

# MT9P004EBMSTCBH-GEVB

## MT9P004 Evaluation Board User's Manual



ON Semiconductor®

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

### EVAL BOARD USER'S MANUAL

#### Evaluation Board Overview

The evaluation boards are designed to demonstrate the features of ON Semiconductor's image sensors products. This headboard is intended to plug directly into the Demo 2X system. Test points and jumpers on the board provide access to clock, I/Os and other miscellaneous signals.

#### Features

- Clock Input
  - ♦ Default – 24 MHz crystal oscillator
  - ♦ Optional Demo 2X controlled MCik
- Two Wire Serial Interface
  - ♦ Selectable base address
- Parallel Interface
- MIPI Interface
- ROHS Compliant



Figure 1. MT9P004 Evaluation Board

#### Block Diagram

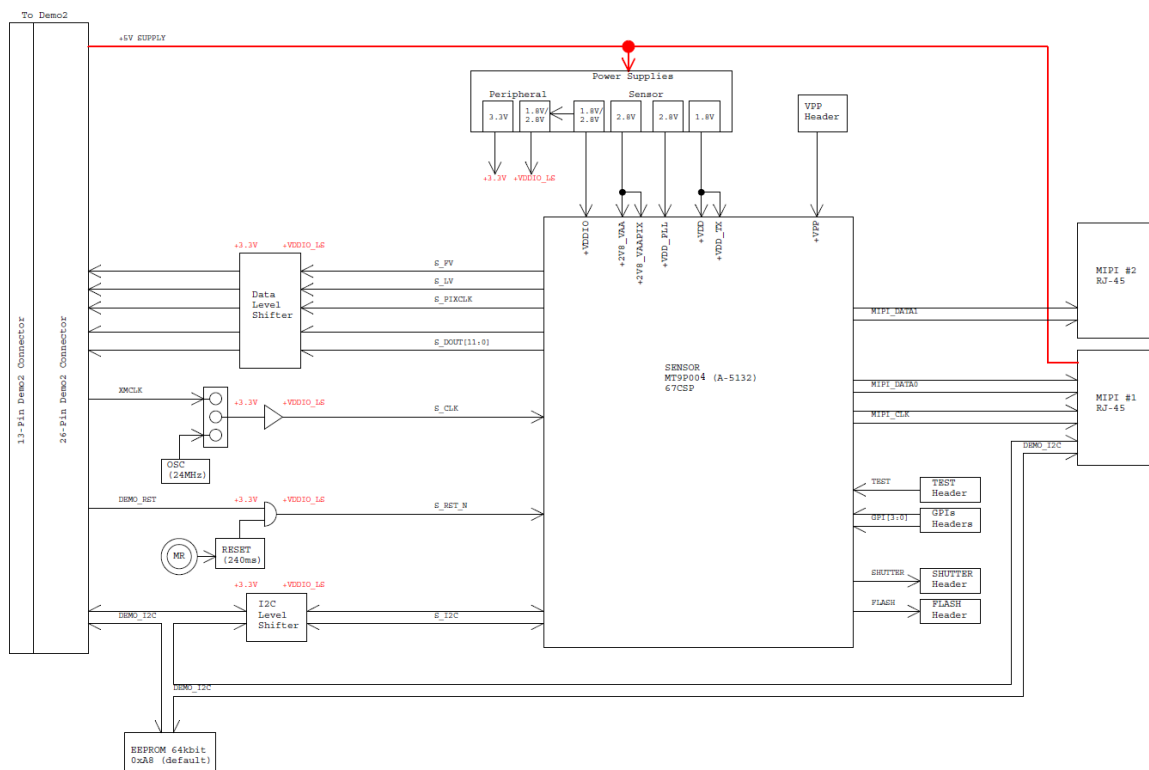


Figure 2. Block Diagram of MT9P004EBMSTCBH-GEVB

# MT9P004EBMSTCBH-GEVB

## Top View

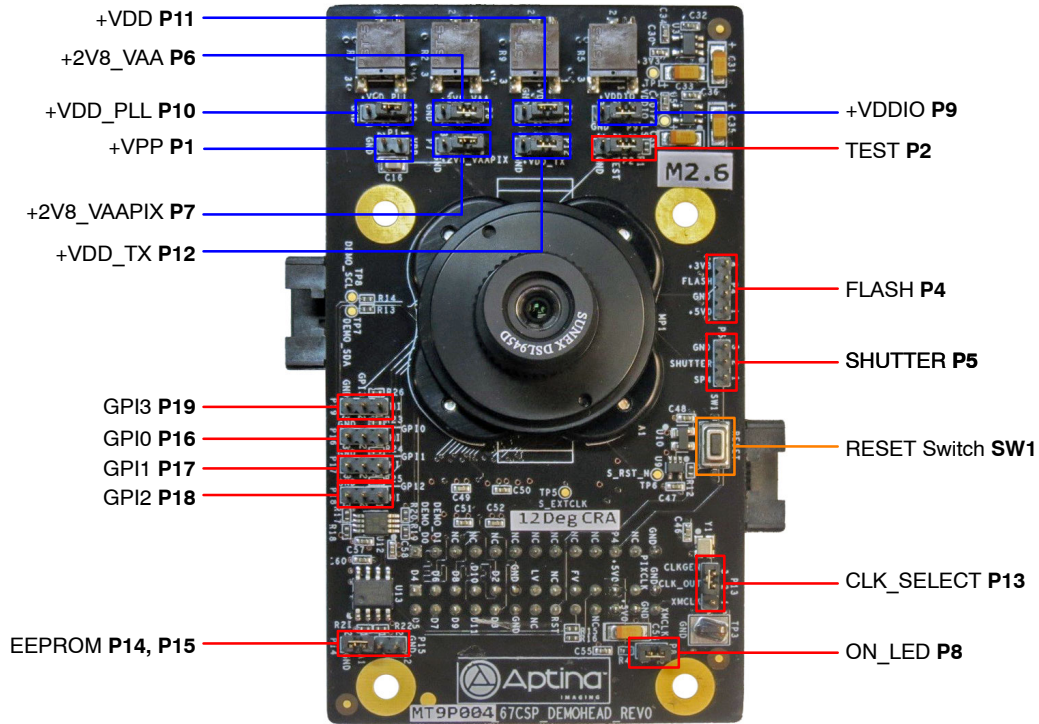


Figure 3. Top View of Evaluation Board – Default Jumpers

## Bottom View

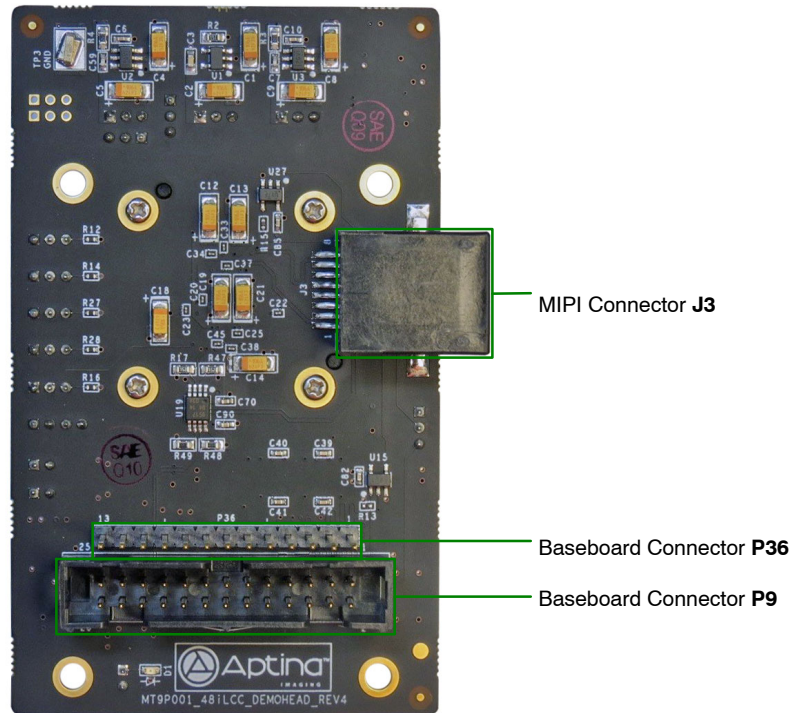
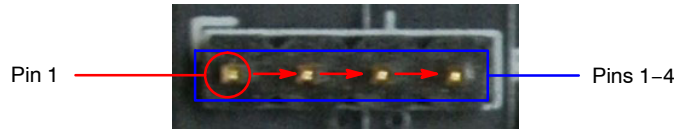


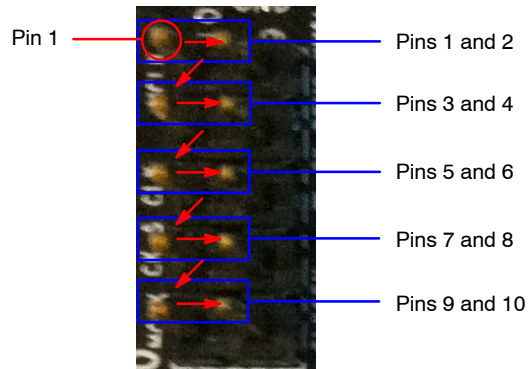
Figure 4. Bottom View of the Evaluation Board – Connector

## Jumper Pin Locations

The jumpers on headboards start with Pin 1 on the leftmost side of the pin. Grouped jumpers increase in pin size with each jumper added.



