

# EVBUM2294/D

## PYTHON Image Sensor Evaluation Kits



ON Semiconductor®

[www.onsemi.com](http://www.onsemi.com)

### EVAL BOARD USER'S MANUAL

#### Description

ON Semiconductor PYTHON Image Sensor Evaluation Kits enable customers to easily and quickly evaluate the performance of the PYTHON CMOS Image Sensors without the need to develop a full camera design. When combined with ON Semiconductor Sensor Studio II software, this hardware allows full control of the image sensor's register settings and enables video recording, still image capture, and image analysis. With this level of programmability, CMOS sensor functionality such as global shutter, very fast frame rate, high NIR sensitivity, and multiple regions of interest can be rapidly evaluated.

#### Features

- Full Access to Image Sensor Register Settings
- Supports HDR Operation and ROI Readout
- USB Interface for Sensor Control, Image Capture, and Firmware Downloads
- Socketed Sensor\* for Easy Sensor Replacement
- Integrated Tripod Mount (1/4–20 thread)
- Additional Headboards (sold separately) Allow Evaluation of Multiple PYTHON Products
- Lens Mount Kit (sold separately) Provides Support for C and F Mount Lenses, Includes IR Cut Filter for Color Imaging Evaluation

#### Kit Includes

- Image Capture Board with Integral Tripod Mount
- Headboard (Sensor installed & Lens Mount affixed)
- USB 3.0 Cable (2 meter length)
- Quick Start Guide

\*Not applicable to PYTHON 480 kit

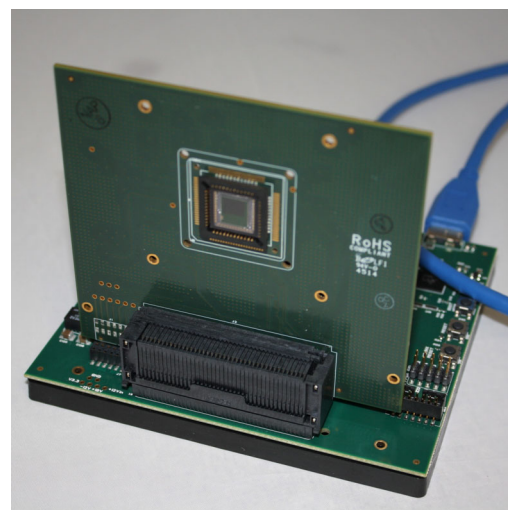


Figure 1. PYTHON Image Sensor Evaluation Board

#### GENERAL SPECIFICATIONS

| Parameter                   | Typical Value                                      |
|-----------------------------|--|
| Hardware Interfaces         | USB 3.0, USB 2.0                                   |
| Typical Data Rate (USB 3.0) | Up to 300 Mb/sec<br>(Varies with USB Adapter used) |

#### KIT SPECIFIC SPECIFICATIONS

| Evaluation Kit                                     | PYTHON 480 | PYTHON 1300 | PYTHON 5000 | PYTHON 25k |
|--|------------|-------------|-------------|------------|
| LVDS Lanes   | 1          | 4           | 8           | 32         |
| Max Frame Rate, Full Resolution (fps)              | 120        | 168         | 82          | 35         |
| Display Frame Rate, Full Resolution, USB 3.0 (fps) | 62         | 26          | 6.8         | 1.6        |
| On Board Buffer Capacity, Full Resolution (Frames) | 256        | 64          | 32          | 8          |
| Included Lens Mount                                | C mount    | C mount     | C mount     | F mount    |
| Compatible with Optional Lens Mount Kit            | No         | Yes         | Yes         | Yes        |

**ORDERING INFORMATION**

| <b>Part Number</b>      | <b>Description</b>  | <b>Compatible Devices<br/>(Sold Separately)</b> |
|-------------------------|---|---|
| NOIP1SN0480A-STI-A-GEVK | PYTHON 480 (SVGA) Monochrome Image Sensor Evaluation Kit (Image Sensor Included)    | N/A   |
| NOIP1SE0480A-STI-A-GEVK | PYTHON 480 (SVGA) Color Image Sensor Evaluation Kit (Image Sensor Included)         | N/A   |
| NOIP1SN1300A-QDI-A-GEVK | PYTHON 1300 (1.3 MP) Monochrome Image Sensor Evaluation Kit (Image Sensor Included) | PYTHON 300, PYTHON 500                          |
| NOIP1SN5000A-QDI-A-GEVK | PYTHON 5000 (5.3 MP) Monochrome Image Sensor Evaluation Kit (Image Sensor Included) | PYTHON 2000 LCC                                 |
| NOIP1SN025KA-GDI-A-GEVK | PYTHON 25K (26.2 MP) Monochrome Image Sensor Evaluation Kit (Image Sensor Included) | PYTHON 10K, PYTHON 12K, PYTHON 16K              |

