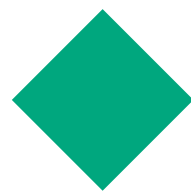




LED

Light Emitting Diodes - Photonics Solutions

epitex



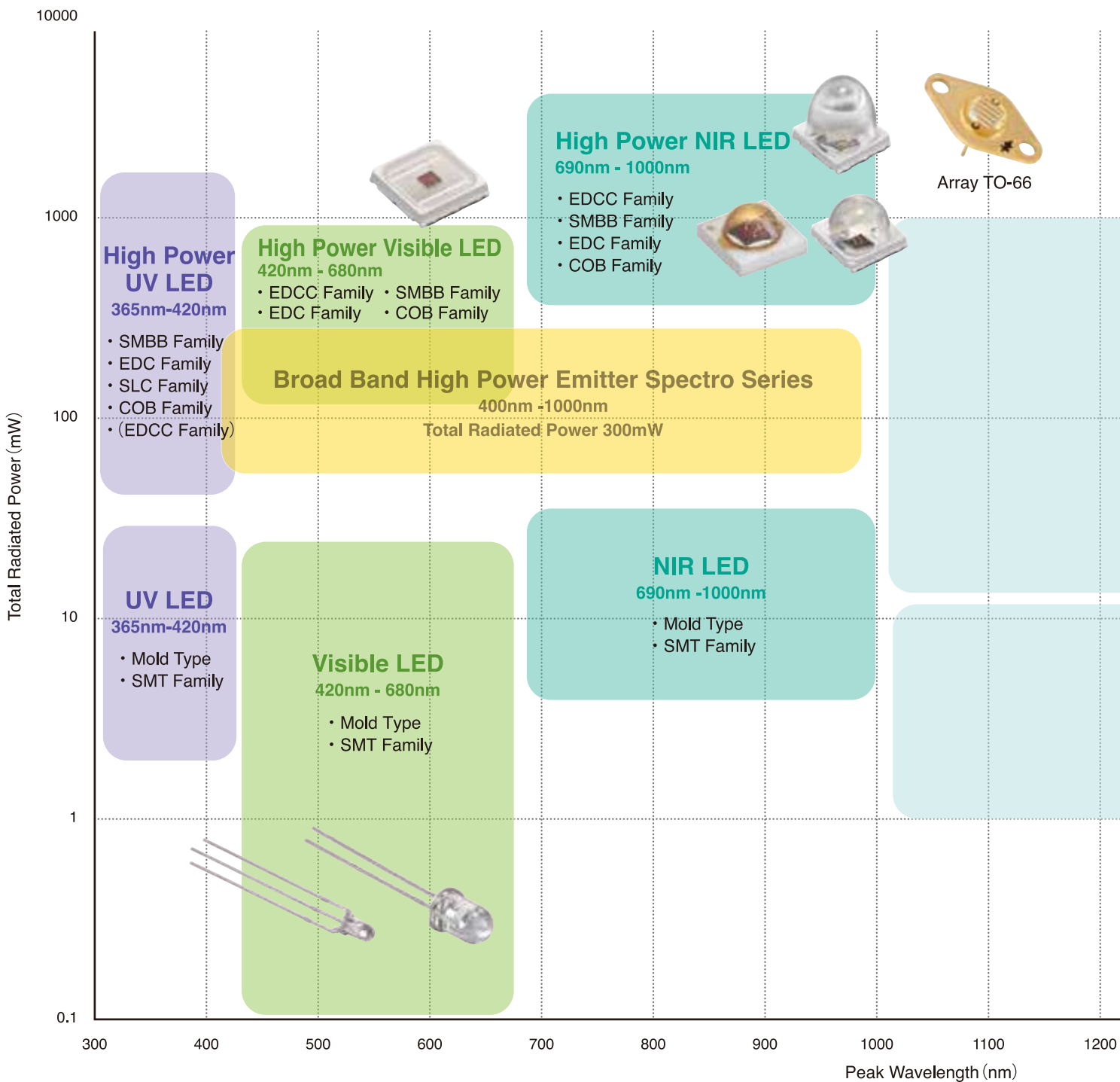
Product Map

All wavelengths between 365 nm and 1900 nm can be offered.

