NOA1305

Ambient Light Sensor with I²C Interface and Dark Current Compensation

Description

October, 2012 − Rev. 0
Publication Order Number:
NOA1305/D

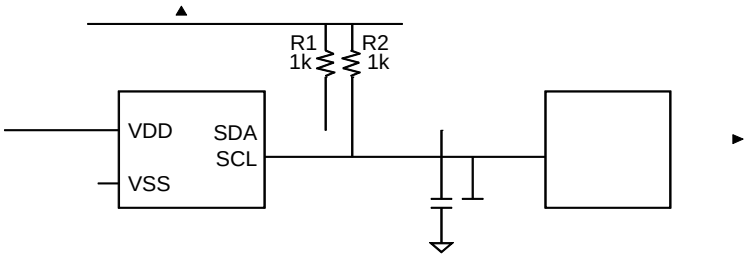


Figure 1. Typical Application Circuit

Table 3. OPERATING RANGES

Rating	Symbol	Standard Mode		Fast Mode		Unit
		Min	Max	Min	Max	
Power supply voltage	VDD	2.4	3.6	2.4	3.6	V
Power supply current	I_{DD}		120		120	A
Quiescent supply current (Note 3)	I_{DD_qe}		2.0		2.0	A
Low level input voltage (VDD related input levels)	V_{IL}	−0.5	0.3 VDD	−0.5	0.3 VDD	V
High level input voltage (VDD related input levels) (Note 4)	V_{IH}	0.7 VDD	VDD + 0.5	0.7 VDD	VDD + 0.5	V
Hysteresis of Schmitt trigger inputs (VDD > 2 V)	V_{hys}	N/A	N/A	0.05 VDD	−	V
Low level output voltage (open drain) at 3 mA sink current (VDD > 2 V)	V_{OL}	0	0.4	0	0.4	V
Output low current (V_{OI}=0.4 V)	I_{OL}	3	N/A	3	N/A	mA
Output low current (V_{OI}=0.6 V)	I_{OL}	N/A	N/A	6	N/A	mA
Output fall time from V_{IHmin} to V_{ILmax} with a bus capacitance, C_b from 10 pF to 400 pF (Note 4)	t_{of}	−	250	$20+0.1C_b$	250	ns
Pulse width of spikes which must be suppressed by the input filter	t_{SP}	N/A	N/A	0	50	ns
Input current of IO pin with an input voltage between 0.1 VDD and 0.9 VDD	I_I	−10	10	−10	10	A
Capacitance on IO pin	C_I	−	10	−	10	pF
Operating free−air temperature range	T_A	−40	85	−40		

Table 5. OPTICAL CHARACTERISTICS
(Unless otherwise specified, these specifications are for VDD = 3.3 V, T_A = 25°C, T_{INT} = 200 ms)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Irradiance responsivity	p (see Figure 5)	R_e		545		nM
Illuminance responsivity	White LED Source: Ev = 100 lux (see Figure 6)	R_{vi100}		154		Counts
	White LED source: Ev = 1000 lux (see Figure 6)	R_{vi1000}		1543		
Dark responsivity	Ev = 0 lux (see Figure 6)	I_{DARK}		0		Counts

Figure 3. AC Characteristics

TYPICAL CHARACTERISTICS

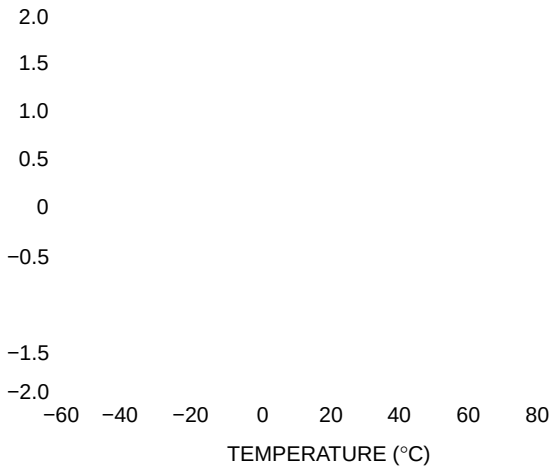
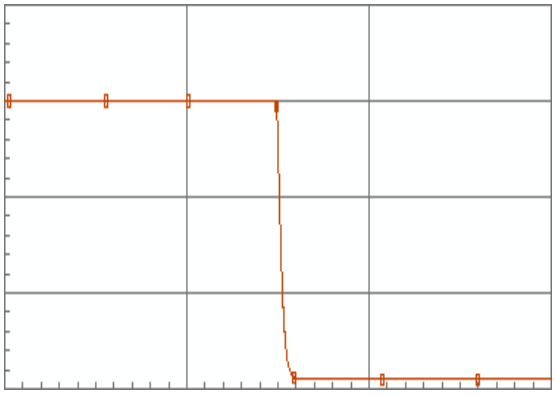


Figure 10. Output Counts vs. Temperature (0 lux)

Figure 11. Output Counts vs. Supply Voltage (100 lux)



NOA1305 Data Registers

Table 6. NOA1305 DATA REGISTERS (Note 7)

Address	Register	Type	Value (binary)	Description	Default (binary)
0x00	POWER_CONTROL	RW	0000 0000	Power Down	0000 1000
			0000 1000	Power On	
			0000 1001	Test Mode 1 (reserved)	
			0000 1010	Test Mode 2 (fixed output 0x5555)	
			0000 1011	Test Mode 3 (fixed output 0xAAAA)	
0x01					

POWER_CONTROL Register (0x00)

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Example Programming Sequence

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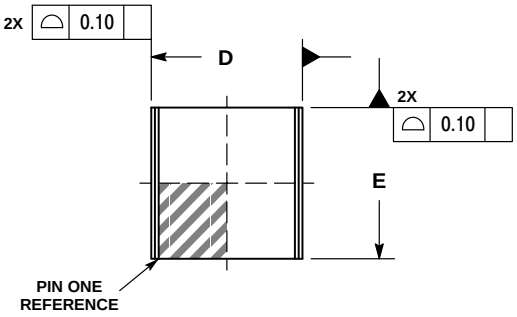
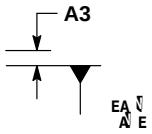
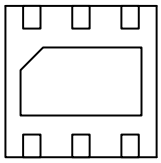
external subroutine I2C_Read_Byte (I2C_Address, Data_Address);
external subroutine I2C_Read_Block (I2C_Address, Data_Start_Address, Count, Memory_Map);
external subroutine I2C_Write_Byte (I2C_Address, Data_Address, Data);
external subroutine I2C_Write_Block (I2C_Address, Data_Start_Address, Count, Memory_Map);
subroutine Initialize_ALS () {
 MemBuf[0x00] = 0x08;   // POWER_CONTROL assert Power On
```

PACKAGE DIMENSIONS

CUDFN6, 2x2
CASE 505AD−01
ISSUE B







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1. A A P A Y14.5 , 1994.
2. : .
3. P A A A 0.15 A 0.30 A P.
4. P A A Y P P P A A A A .

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