



BRIGHTEK ISD Solutions

Infrared & Sensor Div.



Surveillance Camera

Infrared LED & Ambient Light Sensor Involved

Kick-Start :
Infrared LED Solutions
Ambient Light Sensor Solutions

High Power IR LED Applications

Solutions for Security Systems



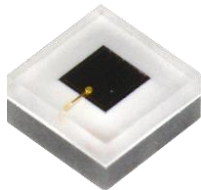
IP Camera



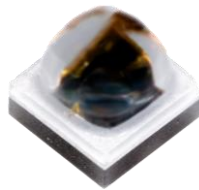
License Plate Recognition



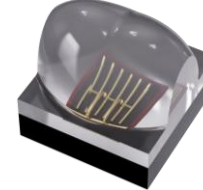
Doorbell



1616 Flat



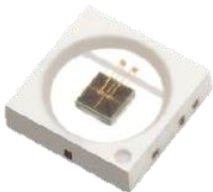
1616 Dome



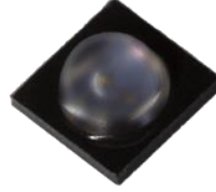
1616 Asymmetric Dome



2720 Flat



3030 Flat



3838 Dome



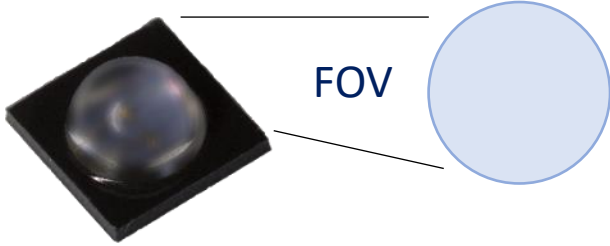
3838 Off Axis Dome



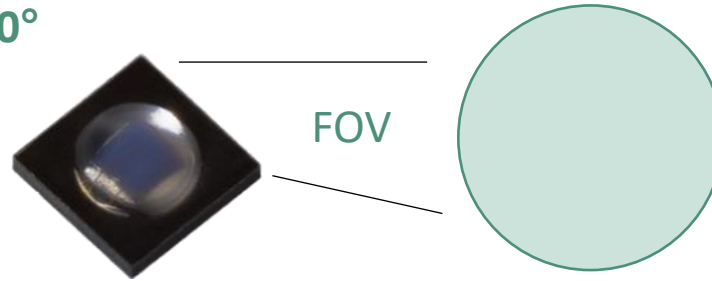
3838 Asymmetric Dome

Features of “Asymmetric” IR LED

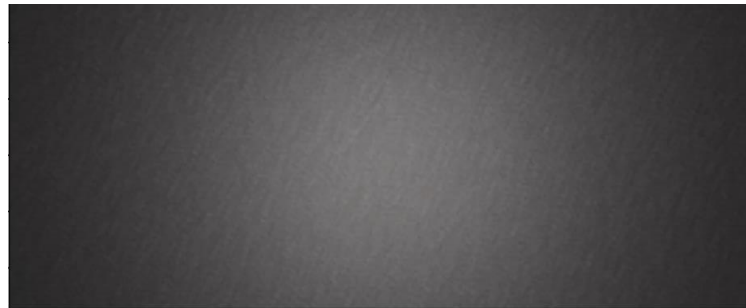
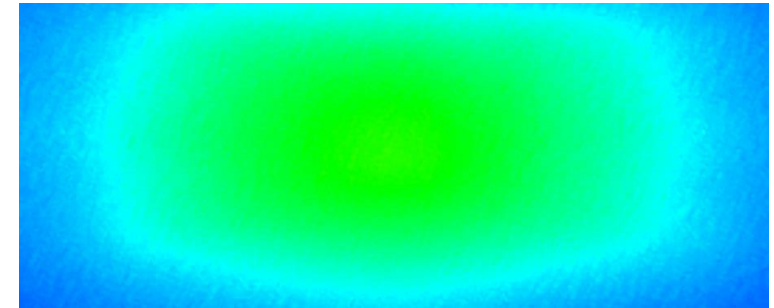
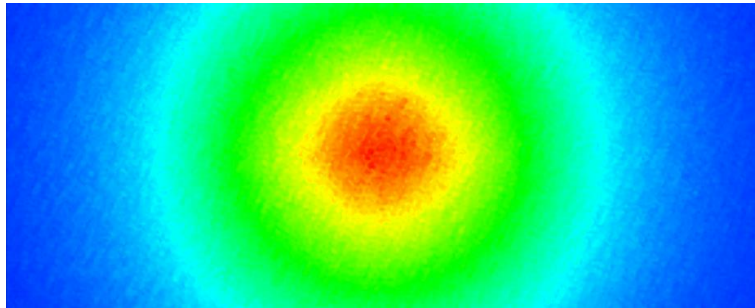
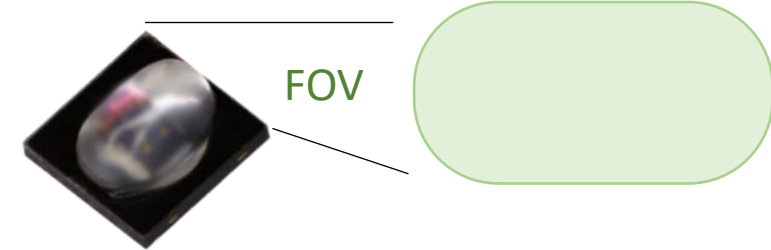
90°



150°



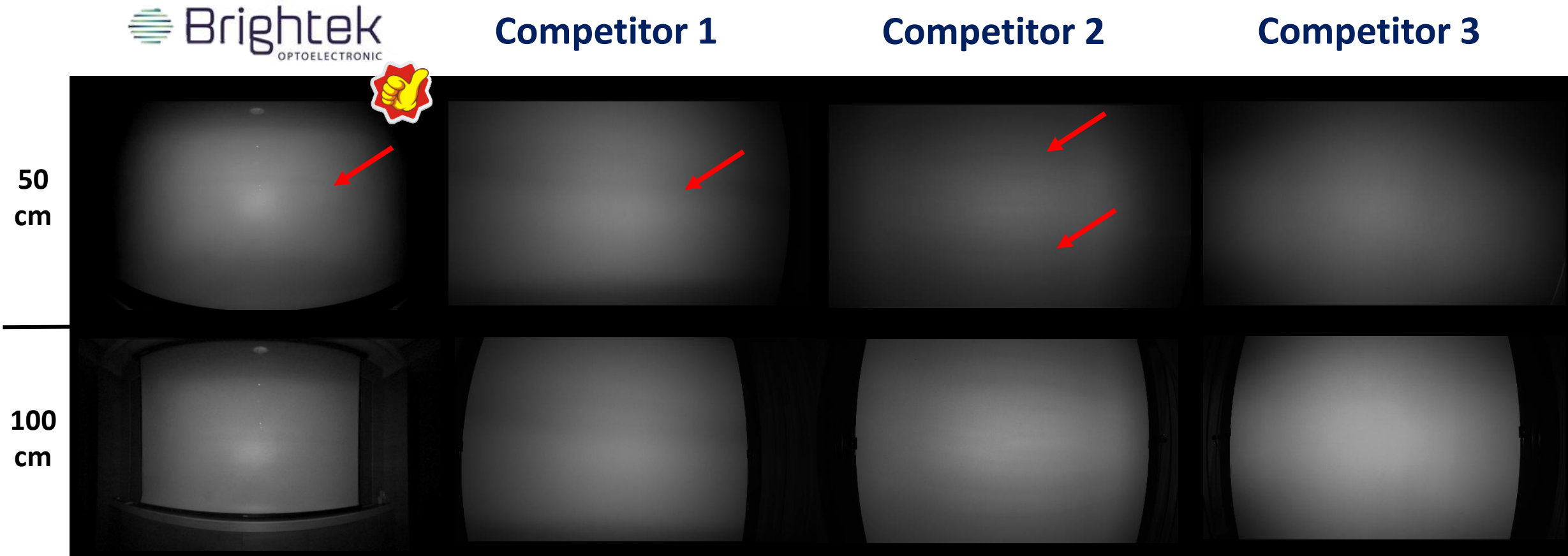
150° x 90°



☰ New design “Asymmetric” ➔ One LED for same performance , simpler design and less cost & consumption.

