













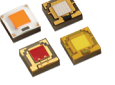



Illumination

A comprehensive portfolio of
application optimized LUXEON LEDs
and the infinitely configurable
Matrix Platform

High Power LEDs - Industry leading flux, efficiency and design flexibility

PRODUCT	DESCRIPTION	FEATURES AND BENEFITS
LUXEON 5050 	High efficacy and superior robustness in a multichip, high power package, enabling cost-effective system design	<ul style="list-style-type: none"> LUXEON 5050 Round LES and Square LES - 655 lm and 825 lm typical for 4000K 70CRI at 25°C Enables high efficacy (>150 lm/W) system design at affordable LED BOM cost Two voltage options compatible with low cost and high efficiency drivers LUXEON 5050 Square LES is designed with top notch corrosion resistance for applications in extremely harsh environments
LUXEON CSP HL1 	Extreme flux density in a compact package for design flexibility and color quality	<ul style="list-style-type: none"> Leading Quality of Light: Top emission only, with no side light and no cross-talk in color tuning applications. Best in class Color over Angle High Luminance: Undomed design enables high beam intensity and beam steering Design Flexibility: Wide range of CCTs in 80CRI and 90CRI allow easy combination for different lighting designs, including color mixing and tunability. Small form factor provides high flexibility and elegant designs
LUXEON MX 	Unmatched performance in a proven package	<ul style="list-style-type: none"> 1,210 lumens >150 lm/W enables high performance 120 lm/W fixtures Ability to meet DLC Premium V4.1 requirements in real world operating conditions Instant upgrade to LUXEON M (footprint and optically compatible)
LUXEON MZ 	Best combination of brightness, uniformity and luminance, enabling precision light control	<ul style="list-style-type: none"> Highest lumen density for ideal optical control in a 600–1,000+ lumen package Tighter beam angles enable higher quality retrofit lamps and higher pole heights for outdoor applications Increases fixture flexibility when used in combination with LUXEON MX
LUXEON TX 	Extreme efficacy and best performance	<ul style="list-style-type: none"> 159 lm/W at 700mA, 85°C (4000K 70CRI) 151 lm/W at 700mA, 85°C (3000K 70CRI) Design flexibility: low V_f of 2.8V and low R_{th} at 3K/W; 1.5A max drive current
LUXEON V 	Unmatched flux density with the lowest thermal resistance, enabling never before possible form factors	<ul style="list-style-type: none"> Low thermal resistance of 0.80°C/W Over 1,700 lumens from a single, compact source PSS-CSP Die technology supports 2x the current per mm²
LUXEON V2 	Best performance. Most usable light. Proven package.	<ul style="list-style-type: none"> CSP technology enables high efficacy at high drive current 3535 package with 3-stripe footprint for ease of design Superior Color over Angle delivers best Quality of Light
LUXEON Z ES 	Extreme flux density in a micro footprint package for precise optical control	<ul style="list-style-type: none"> Micro footprint enables close packaging Undomed design allows precise optical control <i>Freedom from Binning</i> enables color consistency
LUXEON FlipChip White 	Chip Scale Package (CSP) for maximum design flexibility	<ul style="list-style-type: none"> Typical performance at 350mA, 85°C for LUXEON FlipChip White 10; 113 lm/W (3000K 80CRI) and 134 lm/W (4000K 70CRI) Direct Attach—no wire bonds Up to 300 lumens from a single compact source

Color LEDs - A complete color spectrum for a variety of architecture and entertainment applications

