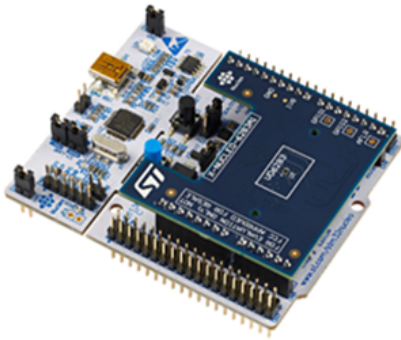# VD6283 Nucleo pack with X-NUCLEO-6283A1 expansion board and STM32-F401RE Nucleo board

Features

- VD6283 6-channel ambient light sensor (ALS) with advanced light flicker extraction expansion board (X-NUCLEO-6283A1)
- STM32F401RE Nucleo board
- Equipped with Arduino® UNO R3 connector
- RoHS compliant
- Full system software (SW) supplied, including code examples and graphical user interface. All this can be downloaded from the VD6283 product page on www.st.com

Description

The P-NUCLEO-6283A1 is a complete evaluation kit allowing anyone to learn, evaluate and develop their application using the VD6283, a color sensor with advanced light flicker frequency extraction.

The VD6283 (1.83 x 1.0 x 0.55 mm) is the smallest 6-channel, ambient light sensor (ALS) on the market. Light measurement is fast and accurate thanks to an individual ADC and readout circuitry for each color channel (Red, Green, Blue, IR, Clear and Visible). The VD6283 uses hybrid color filters with precise responses allowing accurate computation of the correlated color temperature (CCT) and Lux information. The VD6283 can be used for display brightness management or scene light correction. Additionally, the VD6283 can extract light flickering frequencies from 100 Hz to 2 kHz, including LED square signals.

The STM32 Nucleo board, NUCLEO-F401RE, provides an affordable and flexible way for users to try out new ideas and build prototypes with any STM32 microcontroller, choosing from the various combinations of performance, power consumption, and features.

Order code	Description
P-NUCLEO-6283A1/	X-NUCLEO-6283A1 and NUCLEO-F401RE boards

DB4484 - Rev 1 - May 2021
For further information contact your local STMicroelectronics sales office.

www.st.com

1 Board description

1.1 NUCLEO-F401RE board

Information about NUCLEO-F401RE board can be found on www.st.com..

1.2 X-NUCLEO-6283A1 expansion board

The X-NUCLEO-6283A1 expansion board allows the user to test the VD6283 functionality and to program it, which helps understand how to develop an application using the VD6283. It integrates:

- a 1.8 V regulator to supply the VD6283 on the expansion board
- two level shifters to adapt the I/O level to the main board of the microcontroller
- the necessary connectivity for the application

