# Sensor Board Guide for the VEML3328

## INTRODUCTION

The VEML3328 sensor board is intended to be used in conjunction with Vishay's SensorXplorer demonstration kit, or as a standalone unit, to evaluate the capabilities of the VEML3328 color sensor.

## SensorXplorer™

The SensorXplorer (Fig. 1) is a demonstration kit designed to help evaluate Vishay's digital sensors featured on Vishay's sensor boards. These boards, along with their respective software modules, can be used to demonstrate and test each sensor's functionalities, allowing the user to quickly understand how various settings affect the sensor's results. The SensorXplorer board includes an USB to I$^2$C interface chip, a 3.3 V regulator, several indicator LEDs, as well as multiple GPIOs to control the functionality of each board and allow data to be read and displayed on a PC. To get an overview of available sensor boards, as well as to download the software modules and board design files, please visit: www.vishay.com/optoelectronics/SensorXplorer. Here you will also find a link next to each board showing its availability at each of our distributors.

Complete information about the SensorXplorer kit as well as all available sensor boards is available at www.vishay.com/optoelectronics/SensorXplorer. The same page also allows you to check inventory of SensorXplorer kits and Vishay sensor boards at our distributors.

The SensorXplorer installation guide is available for download from the following link: www.vishay.com/doc?84922
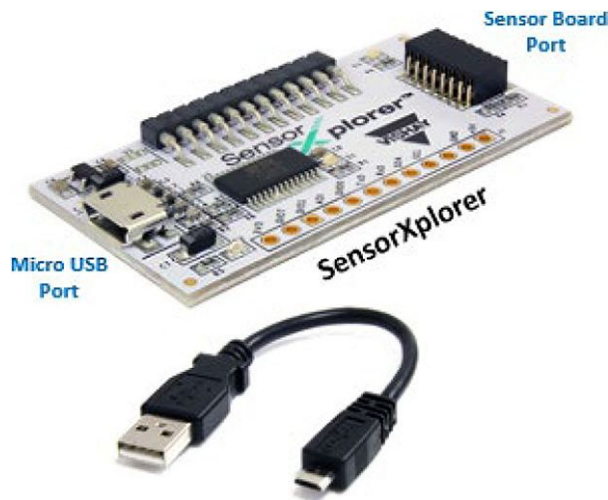


Fig. 1 - SensorXplorer

## USING THE SENSOR BOARD WITH THE SensorXplorer

Following the instructions in the SensorXplorer installation guide, install the SensorXplorer software on your PC, then connect the SensorXplorer evaluation board to your PC and the Vishay sensor board.

The respective demo board software module can then be downloaded from: www.vishay.com/landingpage/SensorXplorer/

Once the module is unzipped the software can be run without the need for further installation.

You are now ready to explore the sensor and its different settings to see how they will work in your application.

## HOW TO USE THE DEMOSOFTWARE

Tabs to switch between the various functions of the software module

Graph plots the results of the active measurement

Controls to change the settings of the color sensor

Displays the measurement results of the different channels

Turn on / off the assembled external white, RGB and infrared LEDs

Controls to active measurements and clear the graph



Fig. 2 - Demosoftware GUI

## USING THE SENSOR BOARD FOR ITSELF

If you want to use the sensor board within your own application and with own self-written software for communication with the sensor you just need to connect the board to power (3.3 V, GND) and the I²C lines (SDA, SCL) as you can see in the figure below.
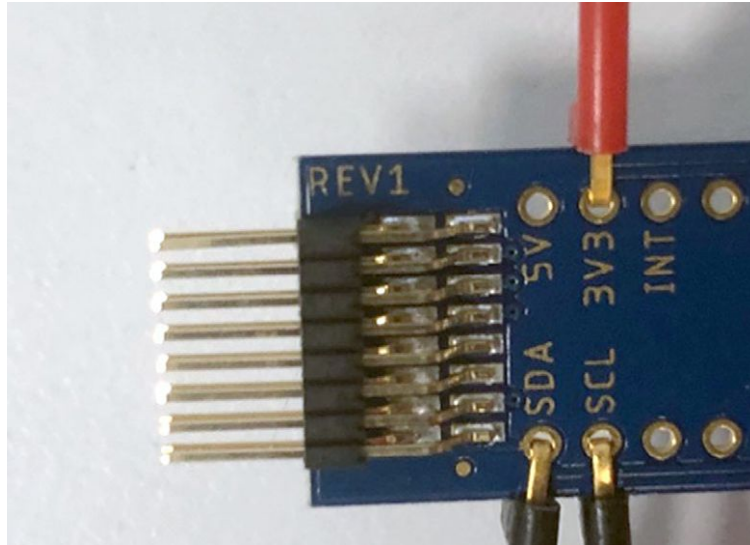


