

**HIGH POWER IR
SMD LED**
SELECTOR GUIDE

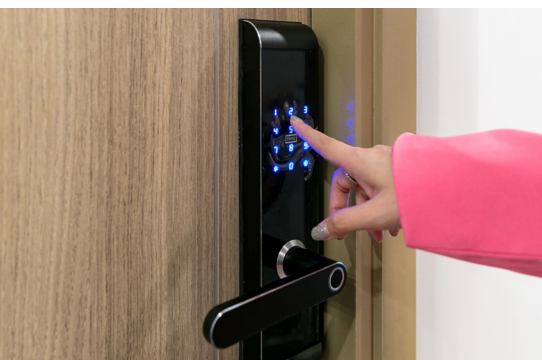


Advantages of High Power IR SMD LEDs

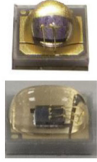




- 3535 and 3838 package size High Power IR LEDs available in 1 Watt to 5 Watt Power.
- Common industry standard NIR wavelengths 850nm and 940nm for diverse applications.
- SMD designed with Ceramic or EMC (Epoxy Molding Compound) LED packaging for high performance, heat resistance, and thermal conductivity at high drive currents.
- Domed type lens with wide range of viewing angle options and emission patterns to address customer specific design requirements.

High Power IR SMD LEDs have a wide range of applications:

- Security Cameras / Surveillance Systems
- Machine Vision
- Sensors
- Smoke Detection
- Face and Iris Recognition
- E-Bike Lighting
- Platform Caution Light
- Remote Controls
- Smart Locks
- Audio / Video Communications
- Household Appliances



3535 Package / 1 Watt If=350mA / Single Junction

Part Number	Package Dimensions	Peak Wavelength (nm)	Radiant Intensity (mW/sr)	Viewing Angle
 582-C14A3-537HPF	3.50 x 3.50 x 3.63mm	850	430 typ	30°
 582-C14A5-537HPF	3.50 x 3.50 x 3.03mm	850	280 typ	60°
 582-C14A11-537HPF	3.50 x 3.50 x 2.03mm	850	105 typ	120°
 582-C14A38-537HPF	3.50 x 3.50 x 2.17mm	850	80 typ	X-130°, Y-85°
 582-C14A16-537HPF	3.50 x 3.50 x 1.90mm	850	50 typ	160°

3535 Package / 2 Watt If=1000mA / Single Junction

 582-C14A5-137HPF	3.50 x 3.50 x 3.03mm	850	440 typ	50°
 582-C14A94-137HPF	3.50 x 3.50 x 2.70mm	850	300 typ	X-90°, Y-45°
 582-C14A9-137HPF	3.50 x 3.50 x 2.53mm	850	400 typ	90°
 582-C14A12-137HPF	3.50 x 3.50 x 2.03mm	850	300 typ	120°
 582-C14A38-137HPF	3.50 x 3.50 x 2.17mm	850	250 typ	X-130°, Y-85°
 582-C14A16-137HPF	3.50 x 3.50 x 1.90mm	850	170 typ	160°

3535 Package / 3.5 Watt If=1000mA / Dual Junction

 582-A24A3-137HPF	3.50 x 3.50 x 3.63mm	850	1700 typ	33°
 582-A24A4-137HPF	3.50 x 3.50 x 3.63mm	850	1070 typ	45°
 582-A24A43-137HPF	3.50 x 3.50 x 3.62mm	850	1080 typ	X-48°, Y-30°
 582-A24A5-137HPF	3.50 x 3.50 x 3.33mm	850	700 typ	57°
 582-A24A6-137HPF	3.50 x 3.50 x 3.03mm	850	790 typ	60°
 582-A24A9-137HPF	3.50 x 3.50 x 2.53mm	850	520 typ	90°
 582-A24A61-137HPF	3.50 x 3.50 x 2.70mm	850	550 typ	X-100°, Y-60°
 582-A24A13-137HPF	3.50 x 3.50 x 2.03mm	850	390 typ	130°
 582-A24A16-137HPF	3.50 x 3.50 x 1.27mm	850	270 typ	160°

