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## NTE30157 thru NTE30160 Discrete RGB LED Indicators 10mm (T-3 1/4) 4-Pin Package Type

**Description:**

NTEs 10mm 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 10mm 4-Pin RGB Types are Available in Multiple Lens Types:
 

<b>Polarity</b>	<b>Water Clear</b>	<b>White Diffused</b>
Common Anode (+)	NTE30157	NTE30158
Common Cathode (-)	NTE30159	NTE30160
- Super High Brightness
- Round Head with Flange

**Absolute Maximum Ratings:** ( $T_A = +25^{\circ}\text{C}$  unless otherwise specified)

Reverse Voltage, $V_R$ .....	5V
Reverse Current, $I_R$ .....	100 $\mu$ A
Peak Current (Duty = 0.1, 1kHz), $I_{FM}$ .....	100mA
Derating Linear from +25 $^{\circ}$ C .....	0.4mA/ $^{\circ}$ C
Derating Linear from +30 $^{\circ}$ C (NTE30160 <b>Only</b> ) .....	0.8mA/ $^{\circ}$ C
Power Dissipation, $P_D$ .....	200mW
Operating Temperature Range, $T_{opr}$ .....	-30 $^{\circ}$ to +85 $^{\circ}$ C
Storage Temperature Range, $T_{stg}$ .....	-30 $^{\circ}$ to +85 $^{\circ}$ C
Lead Temperature (During Soldering, 5sec Max), $T_L$ .....	+260 $^{\circ}$ C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Red Color</b>						
Forward Voltage NTE30157, NTE30158	$V_F$	$I_F = 20\text{mA}$	1.8	2.0	2.2	V
NTE30159, NTE30160			2.0	-	2.2	V
Luminous Intensity NTE30157, NTE30159	$I_V$	$I_F = 20\text{mA}$	8000	9000	10000	mcd
NTE30158			3500	4000	4500	mcd
NTE30160			2000	2500	3000	mcd
Peak Emission Wavelength	$\lambda_P$		620	625	630	nm
Half Intensity Angle NTE30157, NTE30159	$2 \theta_{1/2}$		-	30	-	deg
NTE30158, NTE30160			-	60	-	deg

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



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

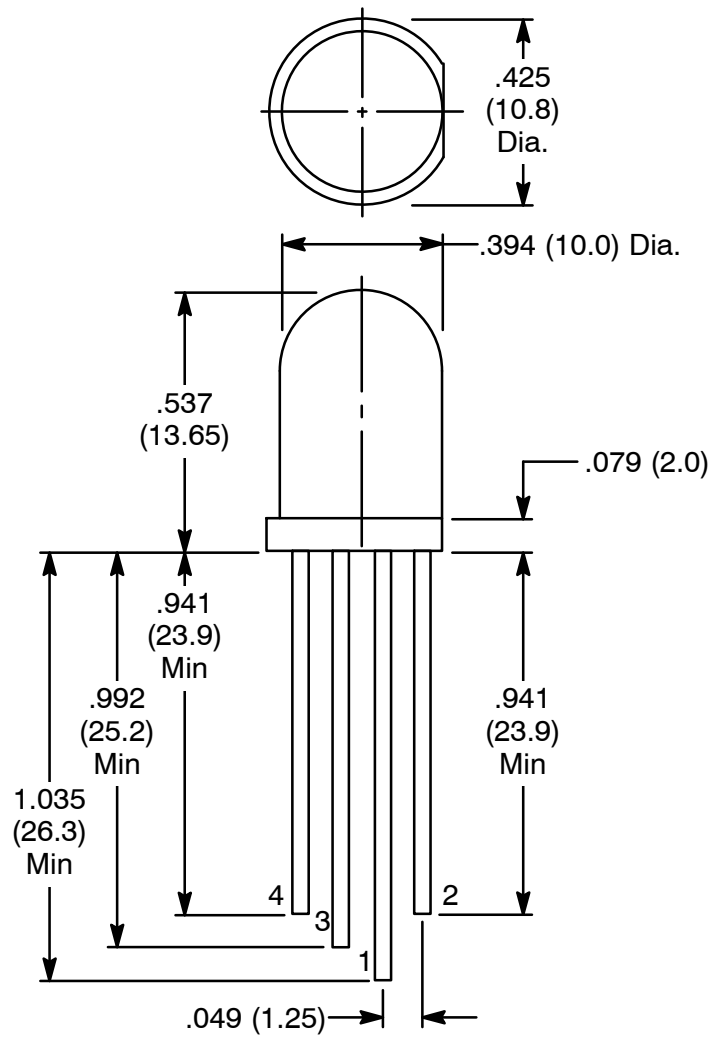
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Green Color</b>						
Forward Voltage NTE30157, NTE30158	$V_F$	$I_F = 20\text{mA}$	2.8	3.2	3.4	V
NTE30159			2.8	3.0	3.4	V
NTE30160			3.0	–	3.2	V
Luminous Intensity NTE30157, NTE30159	$I_V$	$I_F = 20\text{mA}$	18000	19000	20000	mcd
NTE30158			6000	7000	8000	mcd
NTE30160			4000	4500	5000	mcd
Peak Emission Wavelength All Others	$\lambda_P$		515	520	525	nm
NTE30160 <b>Only</b>			520	525	530	nm
Half Intensity Angle NTE30157, NTE30159	$2 \theta_{1/2}$		–	30	–	deg
NTE30158, NTE30160			–	60	–	deg
<b>Blue Color</b>						
Forward Voltage NTE30157, NTE30158	$V_F$	$I_F = 20\text{mA}$	2.8	3.2	3.4	V
NTE30159			2.8	3.0	3.4	V
NTE30160			3.0	–	3.2	V
Luminous Intensity NTE30157	$I_V$	$I_F = 20\text{mA}$	8000	9000	10000	mcd
NTE30158, NTE30160			2000	2500	3000	mcd
NTE30159			6000	6500	7000	mcd
Peak Emission Wavelength	$\lambda_P$		460	465	470	nm
Half Intensity Angle NTE30157, NTE30159	$2 \theta_{1/2}$		–	30	–	deg
NTE30158, NTE30160			–	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
NTE30157	Anode (+)	Red -	Green -	Blue -
NTE30158	Anode (+)	Red -	Green -	Blue -
NTE30159	Cathode (-)	Red +	Green +	Blue +
NTE30160	Cathode (-)	Red +	Green -	Blue +