Asymmetric Light Pattern Comparison

Wide Angle (150° x90°)



 The "shadow area" often appears on 150°/90° across different suppliers, but the shadow area on our product is much narrower, has better uniformity compared to other competitors.

Asymmetric Light Pattern Comparison

Narrow Angle (45°x25°)

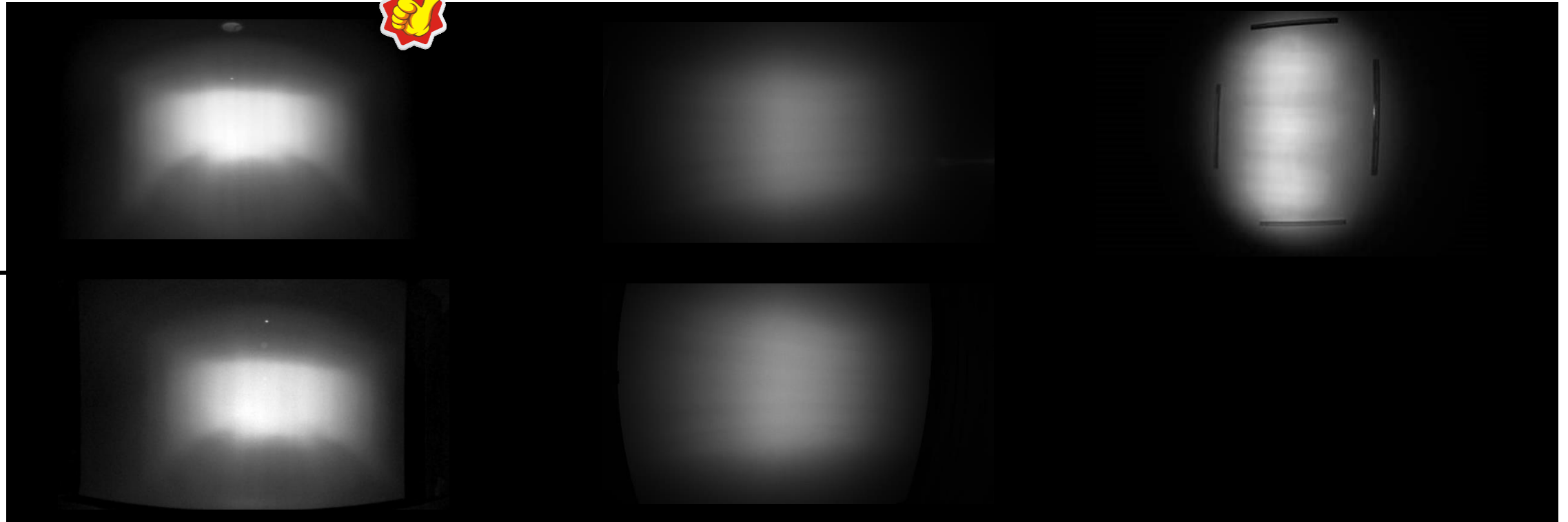
 Brightek
OPTOELECTRONIC

Competitor 1

Competitor 2

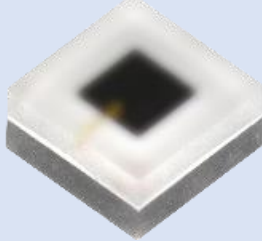
50
cm

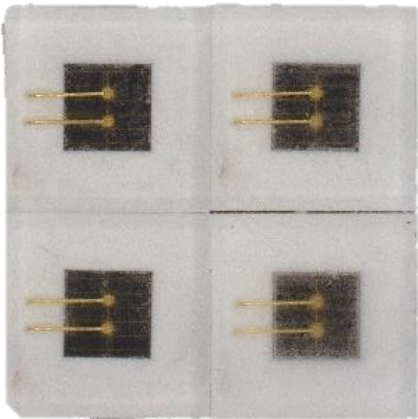
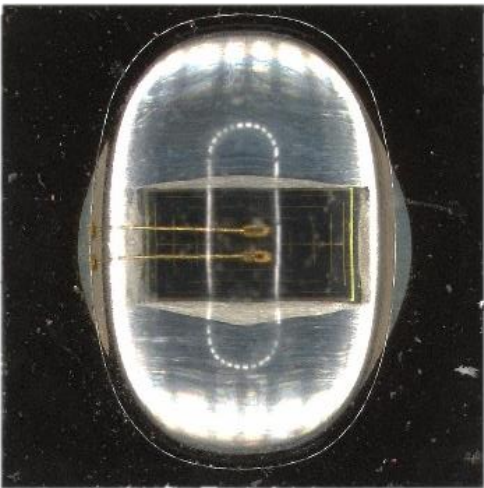
100
cm



- ☰ The "shadow area" often appears on 45°/25° across different suppliers, but the shadow area on our product is much narrower, has better uniformity compared to other competitors.

Advantage of 1616 Series

Items	Unit	3838 Series	1616 Series
Diagram	-		
Maximum Ratings			
Forward Current	A	1.5	1
Power Consumption	W	5.5	3.6
Pulse forward current	A	5	3
Junction temperature	°C	145	145
Operating temperature	°C	-40 to 125	-40 to +105
Thermal resistance junction	K/W	typ. 4.5 max. 9	typ. 7 max. 11
Characteristics			
Spectral bandwidth	nm	45	45
Total radiant power	mW	1300	1100
Forward voltage	V	3.1	3.3



- The size of 1616 is only one-quarter of 3838, and its brightness is 85% of 3838.
- It is the smallest high-power product which forward currents can be 1A.

The Most Complete Product Series

OXXXXX

Brightek

33 Types

41 Types

- 3838 Series with 7 types of viewing angle and different functions → 29 types
- 1616 Series with 3 types of viewing angle and different functions → 12 types
- Leading the industry with a globally unique lens design technology.

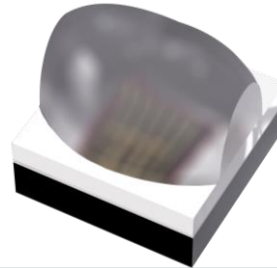
NEW



OFF Axis LED

- First and Unique Off-Axis light IR LED.
- Reduce Cost & Space.

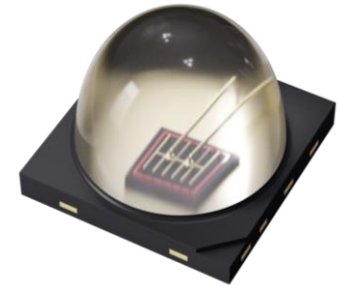
NEW



Smallest Asymmetric LED

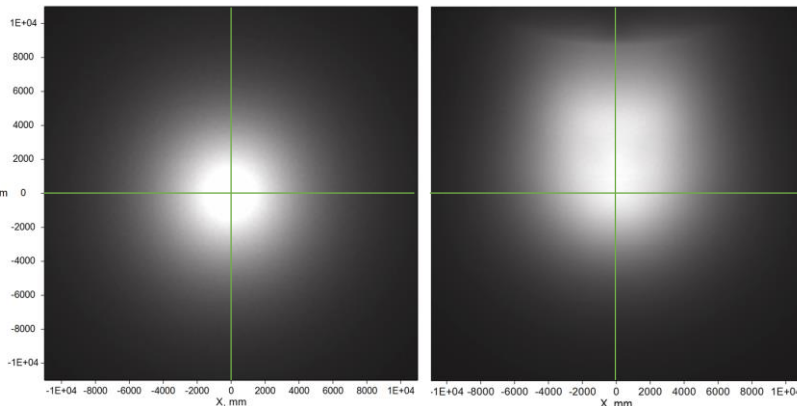
- World Leader in Tiny Asymmetrical LEDs.
- Low Thermal Resistance and High Drive Current.
- Qualifications: AEC-Q102 Qualified

NEW



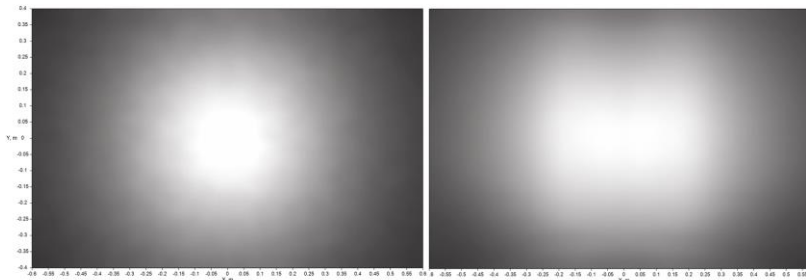
Non-RED Emitting LED

- The Real Invisible Infrared LED.
- Suitable for special applications.