Figure 1. **X-NUCLEO-6283A1 expansion board schematic diagram**
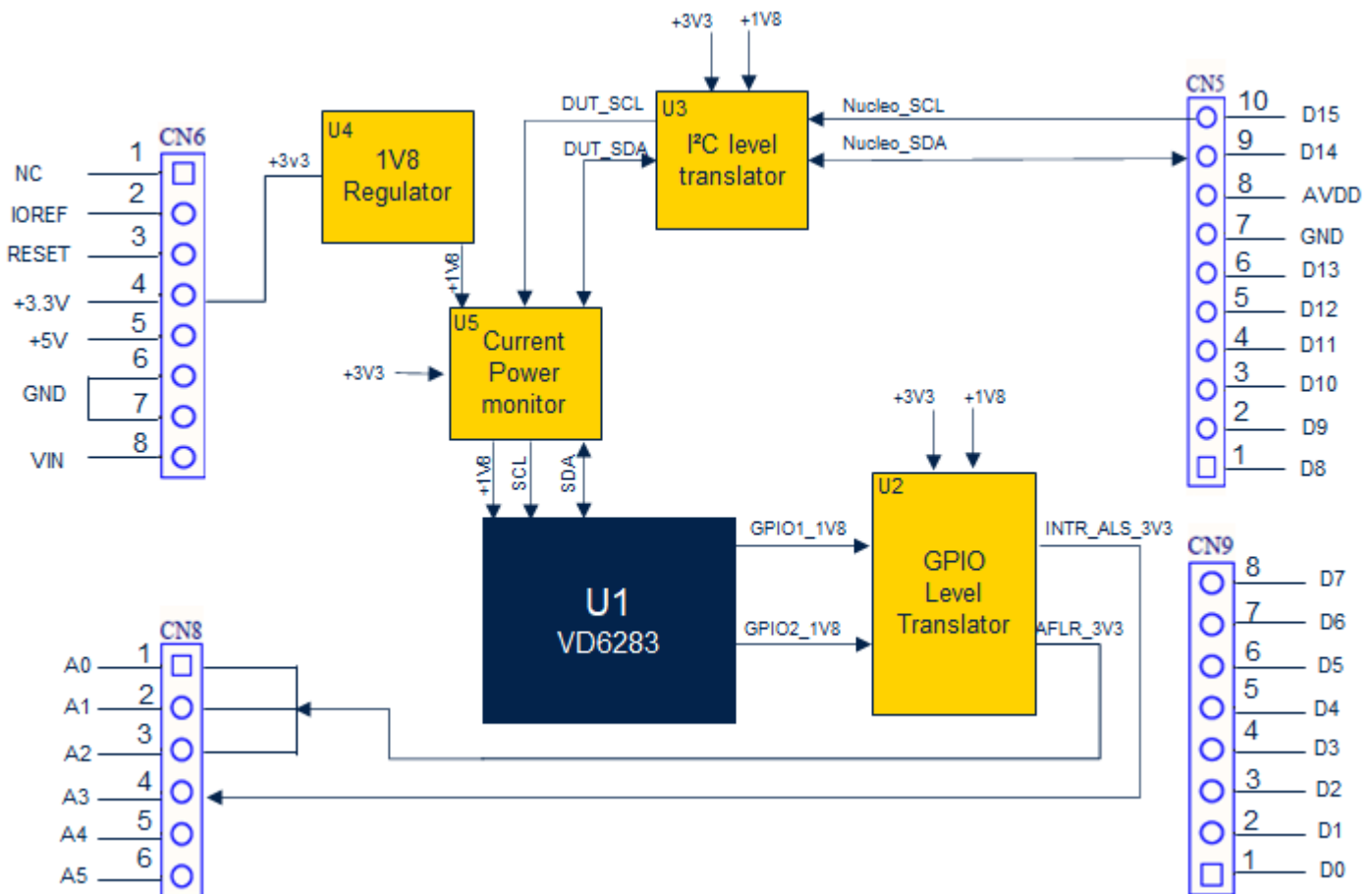
The NUCLEO-F401RE board has to be programmed to control the X-NUCLEO-6283A1 expansion board. The required software is available on www.st.com/en/imaging-and-photonics-solutions/vd6283tx.html.

The X-NUCLEO-6283A1 expansion board and the NUCLEO-F401RE board are connected through the Arduino® compatible connectors CN5, CN6, CN8, and CN9 (see the figure and tables below).