Coverage of all wavelengths in the UV (ultraviolet), visible and IR (infrared) spectra from 365 nm to 1900 nm.

- ◆ Multiple models to support all output power ranges from standard to high power.
- ◆ Wide range of packages suitable for your ideal optical design.

We can also offer products that combine photosensors with LEDs.



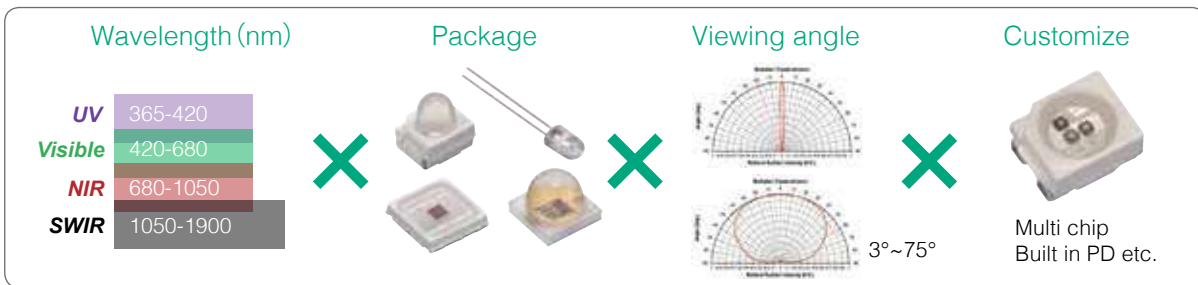


Top Quality LEDs at your disposal

1 How to choose LED models

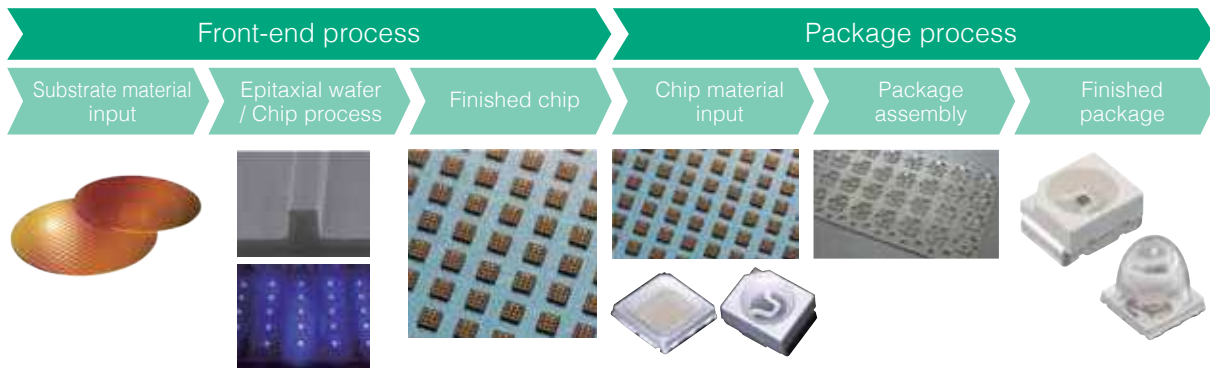
Select Wavelength × Package × Viewing angle × (Customize)

Our "epitex" series LED covers a wide range of wavelengths in the ultraviolet (UV), visible and infrared (IR) spectra, from 365 nm to 1900 nm, Ushio manufactures various types of LEDs to meet the requirements of the application.



Over 30 years know-how based on whole manufacturing process

Over 30 years of know-how based on complete manufacturing process. Ushio owns the entire process in-house, from epi formation to packaging process. Utilizing our expertise, we provide products that meet the requirements of the application, such as multiple wavelengths & photodiode in 1 package in the desired size from more than 1500 LED configurations, as well as customized designs.



