OptoSupply
Light It Up

## ■Features

- Top SMD internal integrated high quality external control line serial cascade constant current IC. control circuit and the chip in SMD 5050 components, to
- form a complete control of pixel, color mixing uniformity and consistency
- built-in data shaping circuit, a pixel signal is received after wave shaping and output waveform distortion will not guarantee a line;
- The built-in power on reset and reset circuit, the power does not work;
- gray level adjusting circuit (256 level gray scale adjustable)
- red drive special treatment, color balance
- line data transmission;
- plastic forward strengthening technology, the transmission distance between two points over 10M Using a typical data transmission frequency of 800
- Kbps, when the refresh rate of 30 frames per sec

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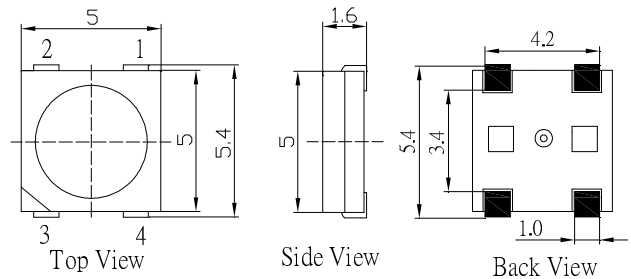
NO.	Symbol	Function description
1	VDD	Power supply LED
2	DOUT	Control data signal output
3	VSS	Ground
4	DIN	Control data signal input

Unite:mm
Tolerance:±0.20mm
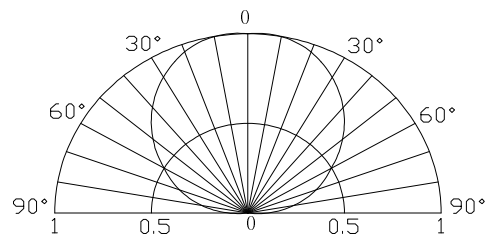unless otherwise noted

■Applications

- Full color LED string light, LED full color module, LED super hard and soft lights, LED guardrail tube, LED appearance / scene lighting
- LED point light, LED pixel screen, LED shaped screen, a variety of electronic products, electrical equipment etc..

■Absolute Maximum Rating   (Ta=25℃ VSS=0V)

Item	Symbol	Value	Unit
Power supply voltage	V_{DD}	+3.5~+5.5	V
Logic input voltage	V_{IN}	-0.5~VDD+0.5	V
Working temperature	Topt	-40~+85	℃
Storage Temperature	Tstg	-40 ~ +105	℃
ESD pressure	V_{ESD}	4K	V
Lead Soldering Temperature	Tsol	260℃/10sec	-

■Directivity

■ LED characteristic parameter

Emitting color	Wavelength (nm)/CCT(K)
Red	620-630
Green	515-525
Blue	460-470
White	6000-7000K

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CNAS IAF ISO 9001: 2008

RoHS Compliant EU2002/95/EC

REACH The new EU chemicals legislation

ATTENTION
OBSERVE PRECAUTIONS
ELECTROSTATIC
SENSITIVE DEVICES

■**The electrical parameters** (unless otherwise specified, TA=-20 ~ +70 ℃, VDD=4.5 ~ 5.5V, VSS=0V):

Parmeter	Symbol	Min	Typical	Max	Unit	Test conditions
The chip supply voltage	VDD	---	5.2	---	V	---
R/G/B port pressure	VDS,MAX	---	---	26	V	---
DOUT drive capability	IDOH	---	49	---	mA	DOUT conect ground, the maximum drive current
	IDOL	---	-50	---	mA	DOUT conect +, the largest current
The signal input flip threshold	VIH	3.4	---	---	V	VDD=5.0V
	VIL	---	---	1.6	V	
The frequency of PWM	FPWM	---	1.2	---	KHZ	---
Static power consumption	IDD	---	1	---	mA	---

■**The dynamic parameters (Ta=25 ℃)：**

Parameter	Symbol	Min	Typical	Max	Unit	Test conditions
The speed of data transmission	fDIN	---	800	---	KHZ	The duty ratio of 67% (data 1)
DOUT transmission delay	TPLH	---	---	500	ns	DIN→DOUT
	TPHL	---	---	500	ns	
IOUT Rise/Drop Time	Tr	---	---	40	ns	VDS=1.5 IOUT=9mA
	Tf	---	---	80	ns	