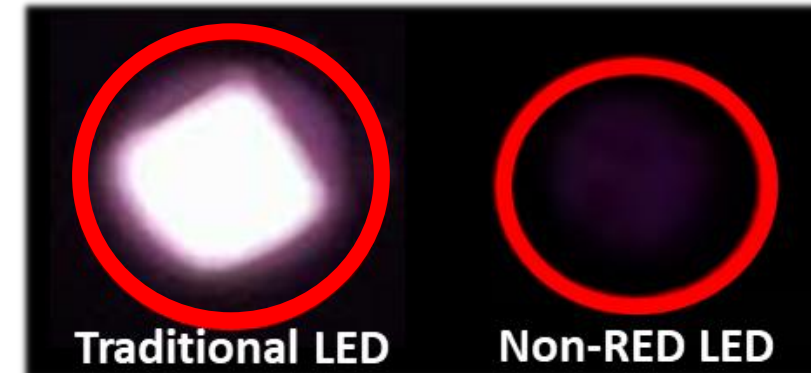
Traditional

OFF Axis



Traditional

Asymmetric



Traditional LED

Non-RED LED

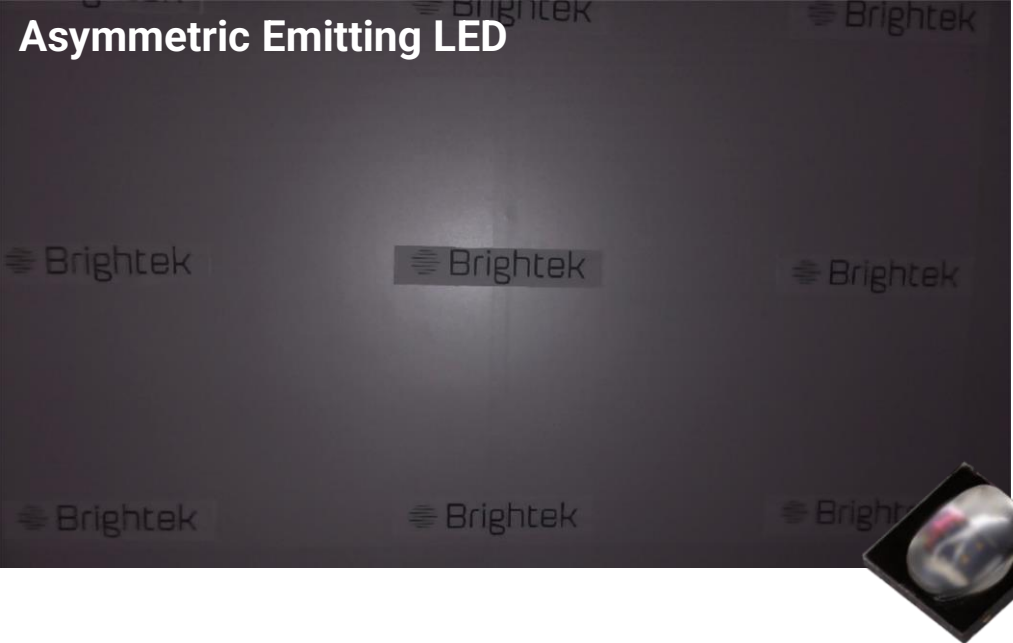
Traditional 940nm Emitting LED



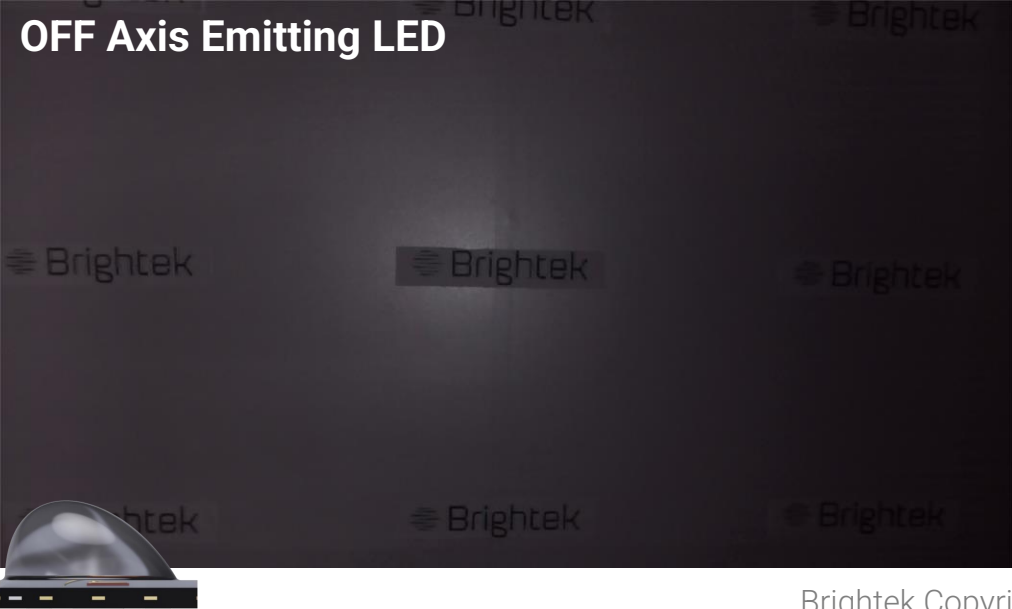
Non-RED Emitting LED

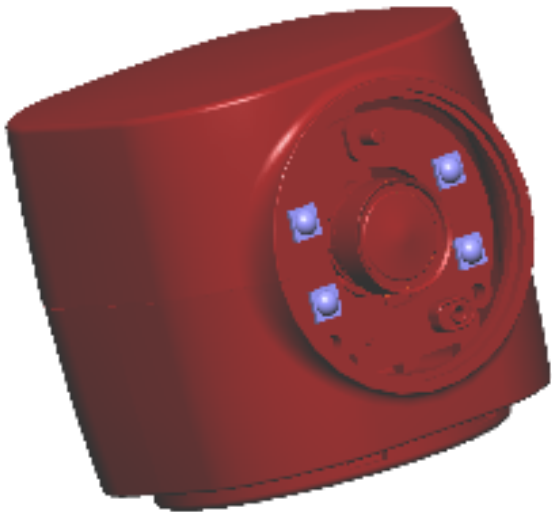


Asymmetric Emitting LED



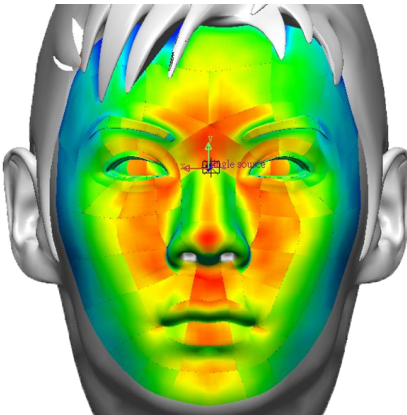
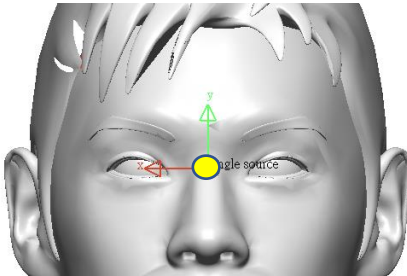
OFF Axis Emitting LED