PRODUCT	DESCRIPTION	FEATURES AND BENEFITS
LUXEON 2835 Color Line 	Robust color line with high performance ideal for cost effective designs	<ul style="list-style-type: none"> • Broadest color gamut offering, ensuring any color point can be achieved in customers designs • Matching polarity across all colors, making the PCB layout easier • Same focal height for all colors, enabling ease of color mixing • Expanding the color gamut via color mixing; LUXEON 2835 Mint, combined with Red-Orange, achieves 2200K on the BBL • Tested and binned at 120mA, 25°C
LUXEON 3535L Color Line 	Color LEDs that deliver the perfect amount of color you need. No more. No less.	<ul style="list-style-type: none"> • Same focal length as other LUXEON Color Lines; optically compatible for simpler design cycles • Color palette and 3V white portfolio on the same footprint • Unique phosphor converted Lime and PC Amber colors provide unrivaled maximum performance
LUXEON C Color Line 	Multiple colors, a single focal length	<ul style="list-style-type: none"> • Consistent focal length for ease of color mixing in any system • Lowest thermal resistance, enabling brighter, lower cost, more efficient systems • Completely hot tested, eliminating unwanted surprises in color shift; all colors and whites at $T_j=85^\circ\text{C}$ • Broadest color portfolio ensuring largest color gamut • Performance at 350mA, 85°C: Red 49 lumens, Green 141 lumens, Blue 43 lumens
LUXEON CZ Color Line 	Maximum punch in any application	<ul style="list-style-type: none"> • Industry leading punch (70 cd/klm) • Eliminate cross talk in densely packed applications • Lowest thermal resistance and isolated thermal pad for better thermal management • Performance at 350mA, 85°C: Red 31 lumens, Green 117 lumens, Blue 34 lumens
LUXEON MultiColor Module 0.5W 	Compact RGB 3-in-1 package that offers flexibility and versatility	<ul style="list-style-type: none"> • Leading intensity performance ensuring bright color designs • Leading reliability performance (e.g. H2S test results) • Water resistance with IPX8 rating • PLCC6 package with 3535 footprint • Each color tested and binned at 20mA, 25°C
LUXEON MultiColor Module 2.5W 	RGBW 4-in-1 package that enables a large color gamut while simplifying the ability of getting just the right color point	<ul style="list-style-type: none"> • Leading flux performance, ensuring bright color designs • Separate cavity for white eliminating cross talk ensures true color points • Leading reliability performance (e.g. H2S test results) 5050 package • Each color tested and binned at 120mA, 25°C
LUXEON Z Color Line 	High power color LEDs in a micro footprint package for ultimate design flexibility	<ul style="list-style-type: none"> • 1.7mm x 1.3mm footprint enables unique arrangements in space constrained applications • Full spectrum of color from 380-670nm, including white and phosphor converted Amber and Lime • The industry's smallest high power color LED • Performance at 500mA, 25°C: Red 52 lumens, Green 118 lumens, Blue 38 lumens





Mid Power & Low Power LEDs - A broad selection of high performance, reliable LEDs

PRODUCT	DESCRIPTION	FEATURES AND BENEFITS
LUXEON 2835C 	Perfected performance, built on a proven legacy for higher output ranges in a 3V package	<ul style="list-style-type: none"> • 61 lumens at 120mA (4000K 80CRI), 25°C • Maximum drive current of 240mA • Efficacy up to 192 lm/W
	Perfected performance, built on a proven legacy for higher output ranges in a 6V package	<ul style="list-style-type: none"> • 118 lumens at 120mA (4000K 80CRI) • Maximum drive current of 240mA • Hot-color targeted at 85°C and 1/9th ANSI micro-binning for tight color control
LUXEON 2835E 	Perfected performance, built on a proven legacy for lower output ranges in a 3V package	<ul style="list-style-type: none"> • 29 lumens at 60mA • Maximum drive current at 150mA • Efficacy up to 170 lm/W
	Perfected performance, built on a proven legacy for lower output ranges in a 6V package	<ul style="list-style-type: none"> • 54 lumens at 60mA (4000K 80CRI) • Maximum drive current of 120mA • Hot-color targeted at 85°C and 1/9th ANSI micro-binning for tight color control
	Perfected performance, built on a proven legacy for lower output ranges in a 9V package	<ul style="list-style-type: none"> • 118 lumens at 100mA (2700K 80CRI) • Maximum drive current of 150mA • Hot-color targeted at 85°C and 1/9th ANSI micro-binning for tight color control
LUXEON 2835 HE 	High flux and efficacy in a 2835 package with a full range of CCTs and CRIs	<ul style="list-style-type: none"> • 35.5 lumens at 65mA (4000K 80CRI) • Maximum drive current of 240mA • 1/8th ANSI micro-binning for tight color control • Efficacy up to 202 lm/W
LUXEON 3014 	Hot-color targeted, low profile package for uniform light in thin designs	<ul style="list-style-type: none"> • Low profile for use in light guide applications and other high uniformity thin designs • 28 lumens at 60mA (4000K 80CRI) • Maximum drive current of 120mA • Hot-color targeted at 65°C and 1/9th ANSI micro binning for better color accuracy
LUXEON 3030 2D 	High flux, hot-color targeted 6V package	<ul style="list-style-type: none"> • 176 lm/W at 120mA (4000K 70CRI) • 132 lm/W at 120mA (2700K 90CRI) • 168 lm/W at 120mA (4000K 80CRI)
LUXEON 3030 HE Plus 	High flux and highest efficacy in a 3030 package with a full range of CCTs and CRIs	<ul style="list-style-type: none"> • 37 lumens at 65mA (4000K 80CRI) • Maximum drive current of 480mA • 1/8th ANSI micro-binning for tight color control • Efficacy up to 210 lm/W
LUXEON 3535L 	Medium flux and efficacy in a 3535 package with a wide range of CCTs and CRIs	<ul style="list-style-type: none"> • 50 lumens at 100mA (4000K 80CRI) • Maximum drive current of 200mA • 1/7th ANSI micro-binning for tight color control
LUXEON 3535L HE 	High flux and efficacy in a 3535 package with a full range of CCTs and CRIs	<ul style="list-style-type: none"> • 52 lumens at 100mA (4000K 80CRI) • Maximum drive current of 300mA • 1/7th ANSI micro-binning for tight color control • Efficacy up to 188 lm/W
LUXEON 3535L HE Plus 	High flux and highest efficacy in a 3535 package with a full range of CCTs and CRIs	<ul style="list-style-type: none"> • 54 lumens at 100mA (4000K 80CRI) • Maximum drive current of 300mA • 1/7th ANSI micro-binning for tight color control • Efficacy up to 195 lm/W