The Arduino connectors on the NUCLEO-F401RE board support the Arduino Uno Revision 3.
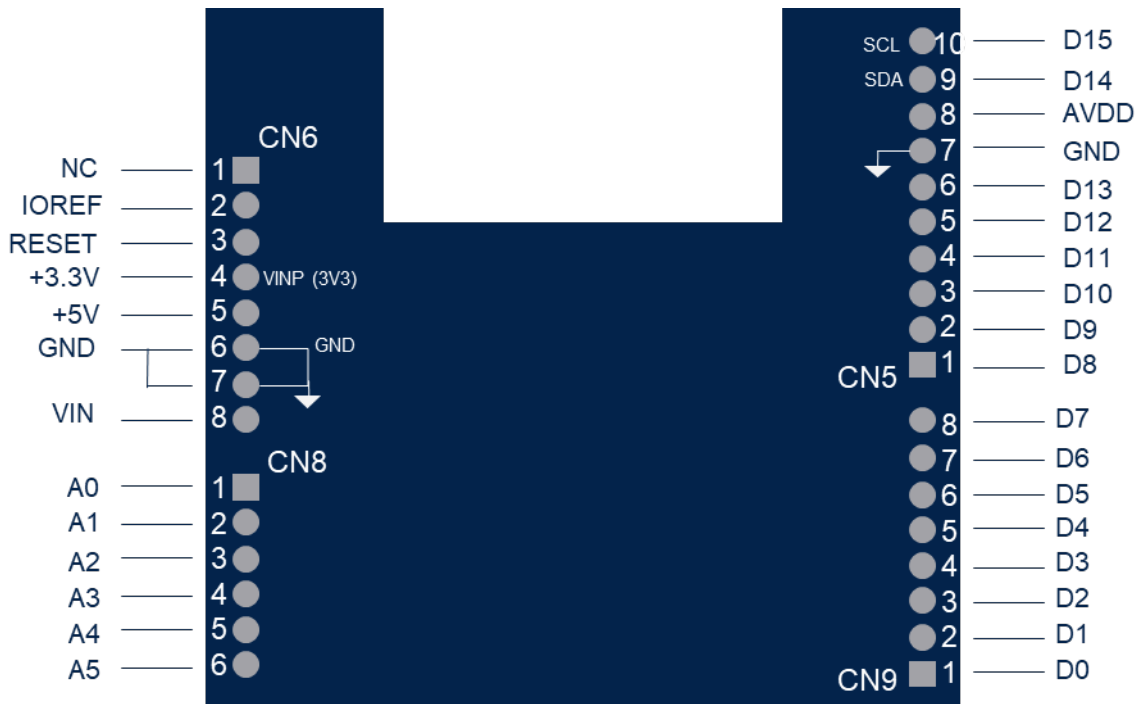
Figure 2. Arduino Uno connector layout

Table 1. Arduino Uno left connector on NUCLEO-F401RE board

CNnumber	VD6283 expansion board	Pin number	Pin name	MCU pin	X-NUCLEO-6283A1 expansion board function
CN6 power		1	NC	NC	Not used
		2		IOREF	
		3		RESET	
	Power	4	3V3	3V3	3.3 V supply
		5	NC	5V	Not used
	GND	6	GND	GND	Ground
		7			
		8	NC	VIN	Not used
CN8 analog	AFLR_ADC	1	A0	PAO	Analog Flicker information from VD6283, to be connected to Host ADC input
		2	A1	PA1	
		3	A2	PA4	
	INTR_ALS_3V3	4	A3	PB0	Interrupt signal from VD6283 device
		5	NC	PC1	Not used
		6	NC	PC0	

Table 2. Arduino Uno right connector on NUCLEO-F401RE board

CNnumber	VD6283 board	Pin number	Pin name	MCU pin	X-NUCLEO-6283A1 expansion board function
CN5 digital	SCL	10	D15	PB8	I2C1_SCL
	SDA	9	D14	PB9	I2C1_SDA
		8	NC	AVDD	Not used
	GND	7	GND	GND	Ground
		6	NC	PA5	Not used
		5	NC	PA6	
		4	NC	PA7	
		3	NC	PB6	
		2	NC	PC7	
		1	NC	PA9	
CN9 digital		8	NC	PA8	Not used
		7	NC	PB10	
		6	NC	PB4	
		5	NC	PB5	
		4	NC	PB3	
		3	NC	PA10	
		2	NC	PA2	
		1	NC	PA3	

2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

Revision history

Table 3. Document revision history

Date	Version	Changes
12-May-2021	1	Initial release