
Anax 產品簡介

- 可見光傳感器 ANX5101 系列



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Anax Technology Corp.



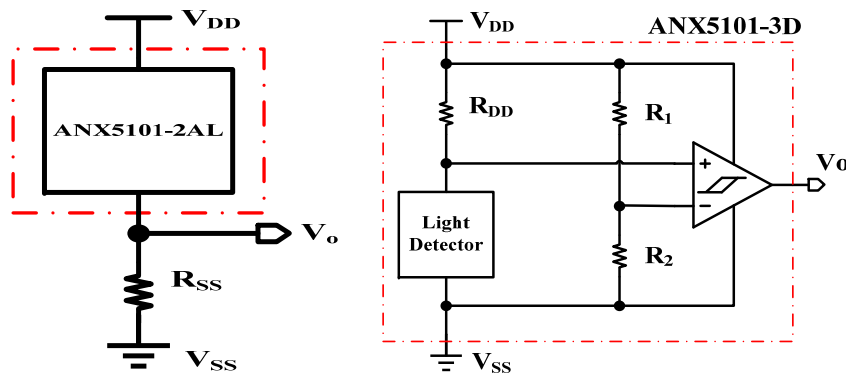
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ANX5101 系列介紹

特性

- 接近人眼对光的反应
- 高红外抑制，不需外加滤光器
- 集成光电流放大器
- 在不同的工作温度，特别是在高温工作时卓越的暗电流特性
- 依据环境光水平变化的高线性输出电流
- 可支持白天/夜间切换决定的数位输出
- 集成的模拟输出缓冲无缝与外部MCU对接
- 高湿度的免疫力



說明

ANX5101系列是高性價比並且不需外置光學濾鏡就可以提供接近人眼的响应和高红外抑的可见光传感器系列。

ANX5101经由和其串接的电阻把光转换成电压。而其动态范围是由电源和外部电阻去决定的(5V电源10KΩ电阻提供了高达160Lux的DR, 如果改用1KΩ的电阻DR可以超过700Lux)。内置内部暗电流消除电路可在高达125°C的工作环境下提供稳定和准确的性能。

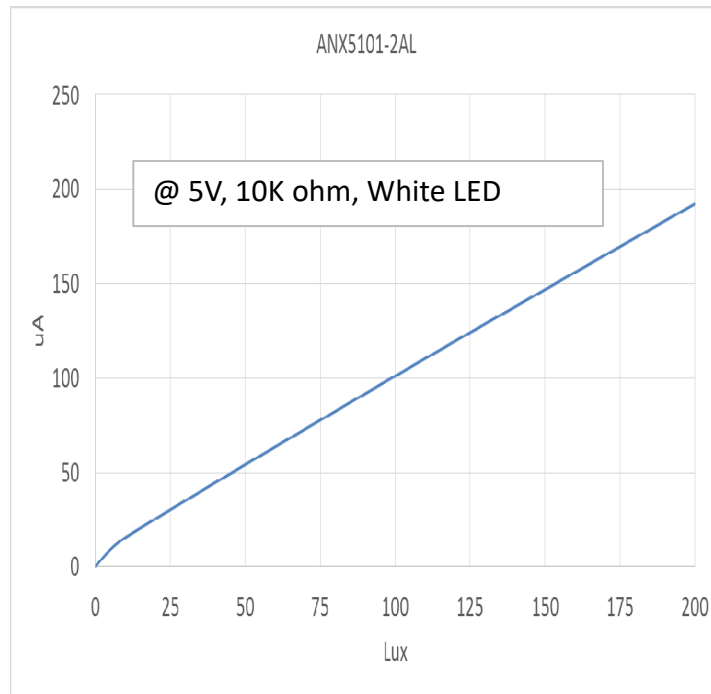
数字输出版本的ANX5101提供了一个BOM成本降低的机会, 同时系统制造商能将他们的PCB板变得更小。

應用

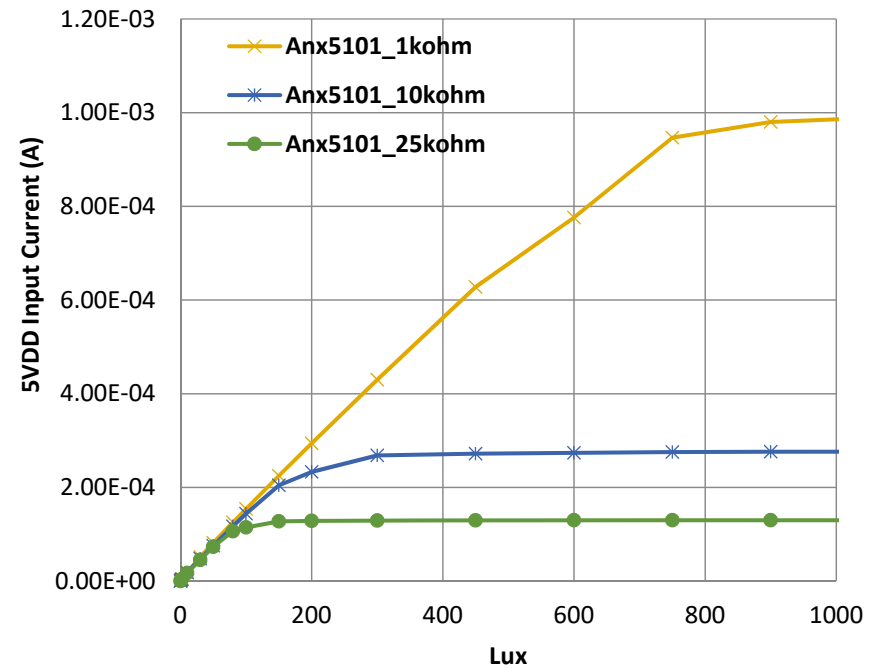
- 黎明/黄昏感应
- 监控摄像机
- 显示背光调节
- 夜灯
- 汽车头灯系统

ANX5101-2AL Light Current Linearity

■ Output current: $1.28 \pm 0.10 \mu\text{A} / \text{Lux}$



■ 5VDD Output Current vs. Lux



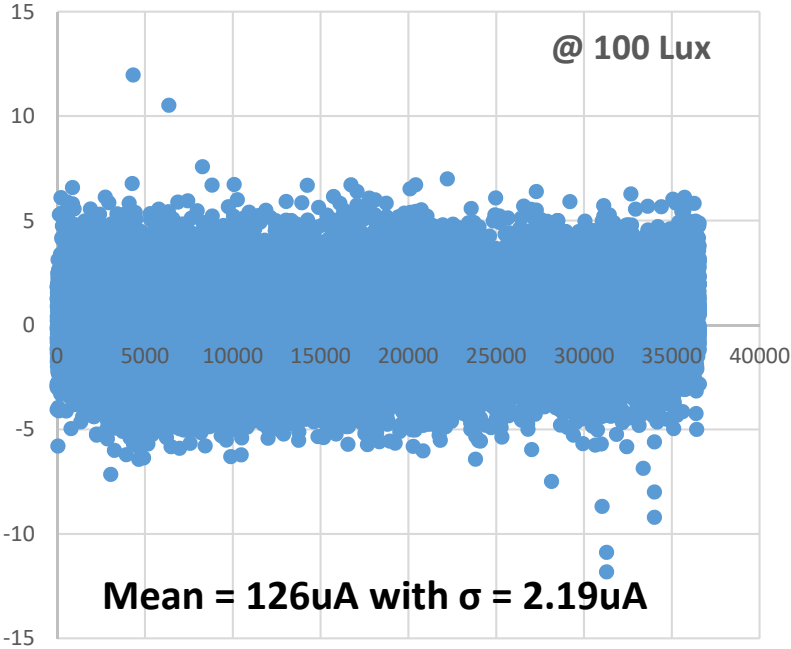
ANX5101 demonstrates good light current linearity over wide lux range

Output Current Variation

■ SemeFab current variation @ 100 Lux

	Options	Ordering Code
Nominal Response	1.25 μ A/Lux	412101-B
	1.0 μ A/Lux	412101E
Die Thickness	300 μ m	G
	525 μ m	NG
Output Current Tolerance	+/- 15%	15
	+/- 25%	25
	+/- 40%	40
Supply Format	Bare die, unsawn wafer	D1
	Bare die, sawn wafer	D2
	LED style package	L
	Surface mount package	S

