

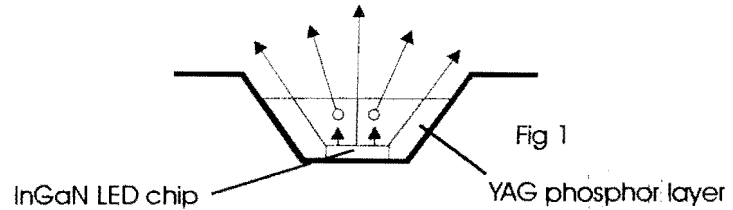
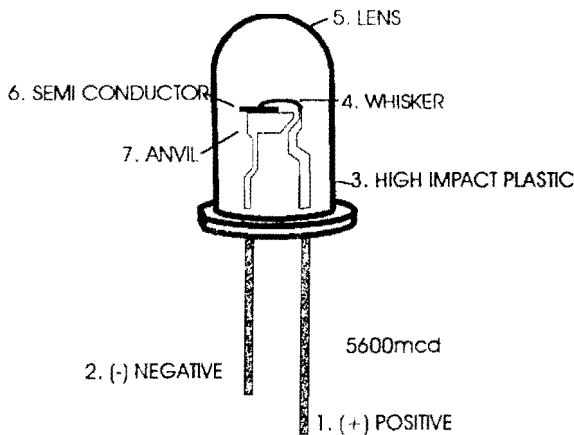
1) Connection to higher voltage will reduce LED life.

2) If LED fails to light reverse polarity.

3) Combinations may be assembled for various voltages or change resistor value.

WHITE LED LIGHTING

WHITE LEDs are "LIGHT EMITTING DIODES" a type of semiconductor. They are the newest item in today's lighting technology. Unlike other light sources, these WHITE LEDs can take a lot of punishment from vibration, heat, and severe cold. Now you have a new option for those hard to solve lighting problems. Our WHITE LEDs can be made waterproof, and put into a lighting package with 1 to 1000 WHITE LEDs. We can design and manufacture street lights, sign lighting, bookcase back lighting or anything else your creative thinking can come up with. GIVE US A CALL.



Using three colors of red, green and blue LED chips can create white. LED technology can be used to reproduce multicolor including white, however, it is not cost-effective to create just white. Current white LEDs are single-chip devices and feature high-brightness InGaN blue LED and YAG (yttrium aluminum garnet) phosphor technology. The YAG phosphor absorbs a part of the blue light from the LED and emits yellow light. Mixing blue and yellow makes white (Figure 1).

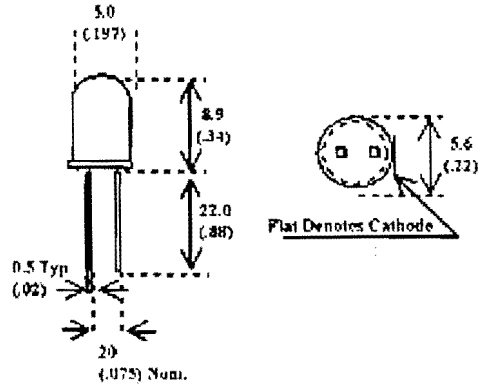
First introduced in 1996, white LEDs currently available on the market provide a white light, which is $x = 0.31$, $y = 0.32$ on the CIE color coordinates diagram. This represents a color temperature of approximately 6,500K (Kelvin) and typical luminous intensity is 5.60cd. (T1-3/4 [5mm] diameter package with 20deg. viewing angle $I_f = 20\text{mA}$ at 25 deg.) By adjusting the phosphor layer, the LEDs can emit incandescent white.

How does a LED work? This is a very simple explanation of their construction and function. WHITE LEDs need 3.6 VDC and use approx. 30 milliamps of current, a power dissipation of 110 milliwatts. The positive power is applied to one side of the LED semiconductor (6) through a lead (1) and a whisker (4). The other side of the semiconductor is attached to the top of the anvil (7) that is the negative power lead (2). It is the chemical makeup of the LED semiconductor (6) that determines the color of the light the LED produces. The plastic housing (3&5) has three functions: it is designed to allow the most light to escape from the semiconductor; it focuses the light; and it protects the led semiconductor from the elements.

SOME BASIC FACTS ABOUT WHITE LEDs

- ☛ WHITE LEDs CAN BE PLACED IN ABUSIVE ENVIRONMENTS
- ☛ WHITE LEDs CAN BE "AC" OR "DC" POWERED (DEPENDING ON THE MODEL)
- ☛ WHITE LEDs ARE THE NEWEST LIGHTING DEVICE ON THE MARKET TODAY
- ☛ WHITE LEDs DO NOT PRODUCE "RF" TO INTERFERE WITH RADIO EQUIPMENT
- ☛ WHITE LEDs ARE A PROVEN TECHNOLOGY
- ☛ WHITE LEDs LAST ABOUT 100,000 HOURS OF CONTINUOUS USE (11 YEARS)
- ☛ WHITE LEDs RADIATE LIGHT AT A 15 TO 45 DEGREE ANGLE DEPENDING ON THE MODEL
- ☛ WHITE LEDs CAN BE MADE COMPLETELY WATERPROOF FOR MANY MARINE APPLICATIONS
- ☛ WHITE LEDs ARE POLARITY PROTECTED, SO IT IS HARD TO MAKE AN INSTALLATION MISTAKE

SE5084J (White 5mm 20°)



Device Type: NSPW500BS
 Dice Material: GaInN
 Light Color: Full Spectrum White
 General Color Index: Ra=85
 Lens Color: Water Clear
 Lens Dimension: 5 mm

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.10") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.

Absolute Maximum Ratings At $T_a = 25^\circ\text{C}$

Parameter	Max	Unit
DC Forward Current (mA)	25	mA
Reverse Voltage	5	V
Power Dissipation (mW)	100	mW
Peak Forward Current, $t_w = 1\text{ msec. Duty} = 1/20$	80	mA
Operation Temperature ($^\circ\text{C}$)	-20° -	$+80^\circ$
Storage Temperature ($^\circ\text{C}$)	-30°	$+100^\circ$
Solder DIP (5seconds, 1.6 mm from body) Temperature	260	$\pm 5^\circ\text{C}$

Electrical Characteristics At $T_a = 25^\circ\text{C}$

Symbol	Parameter	Test Cond.	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 20\text{ mA}$	**	3.6	4.0	V
I_R	Reverse Current	$V_R = 5\text{V}$	**	**	100	μA
λ_{PEAK}	Peak Wavelength	$I_F = 20\text{mA}$	**	**	**	nm
	Chromaticity	X	**	0.31	**	
		Y	**	0.32	**	
2θ	Viewing Angle	$I_F = 10\text{mA}$	**	20°	**	Degrees
I_v	Luminous Intensity	$I_F = 20\text{mA}$	4,800	5,600	6,800	MCD

Notes:

- All dimensions are in millimeters (inches).
- Tolerance is $\leq 0.25\text{ mm}$ (0.10) unless otherwise specified.
- Protruded resin under flange is 1.5 mm (0.59) max.
- Lead spacing is measured where the leads emerge from the package.
- Information in this technical data sheet and believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission.