

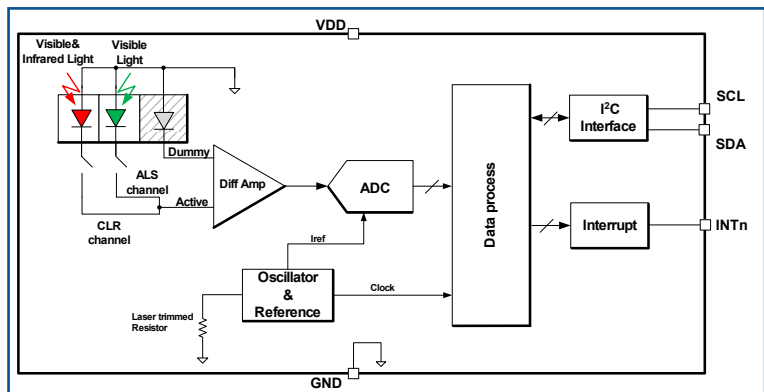


Ambient Light Sensors

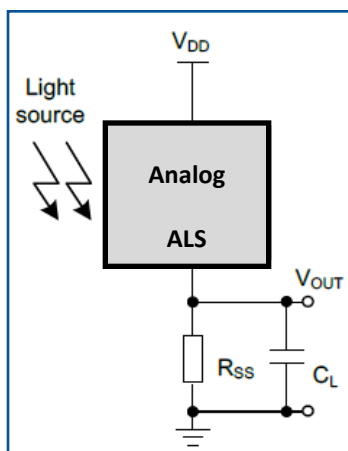
Analog and Digital Ambient Light Sensors
for SMART-Dimming and Industrial ON/OFF applications

The use of Ambient Light Sensors (ALS) is becoming ever more prevalent especially when 'smart' features are being added to products where consumers expect a more automated approach to operation and energy saving. Most of us have a mobile phone, tablet, PC or TV where the accurate measurement of ambient light is used to control the screen brightness or backlight dimming.

For these types of 'Digital' ALS applications, designers require intelligent sensors with a high level of integration, a spectral response to light which is close or even matching the Human Eye, with wide and accurate Illuminance range, all in a physically small SMD package. This level of integration and functionality can be seen from the **SY22309AS22-J00** ALS block diagram



opposite. The SY22309AS22-J00 supports an I2C interface allowing full configuration and access to all light information and uniquely includes 2 photo-diode arrays, where one is used for measuring Visible & IR light (CLEAR channel) and the other for visible light only (ALS channel), allowing designers to detect the type of light source by using the ratio of ALS/CLEAR.



There are of course other simpler applications of 'Analog' ALS devices, where simple detection of a light *threshold* is required to support 'Dusk to Dawn' or 'ON/OFF' control of Street Lighting, Security Camera IR Illuminators and Industrial lights. These applications still require a spectral response close to the Human Eye, with good output linearity where the output current is resolved to a voltage with a simple resistor and then measured by an external ADC, typically already integrated into a microprocessor. The **SY22304AS33-D00** supports this level of functionality in a low cost Radial Lead package providing ultra-high IR rejection, an Illuminance range of 1000 lux with a wide 2V to 12V operating range.

Highly Efficient -Space Saving - Easy Design - Robust Performance
Silergy's Ambient Light Sensors simplify the Art of Light Detection



Ambient Light Sensors

Analog ALS for Industrial ON/OFF applications

Part Number	V _{IN} (V)	I _{out} (μA/LUX)	I _{dark} (nA)	RANGE (LUX)	Special Features	Package (mm)	Temp Range (°C)
SY22304AS33-D00	2—12	0.41	0.41	0.1—1000	Ultra High IR rejection	Radial Lead Ø3	-40 to + 85
SY22304AS55-D00	2—12	0.41	0.41	0.1—1000	Ultra High IR rejection	Radial Lead Ø5	-40 to + 85

FEATURES

Close to Human Eye Spectral Response ($\lambda_c = 550\text{nm}$)

