



- JAPAN** USHIO INC.  
 1-6-5 Marunouchi Chiyoda-ku, Tokyo 100-8150 JAPAN  
 TEL: +81 3-5657-1018 FAX: +81 3-5657-1030  
[www.ushio.co.jp/en/led](http://www.ushio.co.jp/en/led)
- ASIA** USHIO SHANGHAI, INC. / 牛尾贸易(上海)有限公司  
 02,03 Unit, 30F, New Bund Center, NO.555 West Haiyang Road/  
 NO.588 Dongyu Road, Pudong, Shanghai, 200126, P.R.C.  
 TEL: +86 21-6841-1135 FAX: +86 21-6841-1150  
[www.ushio.com.cn](http://www.ushio.com.cn)
- USHIO TAIWAN, INC. / 優志旺股份有限公司  
 8F, No.4, Sec.1, Zhongxiao W.Rd., Taipei 10041, Taiwan, R.O.C.  
 TEL: +886-2-2312-3358 FAX: +886-2-2312-3858  
[www.ushio.com.tw](http://www.ushio.com.tw)
- USHIO KOREA, INC. / 韓國우시오株式会社  
 (Yeoksam-dong, Gangnam Center Building), 17F, 388,  
 Gangnam-daero, Gangnam-gu, Seoul 06232 Rep.of Korea  
 TEL: +82 2-587-1115 FAX: +82 2-587-1118  
[www.ushio.co.jp/kr](http://www.ushio.co.jp/kr)
- USHIO ASIA PACIFIC PTE. LTD.  
 28 Genting Lane, #05-05, Platinum 28, Singapore 349585  
 TEL: +65 6274-5311 FAX: +65 6274-5300  
[www.ushioasiapacific.com](http://www.ushioasiapacific.com)
- AMERICA** USHIO AMERICA, INC.  
 801 Ames Avenue, Milpitas, CA 95035, U.S.A.  
 TEL: +1 669-244-6417 FAX: +1 408-404-0817  
[www.ushio.com](http://www.ushio.com)
- EUROPE** USHIO GERMANY GmbH  
 Münchener Straße 10, 85643 Steinhöring, Germany  
 TEL: +49 80 94 906 0  
[www.ushio.eu](http://www.ushio.eu)

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[www.ushio.co.jp/en/led](http://www.ushio.co.jp/en/led)



