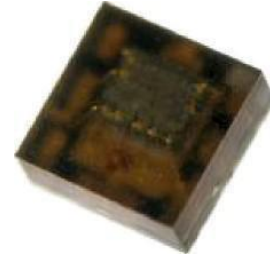




APA2020 Top Mount IC+RGB Chip LED



Features

- RGB Single point of control
- 8Bit(256 level)color set
- 5Bit(32 level)brightness adjustment
- IC input voltage 4.5v~7.5v
- 20mA,Contant current output
- Anti-Reflection resin
- View angle : ≥ 120 (min 50% brightness)
- High contrast

Main Applications

- Indoor display
- Full color display
- Advertising light boxes
- Soft light bar





Product Specifications

	Specification
Luminous Intensity(Iv)	Red : 300--500 mcd Green : 500--850mcd Blue : 120--220 mcd R/G/B@20mA, Ts= 25 °C; Tolerance ±10%
Wavelength	Red : 619--626 nm Green : 520--535 nm Blue : 465--475 nm R/G/B@20mA, Ts= 25 °C; Tolerance ±10%
Applied voltage	5V DC
Power consumption	0.2W
View angle	140°
Refresh rate	400 cycle

Unit: mm Tolerance: +/-0.1 (單位: 誤差為 +/-0.1 毫米)

Outline Dim.(外形尺寸)	Soldering Patten (焊接圖面)
Soldering terminals may shift in the x, y direction.(焊點可能會隨 x,y 方向偏移)	



Absolute maximum ratings:

Supply voltage -0.3 to 0.6V
 Input voltage VSS -0.3 to VDD +0.3V
 Operation temperature -40 to 85 °C
 Storage temperature -40 to 85°C

Note: Stress above those listed may cause permanent damage to the devices.

Electrical characteristics

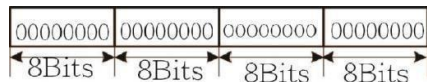
Symbol	Parameter	Condition	Min	Typ.	Max	Units
VDD	Supply voltage			5.0	5.5	V
VIN	Input high voltage		0.7VDD		VDD+0.3	V
VH	Input low voltage		VSS-0.3		0.3VDD	V
LOL	Sink current voltage(RGB)	@VDD=5V,VOL>1V	22.5	24.5	26.5	mA
RIN	Pull high	@VDD=5V		570		KG
VREG	Regulator voltage(VREG)	@VDD>5V	4.4	4.5	4.7	V
FOSC	Oscillator frequency		800		1200	KHz

Function Description

(1) .cascading data structure
 Tabdem N—LED



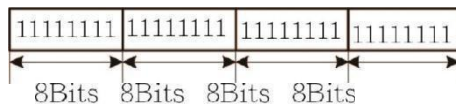
Start Frame 32 Bits



LED Frame 32 Bits



LED Frame 32 Bits



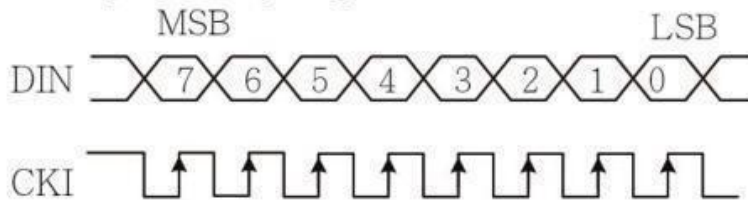


Shenzhen iPixel LED Light Co.,Ltd.

Global bit : 5—bit (32 level) brightness setting , while controlling R, G, B three—color constant current output value , if set the Global bit for the 10000 I 16/31) is the output current is half again the original PWM settings.

DATA MSB↔LSB	Driving Current
00000	0/31
00001	1/31
00010	2/31
...	
11110	30/31
11111	31/31(max)

PWM input and output signals Relations



Data MSB—	Duty Cycle
00000000	0/256(min)
00000001	1/256
00000010	2/256
...	
11111101	253/256
11111110	254/256
11111111	255/256(max)

(2).The number of pixels per second sent to CKI frequency [FCKI minus the Start Frame bit divided by the number 40 the number of LED Frame bit 32, if CKI frequency (FCKI) to 512KHz, the pixel number (512000—40) /32=15998, if the 50 second update Views can be connected in series LED number 15998/50=319.To increase the number of cascaded IC CKI frequency to be increased.