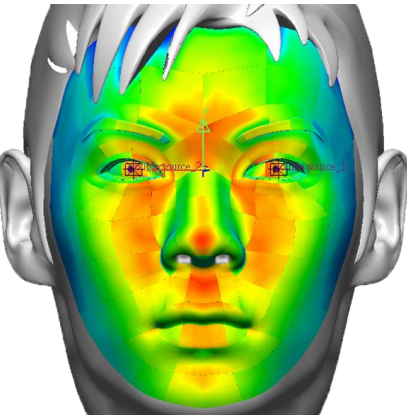
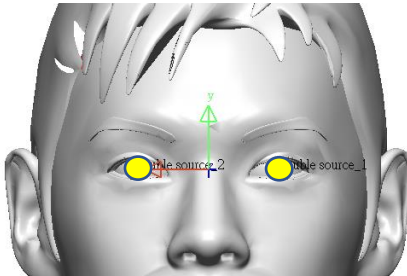


Security Camera

1 pc of LED



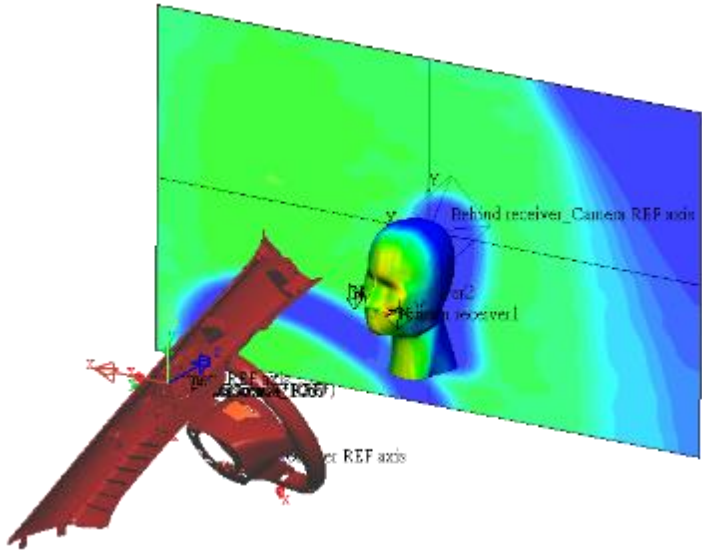
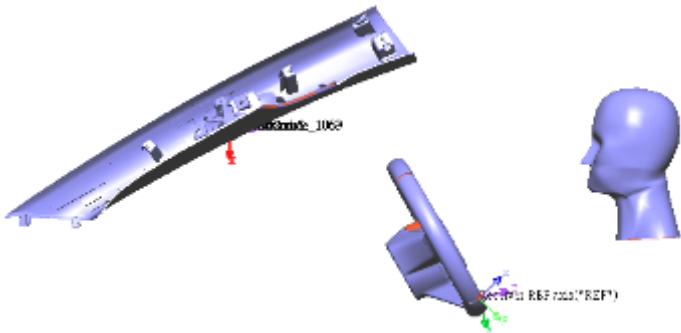
2 pcs of LED



NO.	• min. • max.							
	1	2	3	4	5	6	7	8
1 pcs.	2.61E-06	2.56E-06	2.78E-06	2.15E-06	2.13E-06	2.84E-06	2.66E-06	2.55E-06
2 pcs.	2.59E-06	2.51E-06	2.70E-06	2.17E-06	2.13E-06	2.69E-06	2.52E-06	2.51E-06

unit: W/mm²

NB Facial Recognition



Driver Monitoring



In-Cabin Sensing

Driver Monitoring & Occupant Monitoring Systems

Kick-Start :

Infrared LED Solutions

In-Cabin Sensing of DMS & OMS

DMS and OMS are supported by cameras
Light sources for camera is “ IR LED (2D CMOS Cameras) ”



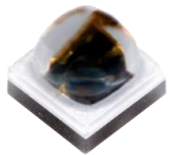
KEY FUNCTION

- ☰ Drowsy driver detection
- ☰ Gaze tracking and distraction warning
- ☰ Driver identification



KEY FUNCTION

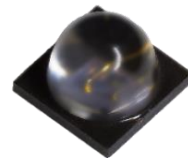
- ☰ Child presence detection
- ☰ Vital signs and health monitoring
- ☰ Personalization (seat positioning)



HE1616F94CQ01

600 mW/sr
80°

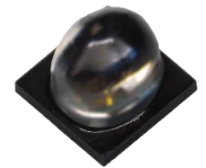
“Smallest High Power LED”



SF3838F94CQ01

1,050 mW/sr
50°

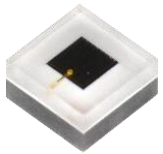
“High Efficiency”



SK3838F94CQ00

1,700 mW/sr
45°/25°

“Asymmetric”

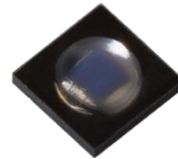


HE1616F94CQ01

400 mW/sr

120°

“Smallest High Power LED”

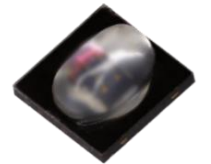


SJ3838F94CQ01

350 mW/sr

150°

“High Efficiency”



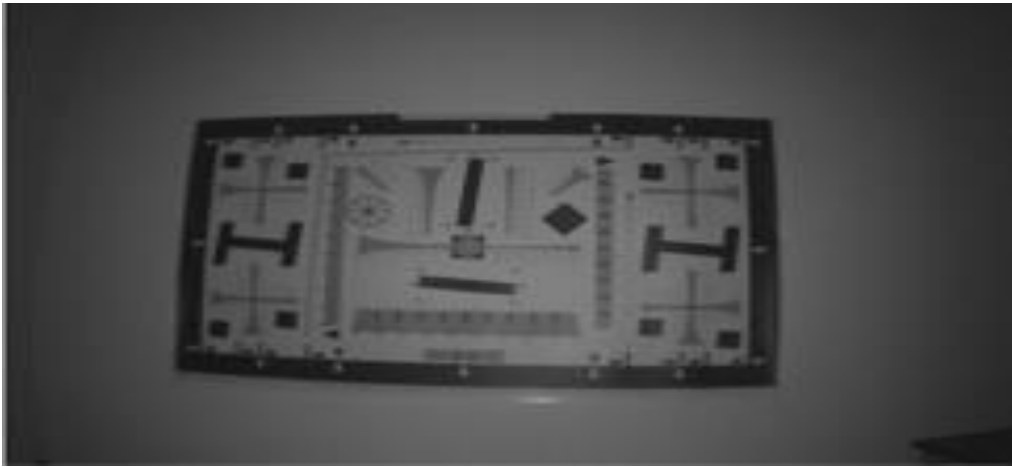
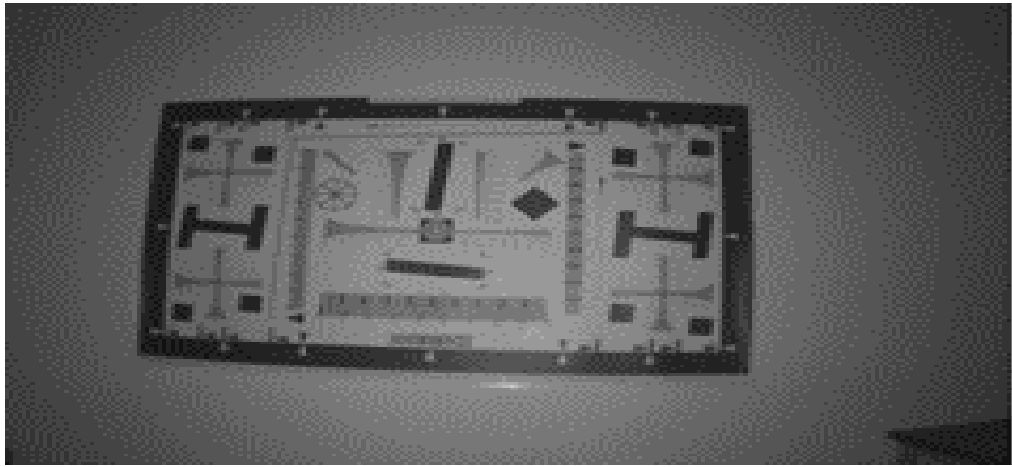
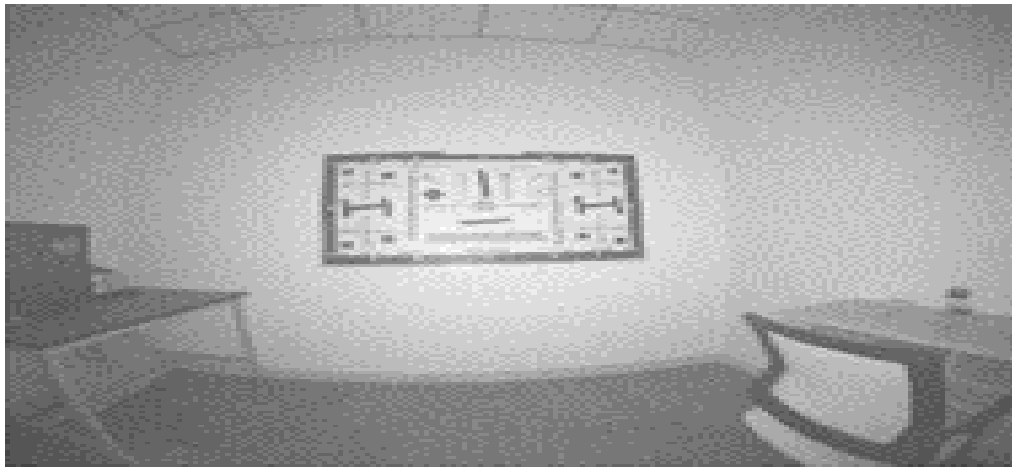
SL3838F94CQ01

