OptoSupply
Light It Up

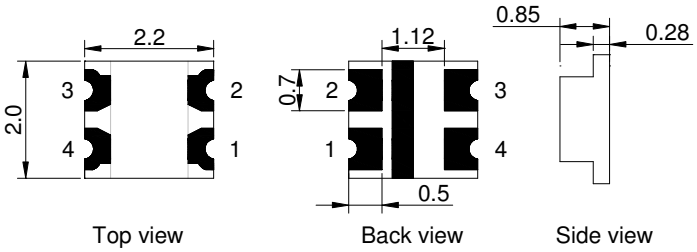
2.2x2.0x0.85mm Intelligent Control RGB LED

OSTW2020C1E

▪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 RGB chip are integrated in a package of 2020 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.
- 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 than1024 points.
- Send data at speeds of 800Kbps.
- The color of the light were highly consistent, cost-effective..

▪Outline Dimension



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

Unite:mm
Tolerance:±0.20mm
unless otherwise noted

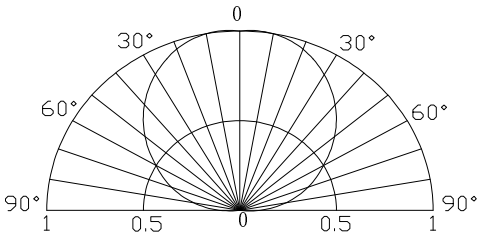
▪Applications

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

▪Absolute Maximum Rating (Ta=25℃)

Item	Symbol	Value			Unit
Power supply voltage	V_{DD}	+3.5~+5.3			V
Input voltage	V_I	-0.3~VDD+0.7			V
Input Current (LED)	If	Red	Green	Blue	mA
		5	5	5	
Operation junction temperature	Topt	-25~+80			℃
Storage Temperature	Tstg	-40 ~ +105			℃
Lead Soldering Temperature	Tsol	260℃/10sec			-

▪Directivity



▪Electrical Characteristics (Ta-20~+70℃, VDD=4.5~5.5V, Vss=0V unless otherwise specified)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Input current	I_I	$V_I=V_{DD}$/V	-	-	±1	μA
Input voltage level	V_{IH}	D_{IN}, SET	0.7V_{DD}	-	-	V
	V_{IL}	D_{IN}, SET	-	-	0.3 V_{DD}	
Hysteresis voltage	V_H	D_{IN}, SET	-	0.35	-	

■ Switching characteristics (TA=-20～+70℃，VDD=5.0,VSS=0V, unless otherwise specified)

Parameter	Symbol	Min	Tpy	Max	Unit	Condition
Transmission delay time	t_{PLZ}	——	——	300	ns	CL=15pF, DIN→DOUT, RL=10KΩ
Fall time	tTHZ	——	——	120	μs	CL=300pF, OUTR/OUTG/OUTB
Input capacity	C_I	——	——	15	pF	——

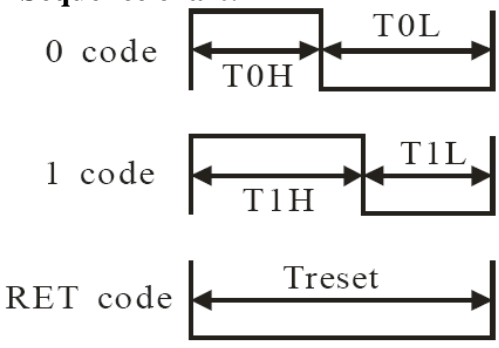
■ LED characteristic parameter

Emitting color	Wavelength (nm) I_F=5mA	Luminous intensity (mcd) I_F=5mA	Voltage(V) I_F=5mA
Red	620-625	50-100	2.0-2.2
Green	520-525	200-300	3.0-3.4
Blue	465-470	50-100	3.0-3.4

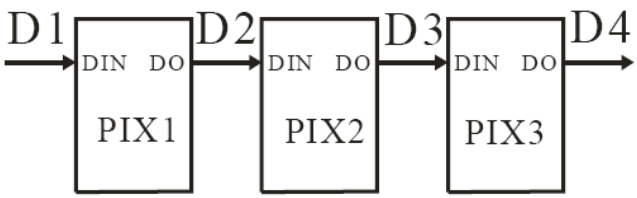
■Data transfer time

T0H	0 code, high voltage time	220ns~380ns
T1H	1 code, high voltage time	580ns~1μs
T0L	0 code, low voltage time	580ns~1μs
T1L	1 code, low voltage time	580ns~1μs
RES	Frame unit, low voltage time	>280μs