# Opto Devices

## Product Information

epitex

# LED

# Product Map

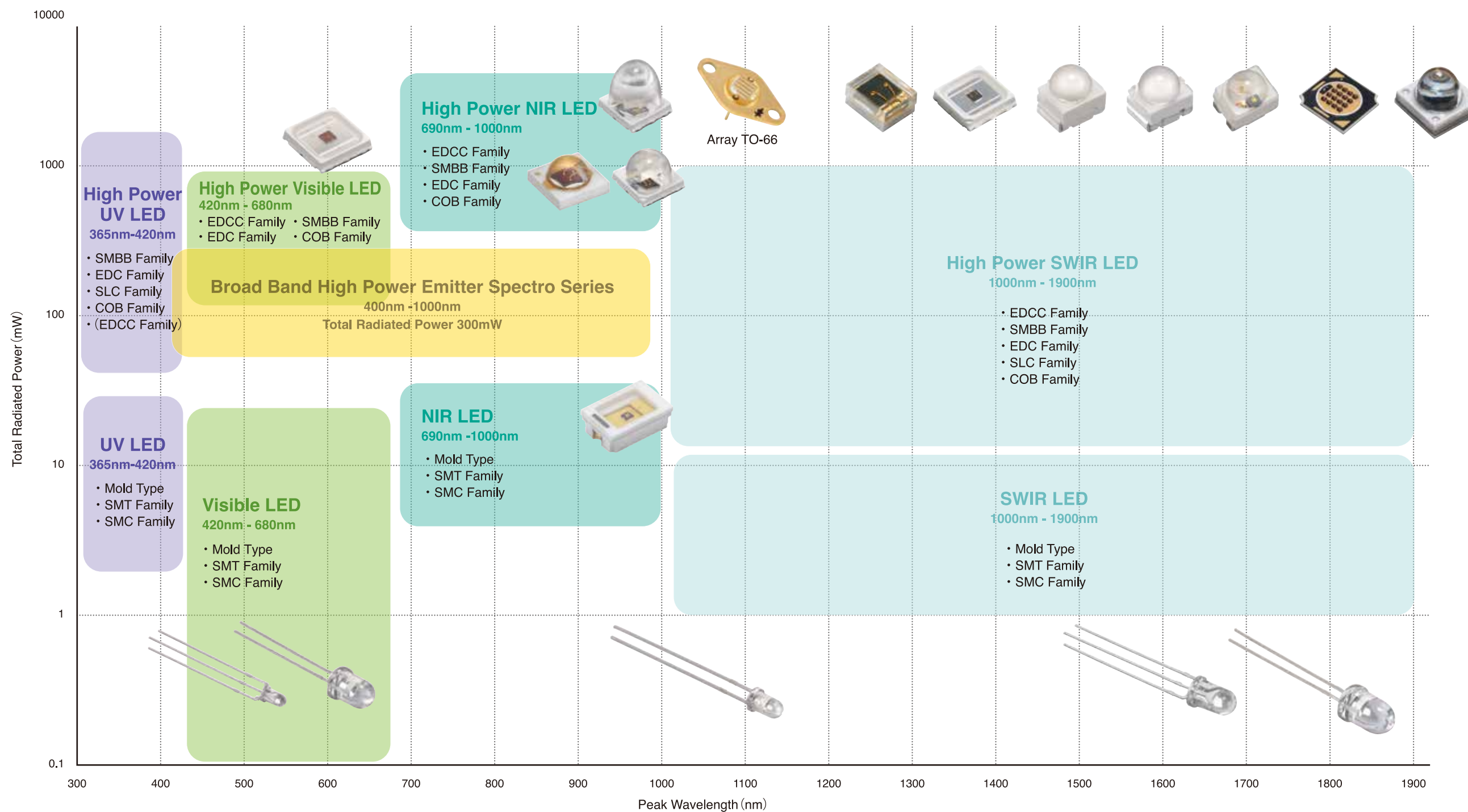
All wavelengths between 365nm and 1900nm can be offered.

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

■ 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

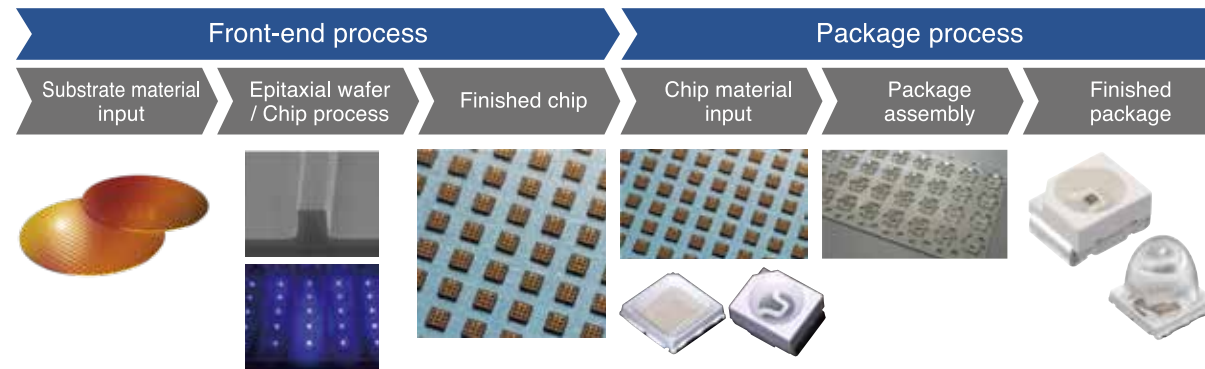
### Select Wavelength × Package × Viewing angle × (Customize)

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.