400 mW/sr

150°/90°

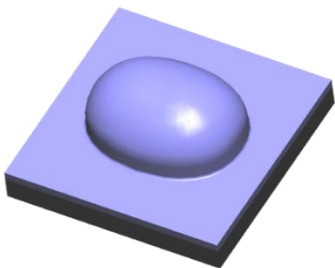
“Asymmetric”

DMS / OMS Light Pattern Comparison

	OXXXXX 50°	BRIGHTTEK 50°
DMS		
	SXXXXXX 120°	BRIGHTTEK 120°
OMS		

3838 Asymmetric

NEW



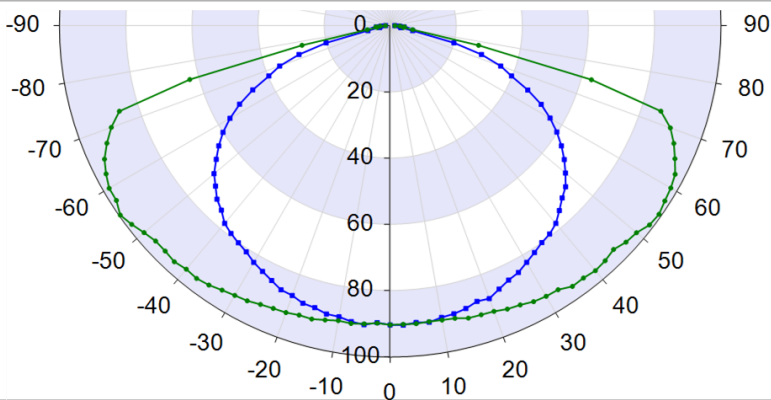
SQ3838F94CQ00

- Application : OMS
- Package : 3.8 x 3.8 x 1.52mm
- FOV : 150°X130°

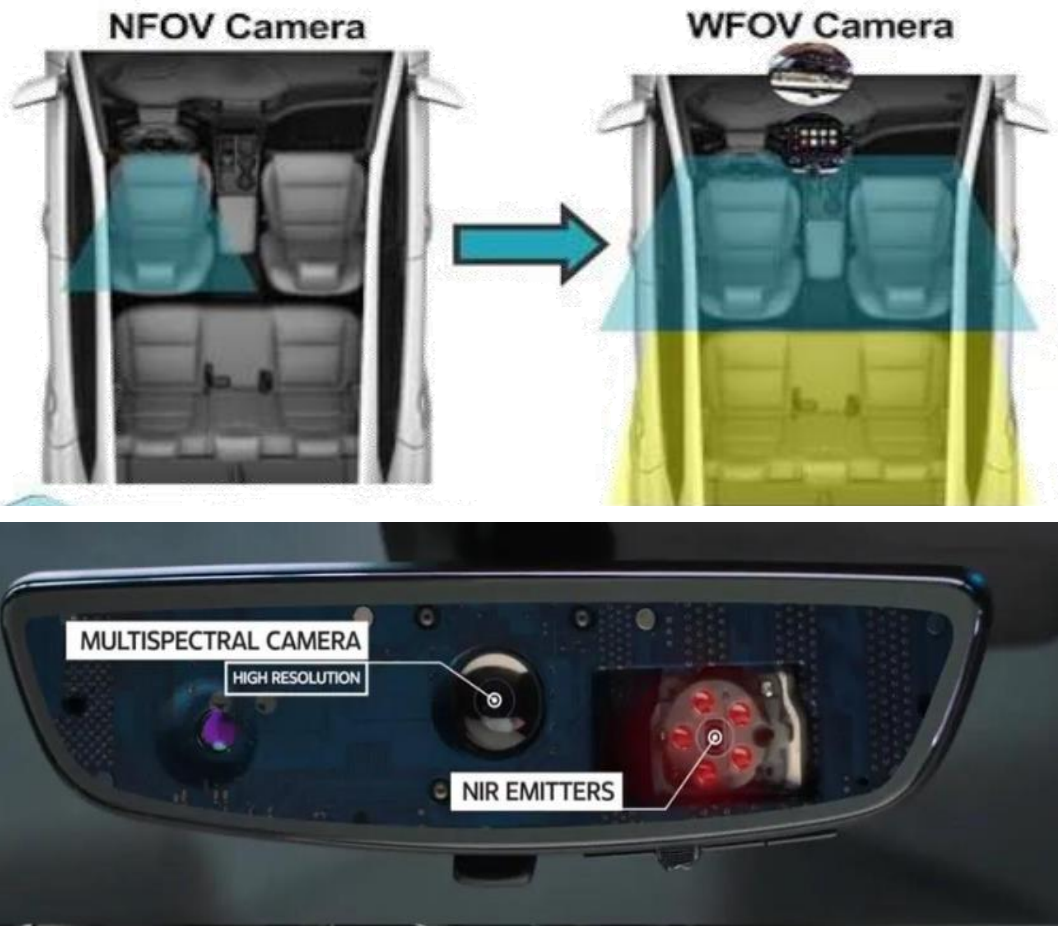
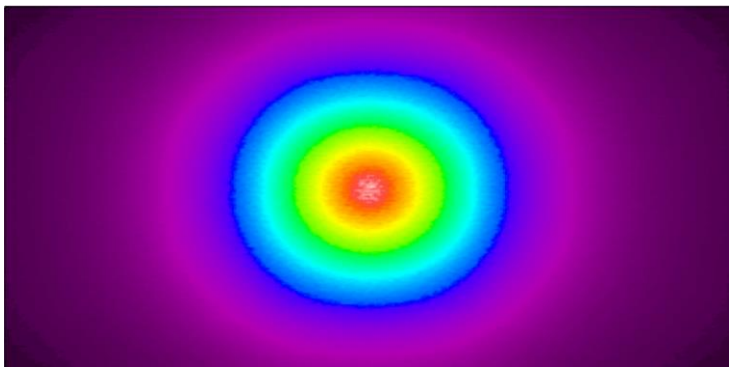
Items12

3838 Asymmetric

Intensity (%)



Irradiance (W/mm^2)



- For the integrated rearview OMS solutions, which covers a main lens FOV (Field of View) of 142x103 degrees (wide-angle lens with an aspect ratio of 16:13), it requires suitable specifications for the wide-angle IR (Infrared) LED.

