



**Ø5_Ø8mm DIP4
Pixel led Datasheet**

Specification

Model No.: WS2811-F5/F8
 Product: 5V DIP4 0.2W Pixel led
 Document No.: SPC-TOP-C/230019
 Issue Date :18-04-2023
 Version: B-23



Greeled Approval		Customer Approval	
Audit	Confirmation	Approval	Audit
Mr Chiang	Ms Lee		
Date:		<input type="checkbox"/> Qualified	<input type="checkbox"/> Disqualified
Reason:			

1.Product feature:

- The control circuit and RGB chips are integrated in one F5/F8 DIP4 led package as one pixel,Built in various of function units.
- Input voltage 4.5-5.5V,Default current 12mA.
- The PWM Scanning Frequency 400hz
- Each color 8Bits,256 Gray scale, $256*256*256=16777216$ true color display.
- Data transmission rate up to 800kbps
- The pixel cascades number is not less than 1024 pixels at 30 frame per second.
- The data transmit base on SPI Communication protocol

2.Working principle description:

The led adopt single data signal communication method, The data encoding adopt RZ code. The Din of led receive data from signal source,locking 24bit data and send them to data latch, PWM scanning unit deal 24bit data and send relative duty ratio signal to relative Emitting chips OUTR,OUTG,OUTB.

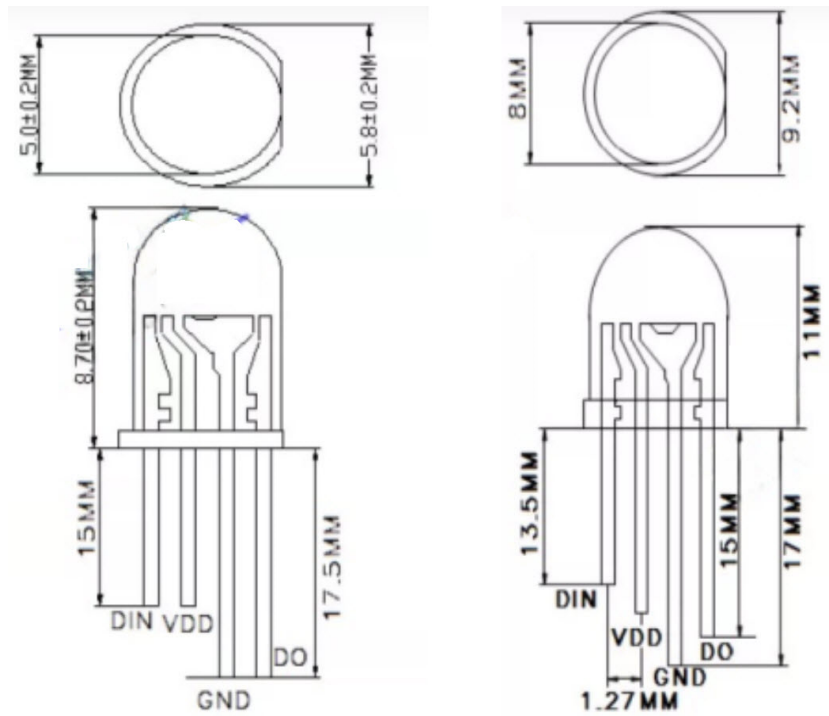
At the same time, Reshaping and amplify extra data,Forwarding them to subsequent led via Dout of led. Based on this rule. The data reduce 24bit pass through every pixel. All Emitting chips receive relative duty ratio signal and Emitting color.

The data auto-reshaping forwarding technology to ensure that the number of cascaded pixel is not limited. The more cascaded pixels request the higher data transmission rate.

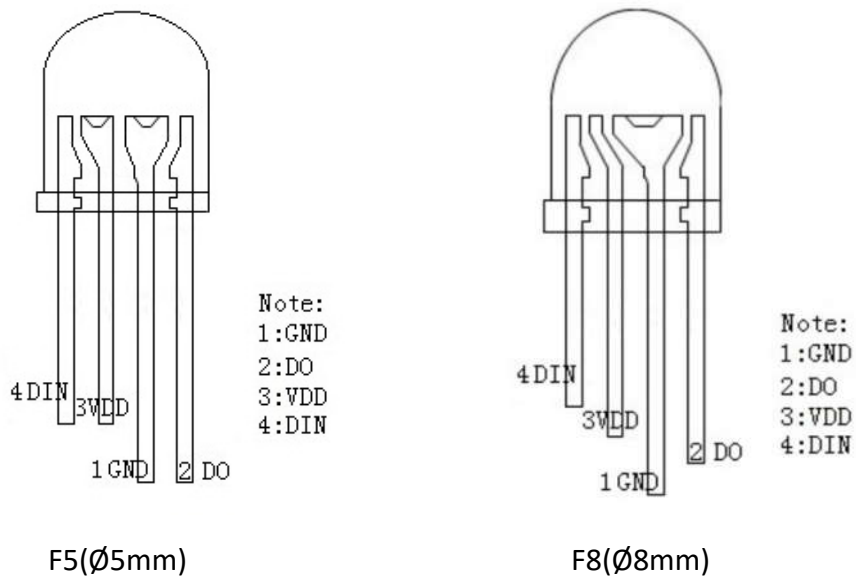
3.Application:

- Billboard,light box,Device
- The Component of light source.

