Technical Note

MT9D012
Camera Module Integrator Identification

Introduction

This technical note addresses Micron's MT9D012 Rev3 CMOS digital image sensor and provides the camera module integrator identification from the general purpose inputs (GPI). The camera module vendor identification confirms electrically which camera module integrator manufactured the camera module. The customer uses this information to load correct register settings tuned to that specific camera module integrator.

Background

Micron has incorporated a method that enables the GPI to identify the camera module integrator, allowing for the loading of register settings optimized for specific camera module integrators.

The identification is obtained from four GPIs that are wire bonded to either a LOW or HIGH logic level. The sensor displays the GPI values through a register when configured as an input. The camera module integrator is responsible for implementing the correct identification code (as recommended by their end customers).

The identification code is accessible using a two-wire serial interface. Specific registers need to be set to enable a READ through the two-wire serial interface. Reading the results of a different register provides the binary response to the bias applied to the respective GPI.

Procedure

The GPI pins can be pulled either HIGH or LOW to be used as module IDs. Users will first bond these to the appropriate HIGH or LOW state, then enable R0x301A [bit 8] by setting its value to "1" (if not enabled by default), which will enable the GPI, and the status readback from R0x3026 (bits 0–3) to status.

Note: For the MT9D012D00STCZ, it is not necessary to write to any registers to enable readback of the GPI pins.

When the input buffer is enabled, it can be read through R0x3026–7 and R0x0002. When enabled, the user must bond these pins to a HIGH or LOW state to avoid excessive power consumption.

The configuration shown in Table 1 on page 2 applies to the MT9D012D00STCZ sensor. Its GPI pins must be statically pulled either HIGH or LOW.

MT9D012D00STC: After reset, these pads are powered-down by default; it is not necessary to bond to these pads. Any of these pads can be configured to provide hardware control of the standby, output enable, and shutter trigger functions.

MT9D012D00STCZ: After reset, these pads are powered-up by default; it is necessary to bond to these pads to a HIGH or LOW state. Failure to do so will result in excessive

power consumption. Any of these pads can be configured to provide hardware control of the standby, output enable, and shutter trigger functions.

Table 1: Register 0x0002

Revision Number Bit	Maps To
7	GPI3
6	Silicon revision bit 3
5	Silicon revision bit 2
4	Silicon revision bit 1
3	Silicon revision bit 0
2	GPI2
1	GPI1
0	GPI0

Notes:
1. By default, the MT9D012D00STCZ sensor responds as a SMIA Profile 0 sensor.
2. MT9D012D00STCZ maps the GPI pins (module ID_) and silicon revision into R0x000.
3. The MT9D012D00STCZ capability registers show available functionality for Profile 0 behavior. The capability registers will be static, in accordance with the SMIA Functional Specification.

Conclusion

The MT9D012 can enable encoding of the GPI pins used as identification codes. This encoding enables customers to identify the specific encoding and apply the tuned register settings specific for a camera module integrator.

The encoding requires the GPI pins to be physically biased to a logic HIGH or LOW level. A READ of the encoding through the image sensor register requires the GPI to be configured as an input. The value of the GPI is obtained by reading a specific register and the value for the register is mapped to specific GPI pins.

For additional information on this and other features, refer to Micron's Web site at www.micon.com/imaging.

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Revision History

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- Initial release