

LED

Light Emitting Diodes - Solid State Lighting

Product Map

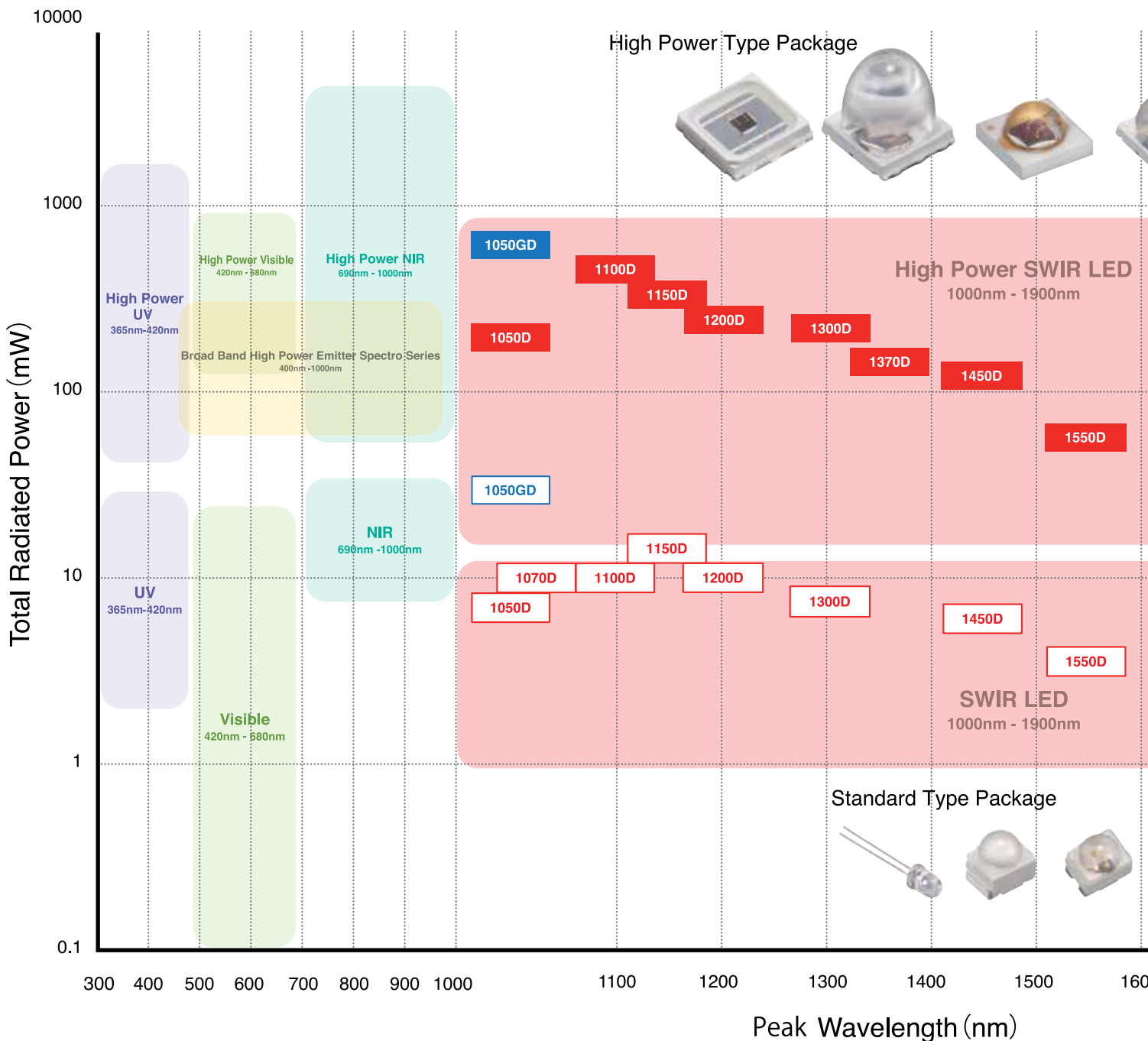
All wavelengths between 365nm and 1,750nm can be offered.

