

# AR0144CS IAS Module

## Prototype 1/4-inch 1.0Mp Global Shutter Module

### Advance Information

#### IAS1MOD-AR0144CSSM080210

The AR0144 1MP IAS module is part of the ON Semiconductor IAS family of modules offering standardized connectors, layout configuration and OTPM protocol. The modules are compatible with Evaluations systems and reference designs offered by ON Semiconductor. The modules are offered from ON Semiconductor as prototype modules not meant for customer production shipments. Customer can work with On Semiconductor Distribution partners for equivalent mass production versions of these modules.

#### Applications

- Machine vision
- Robotics
- Smart Building
- Industrial
- Consumer

Table 1. KEY PERFORMANCE PARAMETERS

Parameter	Value
<b>Sensor</b>	
Sensor Part Number	AR0144CSSM28SUD20
<b>FUNCTIONAL</b>	
Output	Raw
CFA	Mono
Max. fps	60 fps @ 1280 x 800
Interface	2-lane MIPI
<b>MECHANICAL</b>	
Module size X*Y*Z(mm)	9.5 x 24.8 x 3.91
<b>OPTICAL</b>	
Optical Format	1/4"
Image active resolution	1280 (H) x 800 (V) = 1.0 Mp
Pixel size	3.0 $\mu\text{m}$
Focus Range	24 cm~Inf
Hyperfocal Distance	50 cm
Effective Focal Length (EFL)	2.48 mm
Lens F number	2.2
Lens Structure	4P
Diagonal Filed of View (DFOV)	84.1°
Vertical Field of View (VFOV)	51.2°
Horizontal Field of View (HFOV)	75.0°
TV distortion	$\leq 1.0\%$
<b>ELECTRICAL</b>	
Supply voltages	VDDIO: 1.8 V or 2.8 V VDD: 1.2 V VAA: 2.8 V



ON Semiconductor®

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

## EVAL BOARD USER'S MANUAL



This document contains information on a new product. Specifications and information herein are subject to change without notice.

# IAS1MOD-AR0144CSSM080210

**Table 1. KEY PERFORMANCE PARAMETERS**

Parameter	Value
<b>ELECTRICAL</b>	
I2C Pull-up Resistor in Module (Note 1)	2.2k
<b>PROGRAMMABLE STORAGE</b>	
This module has programmable storage.	EEPROM/OTPM is programmed per IAS programming specifications. Please refer to the IAS Module EEPROM and OTPM Application note (AND9865/D) for more information.

1. ON Semiconductor recommends that host sites add a 1.5K pull-up resistor.

**Table 2. ORDERING INFORMATION**

Part Number	Orderable Product Attribute Description
IAS1MOD-AR0144CSSM080210-GEVB	AR0144 1MP 1/4" Mono 28° CRA Die in IAS module with 84.1° DFOV Lens
IAS1-ADPTR-DM3D1-GEVB	Adapter Board to Demo3, DevWareX Supported

**Table 3. MODULE CONNECTOR PINOUT**

Pin Number	Pin Name	Pin Number	Pin Name
1	VPP	34	SADDR
2	GND	33	GND
3	GND	32	EXTCLK
4	DATA_1P	31	GND
5	DATA_1N	30	DATA_2P
6	GND	29	DATA_2N
7	CLK_P	28	GND
8	CLK_N	27	NC
9	GND	26	NC
10	NC	25	GND
11	NC	24	VDD
12	GND	23	VDD
13	VDDIO	22	SDATA
14	SCLK	21	RESET
15	FLASH	20	TRIGGER
16	GND	19	GND
17	VAA	18	VAA

