

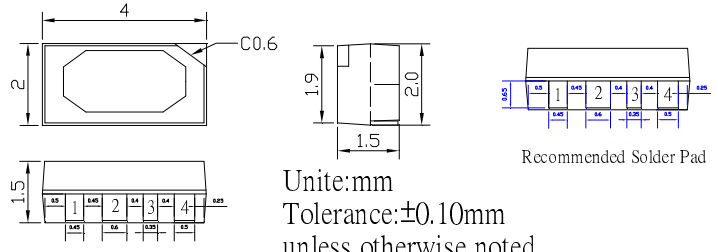
**■Features**

- Top SMD internal integrated high quality external control line serial cascade constant current IC
- Control circuit and the RGB chip in SMD 4020 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

**■Applications**

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

**■Outline Dimension**

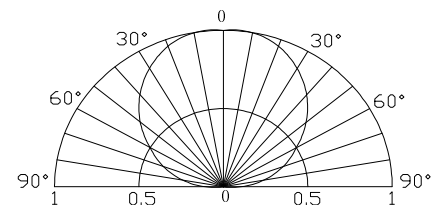


NO.	Symbol	Function description
1	DIN	Control data signal input
2	VDD	Power supply LED
3	DOUT	Control data signal output
4	GND	Ground

**■Absolute Maximum Rating (Ta=25°C)**

Item	Symbol	Value	Unit
Power supply voltage	V <sub>DD</sub>	+3.5~+5.3	V
Input voltage	V <sub>I</sub>	-0.5~V <sub>DD</sub> +0.5	V
Operation junction temperature	T <sub>opt</sub>	-40~+80	°C
Storage Temperature	T <sub>stg</sub>	-50 ~ +150	°C
ESD pressure	V <sub>EDS</sub>	4K	V
Lead Soldering Temperature	T <sub>sol</sub>	260°C /10sec	-

**■Directivity**

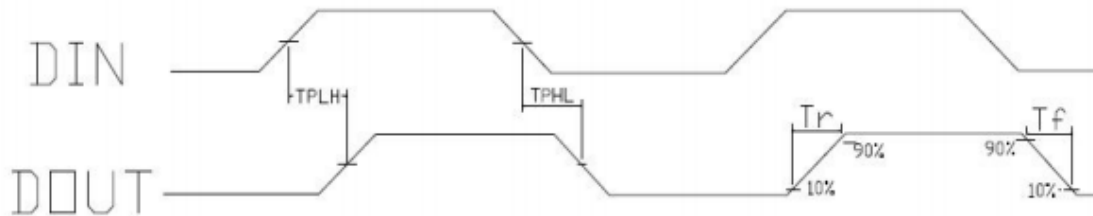


■ **Switching characteristics** (TA=-20~+70°C , VDD=4.5~5.5V, VSS=0V, unless otherwise specified)

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 connect ground, the maximum drive current
	IDOL	--	-50	--	mA	DOUT connect +, 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 °C):

Parmeter	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	--	100	--	ns	VDS=1.5V IOUT=13mA
	Tf	--	100	--	ns	



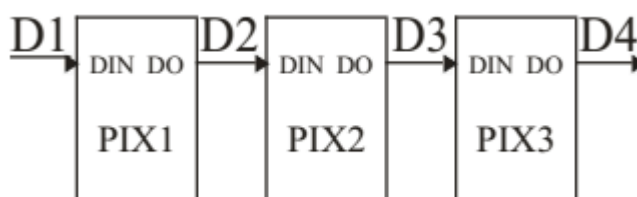
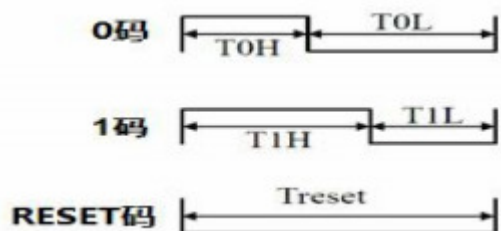
■The data transmission time (TH+TL=1.25μs±600ns):

T0H	0 code, high level time	0.3μs	±0.15μs
T0L	0 code, low level time	0.9μs	±0.15μs
T1H	1 code, high level time	0.9μs	±0.15μs
T1L	1 code, low level time	0.3μs	±0.15μs
Trst	Reset code, low level time	80μs	

