

8mm ws2811 chip on die led

Picture



Features and Benefits

- λ Intelligent reverse connect protection, the power supply reverse connection does not damage the IC.
- λ The control circuit and the LED share the only power source.
- λ Control circuit and RGB chip are integrated in a package of F8 components, form a complete control of pixel point.
- λ Built-in signal reshaping circuit, after wave reshaping to the next driver, ensure wave-form distortion not accumulate.
- λ Built-in electric reset circuit and power lost reset circuit.
- λ Each pixel of the three primary color can achieve 256 brightness display, completed 16777216 color full color display, and scan frequency not less than 400Hz/s.
- λ Cascading port transmission signal by single line.
- λ Any two point the distance less than 2Meter transmission signal without any increase circuit.
- λ When the refresh rate is 30fps, cascade number are not less than 1024 points.
- λ Send data at speeds of 800Kbps.
- λ The color of the light were highly consistent, cost-effective..

Applications

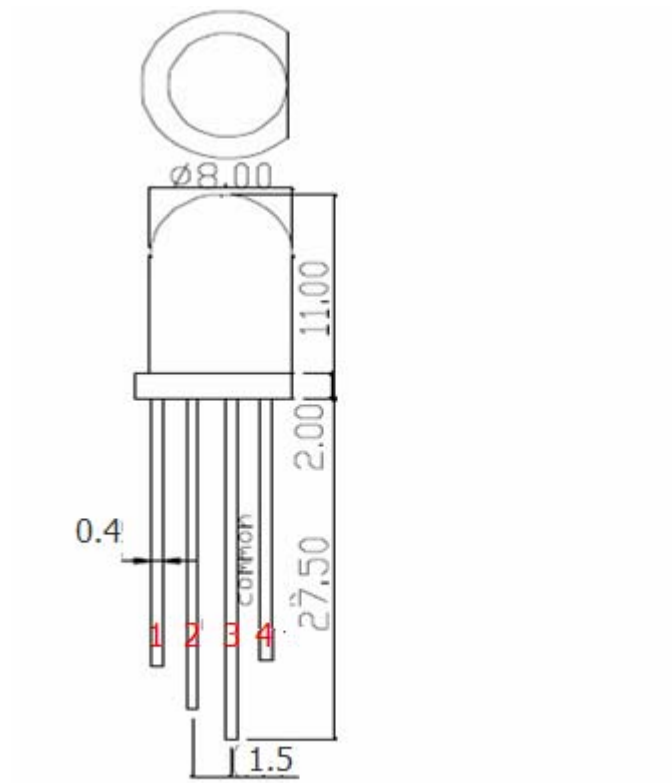
- λ Full-color module, Full color soft lights a lamp strip.
- λ LED decorative lighting, Indoor/outdoor LED video irregular screen.

General description

8mm WS2811 chip on die led is a intelligent control LED light source that the control circuit and RGB chip are integrated in a package of F8 components. It internal include intelligent digital port data latch and signal reshaping amplification drive circuit. Also include a precision internal oscillator effectively ensuring the pixel point light color height consistent.

The data transfer protocol use single NZR communication mode. After the pixel power-on reset, the DIN port receive data from controller, the first pixel collect initial 24bit data then sent to the internal data latch, the other data which reshaping by the internal signal reshaping amplification circuit sent to the next cascade pixel through the DO port. After transmission for each pixel, the signal to reduce 24bit. pixel adopt auto reshaping transmit technology, making the pixel cascade number is not limited the signal transmission, only depend on the speed of signal transmission.

Mechanical Dimensions



PIN function

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

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Power supply voltage	V_{DD}	+3.5~+5.3	V
Input voltage	V_I	-0.5~ $V_{DD}+0.5$	V
Operation junction temperature	T_{opt}	-25~+80	°C
Storage temperature range	T_{stg}	-40~+105	°C

Electrical Characteristics ($T_A=-20\sim+70^{\circ}C$, $V_{DD}=4.5\sim5.5V$, $V_{SS}=0V$, unless otherwise specified)

Parameter	Symbol	conditions	Min	Tpy	Max	Unit
Input current	I_I	$V_I=V_{DD}/V_{SS}$	—	—	± 1	μA
Input voltage level	V_{IH}	D_{IN} , SET	$0.7V_{DD}$	—	—	V
	V_{IL}	D_{IN} , SET	—	—	$0.3 V_{DD}$	V
Hysteresis voltage	V_H	D_{IN} , SET	—	0.35	—	V

Switching characteristics ($T_A=-20\sim+70^{\circ}C$, $V_{DD}=4.5\sim5.5V$, $V_{SS}=0V$, $F_{osc}=600KHZ$)