epitex

series

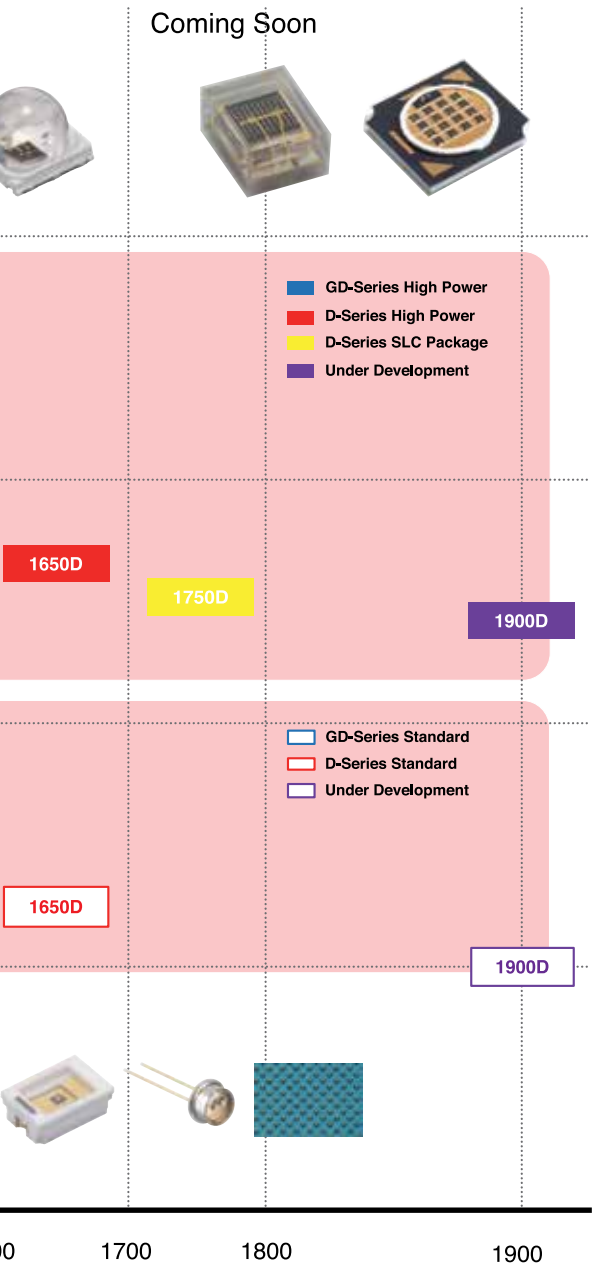
Covering all wavelengths in the UV (ultraviolet), visible and IR (infrared) spectra, between 365 nm to 1,750 nm.

- ◆ Various models supporting all output ranges from low-power to high-power.
- ◆ Wide range of packages, suitable for your ideal optical design.
- ◆ We can also propose products that combine photosensors with LEDs.



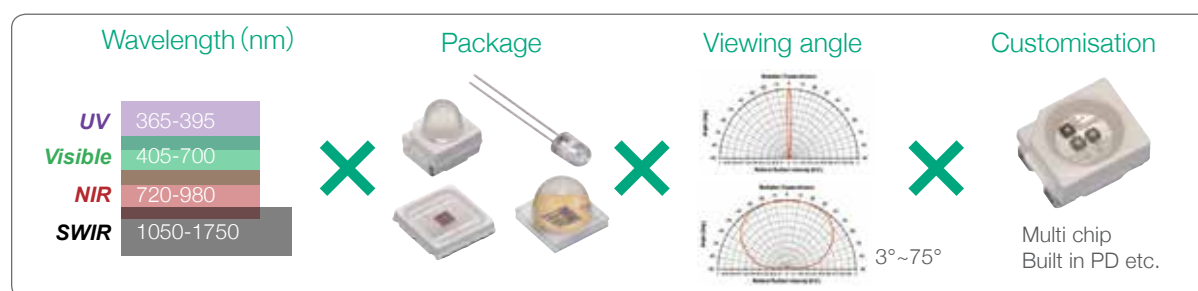


High output is achieved through the use of IRED's unique domed chip formation technology, and an excellent beam shape is provided by precision lens (package) design technology. The perfect light source collection for diverse applications such as CNC machine tools, robots, ophthalmoscopes, and position detection equipment.

