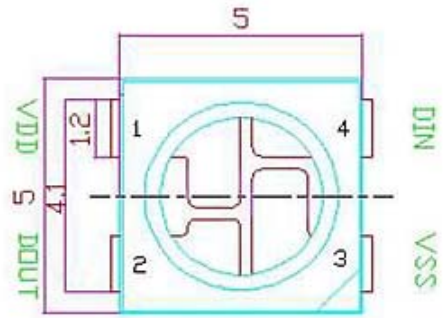
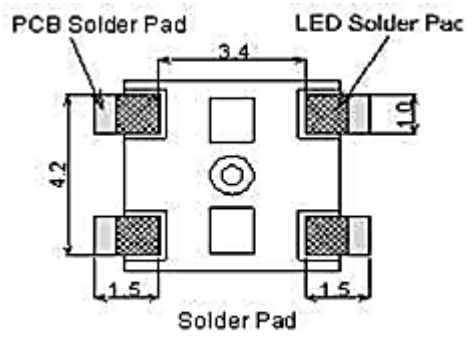
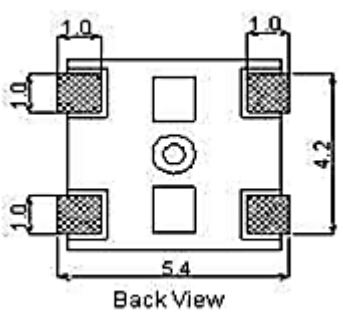
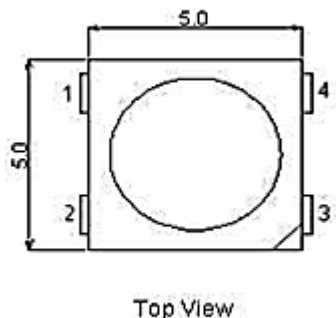


## SPECIFICATION CSPT22RGB-IC

### PACKAGE OUTLINES



### PIN FUNCTION

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

- Notes:
1. All dimensions are in millimeters (inches).
  2. Tolerance is  $\pm 0.25\text{mm}$  (0.01") unless otherwise noted.
  3. Specifications are subject to change without notice.

Part Number	Chip Material	Color of Emission	Lens Type	Internal
CSPT22RGB-IC	InGaAlP/InGaN	RGB	Water Clear	IC



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**ABSOLUTE MAXIMUM RATINGS**
**(TA=25°C)**

Parameter	Symbol	Max Rating	Unit
Power Supply Voltage	IF	+3.5 ~ +5.3	V
Input Voltage	IR	-0.5 ~ VDD+0.5	V
Operating Temperature Range	TOP	-25~+80	°C
Storage Temperature Range	TSTG	-55~+150	°C

**OPTICAL-ELECTRICAL CHARACTERISTICS**
**(TA=25°C)**

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Input Current	II	VI=VDD/VSS	-	-	±1	µA
Input Voltage Level	VIH	DIN, SET	0.7VDD	-	-	V
Input Voltage Level	VIL	DIN, SET	-	-	0.3VDD	V
Hysteresis Voltage	VH	DIN, SET	-	0.35	-	V

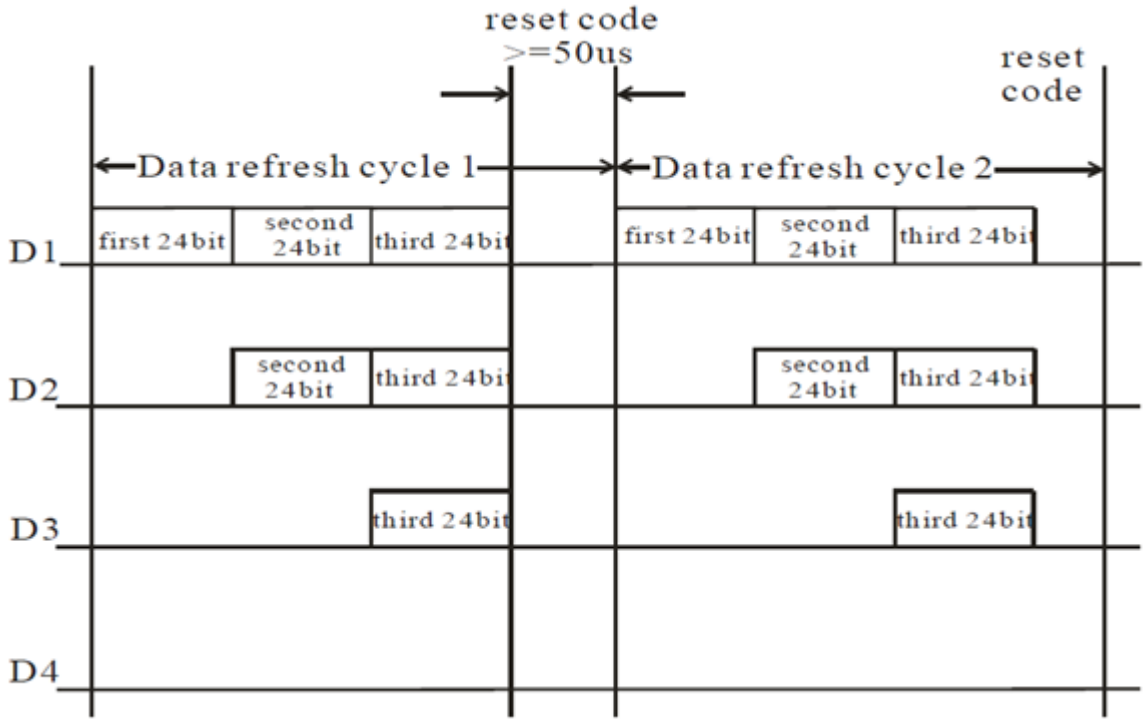
**SWITCHING CHARACTERISTICS**
**(TA=25°C)**

