

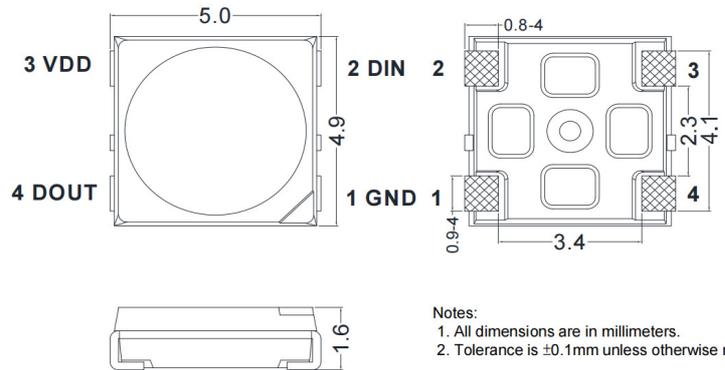
**■Features**

- 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 RGBW 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.
- Gray level adjusting circuit (256 level gray scale adjustable)
- Cascading port transmission signal by single line.
- Any two point the distance more than 5m transmission signal without any increase circuit.
- Using a typical data transmission frequency of 800 Kbps, when the refresh rate of 30 frames per sec

**■Applications**

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

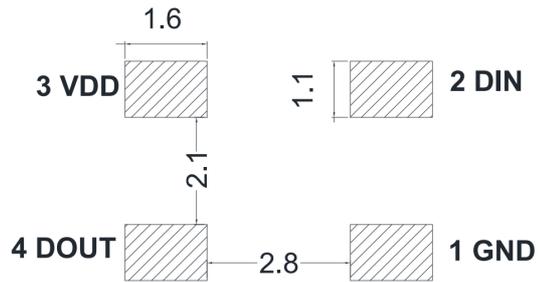
**■Outline Dimension**



Notes:  
1. All dimensions are in millimeters.  
2. Tolerance is ±0.1mm unless otherwise noted

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

Recommended dimensions for PCB

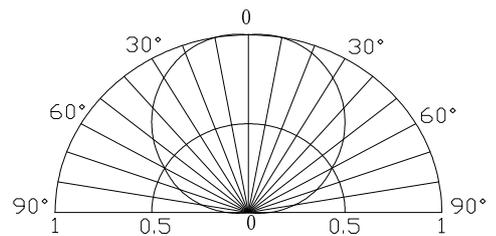


**■Absolute Maximum Rating**

(Ta=25°C)

Item	Symbol	Value	Unit
Power supply voltage	V <sub>DD</sub>	+3.7~+5.5	V
Input voltage	V <sub>I</sub>	-0.5~V <sub>DD</sub> +0.5	V
Operation junction temperature	T <sub>opt</sub>	-40~+85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +85	°C

**■Directivity**

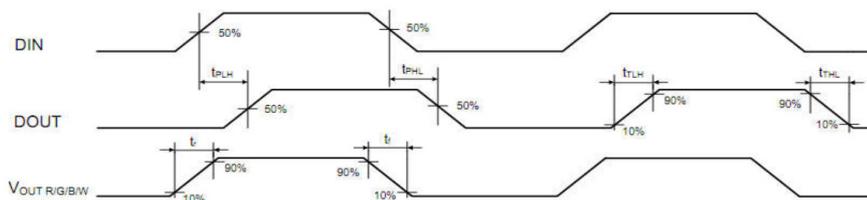


**■Electrical Characteristics (Ta=20~+70°C, VDD=4.5~5.5V, Vss=0V unless otherwise specified)**

Parameter	Symbol	Min	Typical	Max	Unit	Test conditions
The chip supply voltage	V <sub>DD</sub>	---	5.2	---	V	---
The signal input flip threshold	V <sub>IH</sub>	0.7*V <sub>DD</sub>	---	---	V	V <sub>DD</sub> =5.0V
	V <sub>IL</sub>	---	---	0.3*V <sub>DD</sub>	V	
The frequency of PWM	FPWM	---	4	---	KHZ	---
Static power consumption	I <sub>DD</sub>	---	0.29	---	mA	---

