Features and Benefits

* Intelligent reverse connect protection, the power supply reverse connection does not damage the IC.
* The control circuit and the LED share the only power source.
* Control circuit and RGB chip are integrated in a package of 5050 components, form a complete control of pixel point.
* Built-in signal reshaping circuit, after wave reshaping to the next driver, ensure wave-form distortion not accumulate.
* Built-in electric reset circuit and power lost reset circuit.
* 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.
* Cascading port transmission signal by (DAT CLK) two line.
* Any two point the distance less than 5m transmission signal without any increase circuit.
* When the refresh rate is 30fps, cascade number are not more than 512 pixels
* Send data at speeds of 800Kbps or 1200Kbps
* The color of the light were highly consistent, cost-effective

General description

APA102 is a intelligent control LED light source that the control circuit and RGB chip are integrated in a package of 5050 components. It internal include 3 groups shift register and Self-detection signdecoder circuit. Also include a 4.5V voltage regulator part and continuous oscillator effectively ensuring the pixel point light color height consistent. The data transfer protocol use two line decoder mode. After the pixel power-on reset, the DIN port receive data from controller after decorder , the first pixel collect initial 24bit data then sent to the internal data register, the other data which reshaping by the internal signal decorder circuit sent to the next cascade pixel through the DO CO port. After transmission for each pixel.   LED with low driving voltage, environmental protection and energy saving, high brightness, scattering angle is large, good consistency, low power, long life and other advantages. The control chip integrated in LED above becoming more simple circuit, small volume, convenient installation.

Application:
● Led bill board, Led sign
● Led display, landscape lighting
● Building edge projects

PIN function

NO.	Symbol Function	description
1	SDI	Data Input
2	CKI	Clock Input
3	SDO	Data Ouput
4	CKO	Clock Output
3	GND	Ground
4	VCC	+ 5V

Absolute Maximum Ratings

| Parameter	Symbol	Ratings	Unit
Power supply	voltage	+4.5~+5.5	V
Input voltage	VI	-0.5～VDD+0.5	V
Operation junction temperatur	Topt	-40～+70	℃
Storage temperature range	Tstg	-40~+100	℃

Cascade method:
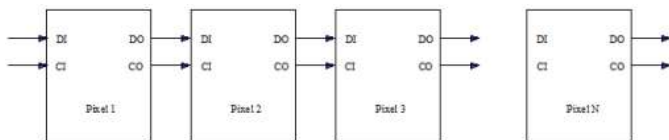
Data transmission method：

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

Composition of 24bit data:

B7	B6	B5	B4	B3	B2	B1	B0	G7	G5	G6	G4	G4	G3	G2	G1	G0	R7	R6	R5	R4	R3	R2	R1	R0

Note: Follow the order of GRB to sent data and the high bit sent at first.

1). Data Format:
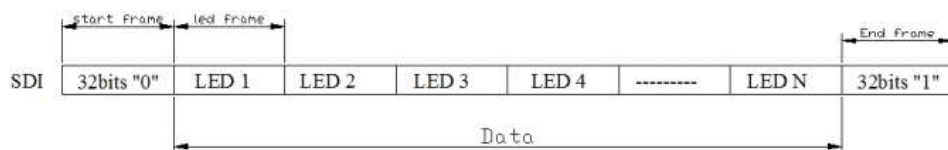
Start frame 32bits

00000000	00000000	00000000	00000000

Led frame 32bits

11111111	Blue	Green	Red
8bits	8bits	8bits	8bits

Note:

1. Don't open the moisture proof bag before you ready use

2. The led should be kept at 30℃ or less and 60％RH or less before opening package.

3. keeping led over 3 months or reuse led that is kept in open-package, Then please eliminate humid. Pls use the constant-temperature oven to toast the led at 60℃for 12Hours. or peel led from roll and toast it at 120℃ for 2hours.

4. the temperature of iron be lower 300℃ and soldering within 3sec, Per solder-pad is observed.