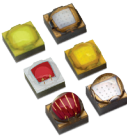


Chip on Board LEDs - High performance solutions that optimize system design

PRODUCT	DESCRIPTION	FEATURES AND BENEFITS
LUXEON CoB Core Range 	Uniform, high efficacy and easy to design	<ul style="list-style-type: none"> • High efficacy: >160 lm/W, 80CRI and >160 lm/W, 70CRI at $T_j=85^{\circ}\text{C}$ • Reaching 30,000 lumens at >140 lm/W at 85°C • Up to 4x lower thermal resistance than competition, enabling smaller heatsinks and higher lumens • Available in >95CRI
LUXEON CoB Core Range – High Density 	Double the flux in the same form factor	<ul style="list-style-type: none"> • 1202HD: 6mm, 2,500 lumens at 95 lm/W, 3000K 80CRI at $T_j=85^{\circ}\text{C}$ • 1204HD: 9mm, 5,000 lumens at 95 lm/W, 3000K 80CRI at $T_j=85^{\circ}\text{C}$ • 1205HD: 11mm, 6,500 lumens at 95 lm/W, 3000K 80CRI at $T_j=85^{\circ}\text{C}$ • 3-step MacAdam ellipse color definition
LUXEON CoB Core Range PW 	Engineered for vibrant colors	<ul style="list-style-type: none"> • High efficacy: up to 138 lm/W at 90CRI, $T_j=85^{\circ}\text{C}$ for high quality of light at lower energy consumption • Various LES sizes and flux output that fit different applications and requirements • Best in class thermal resistance, enabling the use of smaller heatsink and prolonged product life span • Supported by a comprehensive optical, mechanical, and electrical ecosystem
LUXEON CX Plus CoB (Gen 2) 	High efficacy with industry standard footprint	<ul style="list-style-type: none"> • Upgraded with higher efficacy from its predecessor LUXEON CX Plus CoB • 2- and 3-step MacAdam ellipse, ensuring color consistency from luminaire to luminaire • Up to 5% higher flux than competition in same footprint and LES • New generation with improved flux and efficacy
LUXEON CX Plus CoB - High Density 	Higher lumen density with industry standard footprint	<ul style="list-style-type: none"> • Industry's smallest LES for highest lumen densities, up to 1,150 lumens at 3000K 90CRI in 4.5mm LES • Available in 80CRI and 90CRI for standard color and 95CRI for Below BBL • 2- and 3-step MacAdam ellipse, ensuring color consistency from luminaire to luminaire • Up to 10% higher flux than competition in same footprint and LES