■ ANX5101-2AL current variation performance

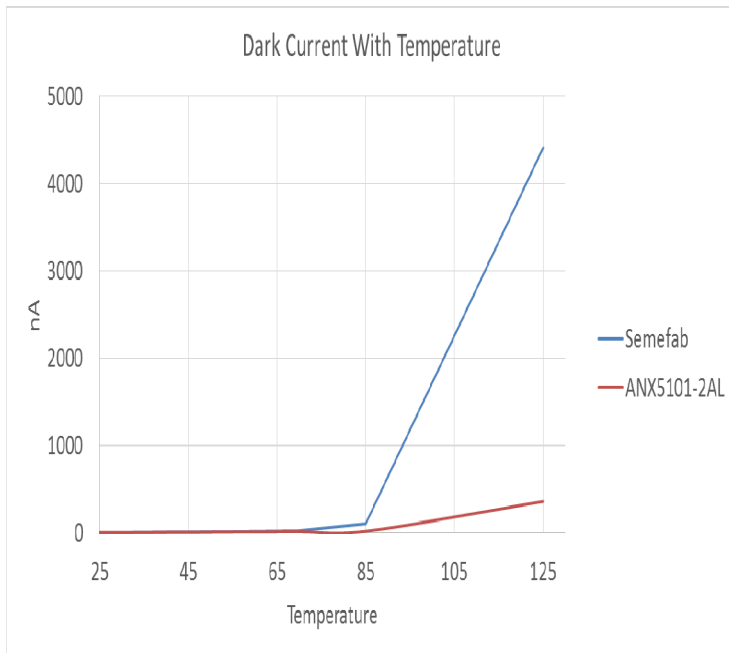


ANX5101 demonstrates much tighter output current variation performance

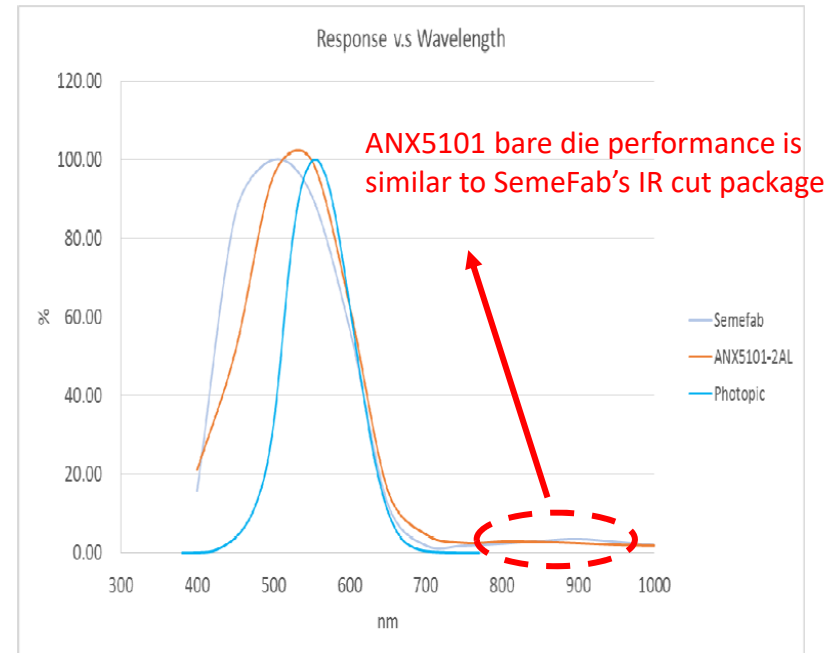


ANX5101-2AL Performance

- Dark current is only 360nA @ 125C



- Photo-spectral response and IR rejection (SemeFab:3φLamp vs. ANX5101-2AL: COB)



ANX5101 demonstrates much lower dark current over temperature and IR sensitivity without IR cut filter/die