2 Wide wavelength range covering

UV 365 nm to SWIR 1900 nm

You can select the suitable LED wavelength for your application, with shorter wavelength emitters available in 20 nm increments (below 1000 nm), and longer wavelength emitters every 50 nm (over 1000 nm).







UV	365 nm	375 nm	385 nm	395 nm	405 nm	415 nm	420 nm												
Violet	430 nm	435 nm	450 nm																
Blue	470 nm	490 nm																	
Green	505 nm	520 nm	525 nm	545 nm	550 nm	565 nm													
Yellow	570 nm	590 nm																	
Orange	600 nm	610 nm	620 nm																
Red	630 nm	640 nm	660 nm	670 nm	680 nm														
IR/GaAs	690 nm	700 nm	710 nm	720 nm	730 nm	735 nm	740 nm	750 nm	760 nm	770 nm	780 nm	790 nm							
	800 nm	810 nm	820 nm	830 nm	840 nm	850 nm	870 nm	880 nm	890 nm	910 nm	940 nm	970 nm							
	980 nm	1050 nm	1100 nm																
IR/InP	1050 nm	1070 nm	1100 nm	1150 nm	1200 nm	1300 nm	1370 nm	1450 nm	1550 nm	1650 nm	1750 nm	1900 nm							

*Under Development

3 Multiple packages to fit your optics

Single Chip Package Lineup

You can select your favorite packages from molded to SMD depending on your application, size and viewing angle.

Output Power	Standard			High			
ChipSize	270µm×170µm	300µm, 350µm, 400µm		1mm or More			
Package	EDP Family	Mold Type	SMT Family	EDCC Family	EDC Family	SMBB Family	SLC Family
	0.6mm×0.3mm	3φ / 5φ	3.5mm×2.8mm	1.5mm×1.85mm	3.45mm×3.45mm	5.2mm×5mm	3.9mm×3.9mm
	Under Development			New 			Glass lens package 

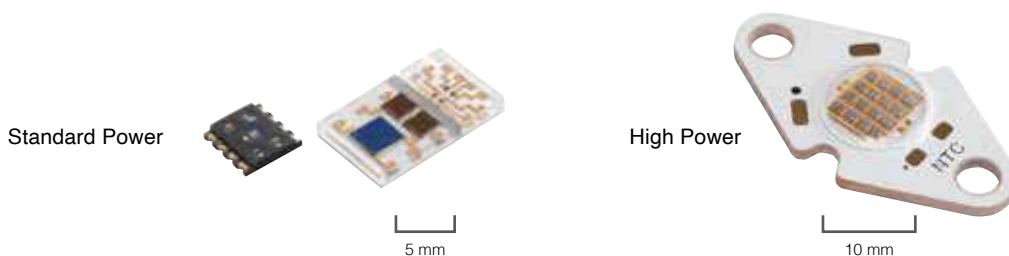
Multi-Chip Package Lineup

You can choose from a wide range to ensure both fine wavelength selection and multiple wavelength combinations. Photosensors can also be provided according to the light source.

		Sterm	8 in 1	SMT Family	SMBB Family
Package image			New 		
Package Size		TO-5, TO-18, TO-46	2.9mm×2.2mm	3.5mm×2.8mm	5.2mm×5mm
Number of Chips	Standard Power 300µm-400µm□	7pcs max. Please Ask	8pcs max.	3pcs max.	5pcs max.
	High Power 1mm□-	—	—	—	3pcs max.