**OPTIONAL HARDWARE ORDERING INFORMATION**

| <b>Part Number</b>              | <b>Description</b>  | <b>Compatible Devices<br/>(Sold Separately)</b>                 |
|---------------------------------|---|---|
| NOIP1SN0480A-STI-HEAD-BD-A-GEVK | PYTHON 480 Monochrome Headboard (Image Sensor Included)                 | N/A   |
| NOIP1SE0480A-STI-HEAD-BD-A-GEVK | PYTHON 480 Color Headboard (Image Sensor Included)                      | N/A   |
| NOIP-48PIN-HEAD-BD-A-GEVB       | 48-Pin Headboard Only (Image Sensor Not Included)                       | PYTHON 300, PYTHON 500, PYTHON 1300                             |
| NOIP-84PIN-HEAD-BD-A-GEVK       | 84-Pin Headboard Only (Image Sensor Not Included)                       | PYTHON 2000 LCC, PYTHON 5000 LCC                                |
| NOIP-355PIN-HEAD-BD-A-GEVB      | 355-Pin Headboard Only (Image Sensor Not Included)                      | PYTHON 10K, PYTHON 12K, PYTHON 16K, PYTHON 25K                  |
| LENS-MOUNT-KIT-D-GEVK           | Lens Mount Kit to Support C and F Mount Lenses (Includes IR Cut-Filter) | All PYTHON evaluation kits and headboards other than PYTHON 480 |

**REQUIRED HARDWARE AND SOFTWARE**

**Host Computer**

- 2 GHz processor, 8 GB RAM, USB 2.0 / 3.0 interface, Windows 7 and Windows 10 Operating System (64 bit)
- Sensor Studio II software. Available for [download](http://www.onsemi.com) at [www.onsemi.com](http://www.onsemi.com).

**For Maximum Speed**

- Native USB 3.0 chipset

**Other (User Supplied)**

- +12 VDC, 2 Amp, power supply with 2.1 mm center positive DC jack
- Camera lens
- IR cut filter (required for evaluating color image sensors)
- Table-top tripod (optional)

All brand names and product names appearing in this document are registered trademarks or trademarks of their respective holders.

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

The evaluation board/kit (research and development board/kit) (hereinafter the "board") is not a finished product and is as such not available for sale to consumers. The board is only intended for research, development, demonstration and evaluation purposes and should as such only be used in laboratory/development areas by persons with an engineering/technical training and familiar with the risks associated with handling electrical/mechanical components, systems and subsystems. This person assumes full responsibility/liability for proper and safe handling. Any other use, resale or redistribution for any other purpose is strictly prohibited.

The board is delivered "AS IS" and without warranty of any kind including, but not limited to, that the board is production-worthy, that the functions contained in the board will meet your requirements, or that the operation of the board will be uninterrupted or error free. ON Semiconductor expressly disclaims all warranties, express, implied or otherwise, including without limitation, warranties of fitness for a particular purpose and non-infringement of intellectual property rights.

ON Semiconductor reserves the right to make changes without further notice to any board.

You are responsible for determining whether the board will be suitable for your intended use or application or will achieve your intended results. Prior to using or distributing any systems that have been evaluated, designed or tested using the board, you agree to test and validate your design to confirm the functionality for your application. Any technical, applications or design information or advice, quality characterization, reliability data or other services provided by ON Semiconductor shall not constitute any representation or warranty by ON Semiconductor, and no additional obligations or liabilities shall arise from ON Semiconductor having provided such information or services.

The boards are not designed, intended, or authorized for use in life support systems, or any FDA Class 3 medical devices or medical devices with a similar or equivalent classification in a foreign jurisdiction, or any devices intended for implantation in the human body. Should you purchase or use the board for any such unintended or unauthorized application, you shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the board.

This evaluation board/kit does not fall within the scope of the European Union directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and may not meet the technical requirements of these or other related directives.

**FCC WARNING** – This evaluation board/kit is intended for use for engineering development, demonstration, or evaluation purposes only and is not considered by ON Semiconductor to be a finished end product fit for general consumer use. It may generate, use, or radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment may cause interference with radio communications, in which case the user shall be responsible, at its expense, to take whatever measures may be required to correct this interference.

ON Semiconductor does not convey any license under its patent rights nor the rights of others.

**LIMITATIONS OF LIABILITY:** ON Semiconductor shall not be liable for any special, consequential, incidental, indirect or punitive damages, including, but not limited to the costs of requalification, delay, loss of profits or goodwill, arising out of or in connection with the board, even if ON Semiconductor is advised of the possibility of such damages. In no event shall ON Semiconductor's aggregate liability from any obligation arising out of or in connection with the board, under any theory of liability, exceed the purchase price paid for the board, if any.

For more information and documentation, please visit [www.onsemi.com](http://www.onsemi.com).

---

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Email Requests to: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

ON Semiconductor Website: [www.onsemi.com](http://www.onsemi.com)

### TECHNICAL SUPPORT

North American Technical Support:

Voice Mail: 1 800-282-9855 Toll Free USA/Canada

Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А