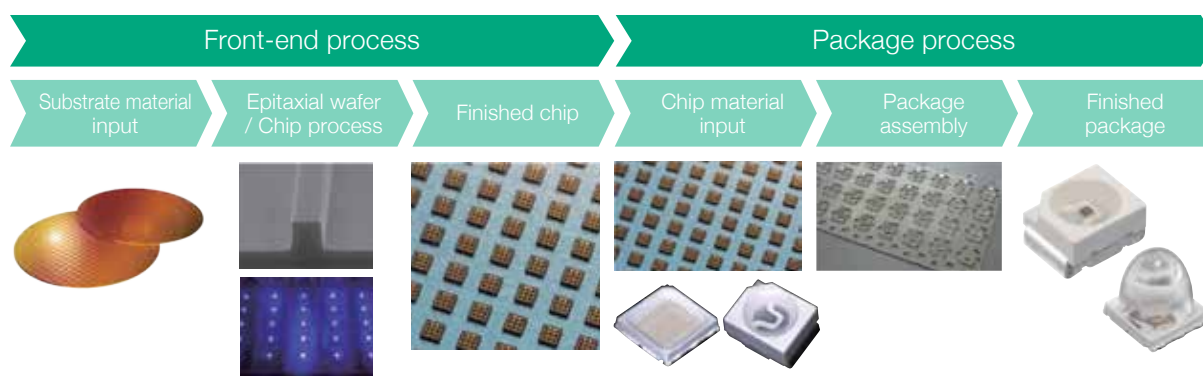


1 Constructing the perfect LED

Depending on the intended application, Ushio's Epitex LED series offers the opportunity to select from a number of wavelengths, package types, and lenses for the modification of radiation distribution and intensity. Further customisation is possible with the addition of extra components.



Ushio carries out the whole process internally, from epitaxial formation to packaging processing. Utilising our expertise and 1,500 construction combinations, we provide customisable LED products that meet the size and configuration demands of the application, such as multiple wavelengths and a photodiode in a single package.



UV 365 nm to SWIR 1750 nm









You can select from a range of wavelengths, with shorter wavelength emitters available in 20 nm increments (below 1,000 nm), and longer wavelength emitters every 50 nm (over 1,000 nm). Multi-chip packages are available for applications requiring more than one wavelength to be emitted simultaneously.

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	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	690 nm	700 nm	710 nm	720 nm	730 nm	735 nm	740 nm
	750 nm											
IR/GaAs*	760 nm	770 nm	780 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							
IR/InP*	1050 nm	1070 nm	1100 nm	1150 nm	1200 nm	1300 nm	1450 nm	1550 nm	1650 nm	1750 nm		

3 Various packages suitable for your optics


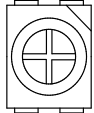
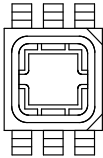
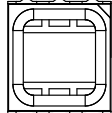
Single-chip package lineup

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

Chip Size	300 μ m, 350 μ m, 400 μ m					500 / 600 μ m	1 mm or More		
Output Power	Standard					Medium			
Line Up	epitex			iRED		iRED	epitex		
Package	Mold Type	SMC Family	SMT Family	FL Type	SG Type	SG Type	SMBB Family	EDC Family	SLC Family
									Coming Soon

Multi-chip package lineup

Multi-chip packages pair the same wavelength selection with the opportunity to create multiple ideal wavelength combinations. Photosensors can be integrated into the same package as the light source for multi-functional packages.

	SMT Family	SMTQ Family	SMB Family	SMBB Family
Desogn image				
Size	3.5 mm \times 2.8 mm	3.5 mm \times 2.8 mm	7.4 mm \times 5 mm	5.2 mm \times 5 mm
Number of Chips (300 μ m-400 μ m)	3 pcs Max.	3 pcs Max.	5 pcs Max.	—
Number of Chips (1 mm-)	—	—	3 pcs Max.	3 pcs Max.

Discover customised packages for a unique optical design

Please contact us if you do not see the required LED package for your application. Ushio is more than happy to recommend the optimal LED design based on the intended application. We can work together to assemble a customised package for you.



High-Power TOP LED SMBB Family

epitex series



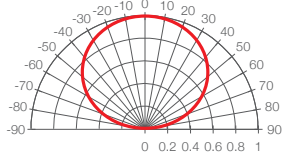
Features

- ◆ All wavelengths between 365 nm and 1,650 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
- ◆ Up to three 1 mm x 1 mm chips can be mounted on an SMBB package

Specifications [e.g. SMBB760D series]

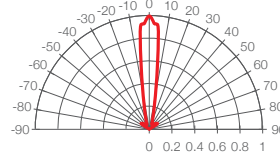
Flat Type

- ◆ Viewing Half Angle: ± 64 deg.



