliability.

3).Richly varied color also support customize or DIY adjustment by controller;

4).Long lifespan:The average life span is 50, 000 hours.

5).Cut&Soldering convenient:every led forms one circuit,so you can cut along the cut-line on FPCB board,which allows customer to cut and solder at will,can meet all requirements on the different led strip length;

6).Flexible&Soft:Adopt flexible FPCB as base board,you can connect,bend,cut and install the led strip at will;

7).Light&Thin:Fit in narrow space installation;

2、 Model No.&Specification

Remark:

IP30=Non waterproof+3M tape;

IP60=Silicone glue waterproof+3M tape;

IP65=Silicone tube waterproof;

Model No.	Voltage	Power (W/M)	LED Qty	Color	Pixel	Length	FPCB Color	IP Grade
HC-F5V-144LED-WS2813B-W	DC5V	72W	144/m	RGB	144	1M	White	IP30 IP60 IP65
HC-F5V-144LED-WS2813B-B	DC5V	72W	144/m	RGB	144	1M	Black	IP30 IP60 IP65

3、Products&Application Picture:

HC-F5V-144LED-WS2813B-W(-IP30/IP60/IP65)

HC-F5V-144LED-WS2813B-B(-IP30/IP60/IP65)



IP30



IP60



IP65



4、Products Basic Parameters:

4-1. Parameters

1	Work Voltage	DC5V	2	Power (m)	72W/M
3	Current Rating	14.4A	4	Total Power(reel)	72W
5	LED Model No.	WS2813B	6	Channel Sequence	GRB
7	Gray Scale Level	256	8	Data Transfer Speed	800K
9	Control Method	Single wire return zero code External control	10	LED Package Type	5050 RGB
11	Viewing Angle	120	12	FPCB Board Color	White Color Black Color
13	FPCB Width	10mm	14	Work Temperature	-25°C~80°C
15	IP Grade	IP30 (Non waterproof+3M tape) IP60 (Silicone glue waterproof+3M tape) IP65(Silicone tube waterproof)	16	Storage Temperature	-40°C~100°C

4-2 .LED Parameter

LED Characteristics

	WS2813A	WS2813B
Quiescent Current	0.7mA	0.7mA
RGB Channel Constant Current	16mA	16mA
RED Brightness (Central Value)	480mcd	360mcd
GREEN Brightness (Central Value)	1500mcd	1150mcd
BLUE Brightness (Central Value)	320mcd	220mcd
WHITE Brightness (Central Value)	2300mcd	1710mcd
RED Wavelength	620-625nm	620-625nm
GREEN Wavelength	515-525nm	515-525nm
BLUE Wavelength	465-475nm	465-475nm

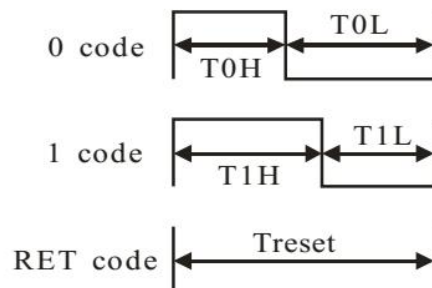
5.IC(WS2813B) Data transfer protocol

5-1.Data transfer time($T_H+T_L=1.25\mu s\pm 300ns$)

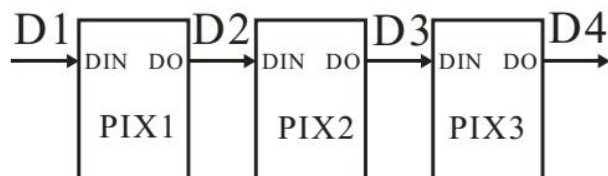
T0H	0-code, High-level time	220ns~380ns
T1H	1-code, High-level time	580ns~1.6 μs
T0L	0-code, Low-level time	580ns~1.6 μs
T1L	1-code, Low-level time	220ns~420ns
RES	Frame unit, Low-level time	> 280 μs

5-2.Sequential waveform

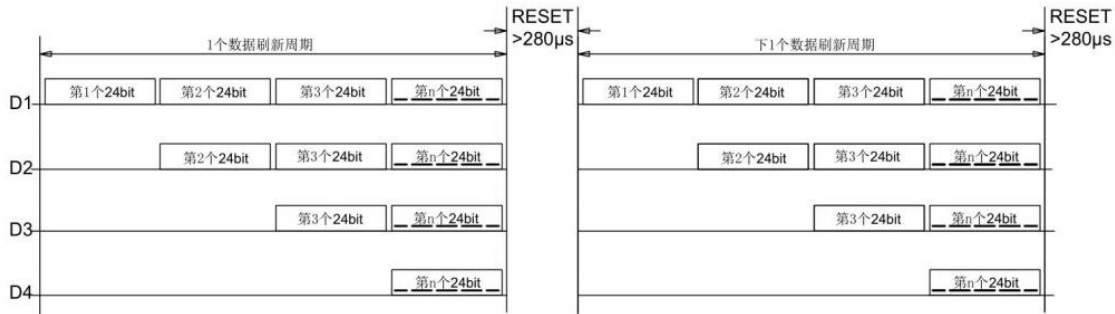
Sequence chart



Cascade method



5-3. Data transmission method :



Note: D1 is the data from MCU, and D2, D3, D4 are from Cascade Circuits.