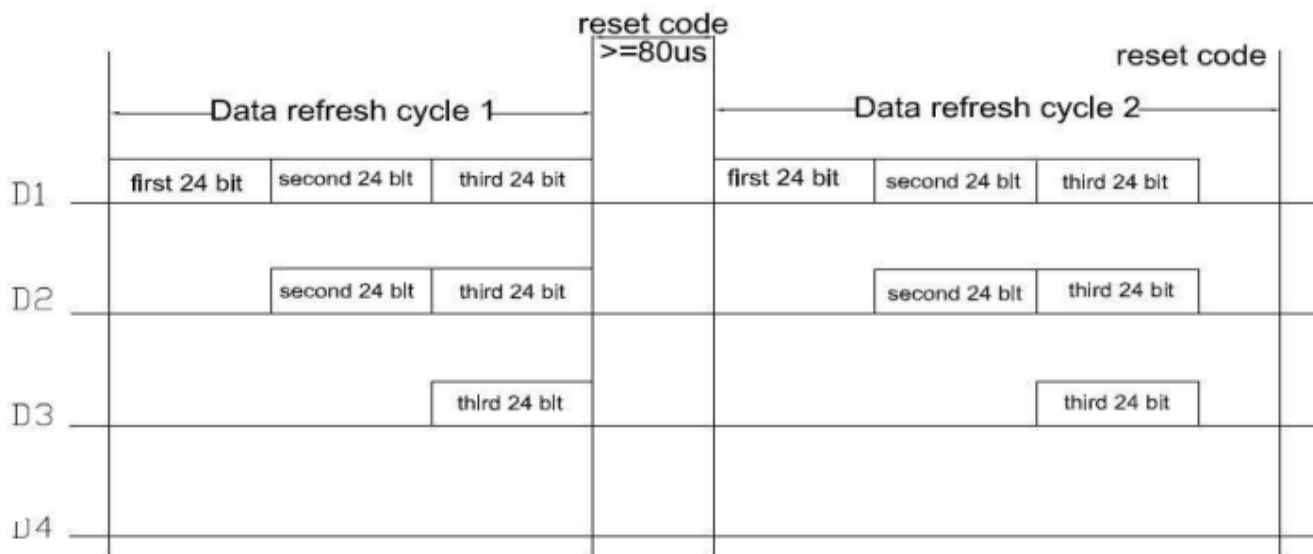
■Timing waveform:

Input code:

Connectionmode:



■The method of data transmission:



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

■ **Composition of 24bit data:**

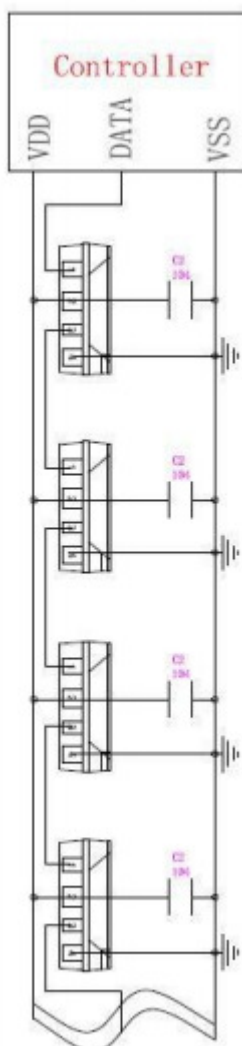
G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4	R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0
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Note: Follow the order of GRB to sent data and the high bit sent at first.

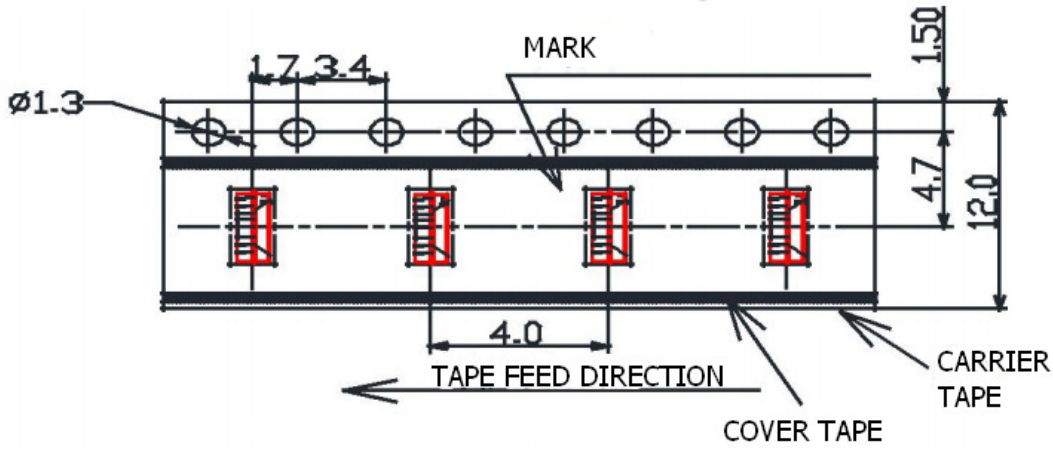
■ **LED characteristic parameter**

Emitting color	I <sub>F</sub> =5mA		I <sub>F</sub> =12mA	
	Wavelength (nm)	Luminous intensity (mcd)	Wavelength (nm)	Luminous intensity (mcd)
Red	620-630	50-150	620-630	300-500
Green	520-535	200-400	515-530	700-1500
Blue	460-475	50-100	460-475	200-300