Wavelength (nm)	Package	Viewing angle	Customize
<b>UV</b> 365-420 <b>Visible</b> 420-680 <b>NIR</b> 680-1050 <b>SWIR</b> 1050-1900			<p>Multi chip Built in PD etc.</p>

### 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.



## 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.

ChipSize	300μm, 350μm, 400μm			1mm or More			
	Standard			High			
Output Power	Mold Type	SMT Family	SMC Family	EDDC Family	EDC Family	SMBB Family	SLC Family
	3φ / 5φ	3.5mm×2.8mm	3.0mm×2.0mm	1.5mm×1.85mm	3.45mm×3.45mm	5.2mm×5mm	3.9mm×3.9mm
Package							

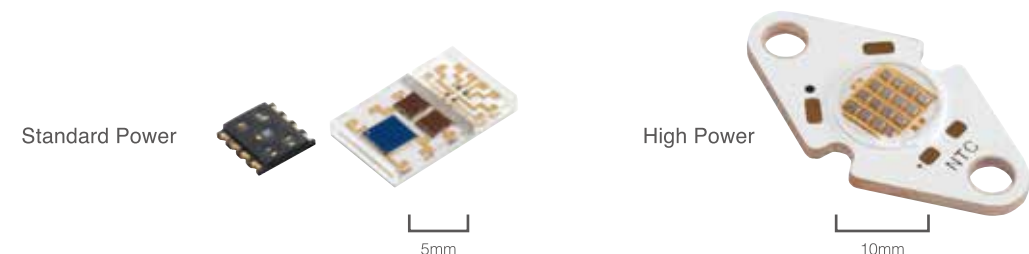
### Multi-Chip Package Lineup

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.

	8 in 1 COB	SMT Family	SMBB Family
Package image			
Size	2.9mm×2.2mm	3.5mm×2.8mm	5.2mm×5mm
Number of Chips (300μm-400μm)	8pcs Max.	3pcs Max.	5pcs Max.
Number of Chips (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.