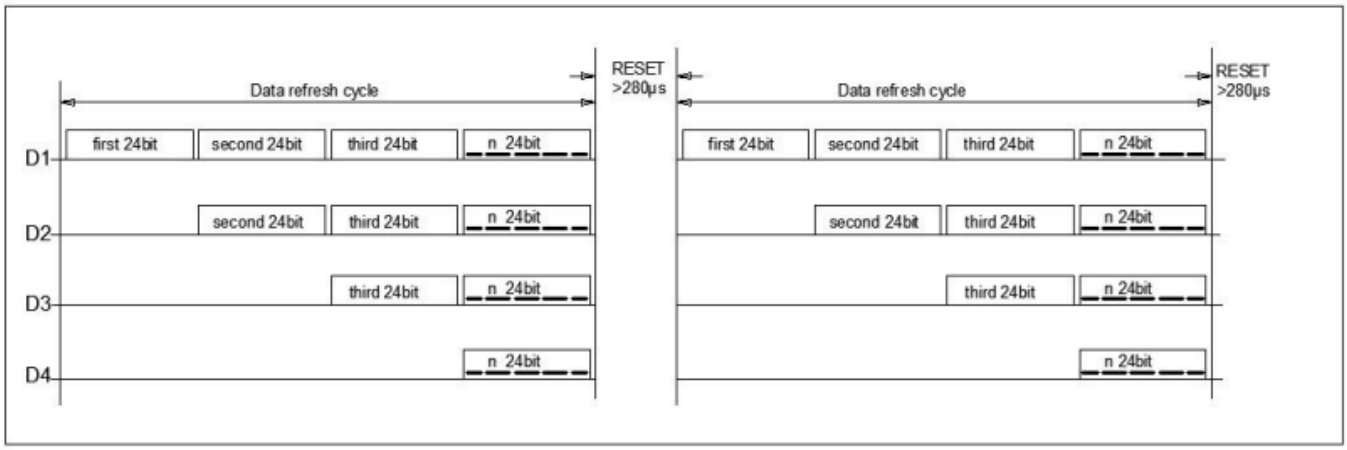
■ Sequence chart:



■ Cascade method:



▪Data transmission method:



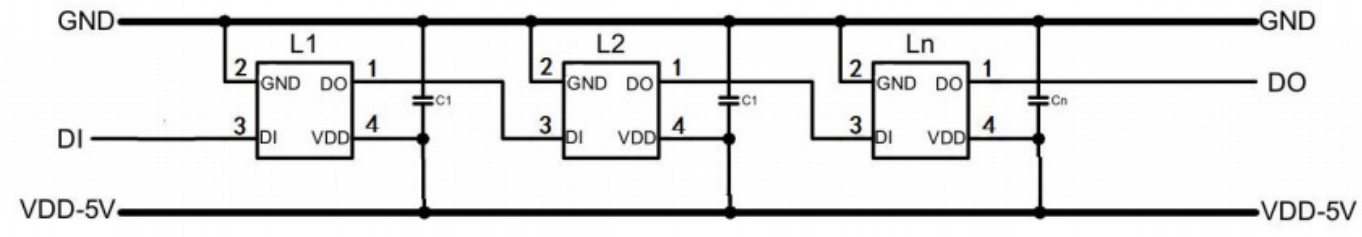
Note: The data of D1 is send by MCU,and D2, D3, D4 through pixel internal reshaping amplification to transmit.

▪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

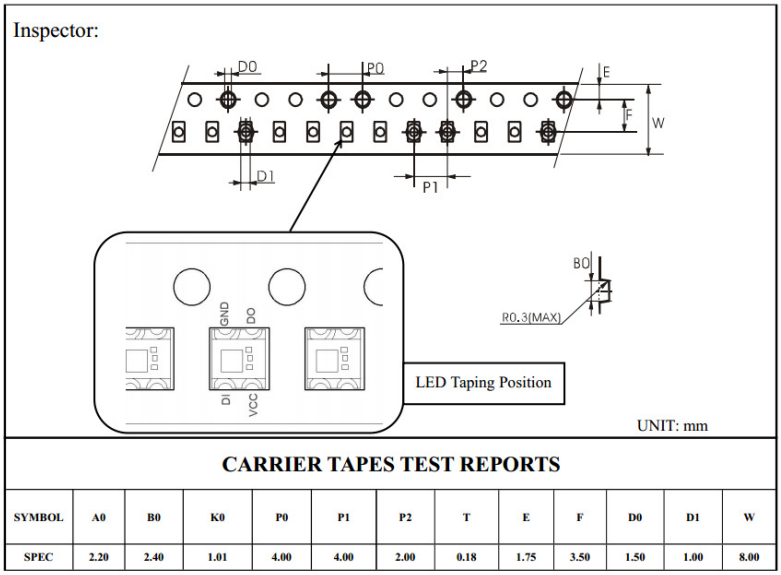
Note: Follow the order of GRB to sent data and the high bit sent at first.

▪Typical application circuit:



Remarks: C1 is the filter capacitor for VDD, its value of 100nF.

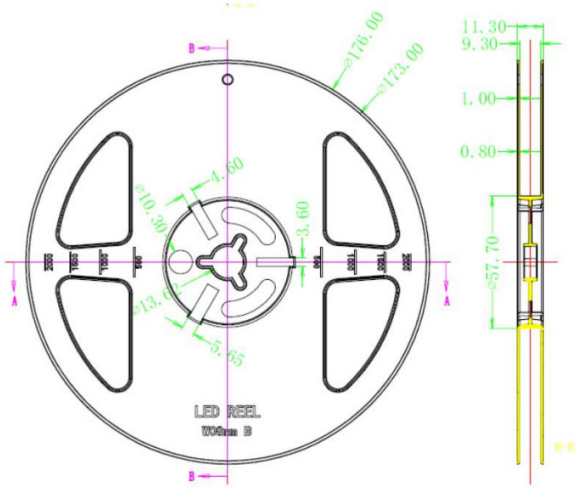
■ Carrier tape (Unit: mm)



CARRIER TAPES TEST REPORTS

SYMBOL	A0	B0	K0	P0	P1	P2	T	E	F	D0	D1	W
SPEC	2.20	2.40	1.01	4.00	4.00	2.00	0.18	1.75	3.50	1.50	1.00	8.00

■ Reel size (Unit: mm)



■ Moisture-proof bag