Stylist Series LEDs - LEDs to create lighting that sells

PRODUCT	DESCRIPTION	FEATURES AND BENEFITS
LUXEON CoB with CrispColor Technology™ 	<p>Fashion retail lighting that makes an impact, highlighting rich colors and increasing contrast</p>	<ul style="list-style-type: none"> • Typical 93CRI with R9 ~95; 105 to 110 lm/W • Color point below BBL matching proposed ANSI “Preference-based Specification” targets • Gamut area index value of ~80 (normal 90CRI LEDs are around 50CRI)
LUXEON CoB with CrispWhite Technology 	<p>Fashion retail lighting that makes an impact, revealing the whitest whites</p>	<ul style="list-style-type: none"> • Double blue peak enabling the CrispWhite effect • All parts >90CRI, also available in >95CRI • Color point below BBL matching CDM • Highest flux densities with the smallest LES
LUXEON CoB with FreshFocus Technology™ 	<p>Accentuating freshness and overall visual appeal, making food irresistible</p>	<ul style="list-style-type: none"> • LED lighting saves energy, reduces stress on the environment, and without IR and UV, it keeps products fresh longer • Spectrum engineered products with focused color points to enable the right lighting for specific merchandise and applications • Several options available: Produce (fruit & vegetables), Fish, Marbled Meat, Red Meat and Bread & Pastries
LUXEON LEDs with AtmoSphere Technology™ 	<p>Creating the ideal ambiance for restaurants and other hospitality venues</p>	<ul style="list-style-type: none"> • Warm color point • Available in 80CRI and 90CRI for great color rendering • Color point on BBL matching halogen

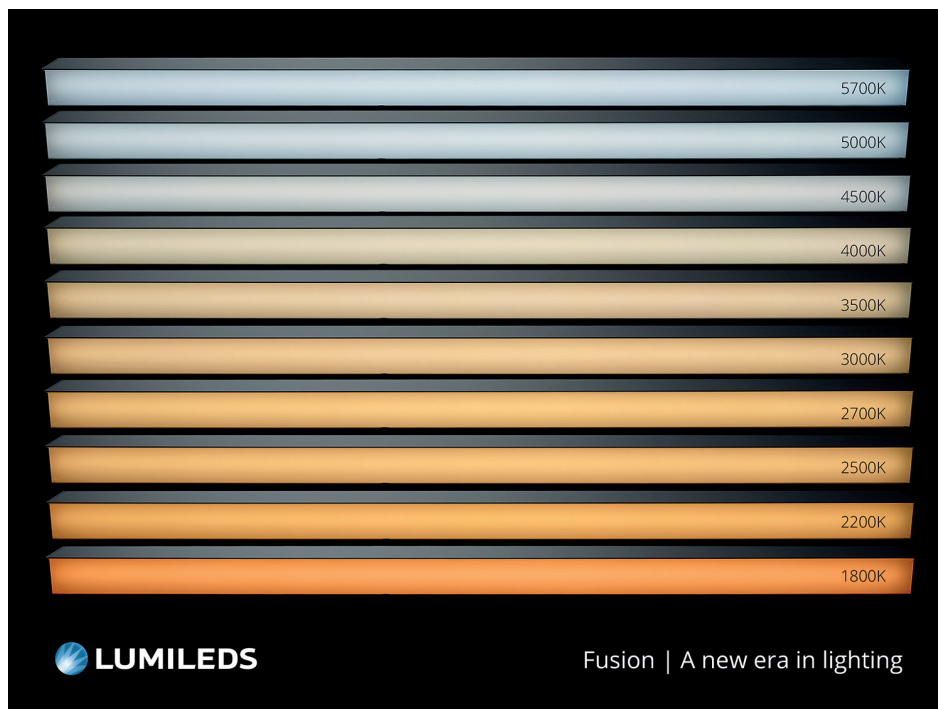
Horticulture LEDs - LEDs engineered to deliver the precise wavelengths of light needed to improve crop yield