(3).POLAR to empty , R, G, B for the negative output; POLAR access VSS, R, G, B is positive output.

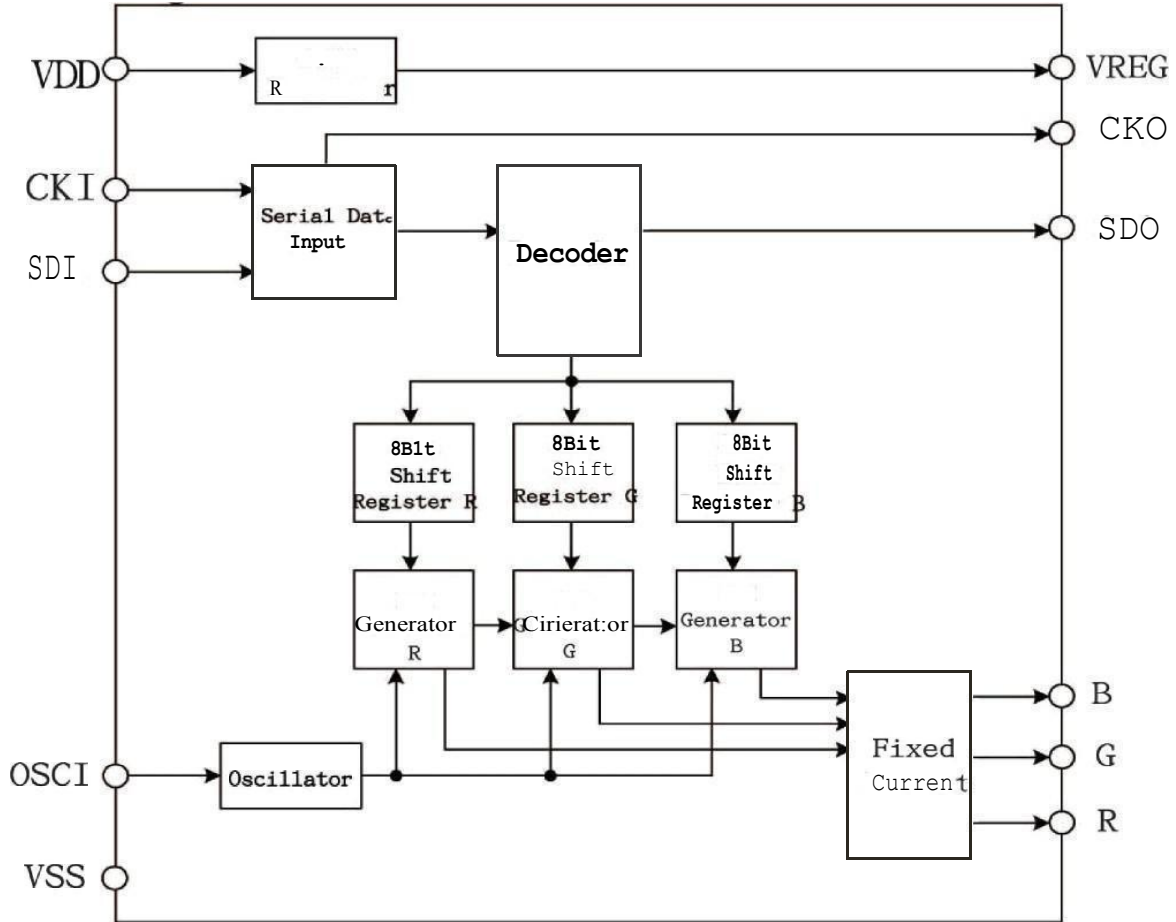
(4).VEN : Self—detection

Data Field to the middle of 3bit were B, G, R in the MSB of the opposite phase, otherwise regarded as invalid data. VEN close to empty when the self—detection : when VEN VSS then activated self—detection.

(5).CSEL to empty when the CKO and CKI RP :CSEL connected with VSS when the CKO compared with CKI.



Block Diagram



Application Circuit