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

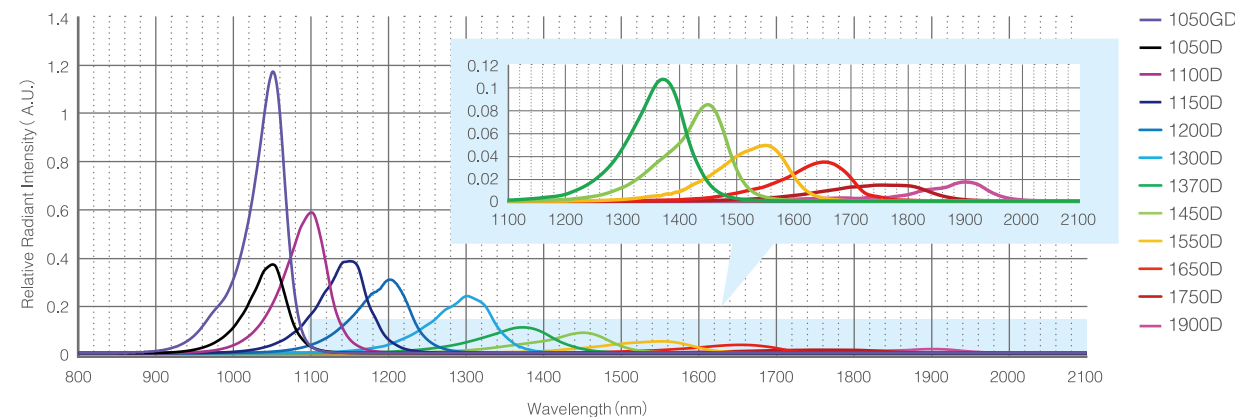
\*Under Development



# Short Wavelength Infrared LED

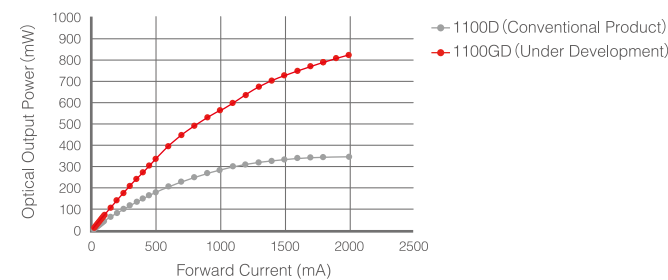
## Features

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



## New GaAs (Gallium Arsenide) High Power 1100nm LED Under Development

- The 1100nm LED, 1100GD series will be released in addition to the existing 1050GD series of high-power 1050nm LED. It achieves more than twice the light output compared to the existing 1100D chip product (IF=1.5A).

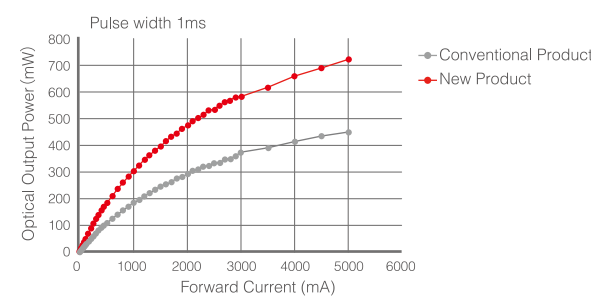


SMBB Package

	PO (mW) at 1A	VF (V) at 1A
SMBB1100D-1100	280	1.46
SMBB1100GD-1100	560	1.59

## New High Power Pulse Drive SWIR LED Sample Available

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

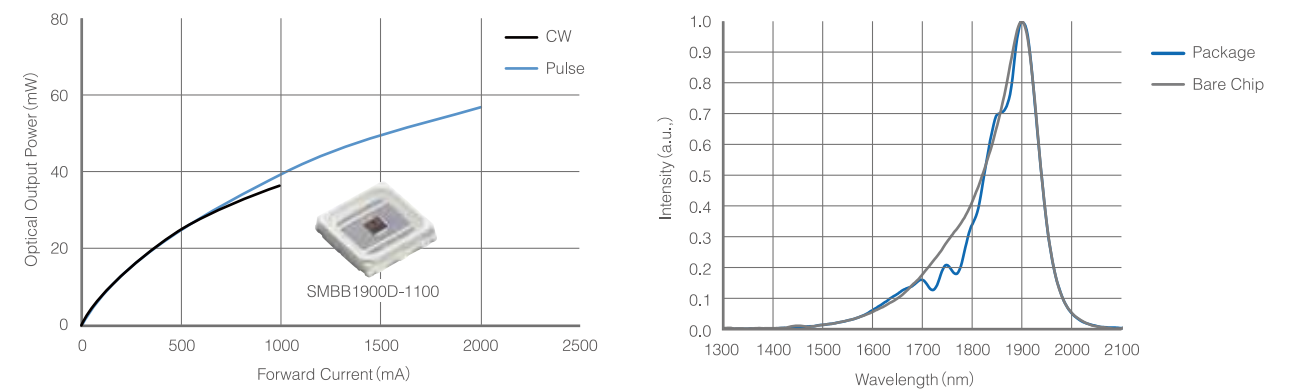


SMBB Package 1300nm

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

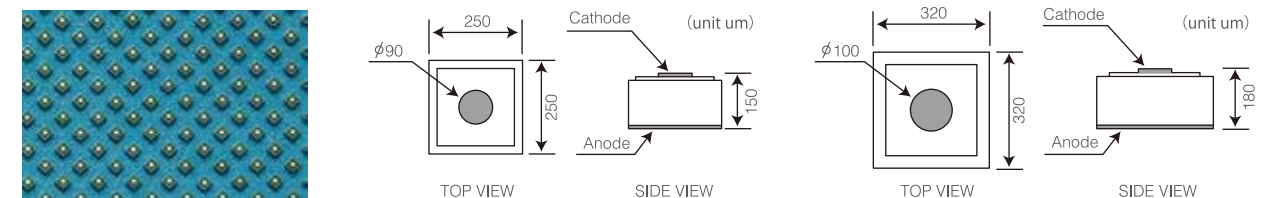
## New 1900nm LEDs

- Wavelength strongly absorbed by moisture (light source for moisture sensing).
- Can be tuned for 1750nm to 1900nm range.