Offer custom packages for your ideal optical design

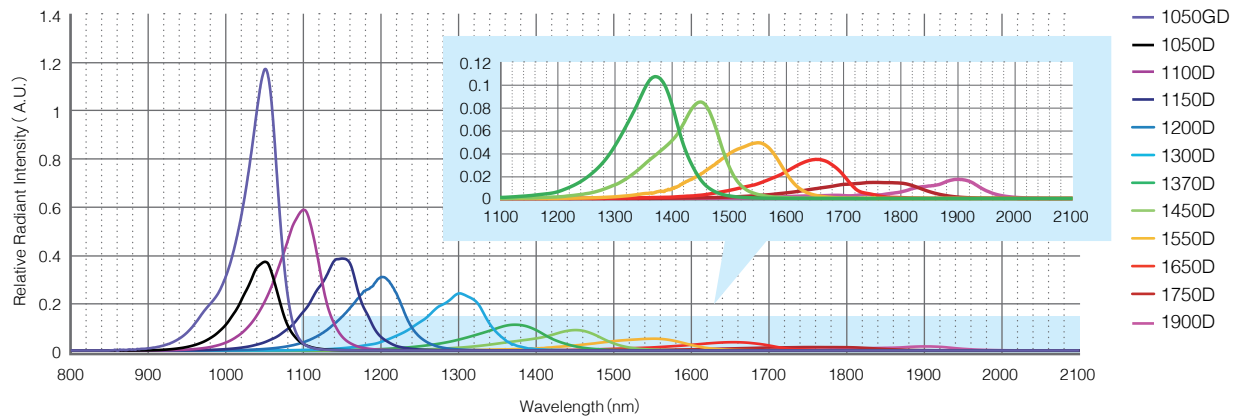
Please contact us even if you don't find the package design you need. We will consider the optimal design according to your request.



Short Wavelength Infrared LED

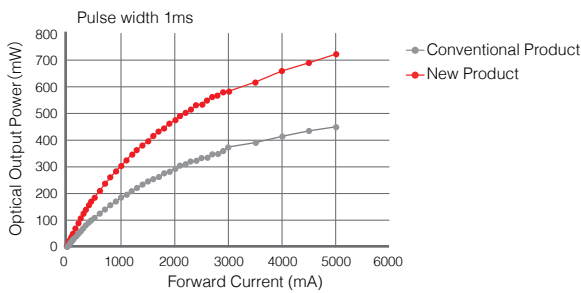
Features

- ◆ Epitex series offers the world's highest class SWIR LED output power.
- ◆ Standard center wavelength is 1050, 1070, 1100, 1150, 1200, 1300, 1370, 1450, 1550, 1650, 1750, 1900 nm.
- ◆ We can also propose a more unique wavelength selection according to the customer's requirement.



New High Power Pulse Drive SWIR LED Sample Available

- ◆ Reduced watt cost with higher output per LED (limited to pulsed drive).
- ◆ Wavelength available from 1050 nm to 1900 nm.

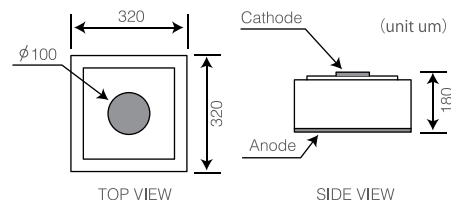
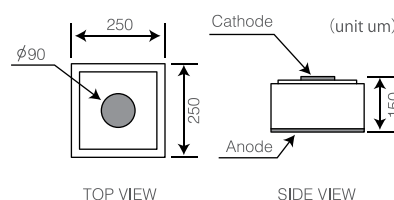


SMBB Package 1300nm

	PO (mW) Pulse IF=4A	VF (V) Pulse IF=4A
Conventional Product	400	2.4
New Product	660	4.9

SWIR LED Bare Chip

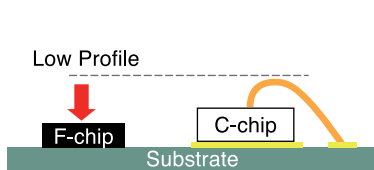
- ◆ The epitex series also offers bare chips in the SWIR wavelength range in 250µm x 250µm and 320µm x 320µm sizes.
- ◆ Standard wavelengths include 1050, 1070, 1100, 1150, 1200, 1300, 1370, 1450, 1550, 1650, 1750, and 1900 nm.
- ◆ Wavelengths and chip sizes can be customized upon request.



