



LED Application Playbook

Energy Saving with Broadcom LEDs

Known for its LEDs' performance, efficiency and reliability, Broadcom offers an extensive portfolio of products that include high brightness and high power LEDs, PLCC surface-mount LEDs, and display backlighting module solutions. These LEDs and display modules address a wide range of markets, including electronic signs and signals, automotive, solid state lighting and LCD display backlighting.

Industrial LED Product Portfolio

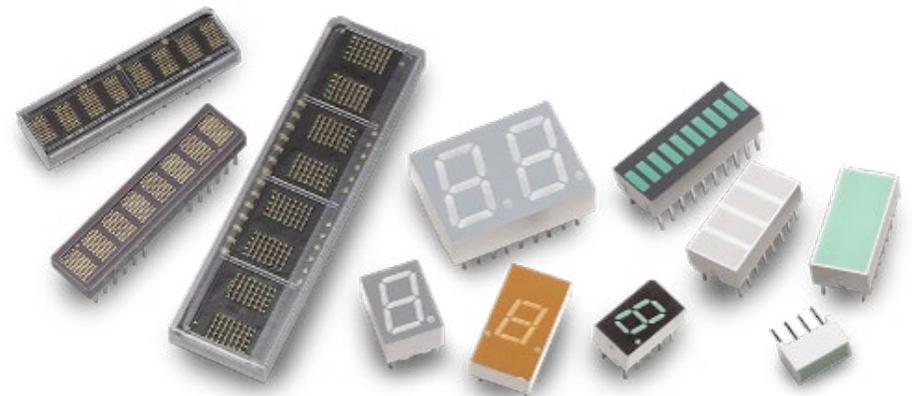
LEDs

- Surface Mount ChipLEDs
- ChipLEDs for Automotive
- Subminiature Lamps
- Surface Mount PLCC LEDs
- Standard & High Brightness Through Hole Lamps
- High Brightness Surface Mount Lamps
- UV-A LEDs
- IR LEDs



LED Displays

- Smart Alphanumeric Displays
- Surface Mount & Through-hole Seven Segment Displays
- Light Bars



Industrial Applications

	Focus Application	Package	BRCM Part Number
	Electric Cars and Charging	Surface Mount PLCC LEDs	ASMB-TTF2-OB20B ASMT-YTB7-0AAO2 ASCY-Cx00-Axxxx ASCK-Cx00-Axxxx
	Horticulture LEDs	Horticulture UVA	ASM6-SxD0/Sx90 AUV3-Sxx2-ORU0K AUV4-PxD0/Sxx1
	Electronic Signs & Signalling Traffic signs, Railway signs	SMT Lamp	AEMD-Ex3K/Cx3L
	Disinfection	UVA	AUV4-PxD0-OMP0H AUV3-Sxx2-xxxxx AUV4-Sxx1-xxxxx
	Renewable Energy Windturbine + Controller	High Power LEDs (Signals) THT LEDs (Indicator) SMT Lamps (Solar Panel Display)	ASM6-SRD0-AHK0H ASM6-SDD0-AQR0H HLMP-EG3B-WX0DV HLMP-CM3H-Y10DD AEMD-EL3K-VW002
	Power Generation and Distribution Energy Consumption Display	7-Segment Displays High Brightness THT	HDSP- Series HLMP-HG82/83-XZ0Dx HLMP-HL82/83-XZ0Dx
	Energy Storage System Status Indicator	Standard THT LEDs SMT Lamp	HLMP-CM3H-Y10DD AEMD-EL3K-VW002

Electric Cars and Charging – Low Power Surface Mount PLCC

Broadcom offers a variety of surface mount (SMT) LEDs in PLCC-2/4/6 packages that are ideal for backlighting in electric vehicles and EV charging systems. This series of products is encapsulated in silicon to increase their tolerance of environmentally hostile applications. They are available in a variety of colors and wattages.

Our low power 3014, 2216 Mono-Color and Multi-Color RGB PLCCs with a compact package footprint and low profile are the best fit. Our 1608 lead frame ChipLEDs can also be used for indicator lighting. These LEDs are designed with high reliability and performance to work under different environmental conditions.

Surface Mount PLCC	Features & Benefits
3014 White and Mono color	<ul style="list-style-type: none">• High brightness driven at 20mA• Small form factor• Viewing angle of 120 deg.• PLCC4 / PLCC6 RGB LEDs for Color Mixing
2216 White and Mono color	
1608 Lead frame ChipLEDs	
3735/2828/1413 RGB LEDs	



Horticulture LEDs

On the Horticulture front, high power LEDs are replacing traditional conventional lamps. Besides saving energy, time and resources, different LED wavelengths can be selected for specific plants and vegetation stages to promote growth rates.