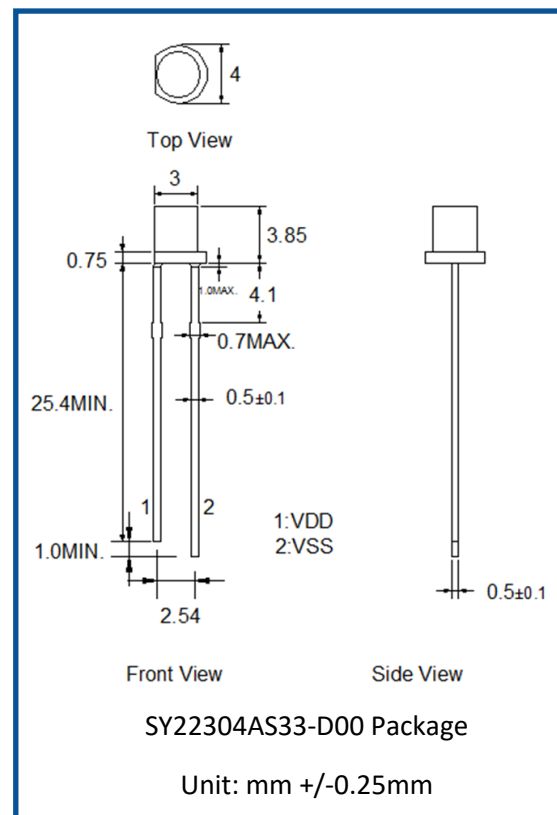
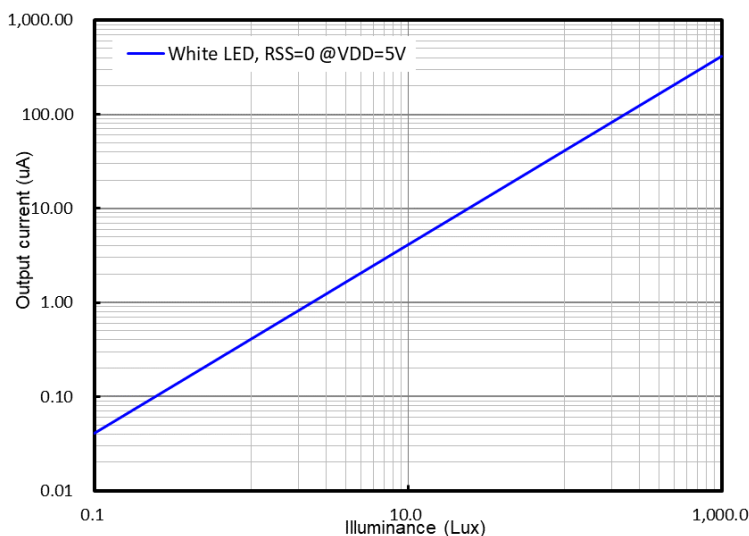
Good Output Linearity

Ultra High Infrared Rejection—*Security Camera applications*

Wide 2V to 12V operation

Transparent Encapsulated Radial Lead package

Output Current Vs. Luminance



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Ambient Light Sensors

Digital ALS for SMART-Dimming applications

Part Number	V _{IN} (V)	100Lux (counts)	I _{dark} (counts)	RANGE (LUX) [counts]	Special Features	Package (mm)	Temp Range (°C)
SY22309AS22-J00	2.3– 3.6	6350	5	16512 [65535]	DUAL PD arrays, I2C control, 6 measurement ranges, 50/60Hz rejection	SMD 2x1.5x0.6	-40 to + 85

FEATURES

21-bit Dynamic Range ADC with 16512 Lux range and 0.0079Lux/count resolution

Matching Human Eye Spectral Response ($\lambda_c = 550\text{nm}$)

Excellent Output Linearity

2 Photo-diode channels allowing determination of light source (ratio of ALS/CLEAR)

ALS: visible light with 6 sensitivity ranges

CLEAR: visible and IR light with 2 ranges

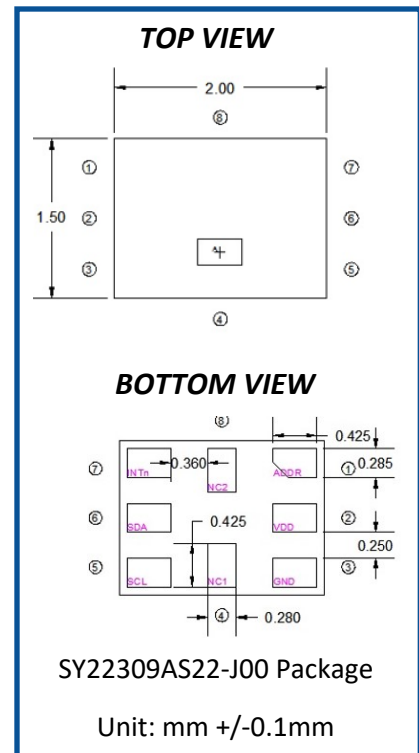
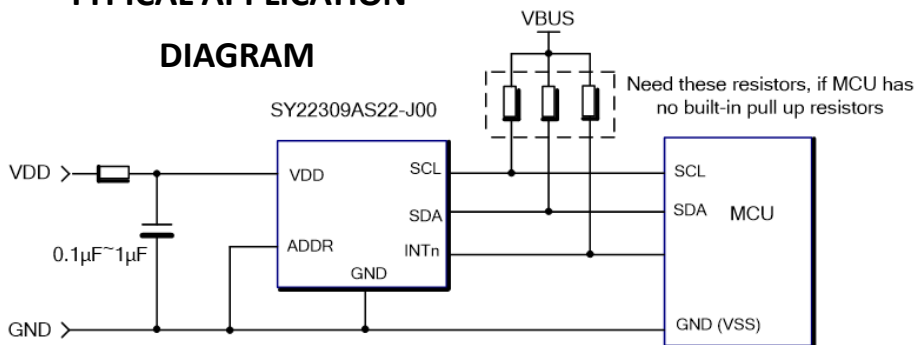
Configurable integration time to filter out 50/60Hz noise artefacts

Configurable High/Low thresholds for Interrupt flag with persistence

SMD Package BT with Transparent Moulding Compound

TYPICAL APPLICATION

DIAGRAM



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