Key Features Comparison

Primary Feature	Condition	SemeFab - 3ψ		ANX5101-2AL		
		Sample 1	Sample 2	Sample 1	Sample 2	unit
Light Current (Lux)	10 Lux	14.4	18.12	13.8	14.75	uA
	100 Lux	93.9	114.8	108.8	108.9	uA
	200 Lux	185.9	201.6	207.6	204.6	uA
Dark Current @	25 °C	1.7	1.3	0.25	1	nA
	85 °C	180	100	0.5	18	nA
	125 °C	4800	4410	105	120	nA
Infrared response	940 nm	2.79*	2.41*	2.01**	2.27**	%

* With IR rejection filter performance

** Without IR rejection filter performance (Clear water epoxy)

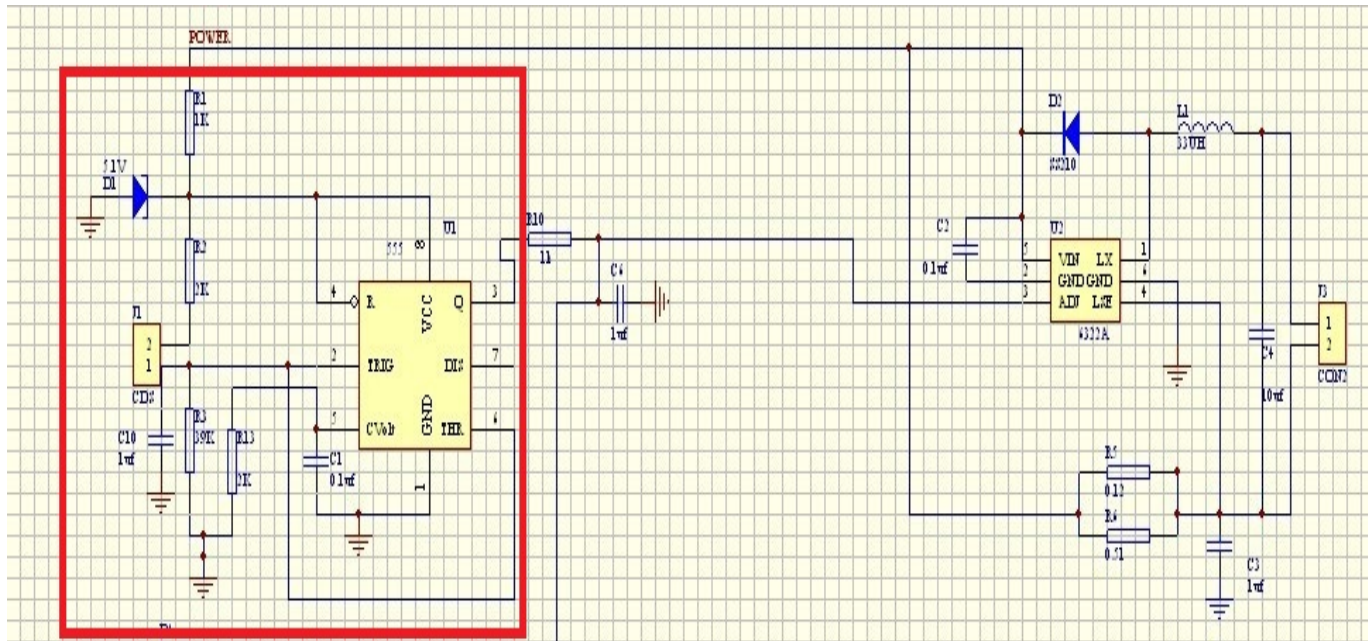
Competitive Analyses with Photo IC

	SemeFab 412101-B	Silergy (AS3101)	ANX5101	Benefit from ANX5101 Series
Max. Rating	10V	6V	12V 	<ul style="list-style-type: none"> Much reliable in typical DC 12V applications
Light Current	~ 1.25uA /Lux	~ 0.48uA /Lux	~ 1.28uA /Lux 	<ul style="list-style-type: none"> More sensitive to Lux
Dark Current	~ 4.4uA @ 125°C	~ 1.99uA @ 125°C	~ 0.36uA @ 125°C 	<ul style="list-style-type: none"> Much robust over wide temperature range
Output Current Variation	+/- 15 ~ 40%	N/A	< +/- 15% 	<ul style="list-style-type: none"> Much accurate system control Simplify stock binning control
Sensitivity	~ 0.01 Lux	~ 0.1 Lux	~ 0.01 Lux 	<ul style="list-style-type: none"> More suitable to lower illuminance condition
IR Rejection	Normal	N/A	Better 	<ul style="list-style-type: none"> BOM cost reduction (IR cut filter/die)
Integration	Low	Low	High 	<ul style="list-style-type: none"> Lower IR LED board BOM cost PCB miniaturization