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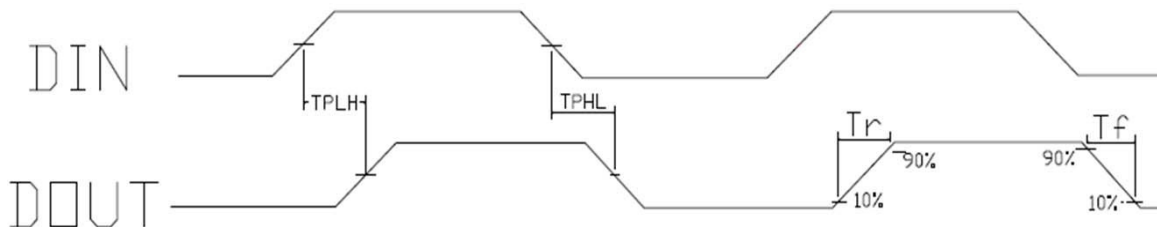
■**The data transmission time** (TH+TL=1.25μs±600ns):

TOH	0 code, high level time	0.3μs	±0.15μs
TOL	0 code, low level time	0.9μs	±0.15μs
T1H	1 code, high level time	0.6μs	±0.15μs
T1L	1 code, low level time	0.6μs	±0.15μs
Trst	Reset code, low level time	80μs	

■**Timing waveform:**
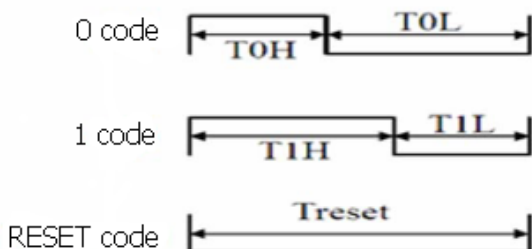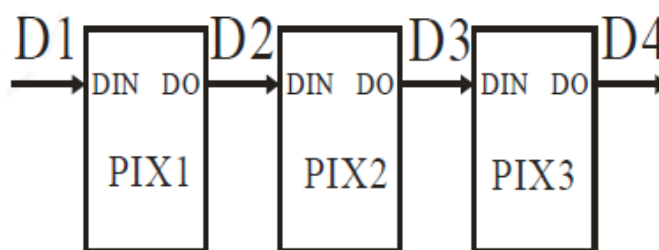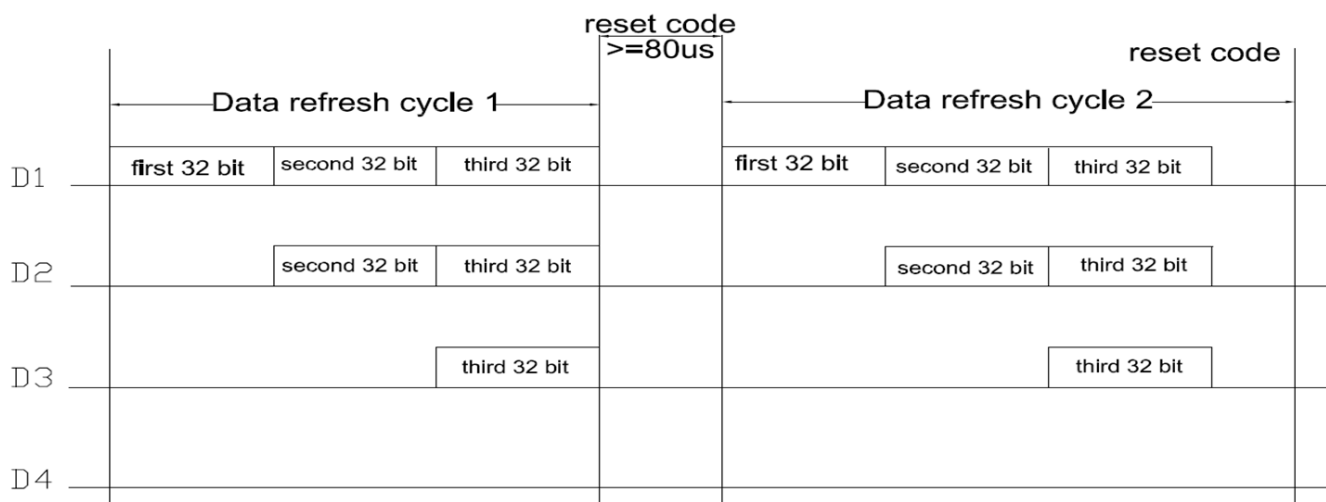