4.Dimension:



5.Pin diagram and function description:



No.	Symbol	Function description
1	GND	Ground
2	DO	Control data signal forwarding output
3	VDD	Power supply
6	DIN	Control data signal input

6.RGB chip characteristic parameter Ta=25℃ at 12mA:

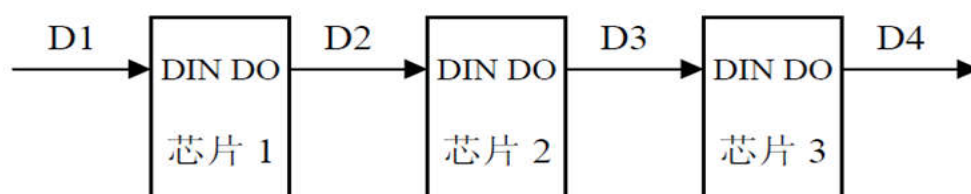
Color	Wavelength(nm)	Light Intensity (mcd)	Beam Angle
Red	620-630	300-500	110°
Green	520-535	750-1000	110°
Blue	460-475	200-350	110°

7.Electrical characteristics (if no special instructions, Ta=25℃):

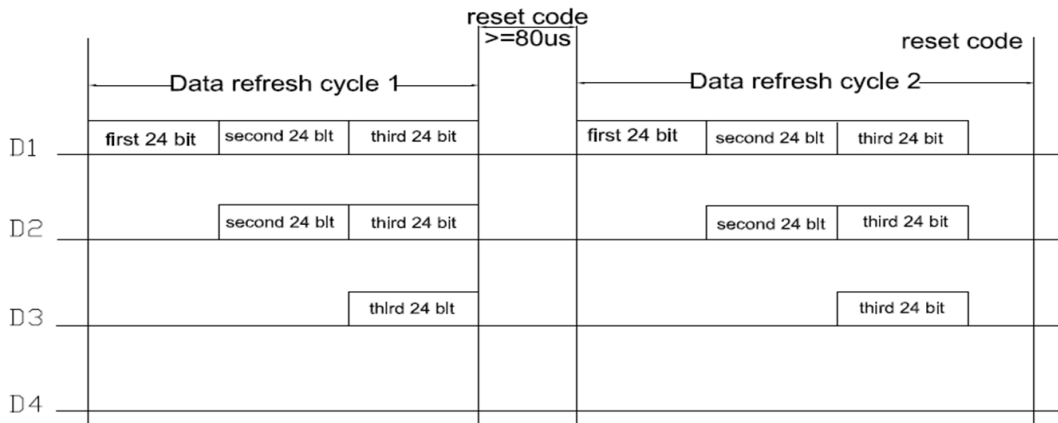
Parameter	Symbol	Min	Typical	Max	Unit
The chip supply Voltage	VDD	4.5	5.0	5.5	V
R/G/B port output drive current	IOUT	-	12	-	mA
High level input voltage	VIH	4	-	-	V
Low level input voltage	VIL	-	-	1	V
Static power	IDD	-	1	-	mA
PWM Frequency	fPWM	-	400	-	HZ

8.Data Format and Timing (TH+TL≥1.25μs)

Name	Description	Min	Typical	Max	Allowable error	Unit
T0H	0 code, high level time	-	0.35	-	±0.15	US
T1H	1 code, high level time	-	1.40	-	±0.15	US
T0L	0 code, low level time	-	1.40	-	±0.15	US
T1L	1 code, low level time	-	0.35	-	±0.15	US
TRST	Reset code, low level time	80	-	-	-	US



Data transmission method

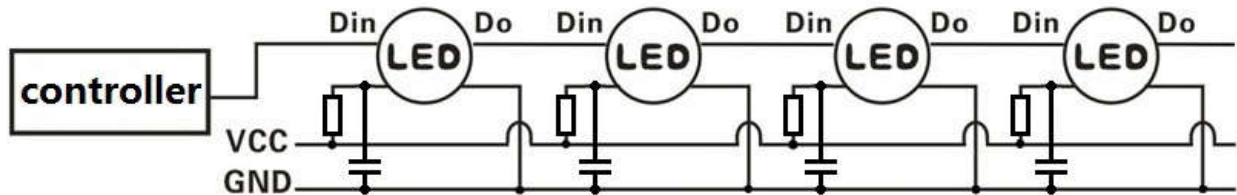


Note: the D1 for MCU send data, D2, D3, D4 for cascade circuit automatic forwarding data.

24bit Data

R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
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Note: High Bit is sent firstly , according to the order of the RGB sending data



9.Packing

M/N	Description	Pcs/ Bag	Bag/Ctn
WS2811-F5	5V,Ø5mm,RGB Pixel led	500pcs	20bag/Ctn
WS2811-F8	5V,Ø8mm,RGB Pixel led	500pcs	15bag/Ctn

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