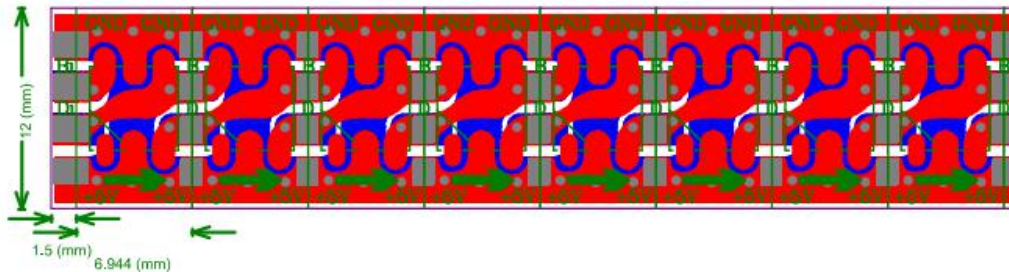
Composition of 24bit data

G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4	R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0
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Note: Data transmit in order of GRB, high bit data is first.

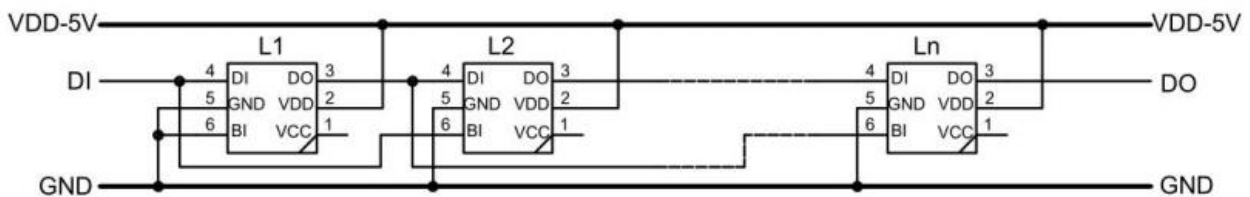
6、 Physical Dimension :

6-1. 144led/m Dimension

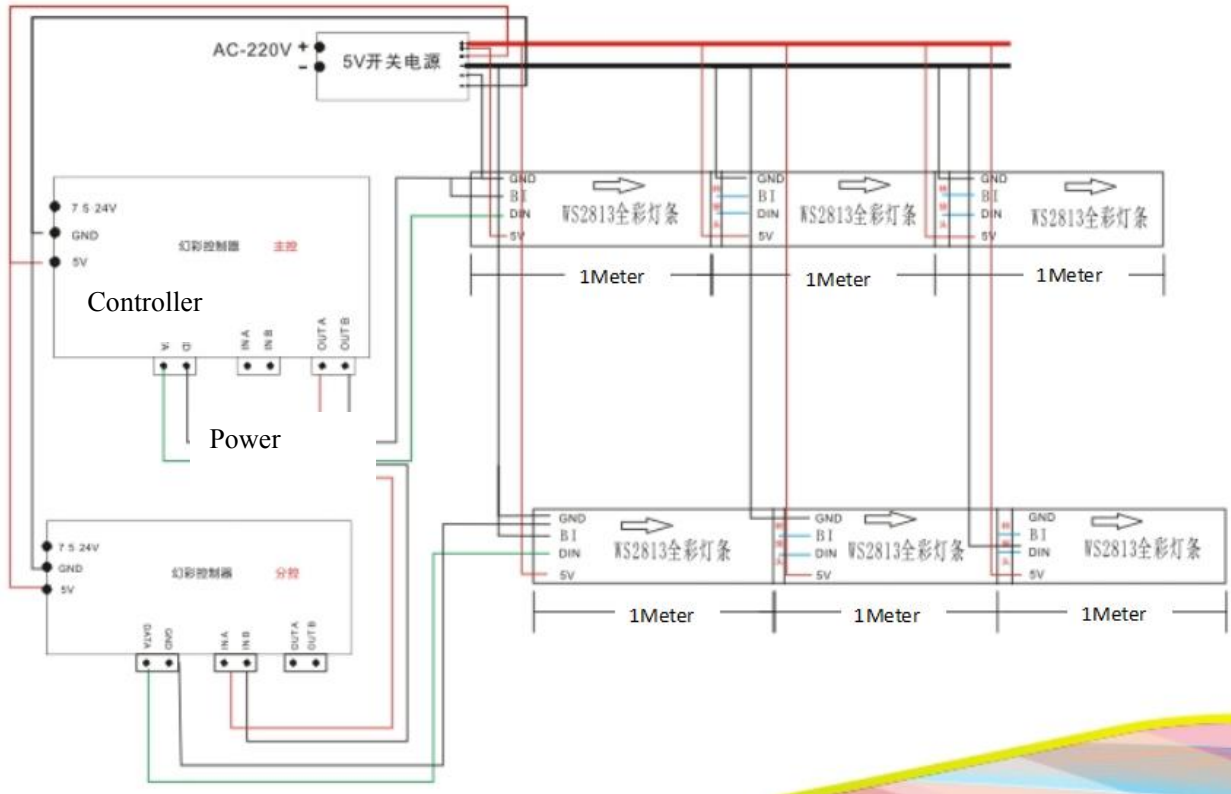


6-2. Typical Application Circuit

For complicated wiring & space-saving



7.Controller&Wire Distributions



(Data-Sheet Change History)

Version	Status Bar	Modify Content Summary	Date	Designer	Reviser	Approved
V1.0	N	New	20170711	Spring	Spring	Mr.Shen

Remarks:

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

Status bar:

N--New;A--Add;M--Modify;D-Delete;