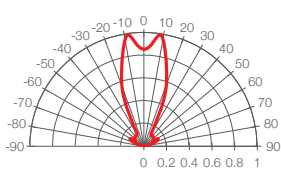
02 Lens Type

- ◆ Viewing Half Angle: ± 9 deg.



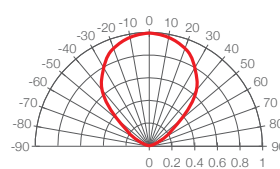
03 Lens Type

- ◆ Viewing Half Angle: ± 22 deg.



05 Lens Type

- ◆ Viewing Half Angle: ± 45 deg.



High-Power TOP LED EDC Family



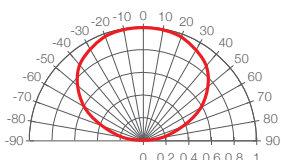
Features

- ◆ All wavelengths between 365 nm and 1,650 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]

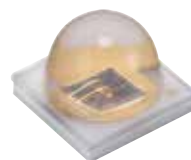
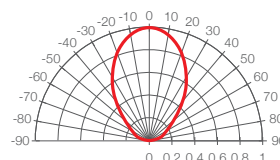
Flat Lens Type

- ◆ Viewing Half Angle: ± 66 deg.



S5 Lens Type

- ◆ Viewing Half Angle: ± 39 deg.



Surface Mount Type LED SMT Family

epitex series



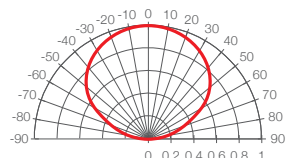
Features

- ◆ All wavelengths between 365 nm and 1,650 nm can be offered
- ◆ Package dimension: 3.5 mm x 2.8 mm

Specifications [e.g. SMT780 series]

Flat Type

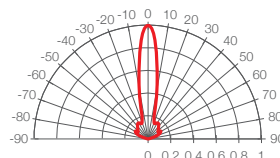
- ◆ Viewing Half Angle: ± 62 deg.



SMT with silicone lens

S1 Lens Type

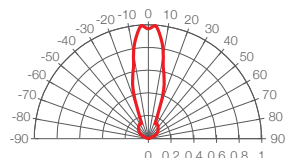
- ◆ SMT with Silicone Lens
- ◆ Viewing Half Angle: ± 10 deg.



SMT with epoxy lens (Available wavelengths: between 470 nm and 1,650 nm)

22 Lens Type

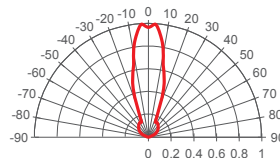
- ◆ SMT with Epoxy lens
- ◆ Viewing Half Angle: ± 15 deg.



*Applicable for specific wavelength
• SWIR Dtype
• NIR D and DS type
[e.g. SMT1550D-22]

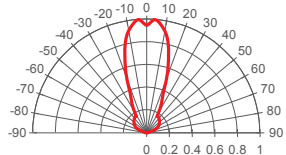
23 Lens Type

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



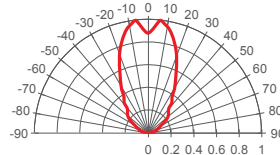
25 Lens Type

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



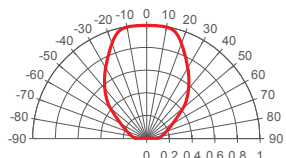
27 Lens Type

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



29 Lens Type

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



Molded Type

epitex series

Features

- ◆ Plastic Molded Type LEDs

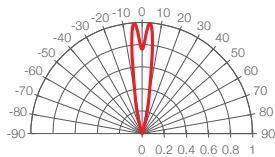


Specifications [e.g. L750-AU series]

01 Lens Type



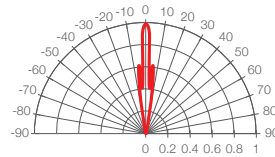
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle: ± 10 deg.