# IAS1MOD-AR0144CSSM080210

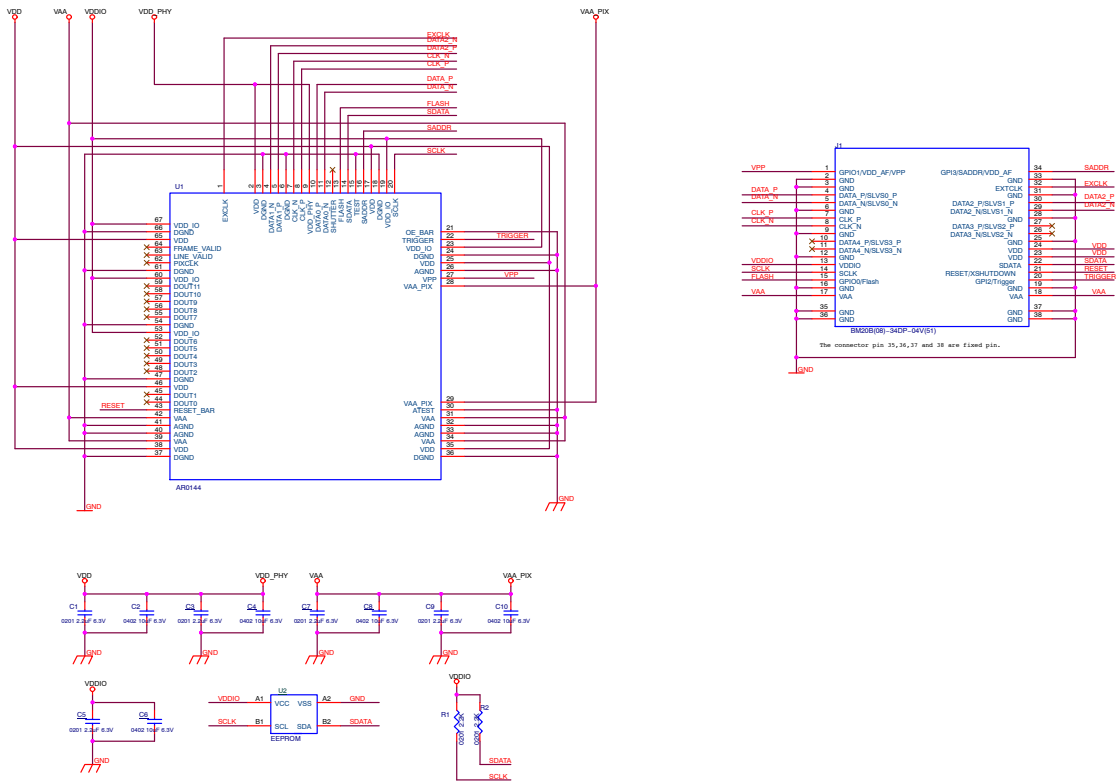


Figure 1. Typical Connections

# IAS1MOD-AR0144CSSM080210

## MODULE CONNECTOR

Part Number	Number of Pins	A	B	C
BM20B(0.8)-34DP-0.4V(51)	34	9.28	6.4	8.82

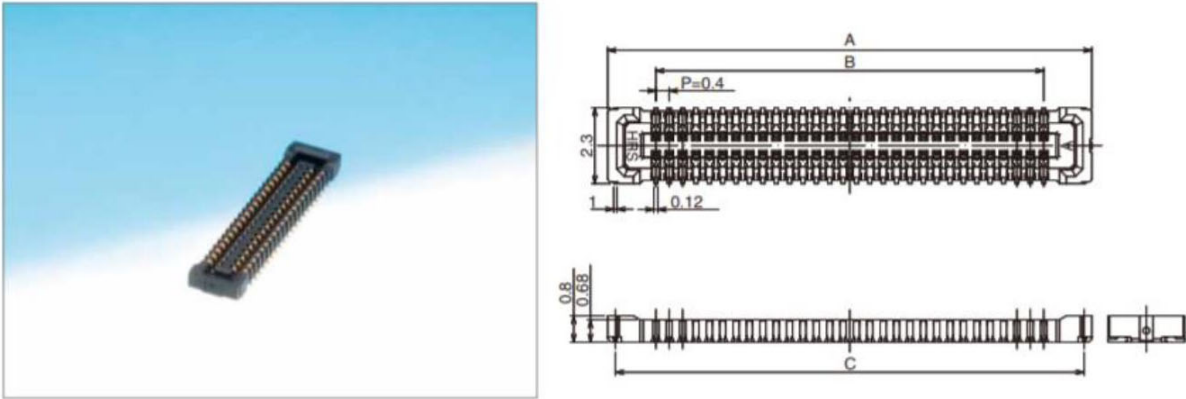
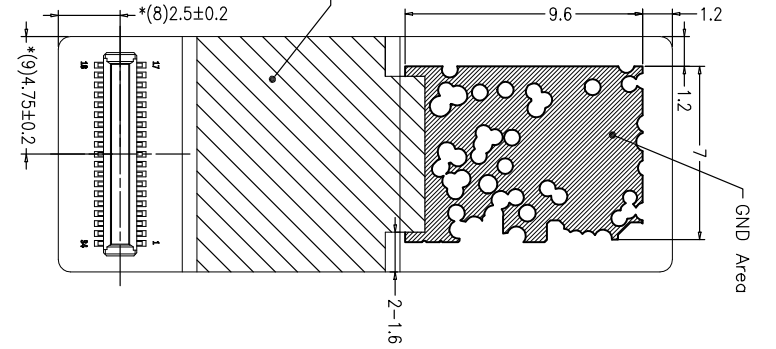
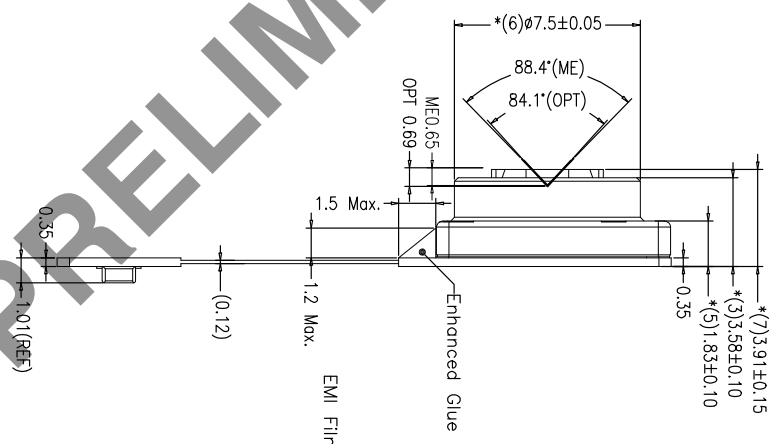
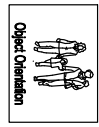
