

NOIM1SM9600A, NOIM2SM9600A



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Advance Information

MANO 9600 9.6 MegaPixel Rolling Shutter CMOS Image Sensor

Features

- 9.6 MegaPixel Resolution in 3840 × 2500 Format
- 2.4 μm × 2.4 μm Square Pixels (Shared 4T Pixel Architecture)
- 2/3 inch Optical Format
- Monochrome (SM) Version
- 20 Frames per Second (fps) at Full Resolution
- Four Low-Voltage Differential Signaling (LVDS) High Speed Serial Outputs or One 10-bit CMOS Output
- On-chip 10-bit Analog-to-Digital Converter (ADC)
- Windowing to Attain Higher Frame Rate
- Rolling Shutter
- On-chip Fixed Pattern Noise (FPN) Correction
- Serial Peripheral Interface (SPI)
- Automatic Exposure Control (AEC)
- Phase Locked Loop (PLL)
- High Dynamic Range (HDR)
- Dual Power Supply (1.8 V and 3.3 V)
- 0°C to 70°C Operational Temperature Range
- 52-pin LCC
- 630 mW Power Dissipation (LVDS)
- 480 mW Power Dissipation (CMOS)
- These Devices are Pb-Free and are RoHS Compliant

Description

The MANO9600 is a rolling shutter CMOS image sensor with a resolution of 3840 x 2500 pixels.

The high sensitivity 2.4 μm x 2.4 μm pixels supports correlated double sampling readout reducing noise and increasing dynamic range.

A high level of programmability using a four wire serial peripheral interface enables the user to read out specific regions of interest.

Higher frame rates are achieved with region of interest or sub-sampled readout modes. The sensor has built-in features for bias control and power supply regulation.

The sensor has on-chip programmable gain amplifiers and 10-bit A/D converters. The integration time and gain parameters can be reconfigured without any visible image artifact. Optionally the on-chip automatic exposure control loop (AEC) controls these parameters dynamically. The image's black level is either calibrated automatically or can be adjusted by adding a user programmable offset.

The image data interface of the M1-SM part consists of four LVDS lanes running at 620 Mbps, facilitating frame rates up to 20 frames per second. A separate synchronization and clock channel containing payload information is provided to facilitate the image reconstruction at the receive end. The M2-SM part provides a parallel CMOS output interface at reduced frame rate of 5 frames per second.

The MANO 9600 is packaged in a 52-pin LCC package and is available in a monochrome without micro lens.

Contact your local ON Semiconductor office for more information.

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

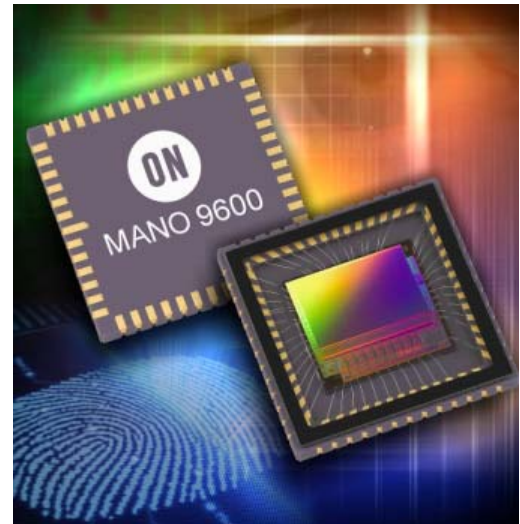


Figure 1. MANO 9600 Package Photograph

Applications

- Biometrics (Fingerprinting)
- Machine Vision
- Inspection
- Microscopy

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SPECIFICATIONS

Key Specifications

Table 1. GENERAL SPECIFICATIONS

Parameter	Specification
Active pixels	3840 x 2500
Pixel size	2.4 μm x 2.4 μm (Shared 4T pixel architecture)
Shutter type	Rolling shutter
Master clock	M1-SM: 62 MHz when PLL is used, 310 MHz (10-bit) / 248 MHz (8-bit) when PLL is not used M2-SM: 62 MHz
ADC resolution	10-bit, 8-bit
LVDS outputs	M1-SM: 4 data + sync + clock
CMOS outputs	M2-SM: 10-bit parallel output, frame_valid, line_valid, clock
Data rate	M1-SM: 4 x 620 Mbps (10-bit) / 4 x 496 Mbps (8-bit) M2-SM: 62 MHz
Power dissipation	M1-SM in 10-bit mode: 630 mW at 20 fps frame rate M2-SM: 480 mW at 5 fps frame rate
Package type	52-pin LCC

Table 2. ELECTRO-OPTICAL SPECIFICATIONS


Parameter	Specification
Frame rate at full resolution	M1-SM: 20 fps M2-SM: 5 fps
Optical format	2/3 inch
Conversion gain	0.064 DN10/e ⁻ 52 $\mu\text{V}/\text{e}^{-}$
Dark noise	1.87 DN10, 29 e ⁻
Responsivity at 550 nm	4.0 DN10/(nJ/cm ²)
Full well charge	12000 e ⁻
QE x FF	40% at 550 nm
Pixel FPN	1.3 LSB10
Row FPN	0.05 LSB10
Column FPN	1.2 LSB10
PRNU	11 LSB10
Dark signal	1.0 DN10/s 16 e ⁻ /s
Dynamic range	54 dB
Signal to Noise Ratio (SNR)	40 dB

To receive a detailed product data sheet and supporting documentation, visit the CISP Extranet at www.onsemi.com/MyON.

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