## New SWIR LED Bare Chips

- 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.

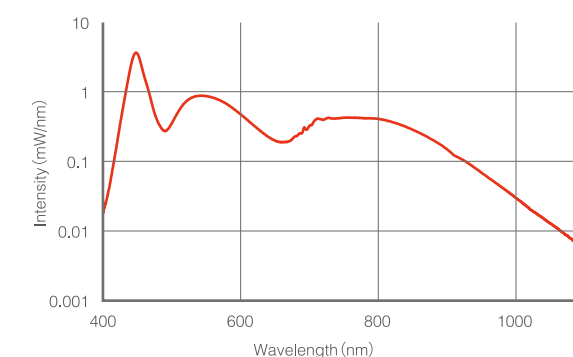



# Spectro Series



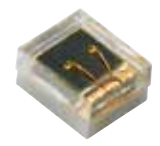
## Features

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

# Compact High-Power LED EDCC Family New

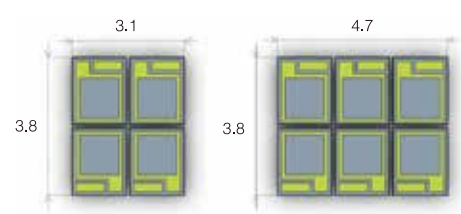
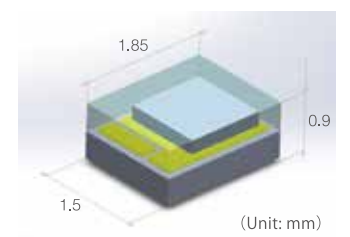
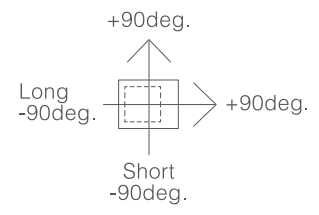
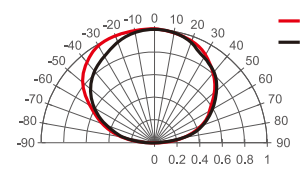


- Features**
- All wavelengths from 365nm to 1900nm can be offered.
  - Compact-sized package, comparable to CSP and high-power 1mmx1mm LED chips, facilitating easy customization in an SMD-type LED format.
  - Package design optimized for high-density integration.

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 EDC Family

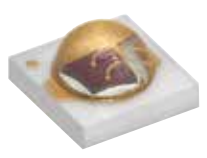
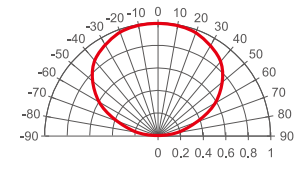


- Features**
- All wavelengths from 365nm to 1900nm can be offered.
  - High power TOP LED using 1mm x 1mm chip.
  - Ceramic Package of 3.5mm x 3.5mm.

Specifications [ e.g. EDC850DS Series ]

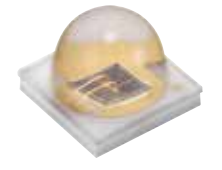
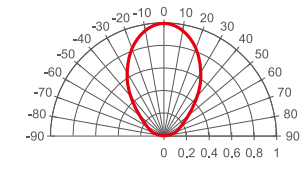
## Flat Type

- Viewing Half Angle:  $\pm 66^\circ$



## S5 Lens Type

- Viewing Half Angle:  $\pm 39^\circ$



# High Power Emitter COB Family New



- Features**
- All wavelengths of 1mm x 1mm high power chips from 365nm to 1900nm 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\*\*\*\* ]

# High Power TOP LED SMBB Family

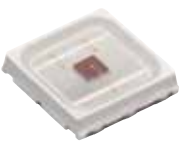
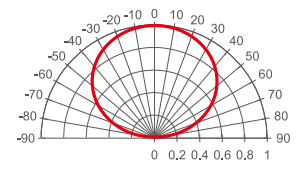


- Features**
- All wavelengths from 365nm to 1900nm can be offered.
  - High power TOP LED using 1mm x 1mm chip.
  - Package of 5mm x 5mm equipped with copper heat sink.
  - Max. 3 pcs of 1mm x 1mm size chip can be mounted.