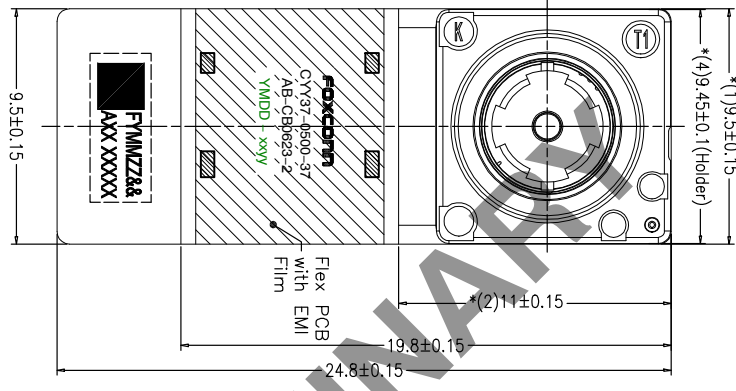
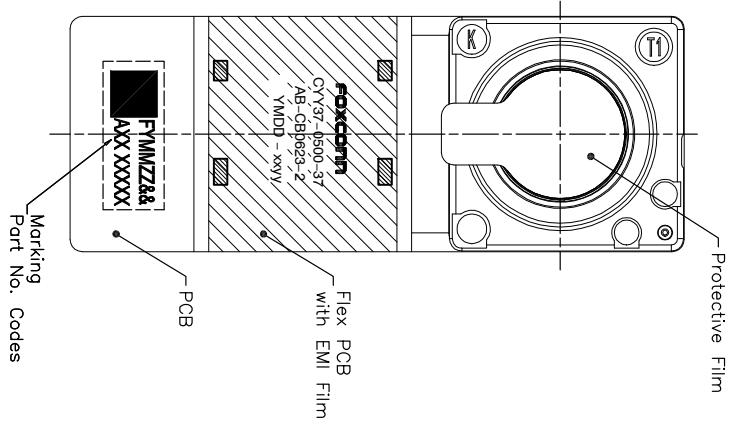


Figure 2.

MECHANICAL DIMENSIONS



- NOTES:
1. SYMBOL \* ( ) IS THE CRITICAL DIMENSION.
  2. THE FPCB FINGER DIMENSIONS FOLLOW CONNECTOR SPECIFICATION.
  3. CONNECTOR: HRS BM208(0.8)-34DP-0.4V(51)
  4. SENSOR: ON SEMICONDUCTOR AR-0144CS 1M HD MONO.
  5. LENS: EP-D432-F05

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