Powerful 850nm Infrared Illumination For Surveillance And Night Vision Systems

Infrared LED lighting is the foundation of modern surveillance and night vision technology. Dialight offers the 3535 package High Power IR LEDs with 850nm for applications requiring high radiant efficiency, maximum illumination distance, and strong sensor compatibility. Our 850nm IR LEDs ranging from 1W to 3.5W provide the radiant intensity and image clarity required for professional grade surveillance systems. IR LEDs with higher radiant output (mW/sr) will provide greater infrared coverage, improved image quality, and low visibility operation across extended distances.

Dialight’s 3535 High Power IR LEDs have a wide selection of viewing angles to match the IR LED beam pattern to the camera’s field of view (FOV) to ensure balanced lighting and eliminates dark edges. Effective IR illumination is based on the beam angle and optical alignment.

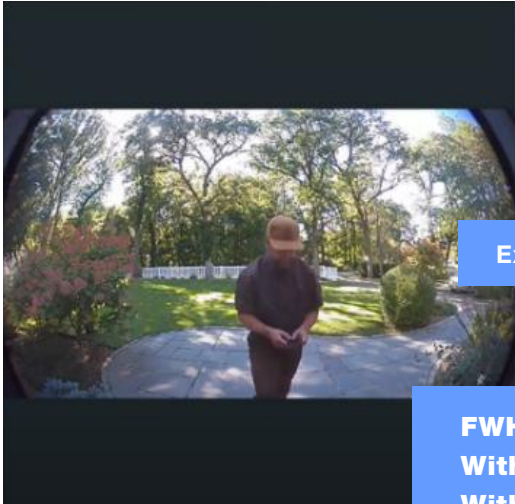
Available viewing angle options include:

- Narrow Beam Angles (30°-45°) - Focused illumination for long distance viewing
- Medium Beam Angles (57°-60°) - Balanced range and area coverage
- Wide Beam Angles (90°-160°) - Broad view illumination for wide-angle security cameras
- Dual Viewing Angles (48/30, 90/45°, 130/85°, 100/160°) - Provide beam spread and optical focus

Application using 3535 IR LED 850nm with wide viewing angle 160 degrees

Fisheye Camera IR LEDs

- 582-C14A16-537HPF (3535, 1 Watt, 850nm, Viewing Angle 160°)
- 582-C14A16-137HPF (3535, 2 Watt, 850nm, Viewing Angle 160°)

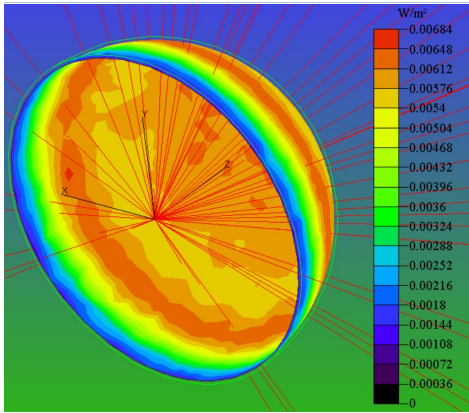


Expand vertical viewing angle

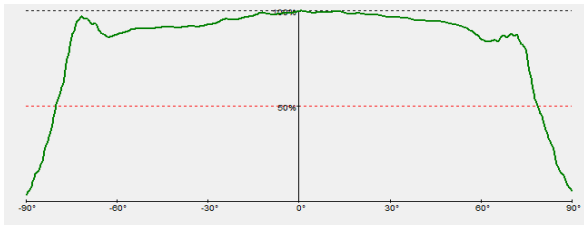


FWHM ≈ 160°
Within 180°, Uniformity >20%
Within 140°, Uniformity >90%

Irradiance Graph



This graph and figure represent the luminous intensity of the High Power IR LED at different angles. At wide viewing angles, the brightness of IR LED remains significant to capture all directions in the camera application.