PRODUCT	DESCRIPTION	FEATURES AND BENEFITS
LUXEON SunPlus 2835 Line 	Enables ease of system design for Horticulture applications	<ul style="list-style-type: none"> Choice of individual colors to design own spectrum or ready made color points designed to maximize yields Portfolio includes both direct color and phosphor converted colors Designed specifically for interweaving or vertical farming applications Binned and tested at 120mA, 25°C Up to 480mA max drive current
LUXEON SunPlus 20 Line 	Delivers the spectra flexibility needed to design a grow light solution to any specification	<ul style="list-style-type: none"> 120° and 150° viewing angle of choice for various design needs Tested and binned in PPF (μmol/s) Fast time to market by leveraging already existing ecosystem Lowest thermal resistance aiding in thermal management Direct colors and full spectrum options available
LUXEON SunPlus 35 Line 	LEDs enabling uniform distribution and optimum output for lighting placed in close proximity to plants	<ul style="list-style-type: none"> Tested and binned in PPF (μmol/s) Purple is available in three different recipes (2.5% Blue, 12.5% Blue, and 25% Blue) Fast time to market by leveraging already existing ecosystem Addition of LUXEON SunPlus 35 Deep Red and Far Red, enabling customized spectra design
LUXEON SunPlus CoB Line 	LEDs for ease of design and high PPF density for a deep penetration into the plant canopy	<ul style="list-style-type: none"> Tested and binned in PPF (μmol/s) Purple (12.5% Blue) provides the right amount of PPF in the blue wavelength (420-480nm) for the application in addition to getting PPF in the Red (620-670nm) wavelength Fast time to market by leveraging already existing Ecosystem

LUXEON Fusion

LUXEON Fusion offers a wide range of benefits to lighting designers, architects, luminaire manufacturers and installers. The unique properties of this versatile light source platform allows users to accurately adjust the color point after installation, creating perfect fixture to fixture consistency between applications such as spotlights, downlights and linear lights in a lighting scheme. Moreover, the system offers the unprecedented option of constant light output, high color fidelity and color gamut over a wide color tuning range including dim-to-warm capability.




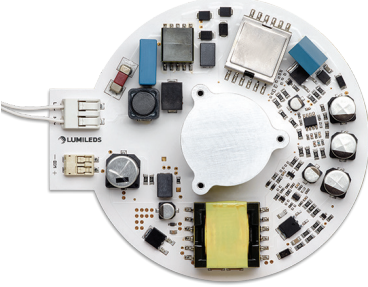
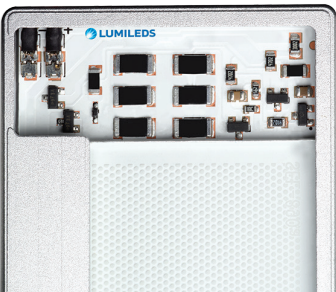
- Constant light output between 2700K and >6500K with virtually no impact on efficacy
- Track Planckian or off Planckian within 0.001 Du'v'
- >90CRI, typical 94CRI above 3000K, R9>50
- Allow dim to warm to 1800K
- Color consistency 3-step MacAdam ellipse with the option for 2-step



Matrix Platform - Infinitely configurable, integrated LED light engines tailored to the most demanding requirements. Yours.

Matrix Platform features application-optimized LUXEON LEDs combined with our Matrix Platform Advanced Technologies, ready for installation into your final luminaire assembly. Advanced Technologies optimize Matrix Platform performance, efficiency and predictability.

Advanced Technologies

FEATURE TECHNOLOGY		TECHNOLOGY OVERVIEW
	<p>Oberon Intelligent Assembly This proprietary pick-and-place system features the industry's only algorithmic LED mixing technology—guaranteeing consistent characteristics and performance board to board.</p>	<p>Unlike contract manufacturers that mix based on flux or V_f value of a binned LED, Oberon eliminates bins and selects LEDs based on specific test data. This results in higher flux, tighter color control, matched V_f strings and board-to-board consistency for applications where uniformity is important—from outdoor streetlights to indoor retail.</p>
	<p>Integrated Light Guides These advanced components soften high-intensity LED pixels to create a more uniform light surface, an increasingly important end game as luminaire form factors become smaller and smaller.</p>	<p>Based on decades of experience developing technology for progressively thinner LED-based television screens, Lumileds has engineered ultra-thin Integrated Light Guides capable of delivering an unprecedented level of light control. The result is luminaires that minimize pixelation to create more visually pleasing light and enhanced ambiance.</p>
	<p>Integrated Drivers These application-specific topologies are designed to address the trend of incorporating more electronic components—including the all-important power source—into a fully integrated, driver-on-board LED system. Integrated Drivers can also be tailored to unique manufacturer requirements, helping amp up system-level optimization.</p>	<p>Integrated Drivers dramatically simplify fixture design and reduce space requirements, offering manufacturers the flexibility to design more streamlined, elegant luminaires. This technology's benefits extend beyond aesthetics, providing system-level cost savings made possible by smaller form factors.</p>
	<p>Connectivity and Controls This sophisticated functionality allows lighting designers to bring cutting-edge luminaires to market that can be controlled remotely, using an app or other device.</p>	<p>To proactively address connectivity expectations in the IoT (Internet of Things) era, Lumileds has leveraged driver-based integration best practices to pioneer state-of-the-art Connectivity and Controls technology. Thanks to a robust selection of supported wired and wireless protocols intelligently integrated into the electronics of the LED system, manufacturers can count on an accelerated time to market.</p>
	<p>Color Tuning Electronics This patented circuitry technology allows LEDs to mimic the warm, yellow dimming pattern that is the hallmark of halogen bulbs by controlling both a warm and a cool LED with two drivers that pair seamlessly with simple single channel drivers.</p>	<p>Ideal for interior and accent lighting, this emerging technology allows manufacturers to balance the brightness of each fixture to create a desired warm effect on dimming. By augmenting existing single LED driver fixtures with this incremental functionality, manufacturers can quickly and easily extend product offerings with LED luminaires that achieve previously elusive dim to warm lighting.</p>