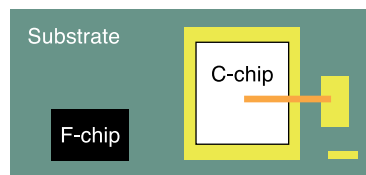
New SWIR Flip-Chip LED

- ◆ Samples of the world's first flip-chip LED using InP materials have been released.
- ◆ It is 45% smaller than existing products while maintaining the same light output with high efficiency.
- ◆ Bonding without wire results in low-profile and adaptable installation.
- ◆ Available as a bare chip (170µm × 270µm) or in a 0603 EDP package (600µm × 300µm) ※1

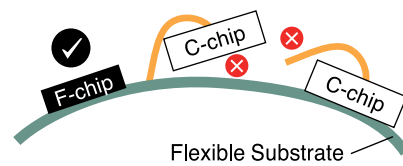
Low Profile



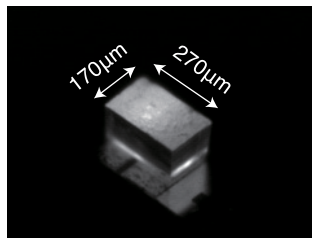
Compact Footprint



Flexible Mounting

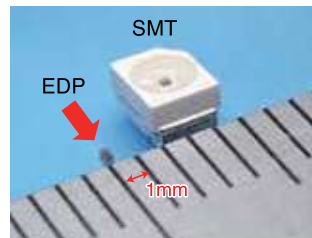


Bare Chip



Microphotograph

Package -EDP Family-



Comparison with SMT Package

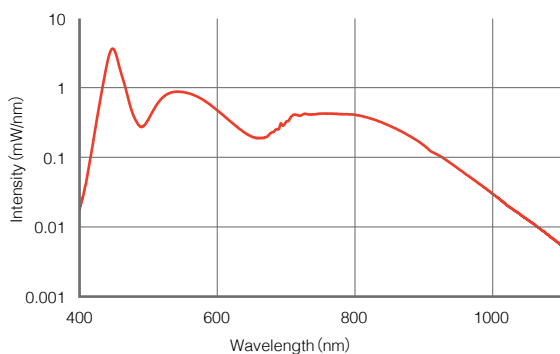
※1 Please contact us for any custom specifications, including size, output, and chip combination, etc.

Spectro Series



Features

- ◆ The Spectro series are high-power, broadband LEDs capable of emitting visible to near-infrared light.
- ◆ It is hoped that Spectro will enable an individual to measure with spectroscopy at hand.



Total Radiated Power (typ) (λ =400-500 nm)	140 mW (IF 500 mA)
Total Radiated Power (typ) (λ =500-1000 nm)	160 mW (IF 500 mA)

Compact High-Power LED EDCC Family

New



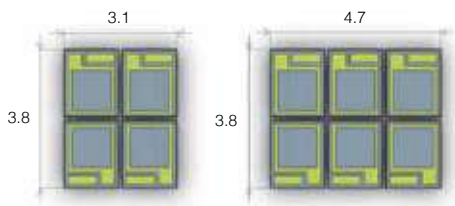
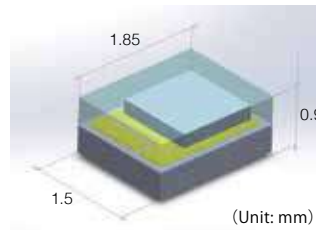
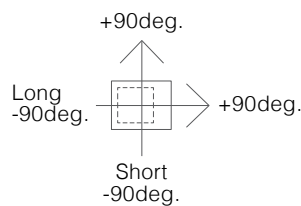
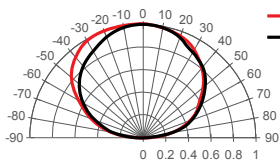
Features

- ◆ All wavelengths from 365 nm to 1900 nm can be offered.
- ◆ Compact-sized package, comparable to CSP and high-power 1 mm×1 mm LED chips, facilitating easy customization in an SMD-type LED format.
- ◆ Package design optimized for high-density integration.

