

Custom Luxeon™ Design Guide

The objective of this design guide is to provide customers with the technical resources necessary to identify custom Luxeon™ Power Light Sources for unique applications. A Luxeon Power Light Source is a configuration of Luxeon Light Emitting Diodes (LEDs) mounted on an aluminum-core printed circuit board (PCB). Luxeon Power Light Sources, also referred to as “Level 2” products, are customized to meet the requirements of indoor and outdoor applications. Lumileds Lighting also builds standard Luxeon Power Light Sources in a variety of configurations.^[1]

Lumileds Lighting offers both standard products, as described in the product data sheets and customized Luxeon solutions to customers who require specialization. Customization requires a high volume commitment, and is therefore not suitable for low volume applications. In these cases, the standard Luxeon Star may be easily assembled by the customer. Lumileds Lighting charges for non-recurring engineering costs to develop a custom Luxeon Power Light Source.

If the standard product board sizes or configurations do not fit in your application, a custom Luxeon Power Light Source may be the solution. For information on product lines other than Luxeon, please consult your regional Lumileds sales representative.

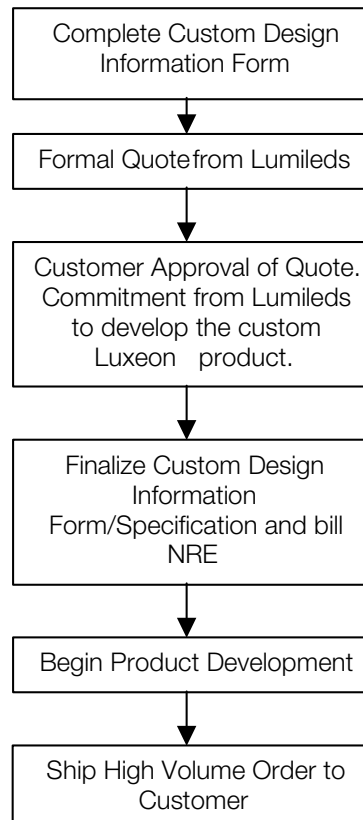
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Benefits of Luxeon Technology

- Highest Flux per Light Source in the world
- Very Long Operating Life (up to 100k hours)
- Superior Material Technology: Aluminum Indium Gallium Phosphide (AlInGaP) for Red, Red-Orange and Amber, and Indium Gallium Nitride (InGaN) for White, Green, Cyan, Blue, and Royal Blue
- More Energy Efficient than Incandescent and most Halogen lamps
- Low Voltage DC operated
- Cool Beam, Safe to the Touch
- Instant Light (less than 100ns)
- Virtually Maintenance—Free Operation
- Fully Dimmable
- No UV
- Superior ESD Protection

Order Process



Guidelines for Design

Although LED technology offers many benefits to various applications, semiconductor light sources behave differently than conventional incandescent or halogen light sources. To assess if Luxeon technology will meet your application demands, we use a Custom Design

Information Form to summarize the detailed requirements. Please contact your local Lumileds sales representative or our website to obtain a “Custom Design Information Form”^[2]. In addition to the guidance of sales engineers, this design guide will assist you in completing this three-page summary.

General Project Tracking Information

The second page of this form contains the table shown in Figure 1. The purpose of this table is to list the basics of the requested product and gauge the customer’s expectations.

Start date:	Start date of the project
Last update / By:	Record maintenance
Target date for quote:	When do you expect a formal quote from Lumileds?
Customer:	Your Company Name
Customer project name:	Customer internal/external product name
Customer part number:	
Lumileds part number:	
Application:	Where will this product be used?
Product functionality description:	What is the product going to do?
Level 2 board option: <ul style="list-style-type: none"> • Standard • Customized Design 	Is a custom product necessary or does Lumileds have product that will serve the needs of this application?
Customer expectations on quantity and timing (mark all that apply): <ul style="list-style-type: none"> • Prototypes (built to final specifications) • Pre production (product for reliability testing by customer) • Production (full volume commitment) 	Once a design is agreed upon, how many samples will be required and when?
Estimated cumulative volume over 3 years after product release:	What is the total volume required for this product?
Target price for Custom Design:	What price is the customer expecting?
Customer contact:	Name, Phone Number, Email Address of main design engineer contact.
Lumileds contacts (Sales Engineer)	Name, Phone Number, Email Address of Lumileds representative.

Figure 1
Custom Design Information Form.

Initial Light Technical Requirements

The third page of the form defines the initial light output requirements as shown in Figure 2. For customers not familiar with LED technology, this section will assist in describing the unique light

output measures of LEDs. For more information on light measurement, please review the [Light Measurement Handbook](#)^[3].

Lifetime Conditions: <ul style="list-style-type: none"> • Operating hours • Ambient temperature range • Lumen maintenance expectations 	What is the total on-time of the product? What is the average board temperature over this period of time? How much light loss is expected?
Optical flux or radiated power required from LED array stated in lm or mW (required for quoting): <ul style="list-style-type: none"> • Minimum • Typical • Maximum 	What is the minimum and maximum amount of flux required for total application (photometric or radiometric)?
Dominant Wavelength (nm) or Peak Wavelength (nm) or CIE coordinate window or Color Temperature (K): <ul style="list-style-type: none"> • Minimum • Typical • Maximum 	What is the acceptable color range?
Specify the maximum to minimum flux ratio requirement within the array. (Typical ratio is approximately 2:1)	How much can the light output vary from LED to LED on one single board?
LED radiation pattern requirement (batwing, lambertian, or other).	Lumileds offers several types of LEDs, each with a different radiation pattern.
Direct view or indirect view application?	Final application for illumination?
Are secondary optics used in this application?	Will the customer be designing optics?
Other:	

Figure 2

Custom Design Information Form, Initial Light Technical Requirements.

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