



ELECTRONICS, INC.  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089  
<http://www.nteinc.com>

## NTE30153 thru NTE30156 Discrete RGB LED Indicators 5mm (T-1 3/4) 4-Pin Package Type

**Description:**

NTEs 5mm RGB LED indicators combine 3 LEDs (1 Red, 1 Green, & 1 Blue) in one convenient, 4-lead package. Available in either common anode or common cathode polarity and clear or diffused lens types, this one LED can be used for three status indicators or pulse width modulate all three and get mixed colors!

**Features:**

- All 5mm 4-Pin RGB Types are Available in Multiple Lens Types:
 

|                        |                           |                              |
|------------------------|---------------------------|------------------------------|
| <b><u>Polarity</u></b> | <b><u>Water Clear</u></b> | <b><u>White Diffused</u></b> |
| Common Anode           | NTE30153                  | NTE30154                     |
| Common Cathode         | NTE30155                  | NTE30156                     |
- Super High Brightness
- Round Head with Flange

**Absolute Maximum Ratings:** (T<sub>A</sub> = +25°C unless otherwise specified)

|   |               |
|---|---------------|
| Reverse Voltage, V <sub>R</sub> .....                               | 5V            |
| Reverse Current, I <sub>R</sub> .....                               | 100µA         |
| Peak Current (Duty = 0.1, 1kHz), I <sub>FM</sub> .....              | 100mA         |
| Derating Linear from +25°C .....                                    | 0.4mA/°C      |
| Power Dissipation, P <sub>D</sub> .....                             | 200mW         |
| Operating Temperature Range, T <sub>opr</sub> .....                 | -30° to +85°C |
| Storage Temperature Range, T <sub>stg</sub> .....                   | -30° to +85°C |
| Lead Temperature (During Soldering, 5sec Max), T <sub>L</sub> ..... | +260°C        |

**Electrical Optical Characteristics:** (T<sub>A</sub> = +25°C unless otherwise specified)

| Parameter                                  | Symbol             | Test Conditions       | Min  | Typ  | Max  | Unit |
|--|--------------------|-----------------------|------|------|------|------|
| <b>Red Color</b>                           |                    |                       |      |      |      |      |
| Forward Voltage<br>NTE30155                | V <sub>F</sub>     | I <sub>F</sub> = 20mA | 2.0  | -    | 2.2  | V    |
| All Others                                 |                    |                       | 1.8  | 2.0  | 2.2  | V    |
| Luminous Intensity<br>NTE30153             | I <sub>V</sub>     | I <sub>F</sub> = 20mA | 7000 | -    | 9000 | mcd  |
| NTE30154                                   |                    |                       | 2500 | 3000 | 3500 | mcd  |
| NTE30155                                   |                    |                       | 5000 | -    | 7000 | mcd  |
| NTE30156                                   |                    |                       | 2000 | 2500 | 3000 | mcd  |
| Peak Emission Wavelength                   | λ <sub>p</sub>     |                       | 620  | 625  | 630  | nm   |
| Half Intensity Angle<br>NTE30153, NTE30155 | 2 θ <sub>1/2</sub> |                       | -    | 30   | -    | deg  |
| NTE30154, NTE30156                         |                    | -                     | 60   | -    | deg  |      |

Note 1. I<sub>FP</sub> Conditions — Pulse Width ≤ 100µs, Duty Cycle ≤ 1%.