Specifications [e.g. EDCC*****]

Flat Type

- ◆ Viewing Half Angle: Long $\pm 69^\circ$ Short $\pm 66^\circ$



Makes it easy to create unique designs, e.g. high-density mounting of multiple LEDs together or mixing multiple wavelengths.

High Power TOP LED SMBB Family



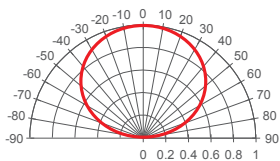
Features

- ◆ All wavelengths from 365 nm to 1900 nm can be offered.
- ◆ High power TOP LED using 1 mm x 1 mm chip.
- ◆ Package of 5 mm x 5 mm equipped with copper heat sink.
- ◆ Max. 3 pcs of 1 mm x 1 mm size chip can be mounted.

Specifications [e.g. SMBB760D Series]

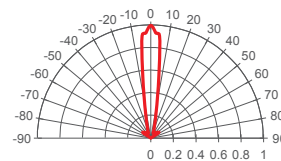
Flat Type

- ◆ Viewing Half Angle: $\pm 64^\circ$



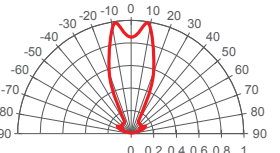
02 Lens Type

- ◆ Viewing Half Angle: $\pm 9^\circ$



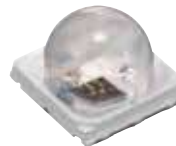
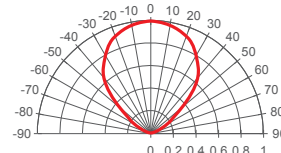
03 Lens Type

- ◆ Viewing Half Angle: $\pm 22^\circ$

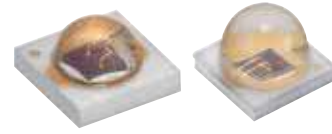


05 Lens Type

- ◆ Viewing Half Angle: $\pm 45^\circ$



High Power TOP LED EDC Family



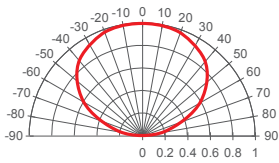
Features

- ◆ All wavelengths from 365 nm to 1900 nm can be offered.
- ◆ High power TOP LED using 1 mm x 1 mm chip.
- ◆ Ceramic Package of 3.5 mm x 3.5 mm.

Specifications [e.g. EDC850DS Series]

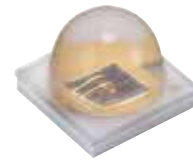
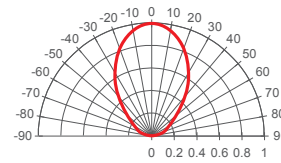
Flat Type

- ◆ Viewing Half Angle: ± 66 deg.



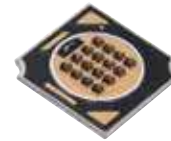
S5 Lens Type

- ◆ Viewing Half Angle: ± 39 deg.