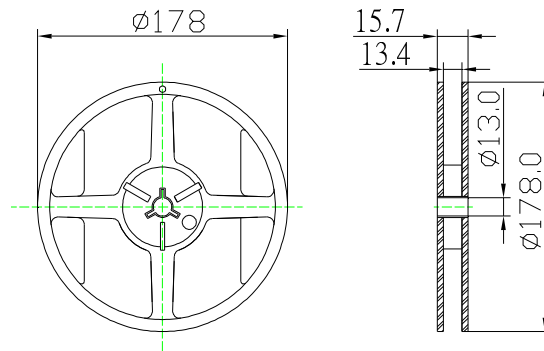
■ **Typical application circuit:**



**Carrier tape (Unit: mm)**



**■ Reel size (Unit: mm)**



**■ Moisture-proof bag**



### ■ Product Overview:

OST34020C1A is a smart LED control circuit and light emitting circuit in one controlled LED source, which has the shape of a 4020 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 24-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 amplification 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°C Humidity: Less than 30%.

If the package has been opened more than 24Hours, components should be dried for 12hrs, at 60±5°C.

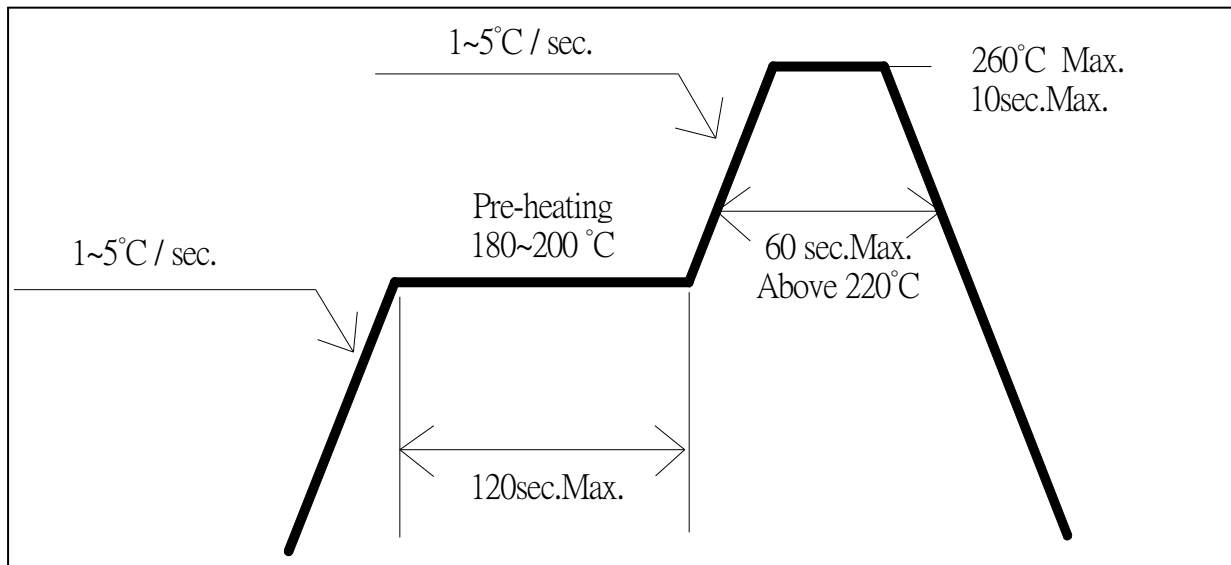
· Optosupply LED electrode sections are comprised of a silver plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid conditions which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration may cause difficulty 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 Conditions

Reflow Soldering		Hand Soldering	
Pre-Heat	180 ~ 200°C	Temperature Soldering time	350°C Max. 3 sec. Max. (one time only)
Pre-Heat Time	120 sec. Max.		
Peak temperature	260°C Max.		
Dipping Time	<b>10 sec. Max.</b>		
Condition	Refer to Temperature-profile		

• Reflow Soldering Condition(Lead-free Solder)



\*Recommended soldering conditions vary according to the type of LED

\*Although the recommended soldering conditions are specified in the above table, reflow, or hand soldering at the lowest possible temperature is desirable for the LEDs.

\*A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.

• All SMD LED products are pb-free soldering available.

• Occasionally there is a brightness decrease caused by the influence of heat or ambient atmosphere during air reflow. It is recommended that the User use the nitrogen reflow method.

• 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.

• 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.



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