02 Lens Type



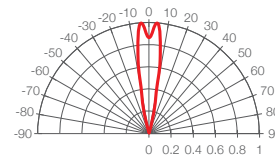
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle: ± 8 deg.



03 Lens Type



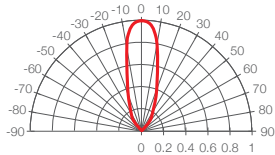
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle: ± 10 deg.



04 Lens Type



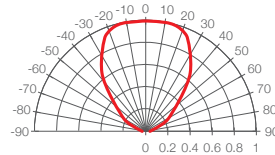
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle: ± 17 deg.



05 Lens Type



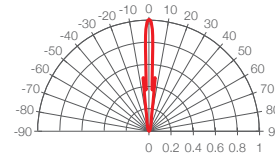
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle: ± 44 deg.



06 Lens Type



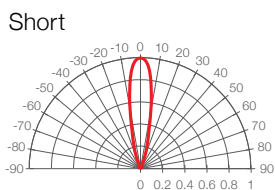
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle: ± 4 deg.



09 Lens Type



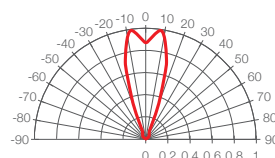
- ◆ Ø5 Plastic Molded LED
- ◆ Viewing Half Angle:
Short: ± 10 deg. Long: ± 21 deg.



33 Lens Type



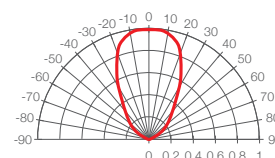
- ◆ Ø3 Plastic Molded LED
- ◆ Viewing Half Angle: ± 17 deg.



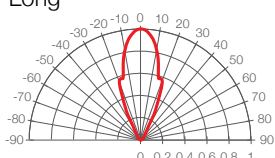
36 Lens Type



- ◆ Ø3 Plastic Molded LED
- ◆ Viewing Half Angle: ± 32 deg.



Long



Infrared Light Emitting Diodes

Features

- ◆ Achieve high optical power by unique domed-chip formation technology.
- ◆ 2 wavelength bands line up of 820 nm / 870 nm
- ◆ Set up SG-type of wide radiation beam and FL-type of collimated beam

IREL series



IREL Product Lineup

	Application	Wavelength	Optical Output	Products	Package Type
IREL	General	820 nm	20 mW	HE8811	CAN type (SG)
			40 mW	HE8404SG	CAN type (SG)
		870 nm	40 mW	HE8812SG	CAN type (SG)
	Encoder	880 nm	10 mW	HE8807SG	CAN type (SG)
			0.5 mW*	HE8807FL	CAN type (FL)



SG Type

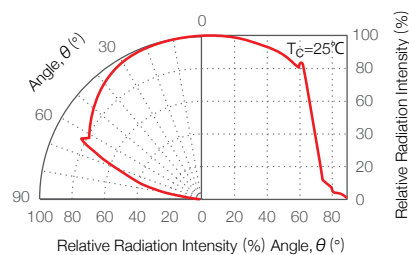


FL Type

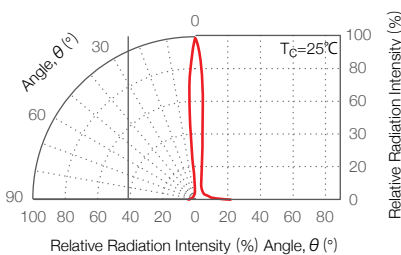
* The optical output within 9 degrees of the acceptance angle.

IREL Radiation Directional

SG Type



FL Type



IREL's Main Characteristics

Part No.	Absolute Maximum Rating		Optical and Electrical Characteristics												Test Conditions (If = mA)
	Forward Current (mA)	Operating Temperature (°C)	Optical Output Power (mW)			Peak Wavelength (nm)			Spectral Width (nm)			Forward Voltage (V)			
			min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
HE8811	200	-20 to 60	20	30	-	780	820	900	-	50	60	-	2.0	2.5	150
HE8404SG	250	-20 to 60	40	50	-	790	820	850	-	50	60	-	1.9	2.5	200
HE8812SG	250	-20 to 60	40	50	-	840	870	900	-	50	60	-	1.8	2.5	200
HE8807SG	200	-20 to 85	10	15	-	800	880	900	-	30	60	-	1.7	2.3	150
HE8807FL	200	-20 to 85	0.5*	1.0*	-	800	880	900	-	30	60	-	1.7	2.3	150