**Figure 5. Pin Locations for a Single Jumper.**  
Pin 1 is Located at the Leftmost Side and Increases as it Moves to the Right



**Figure 6. Pin Locations and Assignments of Grouped Jumpers.**  
Pin 1 is Located at the Top-Left Corner and Increases in a Zigzag Fashion Shown in the Picture

## Jumper/Header Functions & Default Positions

**Table 1. JUMPERS AND HEADERS**

Jumper/Header No.	Jumper/Header Name	Pins	Description
P1	+VPP	Open (Default)	For connection to external 6.5~7.0 V +VPP power supply for OTPM
P2	TEST	1-2 (Default)	Configure to MIPI
		2-3	Configure to CCP2
P4	FLASH	Open (Default)	For connection to external flash
P5	SHUTTER	Open (Default)	For connection to external shutter
P6	+2V8_VAA	1-2 (Default)	Connects to on-board +2V8_VAA power supply
		2-3	External power supply connection
P7	+2V8_VAAPIX	1-2 (Default)	Connects to on-board +2V8_VAAPIX power supply
		2-3	External power supply connection
P8	ON_LED	1-2 (Default)	Turn on +5V bus LED indicator
		2-3	Turn on +5V bus LED indicator
P9	+VDDIO	1-2 (Default)	Connects to on-board +VDDIO power supply
		2-3	External power supply connection
P10	+VDD_PLL	1-2 (Default)	Connects to on-board +VDD_PLL power supply
		2-3	External power supply connection
P11	+VDD	1-2 (Default)	Connects to on-board +VDD power supply
		2-3	External power supply connection

Table 1. JUMPERS AND HEADERS (continued)

Jumper/Header No.	Jumper/Header Name	Pins	Description
P12	+VDD_TX	1-2 (Default)	Connects to on-board +VDD_TX power supply
		2-3	External power supply connection
P13	CLK_SELECT	2-3 (Default)	Connects to on-board oscillator
		1-2	Connects to XMCLK from Demo 2X Baseboard
P14, P15	EEPROM ADDR	P14 Closed, P15 Open (Default)	EEPROM Address set to 0xA8
		P14 Open, P15 Open	EEPROM Address set to 0xAC
		P14 Open, P15 Closed	EEPROM Address set to 0xA4
		P14 Closed, P15 Closed	EEPROM Address set to 0xA0
P16	GPI0	Open (Default)	For various sensor's settings/connection to external peripherals
P17	GPI1	Open (Default)	For various sensor's settings/connection to external peripherals
P18	GPI2	Open (Default)	For various sensor's settings/connection to external peripherals
P19	GPI3	Open (Default)	For various sensor's settings/connection to external peripherals
SW1	RESET	N/A	When pushed, 240 ms reset signal will be sent to MT9P004

**Interfacing to ON Semiconductor Demo 2X Baseboard**

The ON Semiconductor Demo 2X baseboard has a similar 26-pin connector and 13-pin connector which mate with P9

and P36 of the headboard. The four mounting holes secure the baseboard and the headboard with spacers and screws.

**onsemi**, **onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'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). **onsemi** 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 not available for sale to consumers. The board is only intended for research, development, demonstration and evaluation purposes and will 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 PROVIDED BY ONSEMI TO YOU "AS IS" AND WITHOUT ANY REPRESENTATIONS OR WARRANTIES WHATSOEVER. WITHOUT LIMITING THE FOREGOING, ONSEMI (AND ITS LICENSORS/SUPPLIERS) HEREBY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES IN RELATION TO THE BOARD, ANY MODIFICATIONS, OR THIS AGREEMENT, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY AND ALL REPRESENTATIONS AND WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT, AND THOSE ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE CUSTOM OR TRADE PRACTICE.**

**onsemi** 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 **onsemi** shall not constitute any representation or warranty by **onsemi**, and no additional obligations or liabilities shall arise from **onsemi** having provided such information or services.

**onsemi** products including 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. You agree to indemnify, defend and hold harmless **onsemi**, its directors, officers, employees, representatives, agents, subsidiaries, affiliates, distributors, and assigns, against any and all liabilities, losses, costs, damages, judgments, and expenses, arising out of any claim, demand, investigation, lawsuit, regulatory action or cause of action arising out of or associated with any unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of any products and/or 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 **onsemi** 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.

**onsemi** does not convey any license under its patent rights nor the rights of others.

**LIMITATIONS OF LIABILITY:** **onsemi** 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 **onsemi** is advised of the possibility of such damages. In no event shall **onsemi**'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.

The board is provided to you subject to the license and other terms per **onsemi**'s standard terms and conditions of sale. For more information and documentation, please visit [www.onsemi.com](http://www.onsemi.com).

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)