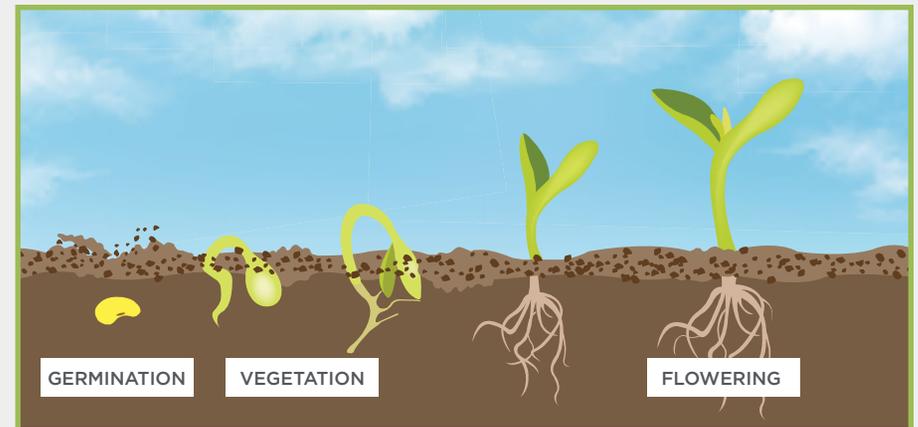
UV-A LEDs can accelerate growth and boost the photosynthesis rate of plants. Plant yields can be increased by stimulating the photosynthetic rate and biomass production through UV-A Supplementation.



Part Number	Platform	Features
ASM6-SxD0/Sx90	Horticulture	<ul style="list-style-type: none"> • 3.5x3.5mm package size • Red, deep red and far red • VA 90 & 130 deg.
AUV3-Sxx2-0RU0K	UV-A	<ul style="list-style-type: none"> • UV-A Spectrum • VA 35 & 60 deg.
AUV4-PxD0/Sxx1		<ul style="list-style-type: none"> • VA 130 deg.

LED Lighting

Blue Wavelength (450-495 nm)	Red Wavelength (620-700 nm)	Far Red Wavelength (700-750 nm)
Heavy blue light promotes vegetation	Heavy red light promotes flowering	Far red light promotes Emerson Effect



Use red light (660 nm) + far red light (730 nm)

- Accelerates stem growth
- Mimics shade

Electronic Signs & Signalling - SMT Lamp

High brightness LEDs in a unique SMT package – ideal for automated manufacturing processes

Applications such as Portable Traffic Signage and Variable Message Signs are a few examples where ESS LEDs are being used to save energy.

Broadcom SMT Lamps are essentially a conventional high brightness through-hole LED in the form of a surface mount device. The LEDs are made with an advanced optical grade epoxy with multiple lens optics options for different application needs.

The LEDs can be driven at low currents <20mA and provide long lifetime in outdoor conditions.

- Traffic variable message signs (VMS) – EN12966
- Traffic signals – EN12368
- Gas price signs
- Pedestrian signs
- Passenger information signs
- Railway systems such as train head lamp and tail lights – EN15153
- Full color signs
- Emergency signs such as beacon, warning triangle signs, exit signs, etc.

Part Number	Platform	Features
AEMD-Ex3K/Cx3L	SMT Lamps	<ul style="list-style-type: none">• Round (15/23/30deg VA)• Oval (95x45deg VA)• All visible colors



Disinfection – UVA LEDs

The spread of infectious diseases has resulted in an increasing demand for more effective disinfection devices. Disinfection equipment using UV LEDs are becoming more and more widely used today compared to traditional methods using chlorine, heat and mercury lamps. This is due to the fact that UV LEDs do not contain harmful substances and have a longer operating life. Recent studies have been made where UVA radiation is proven to be effective at fighting secondary infections and deactivating pathogenic microorganisms from serious infections.



WATER TREATMENT

Water treatment system integrated with a photocatalytic reactor to inactivate bio-pollutants



AIR PURIFICATION

Air purification coupled with air filters trapping fine particles & removing VOCs



REFRIGERATOR

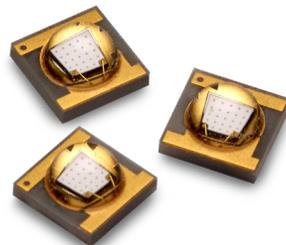
Protection for food & beverages during post-harvest while prolonging freshness & retaining nutrients



DEODORIZER

Acts as a deodorizer to eliminate unwanted odors

Part Number	Wattage	Optic	Viewing Angle, 20 ½	Peak Wavelength, λ_p
AUV4-PxD0-OMPOH	1W	Silicone	130°	385 - 425 nm
AUV3-Sxx2-xxxxx	3W	Quartz	35° & 60°	365 - 395 nm
AUV4-Sxx1-xxxxx	3W	Silicone	60° & 130°	365 - 395 nm



LED Product Stewardship

Broadcom strives to provide the highest quality products while ensuring compliance with the relevant regulatory requirements, including RoHS, REACH and regulations related to Conflict Minerals. Refer to [Broadcom's Environmental, Social & Governance \(ESG\) report](#) for more information on environmental stewardship.

-  RoHS
-  REACH
-  TSCA
-  China VOC



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Broadcom Inc. (NASDAQ: AVGO) is a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions.

Broadcom's category-leading product portfolio serves critical markets including data center, networking, enterprise software, broadband, wireless, storage and industrial. Our solutions include data center networking and storage, enterprise, mainframe and cyber security software focused on automation, monitoring and security, smartphone components, telecoms and factory automation. For more information, go to www.broadcom.com.

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