High Power Emitter COB Family

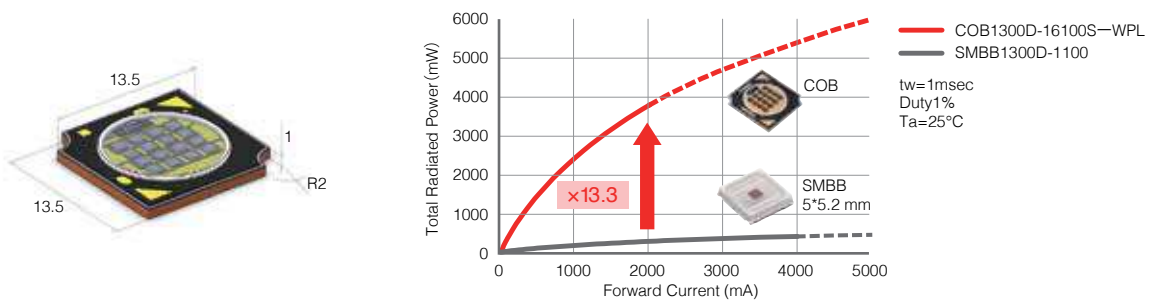
New



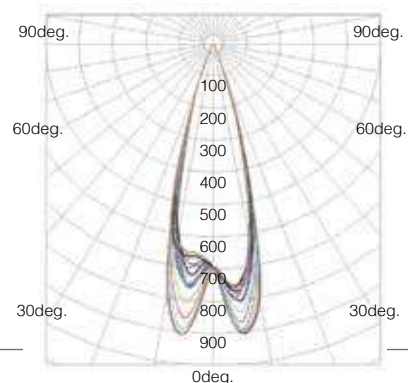
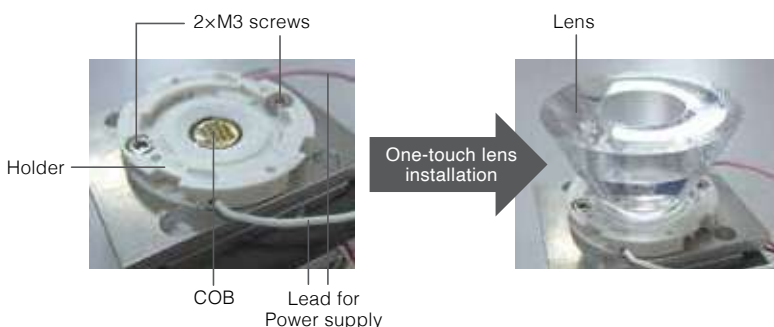
Features

- ◆ All wavelengths of 1 mm x 1 mm high power chips from visible to SWIR can be mounted.
- ◆ Improved light extraction efficiency by placing a potting lens on each LED chip.
- ◆ On-board NTC thermistor.
- ◆ Optimal applications include infrared lighting, machine vision, surveillance cameras, and optical sorting.

Specifications [e.g. COB****]



HOLDERS, LENSES AND OTHER ACCESSORIES AVAILABLE FOR GENERAL PURPOSE COBs CAN BE USED. (E.G. LEDiL C16686_ILONA-RS)



Surface Mount Type LED SMT Family



Features

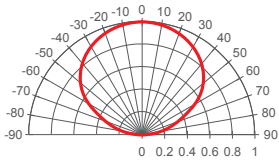
- ◆ All wavelengths from 365 nm to 1900 nm can be offered.
- ◆ Package dimension: 3.5 mm × 2.8 mm.

Specifications [e.g. SMT780 Series except 22 lens]

SMT with Silicone Lens

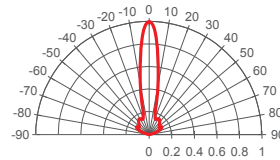
Flat Type

- ◆ Viewing Half Angle: ± 62 deg.



S1 Lens Type

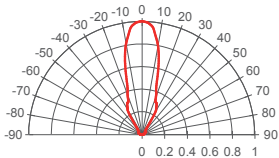
- ◆ SMT with Silicone Lens
- ◆ Viewing Half Angle: ± 10 deg.



SMT with Epoxy Lens (Allowable Wavelengths: between 470 nm and 1,650 nm)

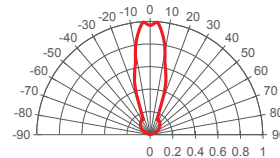
22 Lens Type

- ◆ SMT with Epoxy Lens
- ◆ Viewing Half Angle: ± 15 deg.
- * Applicable for specific wavelength · SWIR DType · NIR D and DS type [e.g. SMT1550D-22]



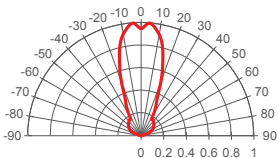
23 Lens Type

- ◆ SMT with Epoxy Lens
- ◆ Viewing Half Angle: ± 16 deg.