Specifications [ e.g. SMBB760D Series ]

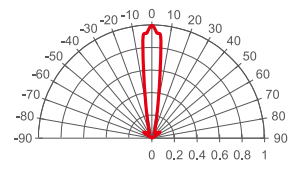
## Flat Type

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



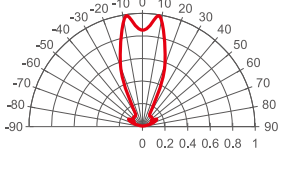
## 02 Lens Type

- Viewing Half Angle:  $\pm 9^\circ$



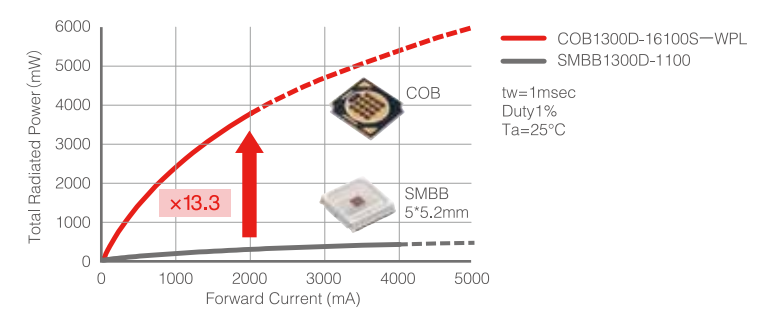
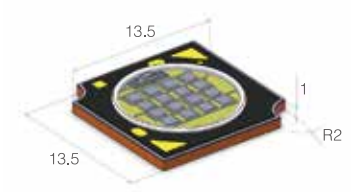
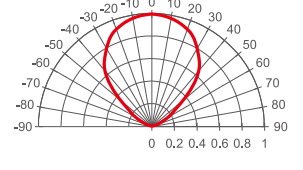
## 03 Lens Type

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

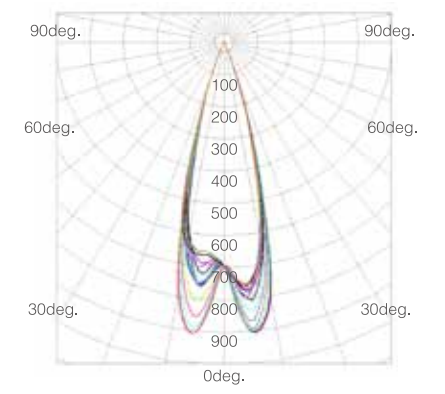
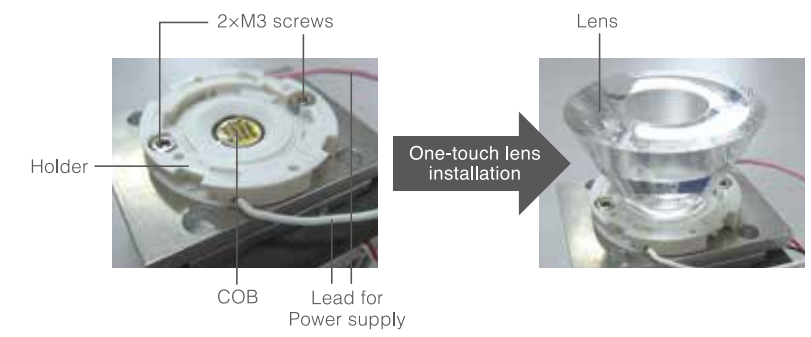


## 05 Lens Type

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



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



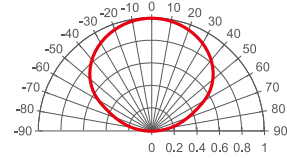
### Features

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

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

### Flat Type

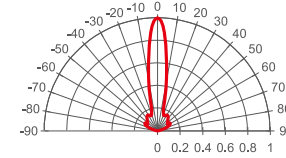
- Viewing Half Angle:  $\pm 62$  deg.