**Electrical Optical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

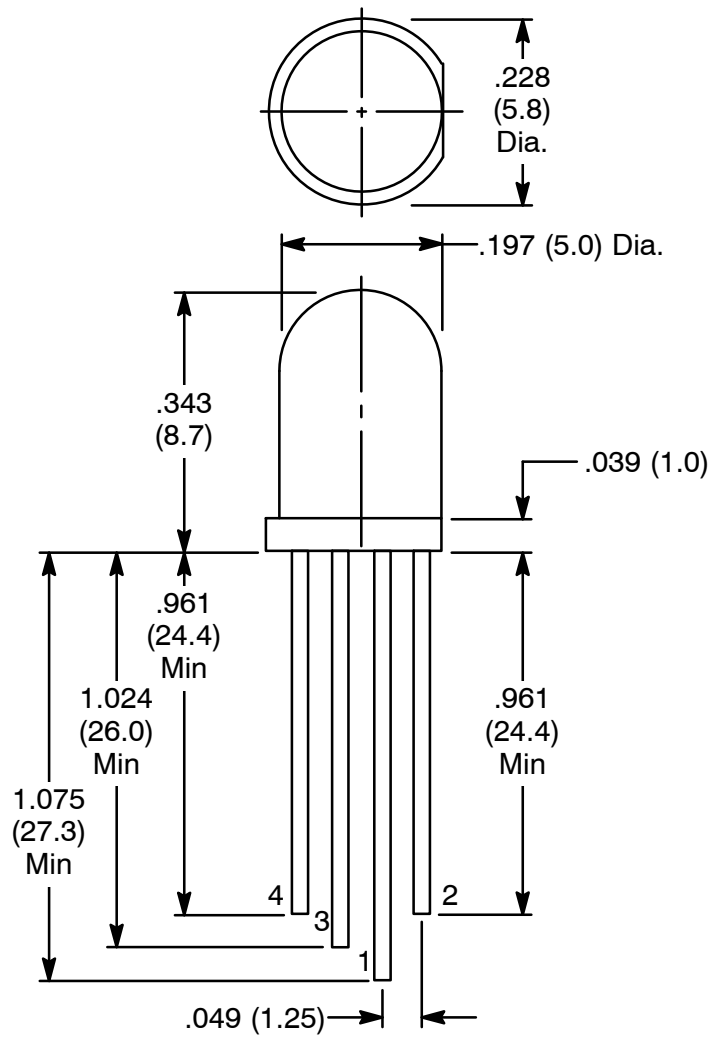
| Parameter                                  | Symbol           | Test Conditions     | Min   | Typ  | Max   | Unit |
|--|------------------|---------------------|-------|------|-------|------|
| <b>Green Color</b>                         |                  |                     |       |      |       |      |
| Forward Voltage                            | $V_F$            | $I_F = 20\text{mA}$ | 3.0   | 3.2  | 3.4   | V    |
| Luminous Intensity<br>NTE30153, NTE30155   | $I_V$            | $I_F = 20\text{mA}$ | 10000 | –    | 12000 | mcd  |
| NTE30154, NTE30156                         |                  |                     | 4500  | 5000 | 5500  | mcd  |
| Peak Emission Wavelength                   | $\lambda_P$      |                     | 520   | 525  | 530   | nm   |
| Half Intensity Angle<br>NTE30153, NTE30155 | $2 \theta_{1/2}$ |                     | –     | 30   | –     | deg  |
| NTE30154, NTE30156                         |                  |                     | –     | 60   | –     | deg  |
| <b>Blue Color</b>                          |                  |                     |       |      |       |      |
| Forward Voltage                            | $V_F$            | $I_F = 20\text{mA}$ | 3.0   | 3.2  | 3.4   | V    |
| Luminous Intensity<br>NTE30153, NTE30155   | $I_V$            | $I_F = 20\text{mA}$ | 5000  | –    | 6000  | mcd  |
| NTE30154, NTE30156                         |                  |                     | 1500  | 2000 | 2500  | mcd  |
| Peak Emission Wavelength                   | $\lambda_P$      |                     | 460   | 465  | 470   | nm   |
| Half Intensity Angle<br>NTE30153, NTE30155 | $2 \theta_{1/2}$ |                     | –     | 30   | –     | deg  |
| NTE30154, NTE30156                         |                  |                     | –     | 60   | –     | deg  |

Note 1.  $I_{FP}$  Conditions — Pulse Width  $\leq 100\mu\text{s}$ , Duty Cycle  $\leq 1\%$ .

**Creating Different Colors:**

With an RGB LED, in addition to being able to produce red, green, and blue light, by configuring the intensity of each LED, you can produce other colors as well. To achieve a purely blue light, the blue LED would be set to the highest intensity, while the intensity of both the green and red LEDs would be set to the lowest. For a white light, all three LEDs would be set to their highest intensity.

In order to produce other colors, you would need to combine all three colors (RGB) using different intensities. This can be done by using a Pulse Width Modulator (PWM) to adjust the intensity of each LED. Because the LEDs are set very close together within a single package, our eyes see the result of the combination of colors, rather than the three colors individually.



|          | 1        | 2     | 3       | 4      |
|----------|----------|-------|---------|--------|
| NTE30153 | Common + | Red - | Green - | Blue - |
| NTE30154 | Common + | Red - | Green - | Blue - |
| NTE30155 | Common - | Red + | Green + | Blue + |
| NTE30156 | Common - | Red + | Green - | Blue + |