■**The method of data transmission:**

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

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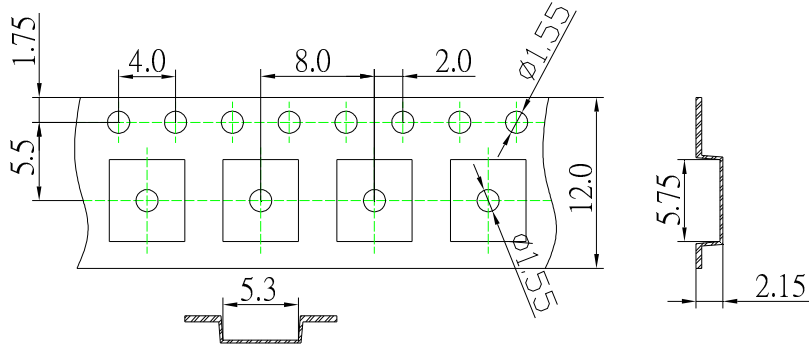
■**The data structure of 32bit:**

R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4
G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
W7	W6	W5	W4	W3	W2	W1	W0				

Note: high starting, in order to send data (R7 - R6 - ....W0)

■**The typical application circuit:**
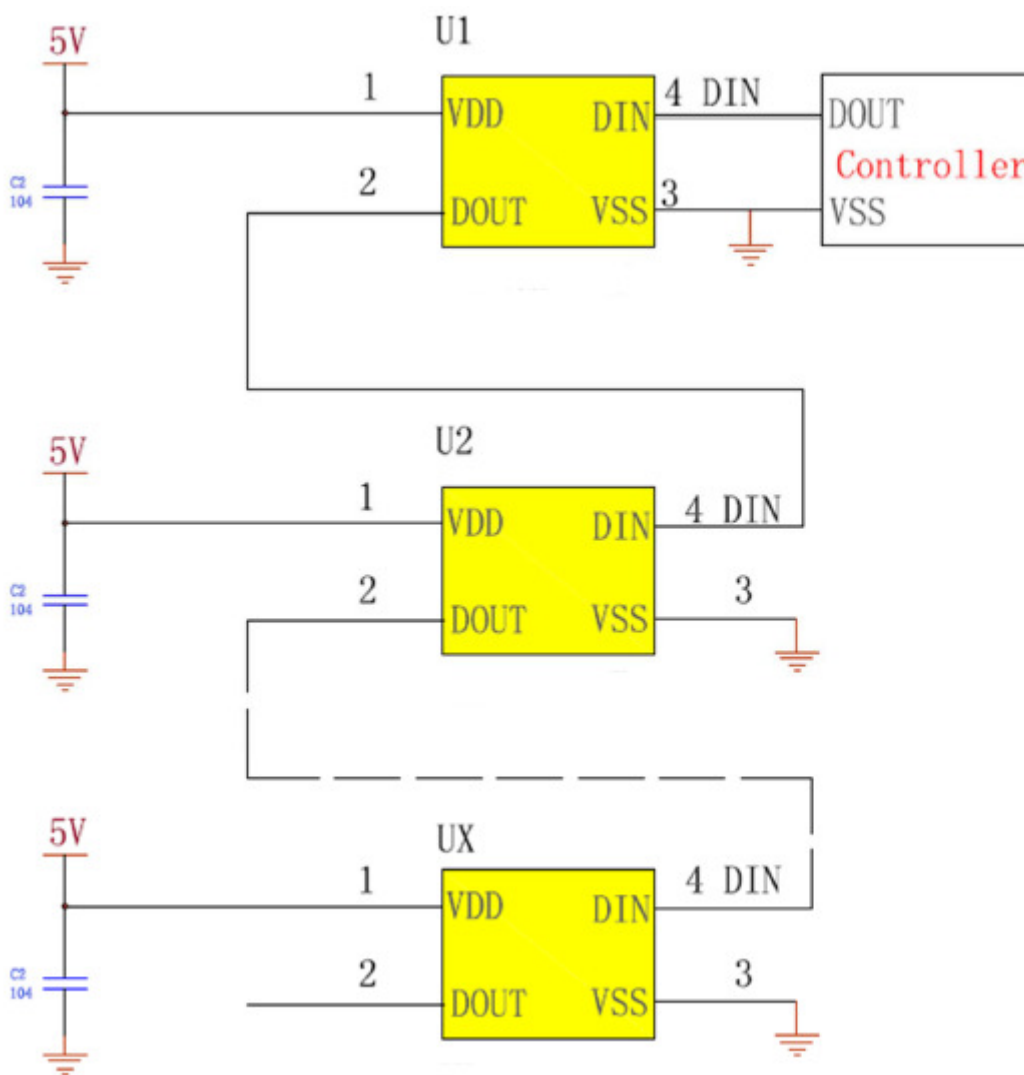
Carrier tape (Unit: mm)

