



APA104 LED STRIP

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, for a complete control of pixel point.
- Built-in signal reshaping circuit, after wave reshaping to the next driver, ensure waveform 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 single line.
- Any two point the distance more than 5m transmission signal without any increase circuit.
- When the refresh rate is 30fps, cascade number are not less than 1024 points.
- Send data at speeds of 800Kbps.
- The color of the light were highly consistent, cost-effective..

Applications

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

General description

APA104 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 intelligent digital port data latch and signal reshaping amplification drive circuit. Also include a precision internal oscillator and a 12V voltage programmable constant current control part, effectively ensuring the pixel point light color height consistent. Control part, effectively ensuring the pixel point light color height consistent. The data transfer protocol use single NZR communication mode. After the pixel power 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 transmiss

PIN function

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

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Power supply voltage	V_{DD}	+3.5~+5.3	V
Input voltage	V_I	-0.5~VDD+0.5	V
Operation junction temperature	T_{opt}	-25~+80	°C
Storage temperature range	T_{stg}	-40~+150	°C

Electrical Characteristics ($T_A = -$

20~+70°C, $V_{DD} = 4.5 \sim 5.5V$, $V_{SS} = 0V$, 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	$0.7V_D$	—	—	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~+70°C, $V_{DD} = 4.5 \sim 5.5V$, $V_{SS} = 0V$, unless otherwise specified)

Parameter	Symbol	Condition	Min	Tpy	Max	Unit
Operation frequency	F_{osc2}	—	—	800	—	KHz

Transmission delay time	t_{PLZ}	CL=15pF,DIN→ DOUT,RL=10KΩ	—	—	300	ns
Fall time	t_{THZ}	CL=300pF,OUTR/OUTG/OUTB	—	—	120	μs
Input capacity	C_i	—	—	—	15	pF

LED characteristic parameter

Emitting color	Model	Wavelength (nm)	Luminous intensity (mcd)	Voltage (V)
Red	10RIMUX	620-625	390-420	2.0-2.2
Green	13CGAUP	522-525	660-720	3.0-3.4
Blue	13CBAUP	465-467	180-200	3.0-3.4

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

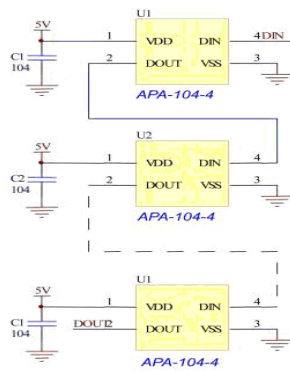
T _{0H}	0 code ,high voltage time	0.35us	±150ns
T _{1H}	1 code ,high voltage time	1.36us	±150ns
T _{0L}	0 code , low voltage time	1.36us	±150ns
T _{1L}	1 code ,low voltage time	0.35us	±150ns
RES	low voltage time	Above 24μs	

Product Features:

- * Energy saving and environment protection.
- * High brightness 5050 SMD LED light strip.
- * Uniformity of light, soft glow in a row, rich colors.
- * Low power consumption, high intensity.
- * Difficult to shock broken, convenient transport.
- * Match the RGB controller and power supplier system.
- * Wide viewing angle.
- * Available in various single and RGB colors.

Product Applications:

Typical application circuit:



- * Light up colorful home life, DIY household lights for hallways, stairs, trails ,windows.
- * Hotels decoration use,Theaters, clubs, shopping malls, festivals and performances use.
- * Architectural decorative lighting,Archway, canopy and bridge edge lighting, Security lighting and Emergency.
- * Extensively applied in Backlighting for signage letters, concealed lighting and advertisement sign lighting.
- * Applicable for automobile & Airplane model decoration, contour lighting or border.

APA104 Datasheet [www.ledlightmake.com/ledlightmake_serv/APA104 Datasheet.pdf](http://www.ledlightmake.com/ledlightmake_serv/APA104%20Datasheet.pdf)