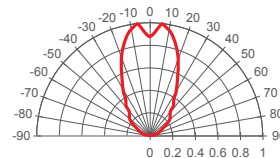
25 Lens Type

- ◆ SMT with Epoxy Lens
- ◆ Viewing Half Angle: ± 20 deg.



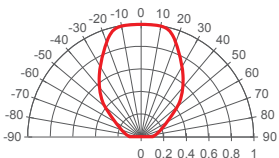
27 Lens Type

- ◆ SMT with Epoxy Lens
- ◆ Viewing Half Angle: ± 39 deg.



29 Lens Type

- ◆ SMT with Epoxy Lens
- ◆ Viewing Half Angle: ± 45 deg.



Molded Type



Features

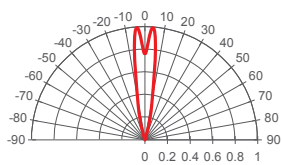
- ◆ Plastic Molded Type LED.
- ◆ All wavelengths from 365 nm to 1900 nm can be offered.

Specifications [e.g. L750-AU Series]

01 Lens Type



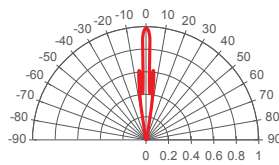
- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 10 deg.



02 Lens Type



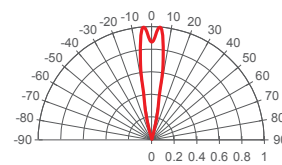
- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 8 deg.



03 Lens Type



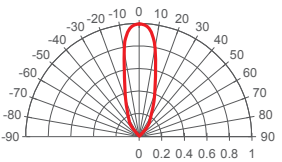
- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 10 deg.



04 Lens Type



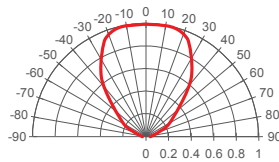
- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 17 deg.



05 Lens Type



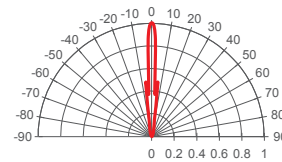
- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 44 deg.



06 Lens Type



- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 4 deg.

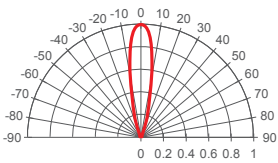


09 Lens Type

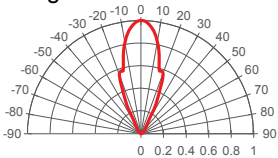


- ◆ $\phi 5$ Plastic Molded LED
- ◆ Viewing Half Angle:
Short: ± 10 deg. Long: ± 21 deg.

Short



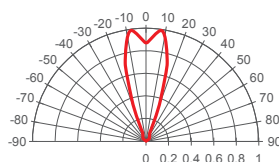
Long



33 Lens Type



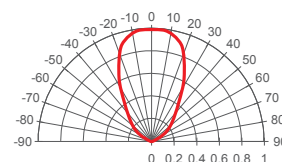
- ◆ $\phi 3$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 17 deg.



36 Lens Type



- ◆ $\phi 3$ Plastic Molded LED
- ◆ Viewing Half Angle: ± 32 deg.



Developing Solutions Together

Ushio is a partner that listens to your ideas and requirements. Let us optimise your processes according to your specifications and expectations. Use our expertise to develop a tailor-made solution that matches your needs.

USHIO



USHIO EUROPE B.V.

The Netherlands | +31 20 446 9333
sales@ushio.eu | www.ushio.eu

USHIO U.K., LTD.

United Kingdom | +44 129 625 6067
sales@ushio.eu | www.ushio.eu

USHIO GERMANY GmbH

Germany | +49 8094 906 0
sales@ushio.de | www.ushio.de

USHIO FRANCE S.A.R.L.

France | +33 134 64 94 94
sales@ushio.eu | www.ushio.eu