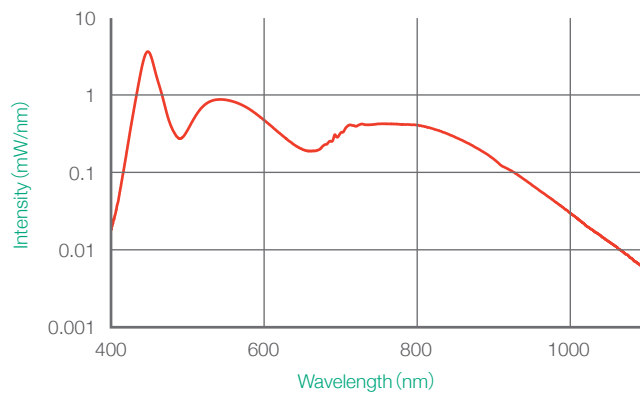
* The optical output within 9 degrees of the acceptance angle.

Spectro Series



Features

- ◆ Spectro is a series of high-output broadband LEDs which simultaneously emits visible to near infrared (NIR) wavelengths.
- ◆ Spectro can be used in machine vision and analysis applications, such as measuring the sugar or fat content of foodstuffs.



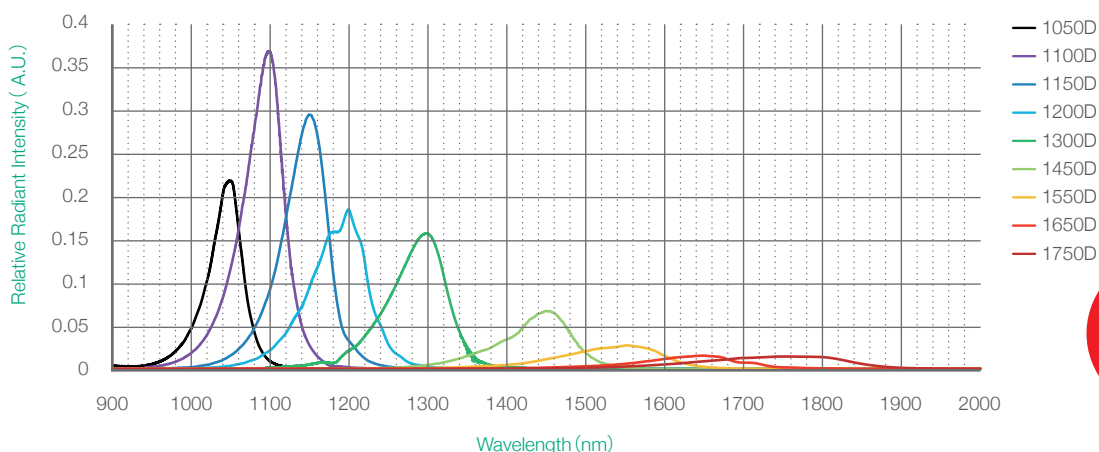
Total Radiated Power (typ) ($\lambda = 400 - 500 \text{ nm}$)	140 mW (if 500 mA)
Total Radiated Power (typ) ($\lambda = 500 - 1000 \text{ nm}$)	160 mW (if 500 mA)

Short Wavelength Infrared LEDs

Features

epitex series

- ◆ Epitex short wavelength infrared (SWIR) LEDs offer the highest optical output power in the world.
- ◆ Standard peak wavelengths: 1,050 / 1,100 / 1,150 / 1,200 / 1,300 / 1,450 / 1,550 / 1,650 / 1,750 nm.
- ◆ Alternatively, Ushio can propose a unique wavelength selection tailored for your application.
- ◆ Visit Ushio's website, SWIR-LED.com, for in-depth analysis of SWIR LED applications and products.



