

KAE-02150 Non-TEC Image Sensor Evaluation Kit

Description

ON Semiconductor KAE-02150 Image Sensor Evaluation Kit enables customers to easily and quickly evaluate the performance of the KAE-02150 and KAE-02152 Interline Transfer EMCCD Image Sensors that do not include an integrated thermoelectric cooler (TEC) without the need to develop a full camera design. ON Semiconductor does provide a kit (part KAE-02150-AB-SD-A-GEVK) to evaluate the KAE-0215x sensor with built in TEC. When combined with ON Semiconductor Sensor Studio II software, this hardware allows easy camera control such as VGA/CDS gains, black levels, Integration time, electron multiplication factor and readout configuration (single dual quad). Image capture and analysis functions such as video recording, still image capture, gain merging algorithm and image analysis are also supported.

Features

- Compatible with KAE-02150 and KAE-02152 Interline Transfer EMCCD Image Sensors
- Kit Includes Monochrome KAE-02150 Image Sensor
- ADDI7015 Analog Front End
- Three Operating Modes Supported:
 - ◆ Normal: All Signal Routed to Standard CCD Output
 - ◆ EM: All Charge Routed to Electron Multiplication Output
 - ◆ Mixed: Intra-scene Switchable Gain Routes Charge Based on Signal Intensity
- USB Interface for Sensor Control, Image Capture, and Firmware Downloads
- Field Updating of Firmware via Sensor Studio II
- Socketed Sensor for Easy Sensor Replacement, allowing Evaluation of KAE-02150 and KAE-02152 Variants
- Includes Mount for C Lens
- Integrated Tripod Mount (1/4-20 Thread)
- Multi-stage Thermoelectric Cooler Module Included. TE Controller not Included
- Optional Lens Mount Kit (not Included) Supports C and F Mount Lens and Includes an IR Cut Filter for Color Imaging Evaluation



ON Semiconductor®

www.onsemi.com

EVAL BOARD USER'S MANUAL

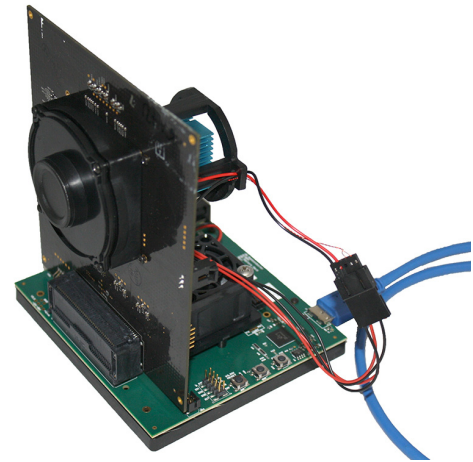


Figure 1. Evaluation Board Picture

Kit Includes

- Image Capture Board with Integral Tripod Mount
- Headboard (Sensor installed and Lens Mount Affixed)
- Dual-stage Thermoelectric Cooler Module (PN: TE Technology TE-2-(127-127)-1.3)
- USB 3.0 Cable (2 meter Length)
- Quick Start Guide
- User's Manual Available in Sensor Studio II Help Section

EVBUM2303/D

Parameter	Typical Value
Hardware Interfaces	USB 3.0, USB 2.0
Typical Data Rate (USB 3.0)	71 MB/sec
Sensor Output Pixel Rate / AFE Data Rate	Analog 20/40 MHz / LVDS 120/240 MHz
Sensor Frame Rate (Full Resolution with USB 3.0): Normal Operation (40 MHz) EM and Mixed Modes (20 MHz)	(single / dual / quad) 14 / 24 / 50 fps 7 / 12 / 25 fps
Display Frame Rate (Full Resolution with USB 3.0): Normal Operation (40 MHz) Intra Scene (20 MHz)	(single / dual / quad) 7 / 12 / 26 fps 4 / 6 / 13 fps
On Board Frame Buffer Capacity: 2 Mp	64 frames
Optics	Includes mount for C lenses, Compatible with optional lens mount kit

ORDERING INFORMATION

Part Number	Description	Compatible Image Sensors (sold separately)
KAE-02150-AB-A-GEVK	KAE-02150 (2 Mp) monochrome image sensor evaluation kit (KAE-02150 image sensor included)	KAE-02150 KAE-02152

OPTIONAL HARDWARE ORDERING INFORMATION

Part Number	Description	Compatible Image Sensors (sold separately)
KAE-02150-FBB-JP-EE	KAE-02150 Bayer color image sensor	N/A
KAE-02152-ABB-JP-EE	KAE-02152 monochrome image sensor	N/A
KAE-02152-FBB-JP-EE	KAE-02152 Bayer color image sensor	N/A
LENS-MOUNT-KIT-D-GEVK	Lens mount kit to support C and F mount lenses (includes IR cut-filter)	N/A

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 at 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)
- TE Controller (tested with TE Technology models TC-48-20 and TC-720)

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. 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.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative