ELECTRO-OPTICAL CHARACTERISTIC TA=25℃

PARAMETER | MIN | TYP | MAX | UNITS | TEST COND
---|---|---|---|---|---
SUPPLY VOLTAGE | Vdd | 0 | 5 | V | -
INPUT VOLTAGE(HIGH) | Vih | 0.7Vdd | Vdd | V | -
INPUT VOLTAGE(LOW) | Vil | 0 | 0.3Vdd | V | -
PEAK WAVELENGTH | R | 630 | nm | If=5mA | -
| G | 520 | - | - | - | -
| B | 470 | - | - | - | -
LUMINOUS INTENSITY | R | 72 | mcd | If=5mA | -
| G | 180 | - | 360 | - | -
| B | 28.5 | - | 72 | - | -
VIEWING ANGLE | - | 120 | - | 2x theta1/2 | If=5mA | -
EPOXY LENS FINISH | WATER CLEAR | - | - | - | - | -

ABSOLUTE MAXIMUM RATINGS TA=25℃

PARAMETER | MIN | TYP | MAX | UNITS | TEST COND
---|---|---|---|---|---
SUPPLY VOLTAGE | Vdd | - | - | 5.5 | V | -
OPERATING TEMPERATURE | - | - | - | - | -
| - | - | - | - | - | -
| - | - | - | - | - | -
STORAGE TEMPERATURE | - | - | 40 TO +90 | °C | -
SOLDERING TEMPERATURE | - | - | 20 TO +70 | °C | -

NOTE:
1. RoHS COMPLIANT.
2. COMPLIANCE WITH EU REACH.
3. COMPLIANCE HALOGEN FREE .
(Br<900 ppm , Cl<900 ppm , Br+Cl<1500 ppm).
4. 2000 PCS/REEL.

MOISTURE SENSITIVE DEVICE
PER JEDEC LEVEL 3 STANDARDS

UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE:
X=±0.020, X.X=±0.025, X.XX=±0.030, X.XXX=±0.050. LEAD SIZE=±0.002, LEAD LENGTH=±0.030. 

**THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE.**
**RECOMMENDED OPERATING CONDITION**  
Ta=20~70°C, VSS=0V

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
<th>TEST COND</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPAGATION DELAY TIME</td>
<td>-</td>
<td>-</td>
<td>300</td>
<td>ns</td>
<td>DIN→DOUT CL=15pF, RL=10KΩ</td>
</tr>
<tr>
<td>FALLING TIME</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>us</td>
<td>CL=300pF OUTR/OUTG/OUTB</td>
</tr>
<tr>
<td>INPUT CAPACITOR</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>pf</td>
<td></td>
</tr>
</tbody>
</table>

**TIMING WAVE FORM**

```
0  TOH  TOL
1  TIH  TIL
```

**RESET TIME**

![Reset Time Diagram]

**HIGH SPEED MODE**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>TYP. ALLOWANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOH</td>
<td>0 CODE, HIGH-LEVEL TIME</td>
<td>300ns ±80ns</td>
</tr>
<tr>
<td>TOL</td>
<td>0 CODE, LOW-LEVEL TIME</td>
<td>900ns ±80ns</td>
</tr>
<tr>
<td>TIH</td>
<td>1 CODE, HIGH-LEVEL TIME</td>
<td>900ns ±80ns</td>
</tr>
<tr>
<td>TIL</td>
<td>1 CODE, LOW-LEVEL TIME</td>
<td>300ns ±80ns</td>
</tr>
<tr>
<td>RES</td>
<td>RESET TIME</td>
<td>&gt;50us</td>
</tr>
</tbody>
</table>

**DATA COMMUNICATION**

```
<table>
<thead>
<tr>
<th></th>
<th>1st 24bit</th>
<th>2nd 24bit</th>
<th>3rd 24bit</th>
<th>1st 24bit</th>
<th>2nd 24bit</th>
<th>3rd 24bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>1st 24bit</td>
<td>2nd 24bit</td>
<td>3rd 24bit</td>
<td>Reset 50us</td>
<td>1st 24bit</td>
<td>2nd 24bit</td>
</tr>
<tr>
<td>D2</td>
<td>2nd 24bit</td>
<td>3rd 24bit</td>
<td>Reset 50us</td>
<td>2nd 24bit</td>
<td>3rd 24bit</td>
<td></td>
</tr>
<tr>
<td>D3</td>
<td>3rd 24bit</td>
<td>Reset 50us</td>
<td>3rd 24bit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**SINGLE DATA IN 24BIT FOR RGB**

```
|--------------------------------------------------------------|
```

**5V APPLICATION CIRCUIT**

```
SDO 1  DOUT  GND  4
2  AVDD  DIN  3
0.1uF VDD
```

**MCU OR CONTROLLER**

---

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**SCALE:** NTF  **APRVD BY:** G.Y.  **PAGE:** 2 of 4  **CHKD BY:** E.C.  **DATE:** 2018.06.29  **DRAWN BY:** E.C.  **UNIT:** mm [INCH]  **LED SIZE:** ±0.02  **LEAD LENGTH:** 500±75  **LEAD SPACE:** 300±15  **LEAD SIZE:** ±0.05  **LEAD LENGTH:** ±0.03  **LEAD SPACE:** ±0.03  **TOLERANCES PER DECIMAL PRECISION ARE:** X=±0.039, X.X=±0.20, X.XX=±0.020, X.XXX=±0.010. **THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE.**  **UNIT:** mm [INCH]

---

**UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE:** X=±0.039, X.X=±0.020, X.XX=±0.010, X.XXX=±0.005. LEAD LENGTH=±0.75, LEAD SPACE=±0.03. **LEAD SIZE:** ±0.05, **LEAD LENGTH:** ±0.03, **LEAD SPACE:** ±0.03.
EXAMPLE OF USING STM32F030C8T6 TO DISPLAY RED, GREEN AND BLUE IN SEQUENCE

```c
uint8_t LED_Number_Per_Ring = 60;
uint32_t Ring_0_Display_memory[60];

void Display_One_Dot(uint32_t color);
void Embeded_Zero(void);
void Embeded_One(void);
void Send_Lo(void);

void main(void)
{
    Init_GPIOs();
    while (1)
    {
        Ring_0_Display_memory[0] = 0xFF0000;
        Send_Whole_Ring_from_Ring_Memory();

        Ring_0_Display_memory[1] = 0x00FF00;
        Send_Whole_Ring_from_Ring_Memory();

        Ring_0_Display_memory[2] = 0x0000FF;
        Send_Whole_Ring_from_Ring_Memory();
    }
}

void Send_Whole_Ring_from_Ring_Memory(void)
{
    uint32_t i, y;
    for (i=0;i<LED_Number_Per_Ring;)
    {
        y = Ring_0_Display_memory[i];
        for (j=0;j<8;j++)
        {
            x = (y & 0xFF0000);  
            if (x>0)  
                Embeded_Zero();
            else  
                Embeded_One();
        }
        Delay_ms(1000);
    }
}
```

**THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE.**

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