Radiant Intensity vs FWHM Viewing Angle

FWHM (degrees)	Center (mW/sr)	0~70° (mW/sr)	80° (mW/sr)	80° (mW/sr)
166	100%	93%	60%	20%

Fisheye cameras use extreme wide-angle lenses and optical designs with curvature for capturing all directions simultaneously.

Dialight's IR LED with 160 degree viewing angle based on FWHM is specifically designed for Fisheye camera and camera with field of view (FOV) greater than or equal to 130 degrees.

Full Width at Half Maximum (FWHM) in degrees for IR LED camera applications defines the beam angle of the infrared light emitted, specifically measured at 50% of its peak intensity. It measures how widely or narrowly the IR light spreads from the source. In camera applications, matching this angle to the camera's FOV is critical for efficient illumination.

In the above example, the doorbell camera feed originally was only 16:9 and the lower area fell into the camera's blind spot. After replacing the design with a 160 degree IR LED (fisheye lens) the field of view becomes wider at all viewing directions.

Fisheye Camera IR LEDs

582-C14A16-537HPF (3535, 1 Watt, 850nm, Viewing Angle 160°)
 582-C14A16-137HPF (3535, 2 Watt, 850nm, Viewing Angle 160°)

Ceiling Mount



Wall Mount



Wide Viewing Angle IR LED

Dome Camera and Corner Mount Camera

582-C14A94-137HPF (3535, 2 Watt, 850nm, X-90°, Y-45°)
 582-C14A38-137HPF (3535, 2 Watt, 850nm, X-130°, Y-85°)




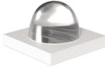
Wide Viewing Angle IR LED

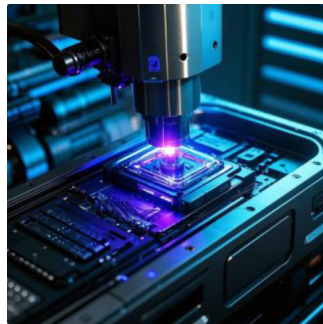
Multi-Sensor Cameras

582-A24A43-137HPF (3535, 3.5 Watt, 850nm, X-48°, Y-30°)
 582-A24A61-137HPF (3535, 3.5 Watt, 850nm, X-100°, Y-60°)



3838 Package / 1W-3W If = 500mA-1500mA / Single Junction and Dual Junction

Part Number	Package Dimensions	Peak Wavelength (nm)	Radiant Intensity (mW/sr)	Viewing Angle	
	582-E16C8-103HPF	3.80×3.80×2.28mm	940	710 typ	80°
	582-E26C8-103HPF	3.80×3.80×2.28mm	940	1400 typ	80°
	582-E16A8-103HPF	3.80×3.80×2.28mm	850	800 typ	80°
	582-E26A8-103HPF	3.80×3.80×2.28mm	850	1400 typ	80°
	582-E16A10-503HPF	3.80×3.80×2.15mm	850	320 typ	100°
	582-E16C15-103HPF	3.80×3.80×1.57mm	940	800 typ	150°
	582-E26A5-103HPF	3.80×3.80×2.38mm	850	1400 typ	50°



Dialight's 3838 High Power IR SMD LED with Domed Lens are designed using Epoxy Molding Compound (EMC) based packaging for superior thermal management, robust reliability, and high power operation from 1W up to 5W.

850nm and 940nm IR wavelengths suitable for a wide range of applications.

Available in Viewing Angles 50°, 80°, 90°, 120° 150° to address different design requirements.

Radiant Flux can be tailored to meet low end and high end Radiant Power specifications.

850nm: 280-450mW min to 1120-1800mW max

940nm: 710-1120mW min to 1120-1800mW max

OE is **O**ur **E**xpertise.

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