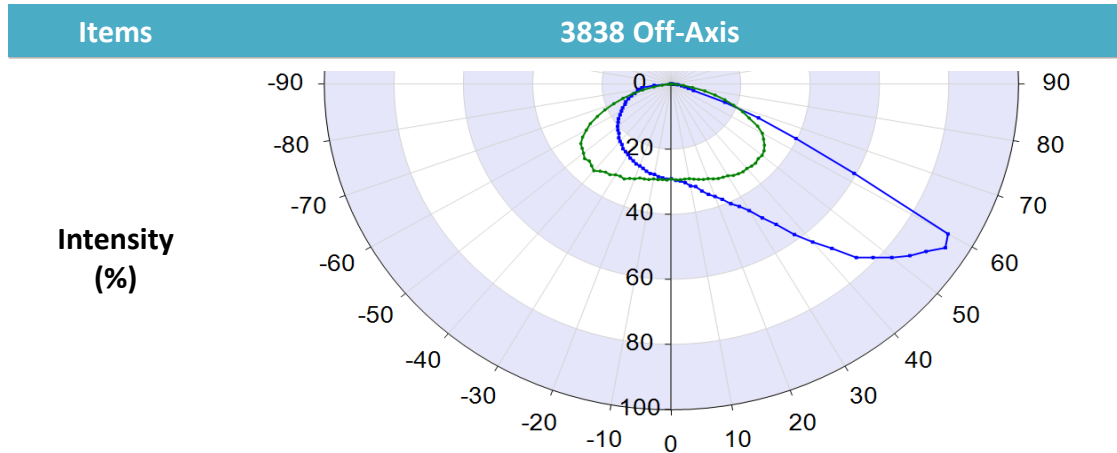
3838 Off-Axis Dome

NEW

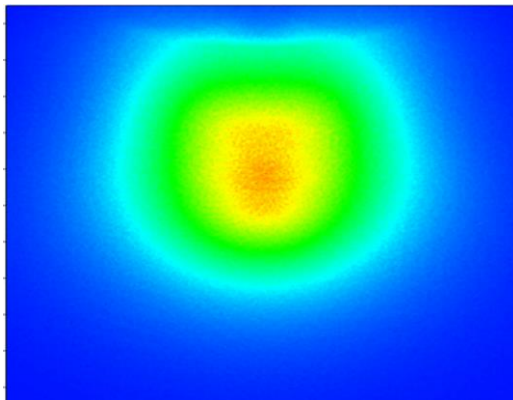


SN3838F85CQ01

- Application : IR Flood
- Package : 3.85 x 3.85 x 2.11mm
- Off-Axis 55°



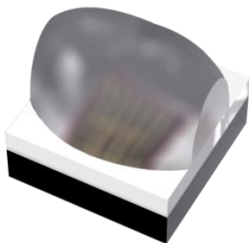
Irradiance
(W/mm^2)



- Traditional ultra-wide-angle camera design often involves placing the IR LED small board separately and bending it at an offset angle.
- This arrangement allows for the simplification of the camera's mechanical design by aligning the IR LED board with the camera's main board on the same plane. It also helps to avoid overexposure issues in images.

1616 Asymmetric

NEW

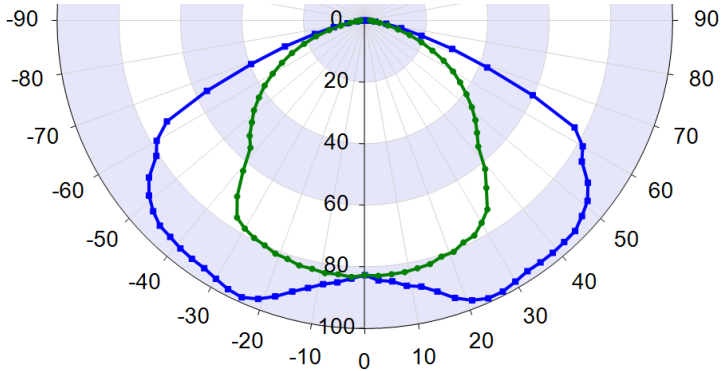


HF1616F85CQ01

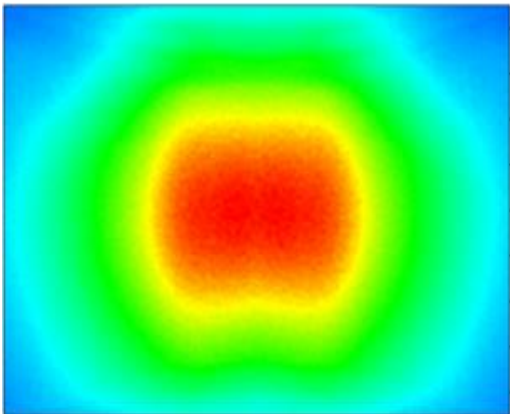
- Application : OMS
- Package : 1.60X1.60X1.37mm
- FOV : 130°X110°

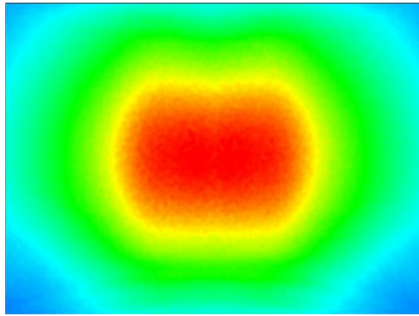
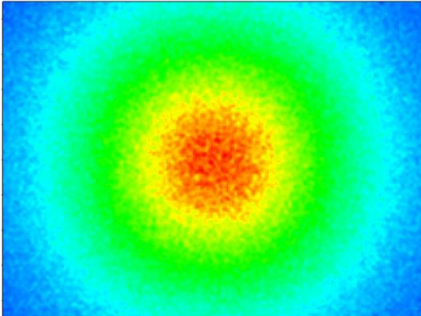
Items 1616 Asymmetric

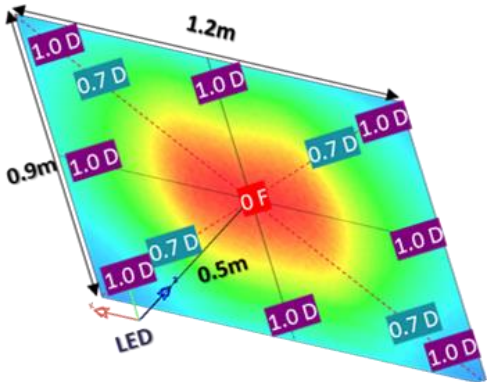
Intensity (%)



Irradiance (W/mm²)