Fig. 3 - Connection of the Sensor Board (power supply and I²C lines)
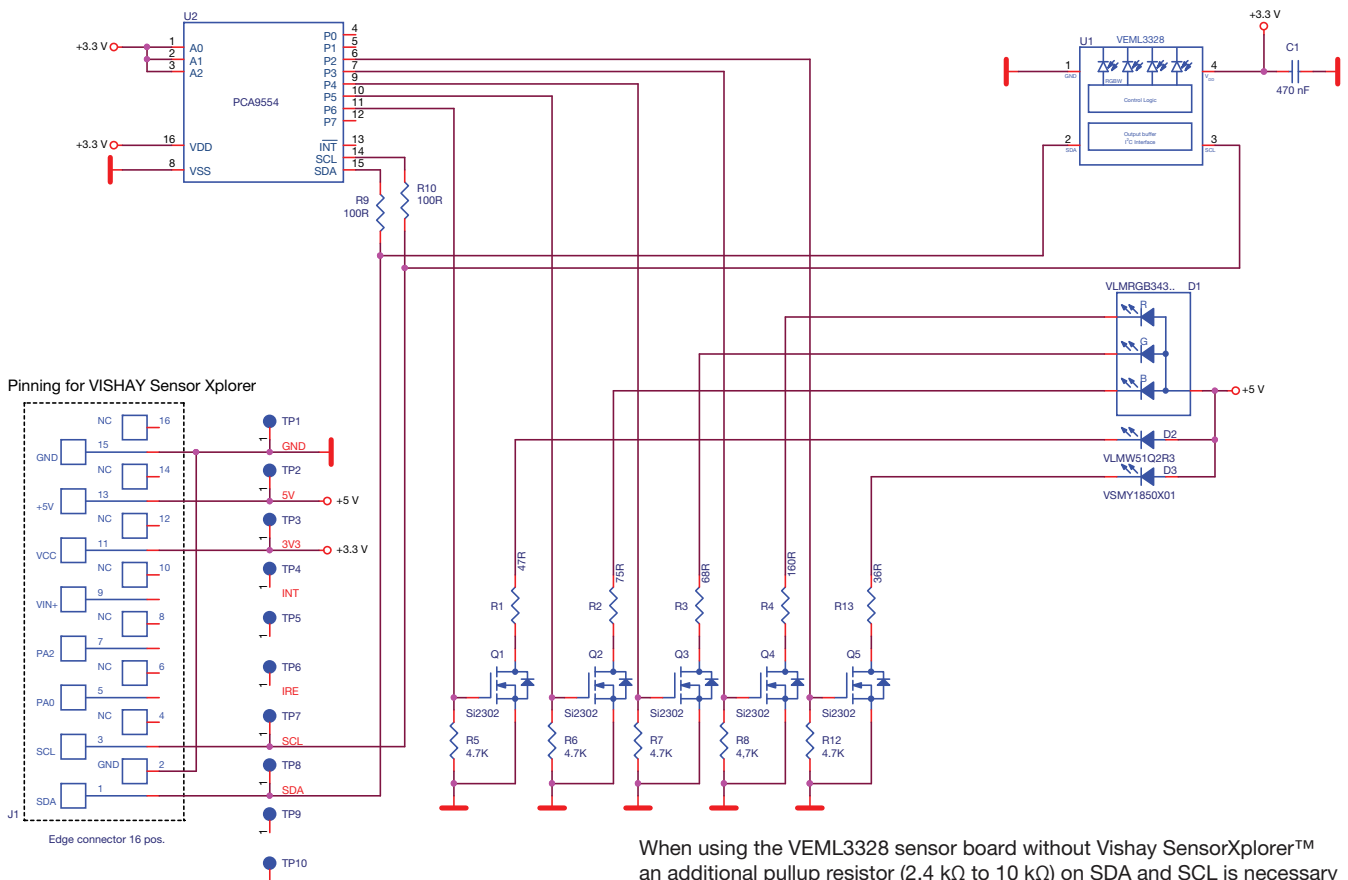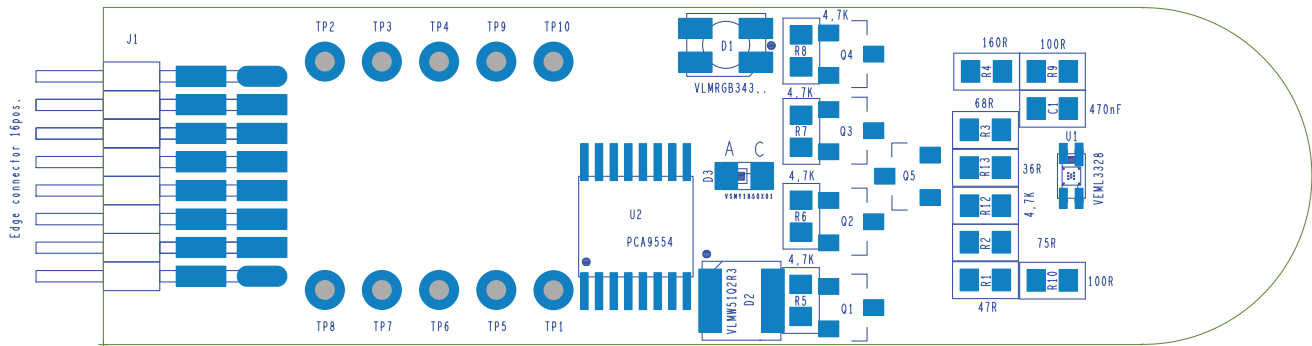
## SCHEMATIC OF THE VEML3328 SENSOR BOARD



