



Fig.1 Luxeon™ Star



Fig. 2 Luxeon™ Emitter

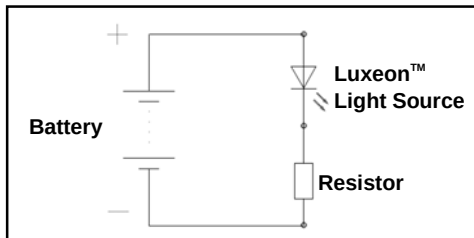


Fig. 3 Using batteries

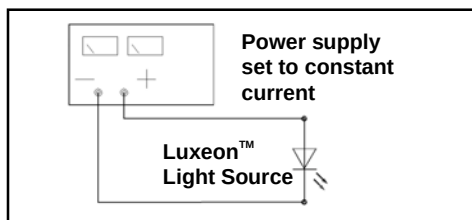


Fig. 4 Constant current mode

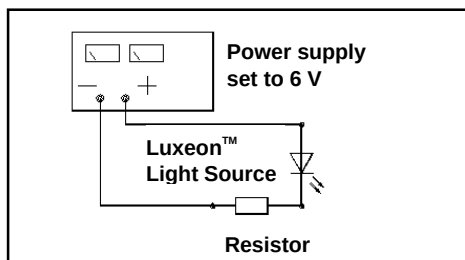


Fig. 5 Constant voltage mode

Electrical Drive Information Luxeon™ Emitter, Star, Star/C & Star/O

Driving a single Luxeon™ light source

LEDs should be driven at a constant current. The power dissipation causes the LED to heat up. Excessive heat destroys the LED. Please follow Application Brief 05 *Luxeon Thermal Design Guide* which can be downloaded at www.luxeon.com to ensure proper heat management.

At room temperature (25°C)

- A Luxeon™ Star (Fig.1) may be driven at it's maximum rated current of 350 mA. The anode lead is denoted by a dot or a "+", anode is the left side of AMP connector on the Star/C when facing toward you. The temperature of the back of the MCPCB may reach 60°C if no additional heatsinking is provided.
- A Luxeon™ Emitter (Fig. 2) must be driven at a reduced current of maximum 100 mA due to the lack of a heat sink. The anode lead is denoted by a hole in the leadframe. The back of the device is not electrically neutral and must be isolated from the leads.

Using batteries (AA, 9 V block) - see Fig. 3

Battery Configuration	Resistors for Luxeon Star		Resistors for Luxeon Emitter	
	Vf-bin E-G	Vf-bin H-L	Vf-bin E-G	Vf-bin H-L
4 AA batteries (~6 V)	11Ω / 1W	8Ω / 1W	30Ω / 0.5 W	22Ω / 0.5W
9 V block	16 Ω / 2 W		49 Ω / 1 W	

Using Power Supplies (Fig. 4 or Fig. 5)

	Luxeon Star		Luxeon Emitter	
Current setting (constant current mode) - see Fig. 4	350 mA		100 mA	
Voltage setting (constant voltage mode) - see Fig. 5	Resistor @ 6 V(const.)		Resistor @ 6 V(const.)	
	Vf-bin E-G	Vf-bin H-L	Vf-bin E-G	Vf-bin H-L
	11Ω / 1W	8Ω / 1W	30Ω / 0.5 W	22Ω / 0.5W

Typical Characteristics at 350mA, Junction Temperature, T_J = 25°C

Radiation Pattern	Color	Typical Dominant Wavelength ^[1] λ_D or CCT	Forward Test Current (mA) I _F	Typical Forward Voltage V _F (V)	Minimum Luminous Flux (lm) Φ_V ^[1]	Typical Luminous Flux (lm) Φ_V
Batwing (low dome)	WHITE	5500 K	350	3.42	13.9	18
	GREEN	530 nm	350	3.42	13.9	25
	CYAN	505 nm	350	3.42	13.9	30
	BLUE ^[2]	470 nm	350	3.42	3.8	5
	ROYAL BLUE ^[3]	455nm	350	3.42	1.7	4
	RED	625 nm	350	2.85	13.9	25
	AMBER	590 nm	350	2.85	10.7	20
Lambertian (high dome)	GREEN	530 nm	350	3.42	13.9	25
	CYAN	505 nm	350	3.42	13.9	30
	BLUE ^[2]	470 nm	350	3.42	3.8	5
	ROYAL BLUE ^[3]	455nm	350	3.42	1.7	4
	RED	627 nm	350	2.95	30.6	44
	RED-ORANGE	617 nm	350	2.95	39.8	55
	AMBER	590 nm	350	2.95	23.5	36

Notes:

1. Minimum luminous flux performance guaranteed within published operating conditions. Luxeon™ types with even higher luminous flux levels will become available in the future. Flux values for Luxeon™ emitters and stars without secondary optics. The efficiency of the collimating optic is approximately 85%.
2. Minimum flux value for 470 nm devices. Due to the CIE eye response curve in the short blue wavelength range, the minimum luminous flux will vary over the Lumileds' blue color range. Luminous flux will vary from a minimum of 2.9 lm at 460 nm to a typical of 8 lm at 480 nm due to this effect.
3. The typical radiometric flux for Royal Blue Luxeon™ is 120 mW.
4. All power light sources represented here are IEC825 Class 2 for eye safety.

Absolute Maximum Ratings

Parameter	White/Green/Cyan/ Blue/Royal Blue	Red/Amber Red-Orange
DC Forward Current (mA) ^[1]	350	385
Peak Pulsed Forward Current (mA)	500	550
Average Forward Current (mA)	350	350
LED Junction Temperature (°C)	120	120
Aluminum-Core PCB Temperature (°C)	105	105
Storage Temperature (°C) Emitter, Star, and Star/C	-40 to +120	-40 to +120
Storage Temperature (°C) Star/O (w/ collimating optic)	-40 to +75	-40 to +75
Soldering Temperature (°C) ^[3]	260 for 5 seconds max	260 for 5 seconds max

Notes:

1. Proper current derating must be observed to maintain junction temperature below the maximum.
2. All products are not sensitive to ESD damage (+/-16,000 Volts by HBM condition).
3. Measured at leads, during lead soldering and slug attach, body temperature must not exceed 120°C. Luxeon™ emitters cannot be soldered by general IR or Vapor-phase reflow, nor by wave soldering. Lead soldering is limited to selective heating of the leads, such as by hot-bar reflow, fiber focused IR, or hand soldering. The package back plane (slug) may not be attached by soldering, but rather with a thermally conductive adhesive. Electrical insulation between the slug and the board is required. Please consult Lumileds' Application Brief on Luxeon™ Emitter Assembly Information for further details on assembly methods.

For additional technical and application information please visit us online at www.luxeon.com