Parameter	Symbol	Condition	Min	Tpy	Max	Unit
Transmission delay time	t_{PLZ}	$CL=15pF, D_{IN}\rightarrow D_{OUT}, RL=10K\Omega$	—	—	300	ns
Fall time	t_{THZ}	$CL=300pF, O_{UTR}/O_{UTG}/O_{UTB}$	—	—	120	μs
Input capacity	C_I	—	—	—	15	pF

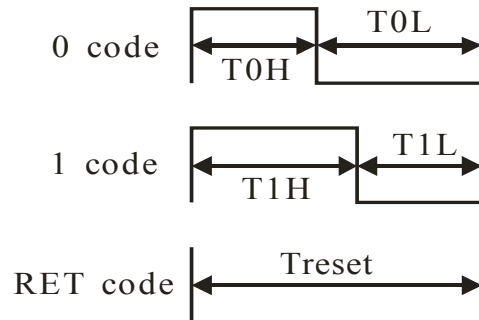
RGB IC characteristic parameter

Emitting color	Model	Wavelength(nm)	Luminous intensity(mcd)	Voltage(V)
Red	13CBAUP	620-625	790-920	2.0-2.2
Green	13CGAUP	522-525	1000-1200	3.0-3.4
Blue	10R1MUX	465-467	400-600	3.0-3.4

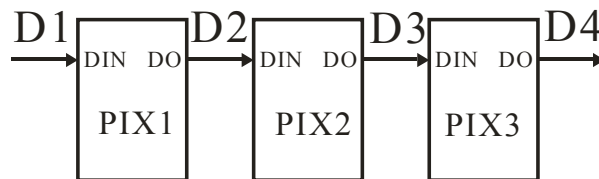
Data transfer time($T_H+T_L=1.25\mu s\pm 600ns$)

T0H	0 code ,high voltage time	0.35us	$\pm 150ns$
T1H	1 code ,high voltage time	0.9us	$\pm 150ns$
T0L	0 code , low voltage time	0.9us	$\pm 150ns$
T1L	1 code ,low voltage time	0.35us	$\pm 150ns$
RES	low voltage time	Above 50 μs	

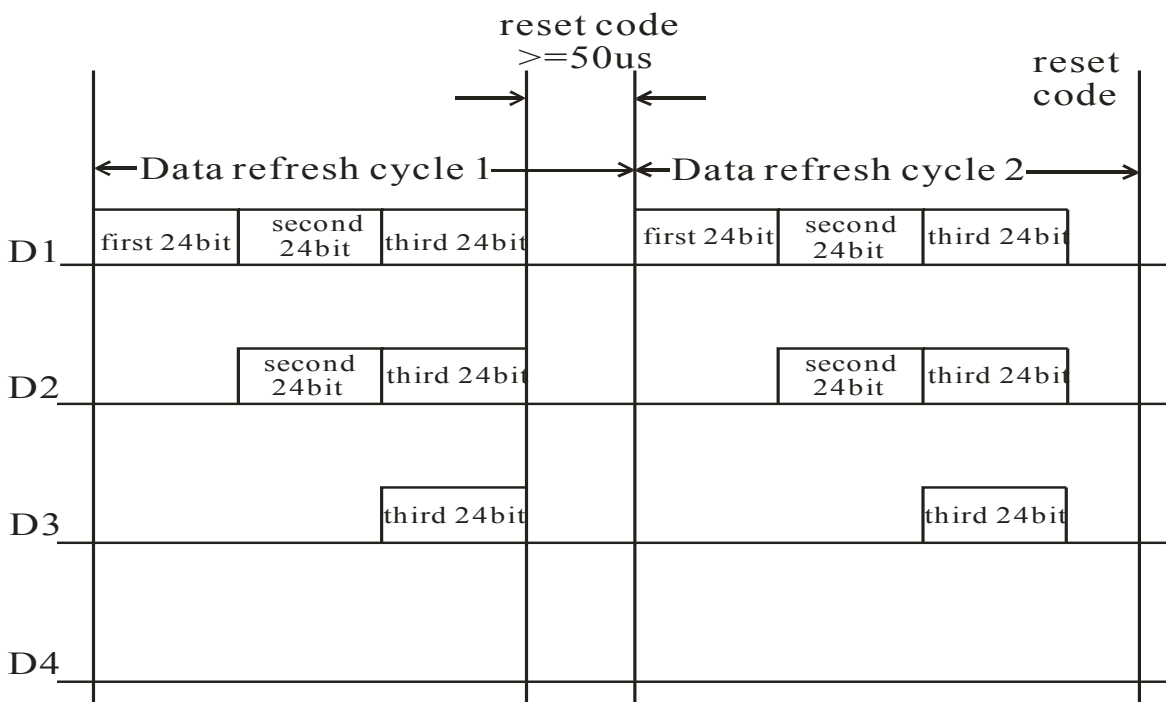
Sequence chart:



Cascade method:



Data transmission method:



Note: The data of D1 is send by MCU,and D2, D3, D4 through pixel internal reshaping amplification to transmit.

Composition of 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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