Illumination Product Portfolio

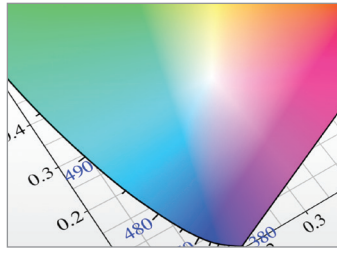
PRODUCT	ARCHITECTURAL	DOWN-LIGHTS	HIGH BAY & LOW BAY	HORTICULTURE	INDOOR AREA LIGHTING	LAMPS	OUTDOOR	SPECIALTY LIGHTING	SPOTLIGHTS
LUXEON 2835C									
LUXEON 2835 Color Line									
LUXEON 2835E									
LUXEON 2835 HE									
LUXEON 3030 2D									
LUXEON 3030 HE Plus									
LUXEON 3535L									
LUXEON 3535L Color Line									
LUXEON 3535L HE									
LUXEON 3535L HE Plus									
LUXEON 5050									
LUXEON C Color Line									
LUXEON CoB Core Range									
LUXEON CoB Core Range – High Density									
LUXEON CoB Core Range PW									
LUXEON CoB with CrispColor Technology™									
LUXEON CoB with CrispWhite Technology									
LUXEON CoB with FreshFocus Technology™									
LUXEON CSP HL1									
LUXEON CX Plus CoB (Gen 2)									
LUXEON CX Plus CoB – High Density									
LUXEON CZ Color Line									
LUXEON FlipChip White									
LUXEON Fusion									
LUXEON LEDs with AtmoSphere Technology™									
LUXEON MultiColor Module 0.5W									
LUXEON MultiColor Module 2.5W									
LUXEON MX									
LUXEON MZ									
LUXEON SunPlus 20 Line									
LUXEON SunPlus 2835 Line									
LUXEON SunPlus 35 Line									
LUXEON SunPlus CoB Line									
LUXEON TX									
LUXEON Z Color Line									
LUXEON Z ES									

ECOSYSTEM



Select pre-qualified, off-the-shelf components to aid in complete system design.

LED SPECTRUM MIXER



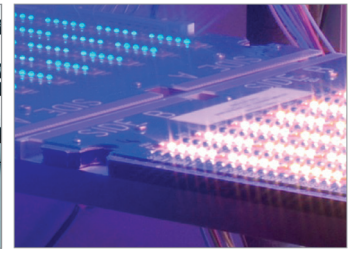
Calculate the color (white or color) that will be achieved by combining different LEDs into one application

SYSTEM CALCULATOR



Calculate the overall system performance based on design inputs.

LM-80 REPORTS



Generate LM-80 reports for specific Lumileds LEDs.

Please check out our ecosystem support at lumileds.com/designtools.

About Lumileds

Companies developing automotive, mobile, IoT and illumination lighting applications need a partner who can collaborate with them to push the boundaries of light. With over 100 years of inventions and industry firsts, Lumileds is a global lighting solutions company that helps customers around the world deliver differentiated solutions to gain and maintain a competitive edge. As the inventor of Xenon technology, a pioneer in halogen lighting and the leader in high performance LEDs, Lumileds builds innovation, quality and reliability into its technology, products and every customer engagement. Together with its customers, Lumileds is making the world better, safer, more beautiful—with light.

To learn more about our lighting solutions, visit lumileds.com.



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