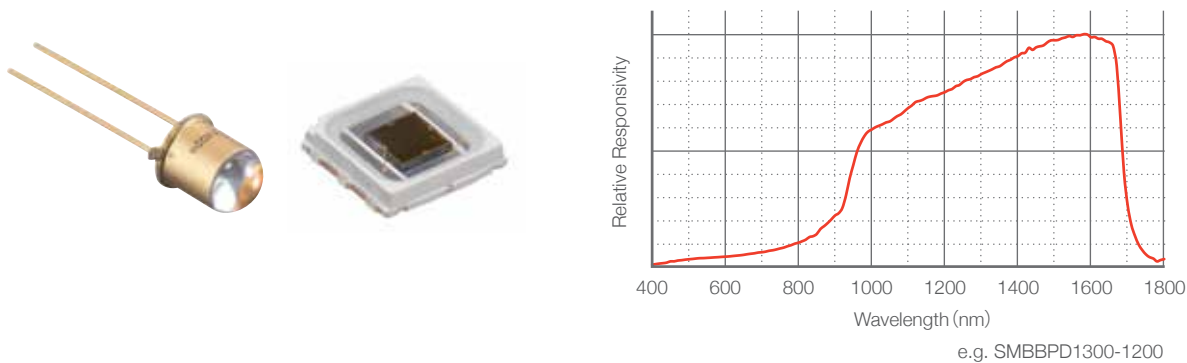
Visit
SWIR-LED
.com!

Photosensors

Features

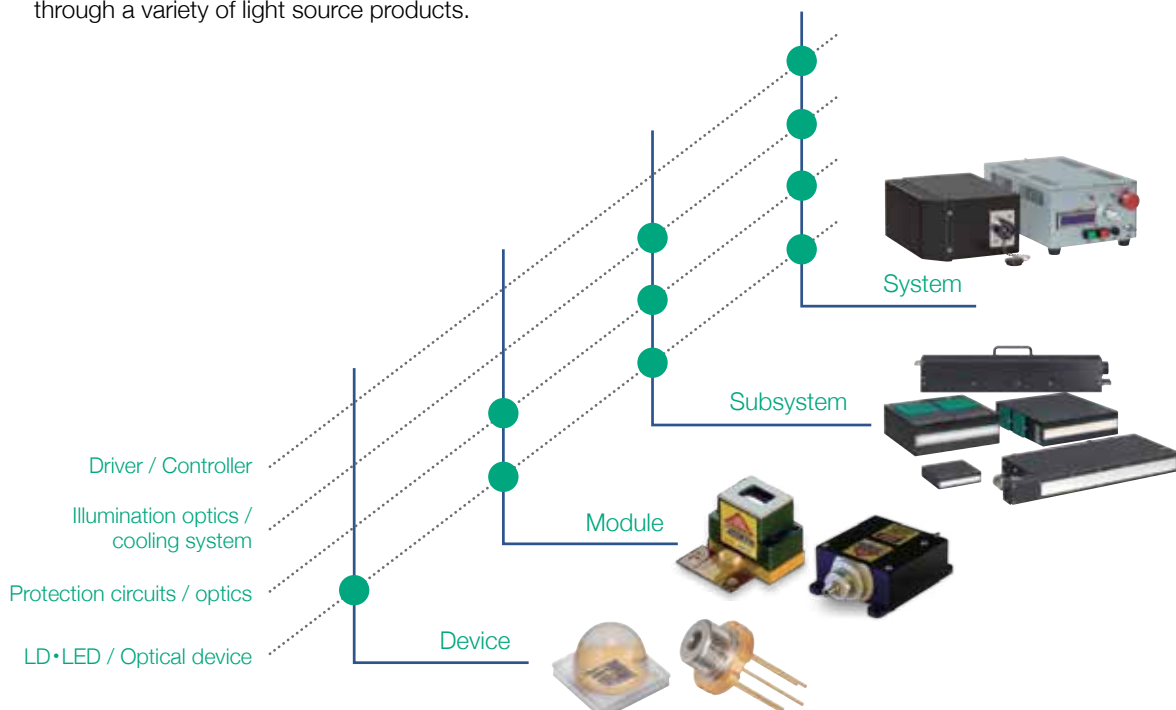
- ◆ A variety of photosensors are available to complement the 365 nm to 1,750 nm wavelength LED lineup.
- ◆ Light-emitting chips and photodiodes can be mounted together in one package.

Relative Responsivity vs. Wavelength



Ushio provides the best light source solution

- ◆ We will continue to create innovative LEDs and other products owing to contribution of Ushio's technology and experiences.
- ◆ At Ushio Inc, we can propose not only LEDs, but also optimized optical solutions for customers through a variety of light source products.



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



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