Competitive Analyses with CdS

	CdS (Light -> Resistance)	ANX5101 Photo IC (Light -> Current)	Remark
Operating Temperature	-30 ~ 70 °C	-40 ~ 125 °C	-
Responsivity Variation @10Lx	+/- 50%	+/- 15%	* CdS typical: 60K ohm (Token PGM5539) * ANX5101 typical: 12.5uA
Gain Linearity Variation (Y variation)	+/- 20% (+/- 0.1)	+/- 10% (+/- 0.04)	Y= log (R@10Lx/R@100Lx) * CdS Y typical: 0.6 ~ 0.8 (by model) * ANX5101 Y typical: 1
Temperature Drift % (20 °C +/- 50 °C)	+/- 30% @ 1 Lux +/- 17% @ 10 Lux +/- 10% @ 100 Lux	< +/- 1% @ 1 Lux < +/- 1% @ 10 Lux < +/- 1% @ 100 Lux	* CdS has high positive temperature coefficient
Dark Responsivity @25°C	2000K ohm	1 nA	* CdS typical: 60K ohm @ 10 Lx (SNR: ~30x) * ANX5101 typical: 1.25uA @ 1 Lx (SNR: ~1000x)
Dark Responsivity @85°C	N/A	18 nA	-
RoHS compliant	No	Yes	-
IR Rejection @700nm	18%	10%	
Integration solution	No	Yes	ANX5101-3D , ANX5101-4D

Integrated Solution for IP CAM Light Board Module



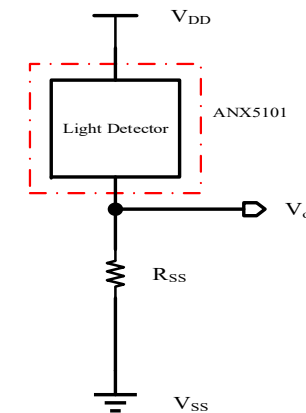
ANX5101-3D = CdS sensor + NE555 Timer + 5.1V Zener + R*4 + C*2

ANX5101-3D has better performance, lower BOM cost & RoHS compliant

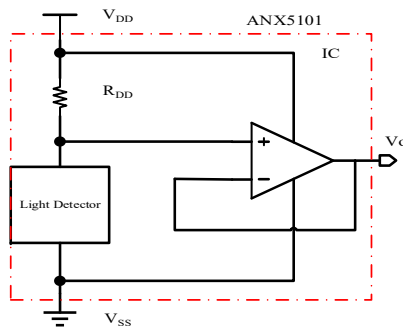
ANX5101 Series Selection Guide

Part No.	Description
ANX5101-2AL	<ul style="list-style-type: none"> Compatible w/ SemeFab 412101B 2-pin Analog-out Low lux detection range
ANX5101-2AH	<ul style="list-style-type: none"> Compatible w/ SemeFab 412102 2-pin Analog-out High lux detection range
ANX5101-3A	<ul style="list-style-type: none"> 3-pin Analog-out w/ buffer capability
ANX5101-3D	<ul style="list-style-type: none"> 3-pin Digital-out w/ 13-Lux hysteresis range (Light threshold : 22 Lux / Dark threshold : 9 Lux)
ANX5101-4D	<ul style="list-style-type: none"> 4-pin Digital-out w/ external threshold setting
ANX5101-4A2S	<ul style="list-style-type: none"> 4-pin Analog-out w/ embedded ALS and IR Sensor