■ **Switching Characteristics**

parameter	Symbol	Min	Typical value	Max	Unit	Test conditions
Data transmission speed	fDIN	---	800	---	KHZ	Duty cycle 67% (data 1)
Dout transmission delay	TPLH	---	100	---	ns	The earth load capacitance of the dout port is 30pf, and the signal transmission delay from DIN to dout
	TPHL	---	100	---	ns	
Dout conversion time	TTLH	---	20	---	ns	The earth load capacitance of the dout port is 30pf
	TTHL	---	10	---	ns	
Output R / G / B / W conversion time	Tr	---	152	---	ns	IOU T R / B= 5mA, out R / G / B / W port connected with 200 Ω resistor to VDD in series * The earth load capacitance of the dout port is 30pf
	Tf	---	300	---	ns	



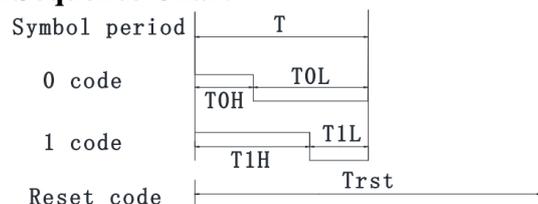
■ **LED Characteristic Parameter**

Emitting color	Wavelength (nm)/CCT(K)	Luminous intensity (mcd)
	R/G/B IF=8mA	W IF=16.5mA
Red	620-630nm	250-450
Green	520-530nm	600-1000
Blue	460-470nm	120-250
White	5500-8500K	1800-2500

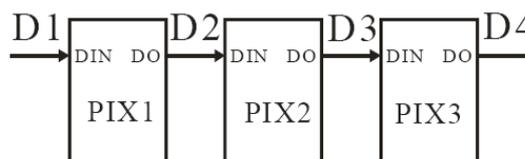
■ **The Data Transfer Time**

Name		Min.	Standard value	Max.	Unit
T	Code period	1.20	--	--	μs
TOH	0 code, high level time	0.2	0.3	0.4	μs
TOL	0 code, low level time	0.8	--	--	μs
TIH	1 code, high level time	0.65	0.75	1.0	μs
TIL	1 code, low level time	0.2	--	--	μs
Reset	Reset code, low level time	>200	--	--	μs