SMT with Silicone Lens

### S1 Lens Type

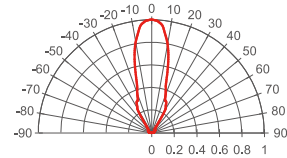
- SMT with Silicone Lens
- Viewing Half Angle:  $\pm 10$  deg.



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

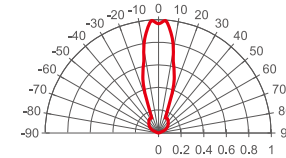
### 22 Lens Type

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



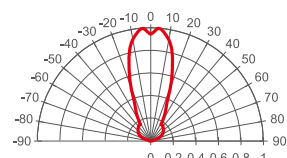
### 23 Lens Type

- SMT with Epoxy Lens
- Viewing Half Angle:  $\pm 16$  deg.



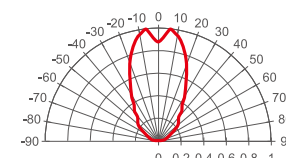
### 25 Lens Type

- SMT with Epoxy Lens
- Viewing Half Angle:  $\pm 20$  deg.



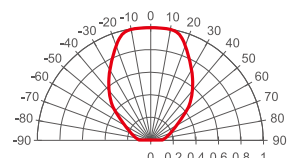
### 27 Lens Type

- SMT with Epoxy Lens
- Viewing Half Angle:  $\pm 39$  deg.



### 29 Lens Type

- SMT with Epoxy Lens
- Viewing Half Angle:  $\pm 45$  deg.



## Molded Type



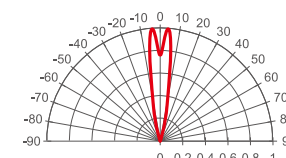
### Features

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

Specifications [ e.g. L750-AU Series ]

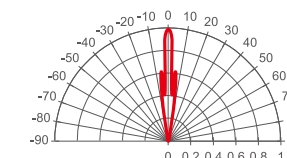
### 01 Lens Type

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



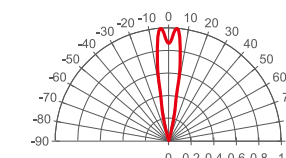
### 02 Lens Type

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



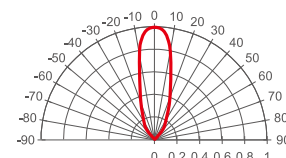
### 03 Lens Type

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



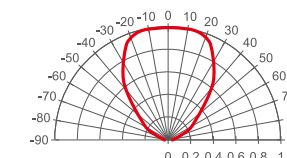
### 04 Lens Type

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



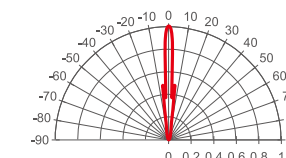
### 05 Lens Type

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



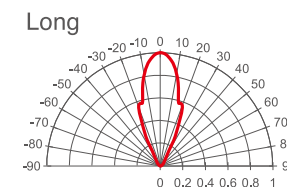
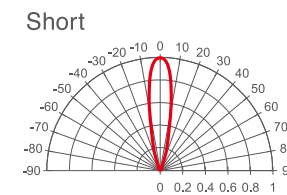
### 06 Lens Type

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



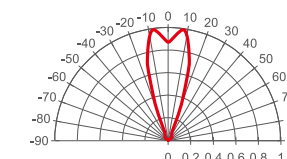
### 09 Lens Type

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



### 33 Lens Type

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



### 36 Lens Type

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

