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## NTE30180 Series LED, 3W, High Power 20mm x 20mm Star Base Aluminum PCB

**Features:**

- Water Clear Lens
- Available in White (W), Warm White (WW), Red (R), Green (G), and Blue (B) Colors

**Applications:**

- Decorative Lighting
- Architectural Lighting
- Residential Lighting
- Commercial Lighting
- Automotive Interiors



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

Power Dissipation (Note 1), $P_D$ .....	3W
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width), $I_F(\text{peak})$ .....	1000mA
Continuous Forward Current, $I_F$	
NTE30180-W, NTE30180-WW, NTE30180-G, NTE30180-B .....	750mA
NTE30180-R .....	700mA
Reverse Voltage, $V_R$	
NTE30180-W, NTE30180-WW, NTE30180-G, NTE30180-B .....	5V
NTE30180-R .....	3V
LED Junction Temperature, $JT$ .....	+120°C
Operating Temperature Range, $T_{opr}$	
NTE30180-W, NTE30180-WW, NTE30180-G, NTE30180-B .....	-40° to +85°C
NTE30180-R .....	-40° to +60°C
Storage Temperature Range, $T_{opr}$	
NTE30180-W, NTE30180-WW, NTE30180-G, NTE30180- .....	-20° to +60°C
NTE30180-R .....	-40° to +80°C

**\*\* These 3W star type LEDs are capable of producing a very high brightness. Please DO NOT look directly at them for any prolonged period of time.**

Note 1. 1W compatible if 400mA, 2.0 – 2.6V (Red) and 350mA, 3.0 – 3.6V (All other colors)

Rev. 6-22



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

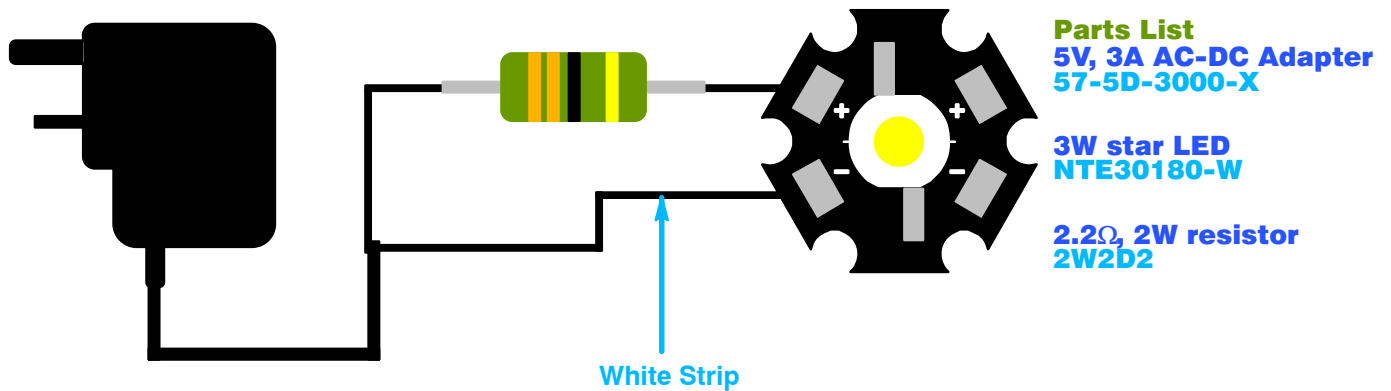
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Luminous Flux NTE30180-W	$\Phi$	$I_F = 750\text{mA}$	210	230	250	Lm
NTE30180-WW			180	210	230	Lm
NTE30180-R		$I_F = 700\text{mA}$	50	80	100	Lm
NTE30180-G		$I_F = 750\text{mA}$	70	80	110	Lm
NTE30180-B			15	20	25	Lm
Viewing Angle NTE30180-R <b>Only</b>	$2 \Theta 1/2$	$I_F = 700\text{mA}$	115	120	125	deg
All Others		$I_F = 750\text{mA}$	115	120	125	deg
Forward Voltage NTE30180-R <b>Only</b>	$V_F$	$I_F = 700\text{mA}$	1.8	-	2.6	V
All Others		$I_F = 750\text{mA}$	3.4	3.8	4.0	V
Reverse Current NTE30180-R <b>Only</b>	$I_R$	$V_R = 3\text{V}$	0	-	5	$\mu\text{A}$
All Others		$V_R = 5\text{V}$	-	-	10	$\mu\text{A}$
Color Rendering Index NTE30180-W & NTE30180-WW <b>Only</b>	$R_a$	$I_F = 750\text{mA}$	60	75	90	*
Color Temperature NTE30180-W	CCT	$I_F = 750\text{mA}$	5500	6000	6500	K
NTE30180-WW			3000	3150	3300	K
Wavelength NTE30180-R		$I_F = 700\text{mA}$	615	620	630	nm
NTE30180-G			$I_F = 750\text{mA}$	515	520	530
NTE30180-B		460		465	470	nm
Spectrum Line Half Width NTE30180-R <b>Only</b>	$\Delta\lambda$	$I_F = 700\text{mA}$	-	23	-	nm
ESD Withstand Limit NTE30180-R <b>Only</b>	ESD		-	-	2000	V
Junction Temperature NTE30180-R	$T_J$	$I_F = 700\text{mA}$	-	115	-	$^{\circ}\text{C}$
All Others			$I_F = 750\text{mA}$	-	115	-

**Typical Application Information**

The NTE30180-X Series of High-Power star LEDs are a 3W LED and the forward voltage is rated at 2.2V to 4.0V depending on the color. The best way to drive these LEDs is constant current, at 350mA, but you can get away with under-driving. For the purpose of these calculations, a forward voltage of 3.7V is used. The typical current of the LED will therefore be 810mA (from Power = Current x Voltage). The power source used with the LED must therefore be able to deliver at least 810mA. Since most power supplies will be higher than 3.7V, a current resistor will be required. The resistor also needs to handle 810mA flowing through it and, as a result, will need to be a power resistor. Please note that during use both the star LED and the resistor will get hot and shouldn't be touched.

The LED has markings for '+' and '-' as indicated on the top side of the PCB.

## Single LED Powered by a 5V wall block



### **CAUTION!**

In high power LEDs, the maximum driving current falls in the 350 – 1000mA range. They are typically available in 1 – 5 watt packages, but can go up to 40W for multi-chip lamps. Commercially available 1W packages can produce in excess of 100 lumens/watt. Although our NTE 3W LEDs come mounted on an aluminum PCB, additional heatsinking may be required in some prolonged applications. A device can be destroyed if excess heat from the high power LED is not removed. High power LEDs are frequently used to replace incandescent bulbs in torches, or can be set in an array to form a powerful LED lamp.