When using the VEML3328 sensor board without Vishay SensorXplorer™ an additional pullup resistor (2.4 kΩ to 10 kΩ) on SDA and SCL is necessary

Fig. 4 - Schematic of the VEML3328-SB, Rev. 3

## ASSEMBLY OF THE VEML3328 SENSOR BOARD

VEML3328 sensor board, rev. 3.0



Assembly top

| BILL OF MATERIALS | | | | | |
|---|---|---|---|---|---|
| **ITEM** | **QUANTITY** | **REFERENCE** | **COMPONENT CLASS** | **VALUE** | **PACKAGE** |
| 1 | 1 | C1 | Capacitor NP | 470 nF | SMC0603 |
| 2 | 1 | D1 | LED RGB | VLMRGB343 | PLCC-4 |
| 3 | 1 | D2 | LED white | VLMW51Q2R3 | PLCC-2 plus |
| 3 | 1 | D3 | LED IR 850 nm | VSMY1850X01 | SMD0805 |
| 4 | 1 | R1 | Resistor | 47R | SMR0603 |
| 5 | 1 | R2 | Resistor | 75R | SMR0603 |
| 6 | 1 | R3 | Resistor | 68R | SMR0603 |
| 7 | 1 | R4 | Resistor | 160R | SMR0603 |
| 8 | 1 | R5 | Resistor | 4.7K | SMR0603 |
| 9 | 1 | R6 | Resistor | 4.7K | SMR0603 |
| 10 | 1 | R7 | Resistor | 4.7K | SMR0603 |
| 11 | 1 | R8 | Resistor | 4.7K | SMR0603 |
| 12 | 1 | R9 | Resistor | 100R | SMR0603 |
| 13 | 1 | R10 | Resistor | 100R | SMR0603 |
| 11 | 1 | R12 | Resistor | 4.7K | SMR0603 |
| 11 | 1 | R13 | Resistor | 36R | SMR0603 |
| 14 | 1 | Q1 | Transistor | Si2302 | SMSOT23GSD |
| 15 | 1 | Q2 | Transistor | Si2302 | SMSOT23GSD |
| 16 | 1 | Q3 | Transistor | Si2302 | SMSOT23GSD |
| 17 | 1 | Q4 | Transistor | Si2302 | SMSOT23GSD |
| 17 | 1 | Q5 | Transistor | Si2302 | SMSOT23GSD |
| 19 | 1 | U1 | Sensor | VEML3328 | SMD |
| 18 | 1 | U2 | IC | PCA9554 | TSSOP16 |
| 20 | 1 | J1 | Edge connector | 2 x 8 pos. | SMD header strip |