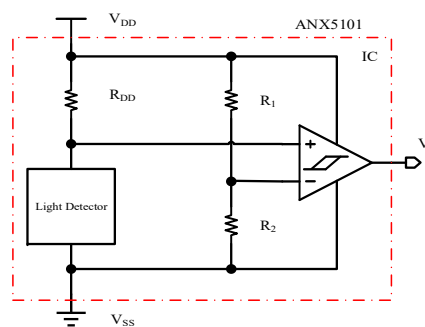
■ ANX5101-2AL, 2AH



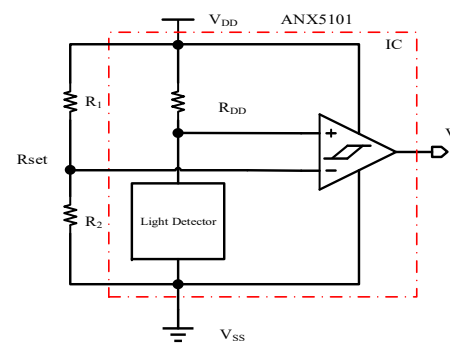
■ ANX5101-3A



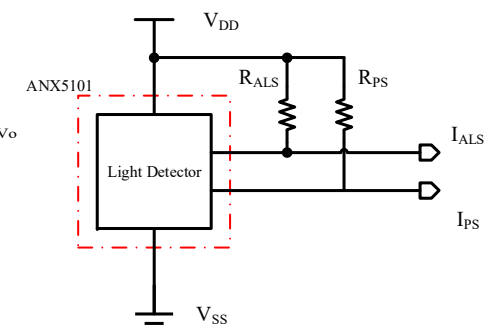
■ ANX5101-3D



■ ANX5101-4D

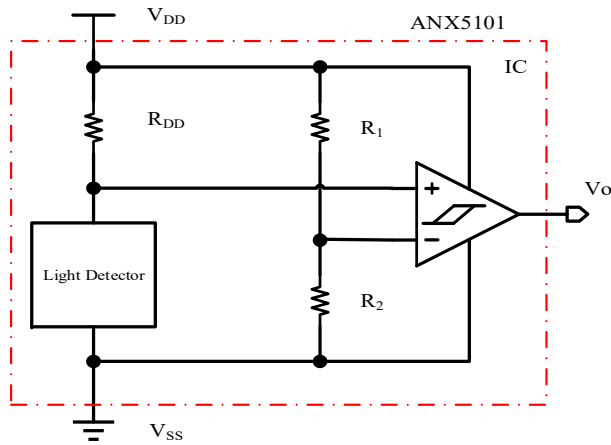


■ ANX5101-4A2S



IR LED ON/OFF Switching Lux

■ ANX5101-3D (VDD, VSS, Vo)



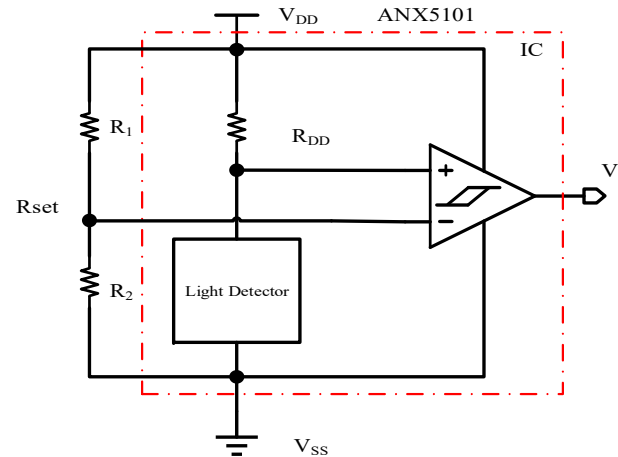
IR LED ON : 9 Lux

IR LED OFF : 22 Lux

* Note1: Custom Threshold (9 & 22 Lux) available

* Note2: 20% variation max.

■ ANX5101-4D (VDD, VSS, Rset, Vo)



IR LED ON : $\frac{31.25 * R_1}{R_1 + R_2} VDD - 6.5$ Lux

IR LED OFF : $\frac{31.25 * R_1}{R_1 + R_2} VDD + 6.5$ Lux

* Note1: Custom delta (6.5 Lux) available

* Note2: 20% variation max.