■ Reel size (Unit: mm)

■ Moisture-proof bag

Lable

Aluminum moisture-proof bag

Desiccant

Lable

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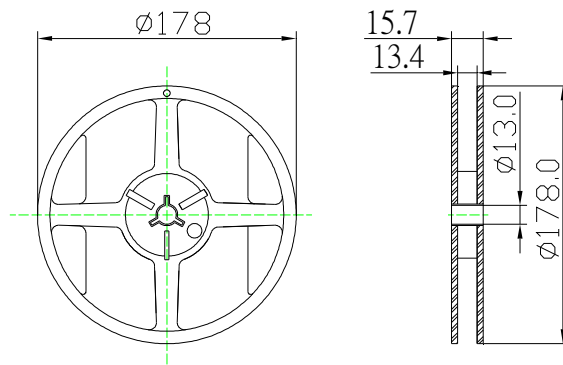
■ General description

OST45050C1A-W is a smart LED control circuit and light emitting circuit in one controlled LED source, which has the shape of a 5050 LED chip. Each lighting element is a pixel, and the intensities of the pixels are contained within the intelligent digital interface input. The output is driven by patented PWM technology, which effectively guarantees high consistency of the color of the pixels. The control circuit consists of a signal shaping amplification circuit, a built-in constant current circuit, and a high precision RC oscillator.

The data protocol being used is unipolar NRZ communication mode. The 32-bit data is transmitted from the controller to DIN of the first element, and if it is accepted it is extracted pixel to pixel. After an internal data latch, the remaining data is passed through the internal mplification circuit and sent out on the DO port to the remaining pixels. The pixel is reset after the end of DIN. Using automatic shaping forwarding technology makes the number of cascaded pixels without signal transmission only limited by signal transmission speed.

The LED has a low driving voltage (which allows for environmental protection and energy saving), high brightness, scattering angle, good consistency, low power, and long life. The control circuit is integrated in the LED above.

■Storage

· Storage Conditions
Before opening the package:
The LEDs should be kept at 30°C or less and 60%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.
· After opening the package:
Soldering should be done right after opening the package (within 24hrs).
Keeping of a fraction, sealing and Temperature: 5~30℃ Humidity: Less than 30%.
If the package has been opened more than 24Hours, components should be dried for 12hrs, at 60±5℃.
· Optosupply LED electrode sections are comprised of a silver plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid conditions which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration may cause difficulty during soldering operations. It is recommended that the User use the LEDs as soon as possible.
· Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

■Soldering heat reliability

Reflow soldering Profile
· Reflow soldering should not be done more than two times.
· When soldering, do not put stress on the LEDs during heating.
· After soldering, do not warp the circuit board.
· Repairing should not be done after the LEDs have been soldered.   When repairing is unavoidable,
a double-head soldering iron should be used.   It should be confirmed beforehand whether the

characteristics of the LEDs will or will not be damaged by repairing.

Solder=Low Lead Free
Average ramp-up rate = 3ºC/sec. max.
Preheat temperature: 160º~200ºC
Preheat time = 120 sec. max.
Ramp-down rate = 6ºC/sec. max.
Peak temperature = 245ºC max.
Time within 3ºC of actual peak temperature = 25 sec. max.
Duration above 220ºC is 40 sec. max.

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RoHS Compliant
EU 2002/95/EC

REACH
The new EU chemicals legislation

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