	HF1616F85CQ01 (Asymmetric)	HL1616F85CQ01 (Symmetric)																																																																																																				
Total radiant power (mW)	1000 mW	1000 mW																																																																																																				
Irradiance chart (mW/m^2) 1.05 0.7 0.35 0																																																																																																						
Irradiance value (mW/m^2) RED:0D GREEN:0.7D PURPLE:1.0D And Uniformity (%) GOLDEN: Uniformity	<table><tr><td>208.1</td><td></td><td>361.2</td><td></td><td>214.0</td></tr><tr><td>20.0%</td><td></td><td>34.7%</td><td></td><td>20.5%</td></tr><tr><td></td><td>399.9</td><td></td><td>407.1</td><td></td></tr><tr><td></td><td>38.4%</td><td></td><td>39.1%</td><td></td></tr><tr><td>354.6</td><td></td><td>1041.9</td><td></td><td>364.0</td></tr><tr><td>34.0%</td><td></td><td>100.0%</td><td></td><td>34.9%</td></tr><tr><td></td><td>316.0</td><td></td><td>321.3</td><td></td></tr><tr><td></td><td>30.3%</td><td></td><td>30.8%</td><td></td></tr><tr><td>151.9</td><td></td><td>349.6</td><td></td><td>155.6</td></tr><tr><td>14.6%</td><td></td><td>33.6%</td><td></td><td>14.9%</td></tr></table>	208.1		361.2		214.0	20.0%		34.7%		20.5%		399.9		407.1			38.4%		39.1%		354.6		1041.9		364.0	34.0%		100.0%		34.9%		316.0		321.3			30.3%		30.8%		151.9		349.6		155.6	14.6%		33.6%		14.9%	<table><tr><td>125.4</td><td></td><td>352.4</td><td></td><td>125.5</td></tr><tr><td>13.2%</td><td></td><td>37.1%</td><td></td><td>13.2%</td></tr><tr><td></td><td>259.4</td><td></td><td>260.8</td><td></td></tr><tr><td></td><td>27.3%</td><td></td><td>27.5%</td><td></td></tr><tr><td>208.4</td><td></td><td>949.4</td><td></td><td>211.4</td></tr><tr><td>21.9%</td><td></td><td>100.0%</td><td></td><td>22.3%</td></tr><tr><td></td><td>263.2</td><td></td><td>263.7</td><td></td></tr><tr><td></td><td>27.7%</td><td></td><td>27.8%</td><td></td></tr><tr><td>131.8</td><td></td><td>358.4</td><td></td><td>132.8</td></tr><tr><td>13.9%</td><td></td><td>37.8%</td><td></td><td>14.0%</td></tr></table>	125.4		352.4		125.5	13.2%		37.1%		13.2%		259.4		260.8			27.3%		27.5%		208.4		949.4		211.4	21.9%		100.0%		22.3%		263.2		263.7			27.7%		27.8%		131.8		358.4		132.8	13.9%		37.8%		14.0%
208.1		361.2		214.0																																																																																																		
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131.8		358.4		132.8																																																																																																		
13.9%		37.8%		14.0%																																																																																																		



Irradiance :

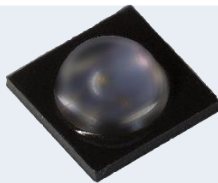
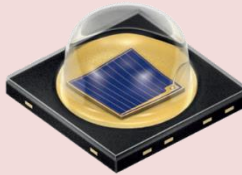
- Asymmetric is better than symmetric.

Uniformity :

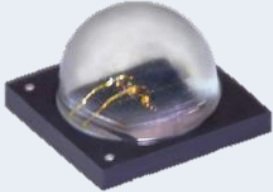
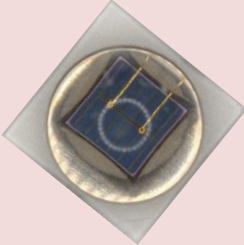
- Asymmetric is better than symmetric.

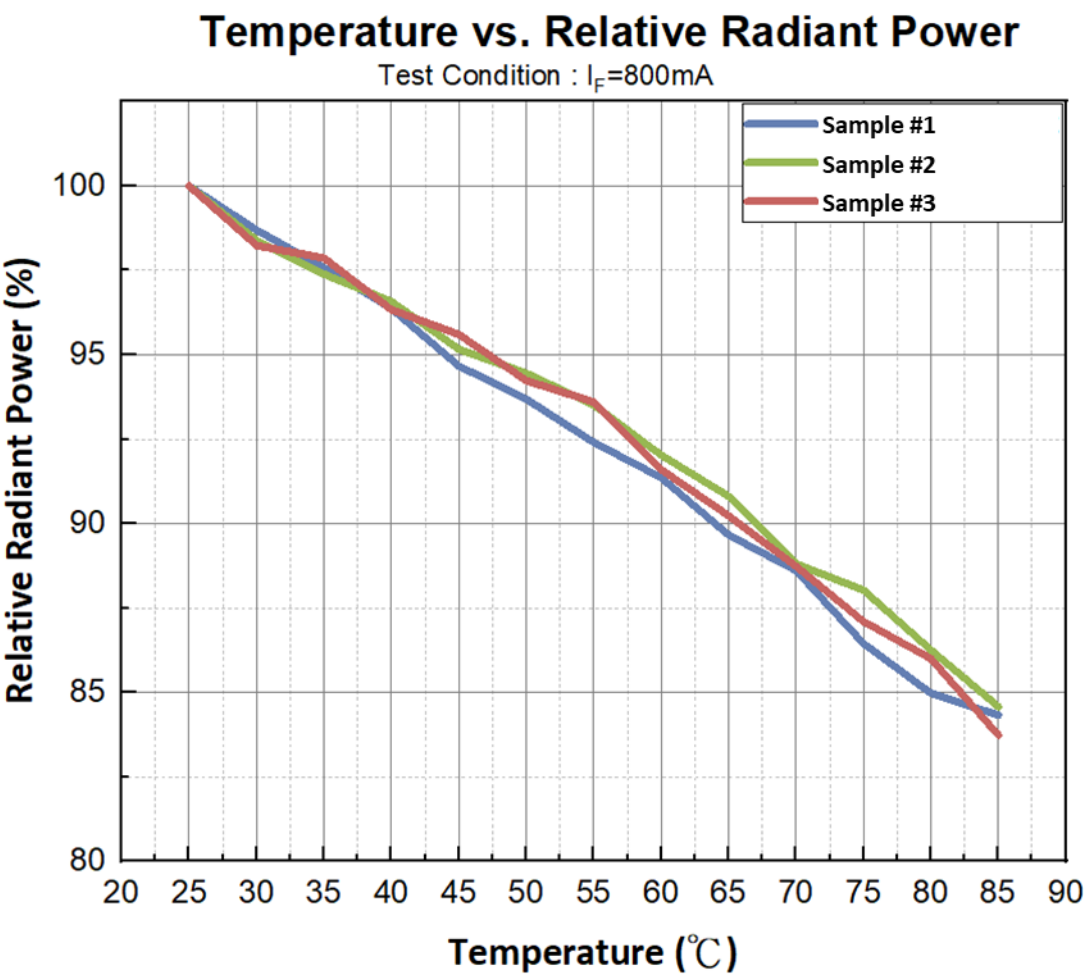
Actual Performance Comparison



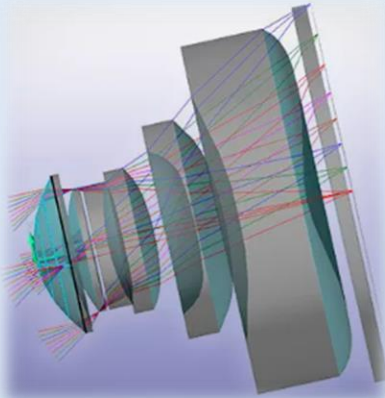
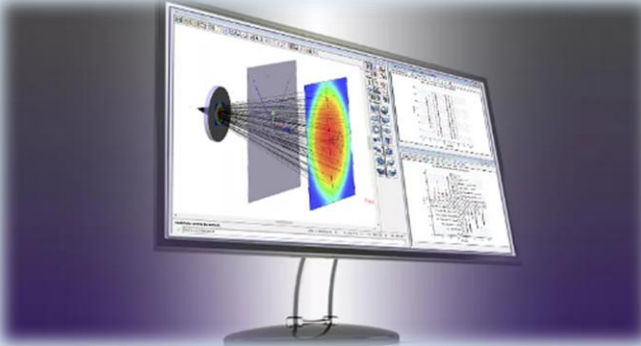
Items	Unit	SD3838F85CQ00		SFH 4715 AS	
Package Dimensional	mm	 3.85 x 3.85 x 2.21		 3.85 x 3.85 x 2.29	
		Low👍		High	
Maximum Ratings					
Forward Current	A	1500		1500	
Power Consumption	W	5.7		5.5	
Pulse forward current	A	5		5	
Junction temperature	°C	145		145	
Operating temperature	°C	-40 to +125		-40 to +125	
Thermal resistance junction	K/W	typ. 4.5 max. 9		typ. N/A max. 9	
Characteristics (typ.)					
		Datasheet Specification	Sample Test	Datasheet Specification	Sample Test
View Angle	°	90	90.02	80	77.45
Spectral bandwidth	nm	35	36.02	30	31.9
Total radiant power	mW	1360	1361.92👍	1530	1236.37
Radiant intensity	mW/sr	720	720.89	900	863.30👍
Forward voltage	V	3.25	3.21	3.15	2.95👍