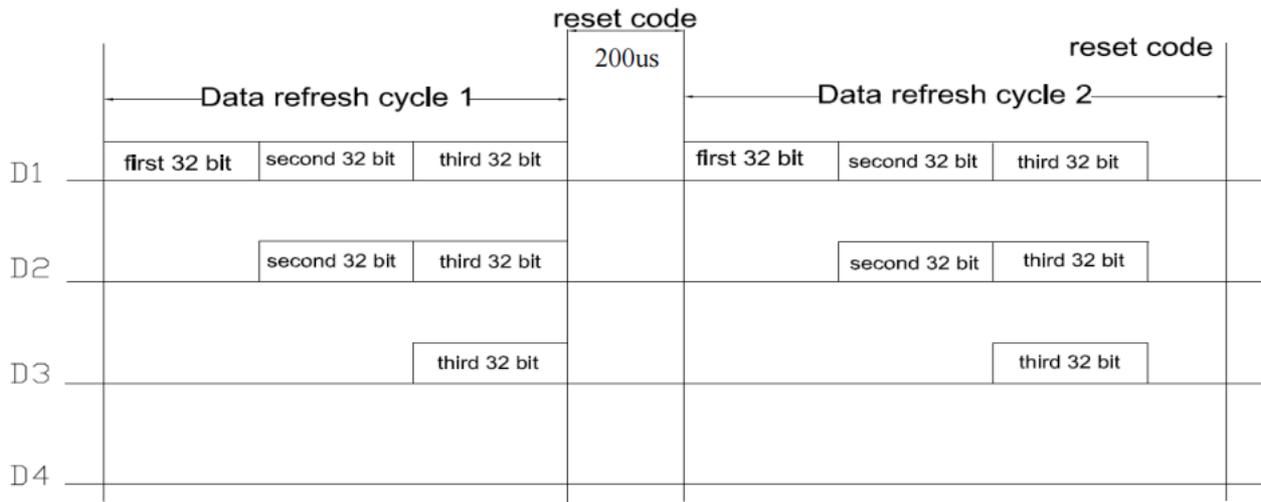
■ **Sequence Chart**



■ **Cascade Method**



■Data Transmission Method



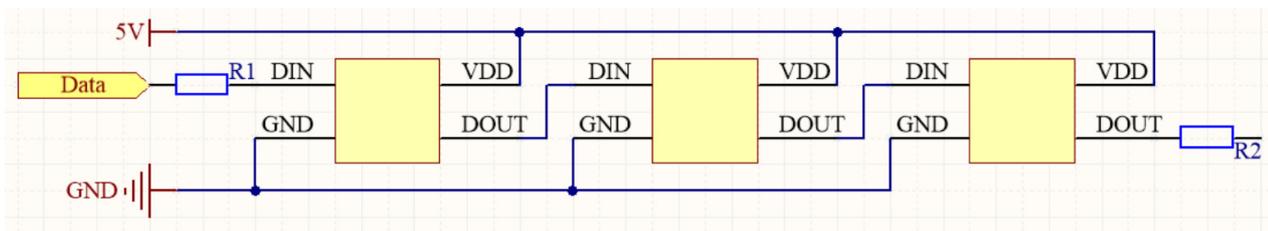
Note: the D1 sends data for MCU, D2, D3, D4 for data forwarding automatic shaping cascade circuit.

■Composition of 32bit Data

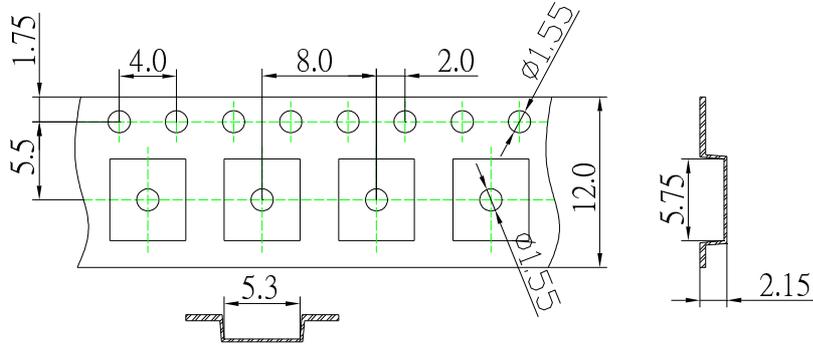
G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0
W7	W6	W5	W4	W3	W2	W1	W0				

Note: high starting, in order to send data (G7 - G6 - ..... W0)

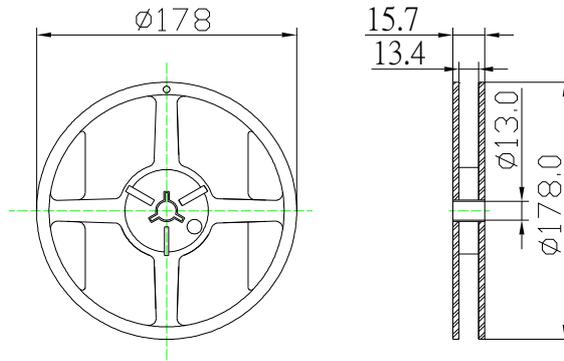
■Typical Application Circuit



**Carrier Tape (Unit: mm)**



**■ Reel Size (Unit: mm)**



**■ Moisture-proof Bag**



## ■ General Description

OSSK5SF55 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 RZ 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 Heat Reliability

· Reflow soldering Profile

· Reflow soldering should not be done more than two times.

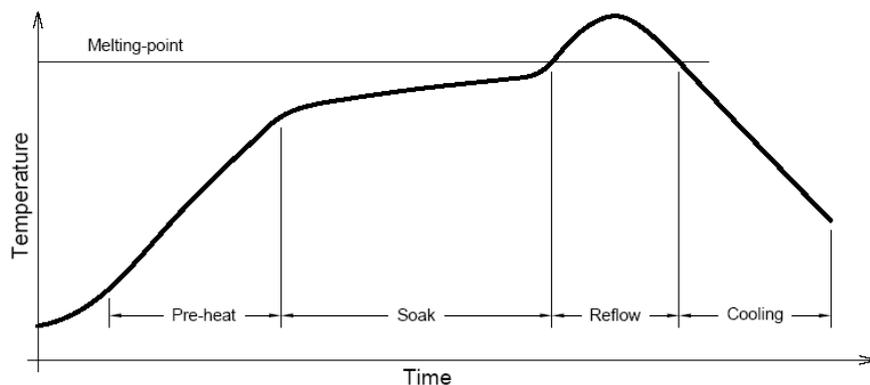
· When soldering, do not put stress on the LEDs during heating.

· 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 = 3°C/sec. max.
Preheat temperature: 160°~200°C
Preheat time = 120 sec. max.
Ramp-down rate = 6°C/sec. max.
Peak temperature = 245°C max.
Time within 3°C of actual peak temperature = 25 sec. max.
Duration above 220°C is 40 sec. max.



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