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Operation Frequency	Fosc2	-	-	800	-	kHz
Transmission Delay Time	tPLZ	CL=15pF, DIN-> DOUT,RL=10kΩ	-	-	300	ns
Fall Time	tTHZ	CL=300pF,OUTR/OUTB TG/OUTB	-	-	120	µS
Data Transmission Rate	FMAX	Duty Ratio 50%	400	-	-	kbps
Input Capacity	CI	-	-	-	15	pF



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## DATA TRANSMISSION METHOD



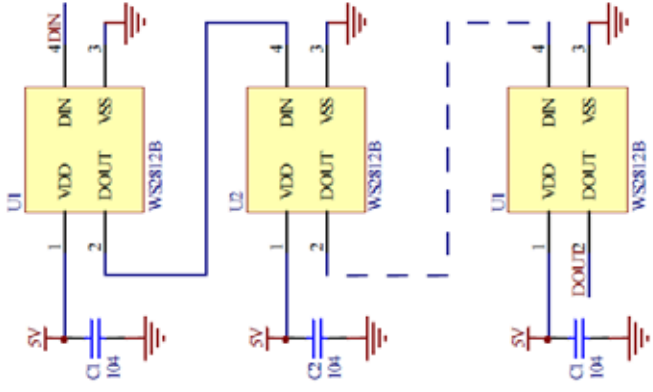
Note: The data of D1 is sent by MCU, and D2, D3, D4 through pixel internal reshaping amplification to transmit.


**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 send data and the high bit sent at first.

**Typical application circuit:**





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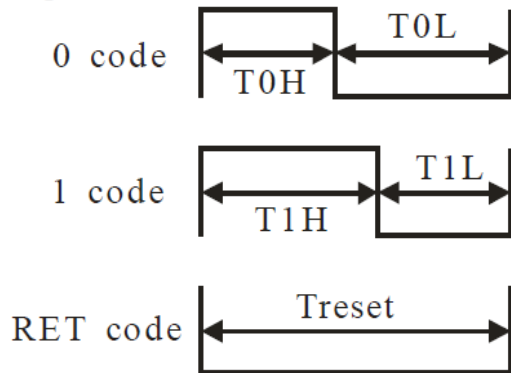
## LED CHARACTERISTICS

Parameter	Symbol	Test Condition	Color	Value			Unit
				Min	Typ	Max	
Luminous Intensity	IV	IF = 20mA	Red	550	700	-	mcd
			Green	1100	1400	-	
			Blue	200	300	-	
Forward Voltage	VF	IF = 20mA	Red	-	2.0	2.2	V
			Green	-	3.0	3.2	
			Blue	-	3.0	3.4	
Dominant Wavelength	λD	IF = 20mA	Red	620	-	630	nm
			Green	515	-	530	
			Blue	465	-	475	

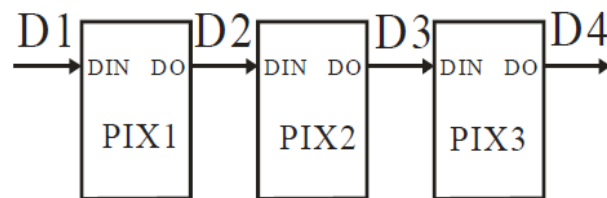
### DATA TRANSFER TIME (TH+TL+1.25 μs ±150ns)

T0H	0 code, high voltage time	0.4μs	±150ns
T1H	1 code, high voltage time	0.85 μs	±150ns
T0L	0 code, low voltage time	0.85 μs	±150ns
T1L	1 code, low voltage time	0.4 μs	±150ns
RES	Low voltage time	Above 50 μs	--

#### Sequence chart:



#### Cascade method:



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**SOLDERING CONDITIONS**
**REFLOW REQUIREMENTS**

Profile Feature	Lead-Based Solder	Lead-Free Solder
Average Ramp-Up Rate ( $T_{s_{max}}$ to $T_p$ )	3°C/second max.	3°C/second max.
Preheat: Temperature Min ( $T_{s_{min}}$ )	100°C	150°C
Preheat: Temperature Min ( $T_{s_{max}}$ )	150°C	200°C
Preheat: Time ( $t_{s_{min}}$ to $t_{s_{max}}$ )	60-120 seconds	60-180 seconds
Time Maintained Above: Temperature ( $T_L$ )	183 °C	217 °C
Time Maintained Above: Time ( $t_L$ )	60-150 seconds	60-150 seconds
Peak/Classification Temperature ( $T_P$ )	215 °C	250 °C
Time Within 5°C of Actual Peak Temperature ( $t_p$ )	10-30 seconds	5-10 seconds
Ramp-Down Rate	6°C/second max.	6°C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

**REFLOW CONSIDERATIONS**

1. Keep the product before using it in the oven and bake 65~70 degrees 24 hours.
2. After coming out from the oven within 2 hours immediately complete.
3. Use of the product is not finished in time back in the oven.
4. When the shift, the patch and then completed the furnace had finished work, there is no patch back into the oven in time.



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