Radiant Power at Different Temperatures

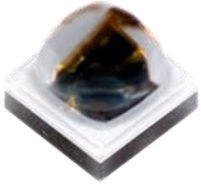
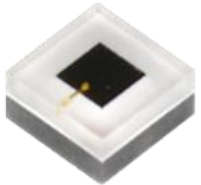
Items	Sample #1	Sample #2	Sample #3
Package Dimensional			
	3.50 x 3.50 x 2.29	3.85 x 3.85 x 2.21	3.55 x 3.55 x 2.60
Test condition : I _F =800mA // Unit : %			
25°C	100.00	100.00	100.00
30°C	98.69	98.39	98.23
35°C	97.58	97.39	97.87
40°C	96.37	96.58	96.34
45°C	94.67	95.16	95.60
50°C	93.69	94.45	94.24
55°C	92.41	93.52	93.60
60°C	91.36	92.03	91.61
65°C	89.66	90.81	90.24
70°C	88.62	88.81	88.74
75°C	86.46	88.04	87.11
80°C	84.99	86.26	86.01
85°C	84.33	84.59	83.74



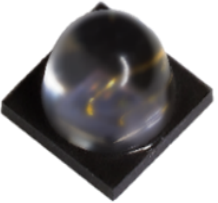
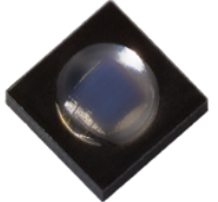
	Spectroradiometer	Luminous Intensity Measurement Adapters	Integrating Spheres	Lightproof Goniophotometer	Thermal Transient Tester
Model					
Where Use	Collocation with Luminous Intensity / Measurement Adapters Integrating Spheres / Lightproof Goniophotometer	Forward voltage / Spectral bandwidth / Peak wavelength / Radiant intensity measurement	Forward voltage / Spectral bandwidth / Peak wavelength / Total radiant power measurement	View angle measurement	Thermal resistance measurement

	Software CODE V	Software Light Tools	Hardware Rigo-801
Model	CODE V[®] 	LightTools[®] 	
Where Use	Imaging Optical Design	Lighting Design	LED Near-Field Goniophotometer

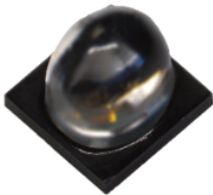
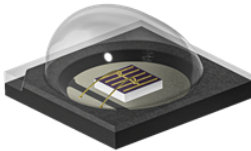
High Power Product – 1616 Series

Product Appearance	Part No.	Dimension (mm)	λ P (nm)	View Angle	I_E Typ. (mW/sr) ($I_F=1000\text{mA}$)	Φ_e Typ. (mW) ($I_F=1000\text{mA}$)	V_F Typ. (V) ($I_F=1000\text{mA}$)
 Conventional Dome Lens	HE1616F85CQ00	1.60 x 1.60 x 1.69	850	80°	310	600	1.7
	HE1616F85CQ01	1.60 x 1.60 x 1.69	850	80°	750	1300	3.30
	HE1616F94CQ00	1.60 x 1.60 x 1.69	940	80°	310	600	1.7
	HE1616F94CQ01	1.60 x 1.60 x 1.69	940	80°	800	1300	3.20
 Flat	HL1616F85CQ00	1.60 x 1.60 x 0.81	850	120°	200	550	1.7
	HL1616F85CQ01	1.60 x 1.60 x 0.81	850	120°	380	1200	3.30
	HL1616F94CQ00	1.60 x 1.60 x 0.81	940	120°	200	550	1.7
	HL1616F94CQ01	1.60 x 1.60 x 0.81	940	120°	400	1200	3.30
 Asymmetric Dome Lens	HF1616F85CQ00	1.60 x 1.60 x 1.37	850	130°/110°	250	600	1.7
	HF1616F85CQ01	1.60 x 1.60 x 1.37	850	130°/110°	450	1300	3.30
	HF1616F94CQ00	1.60 x 1.60 x 1.37	940	130°/110°	250	600	1.7
	HF1616F94CQ01	1.60 x 1.60 x 1.37	940	130°/110°	450	1300	3.20

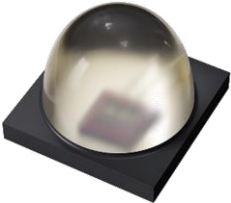
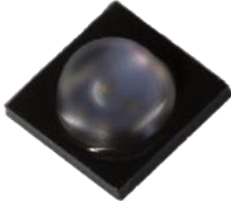
High Power Product – 3838 Series

Product Appearance	Part No.	Dimension (mm)	λ_P (nm)	View Angle	I_E Typ. (mW/sr) ($I_F=1000mA$)	Φ_e Typ. (mW) ($I_F=1000mA$)	V_F Typ. (V) ($I_F=1000mA$)
 Conventional Dome Lens	SF3838F85CQ00	3.85 x 3.85 x 2.98	850	40°	730	950	1.70
	SF3838F85CQ01	3.85 x 3.85 x 2.98	850	50°	1050	1360	3.25
	SF3838F94CQ00	3.85 x 3.85 x 2.98	940	50°	650	800	1.60
	SF3838F94CQ01	3.85 x 3.85 x 2.98	940	50°	1200	1400	3.1
 Conventional Dome Lens	SH3838F85CQ00	3.85 x 3.85 x 2.21	850	80°	430	950	1.70
	SD3838F85CQ00	3.85 x 3.85 x 2.21	850	90°	700	1360	3.25
	SD3838F94CQ01	3.85 x 3.85 x 2.21	940	90°	430	800	1.60
	SD3838F94CQ00	3.85 x 3.85 x 2.21	940	90°	750	1400	3.1
 Conventional Dome Lens	SJ3838F85CQ00	3.85 x 3.85 x 1.51	850	150°	250	950	1.70
	SJ3838F85CQ01	3.85 x 3.85 x 1.51	850	150°	350	1360	3.25
	SJ3838F94CQ00	3.85 x 3.85 x 1.51	940	150°	250	800	1.60
	SJ3838F94CQ01	3.85 x 3.85 x 1.51	940	150°	420	1400	3.10

High Power Product – 3838 Series

Product Appearance	Part No.	Dimension (mm)	λ P (nm)	View Angle	I_E Typ. (mW/sr) ($I_F=1000mA$)	Φ_e Typ. (mW) ($I_F=1000mA$)	V_F Typ. (V) ($I_F=1000mA$)
 Asymmetric Dome Lens	SK3838F85CQ00	3.85 x 3.85 x 3.30	850	45° x 25°	1700	1200	3.40
	SK3838F94CQ00	3.85 x 3.85 x 3.30	940	45° x 25°	1700	1200	3.20
 Asymmetric Dome Lens	SL3838F85CQ00	3.85 x 3.85 x 1.90	850	130° x 80°	280	950	1.70
	SL3838F85CQ01	3.85 x 3.85 x 1.90	940	150° x 90°	420	1360	3.25
	SL3838F94CQ00	3.85 x 3.85 x 1.90	850	150° x 90°	250	800	1.60
	SL3838F94CQ01	3.85 x 3.85 x 1.90	940	150° x 90°	420	1400	3.10
 Off-Axis Dome Lens	SN3838F85CQ01	3.85 x 3.85 x 2.15	850	OA60	320	1400	3.40
	SN3838F94CQ01	3.85 x 3.85 x 2.15	940	OA60	320	1400	3.20

High Power Product – 3838 Series

Product Appearance	Part No.	Dimension (mm)	λ_P (nm)	View Angle	I_E Typ. (mW/sr) ($I_F=1000\text{mA}$)	Φ_e Typ. (mW) ($I_F=1000\text{mA}$)	V_F Typ. (V) ($I_F=1000\text{mA}$)
 Low Red Glow	SF3838F96CQ00	3.85 x 3.85 x 2.98	960	50°	530	650	1.40
 Low Red Glow	SP3838F95CQ01	3.85 x 3.85 x 1.85	950	120°	600	1400	2.90

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Our Vision

Intelligent illumination for a more brilliant life



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