

Realization of High-definition Videos and High-resolution Still Images

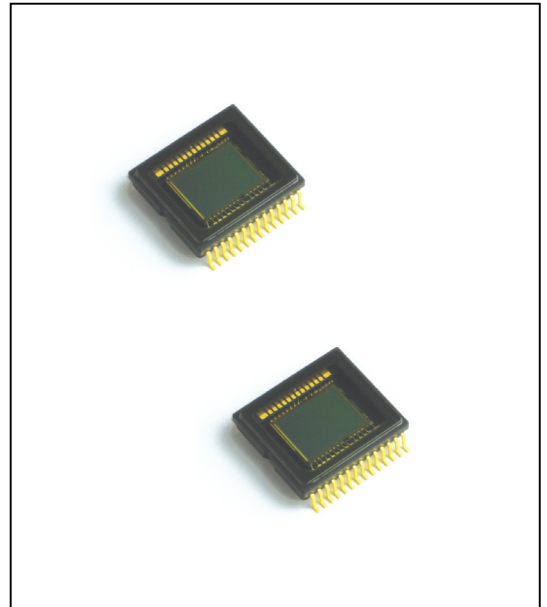
CCD Area Image Sensor MN39850PM

■ Overview

MN39850PM is a 1/1.8" optical format 10 Megapixel CCD image sensor, most suitable for high-resolution digital still cameras. Excellent color reproducibility was realized by applying an introduction of the RGB Bayer pattern primary color on-chip filter. And 30 frames/sec high-definition video shooting is possible through pixel mixture reading mode. Moreover, vivid and stable images are obtained through total 10,369,212 pixels (horizontal 3,738 x vertical 2,774).

■ Feature

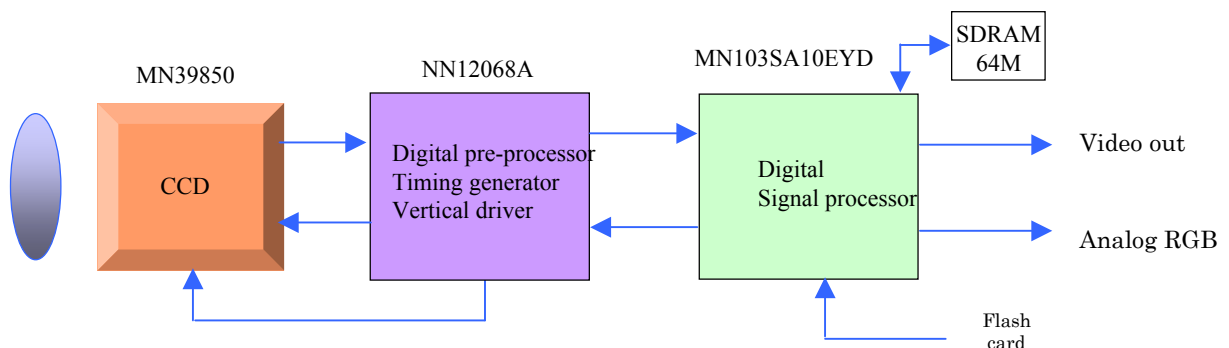
- Effective pixels 3,672(horizontal) × 2,760(vertical)
- High sensitivity
- 2.0μm × 2.0μm square pixels
- VGA 30 frames/s operation through pixel mixture reading mode
- Realization of wide dynamic range and high S/N ratio by reducing dark signal.
- Horizontal CCD 3.3V and low power consumption
- 28-pin plastic package



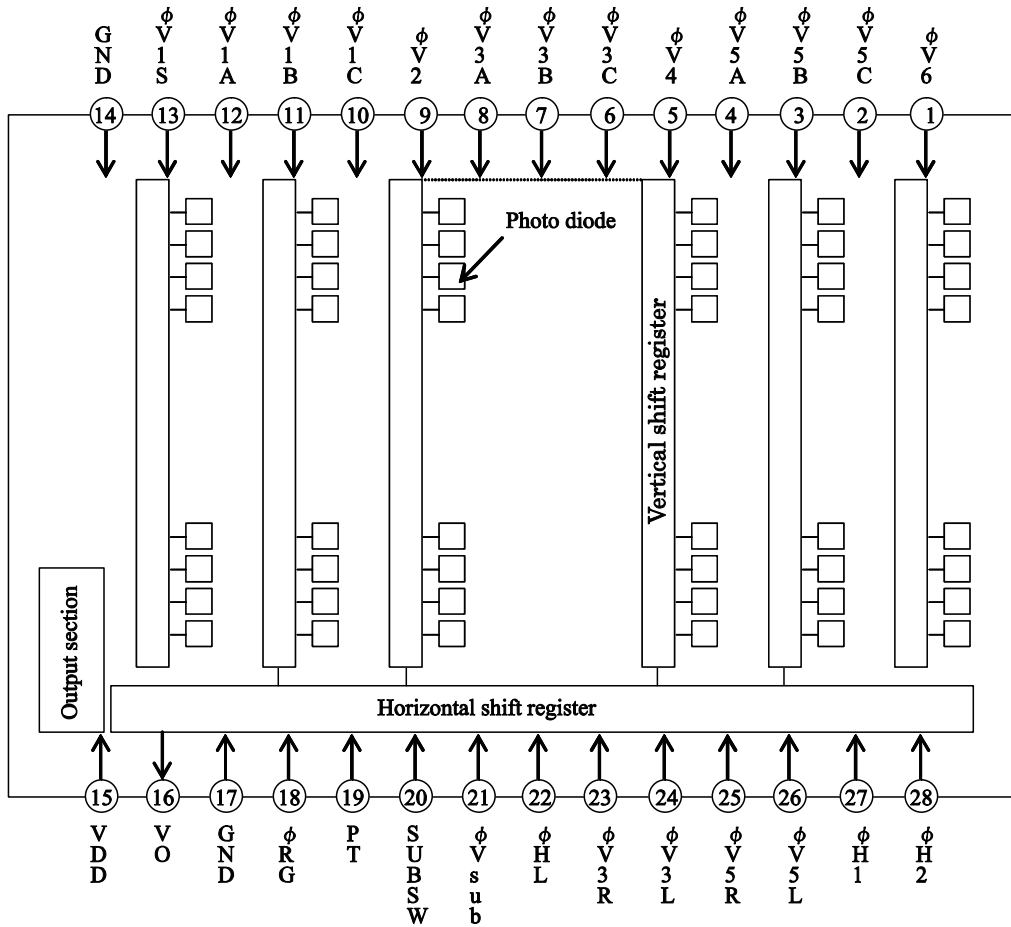
■ Applications

Digital still cameras

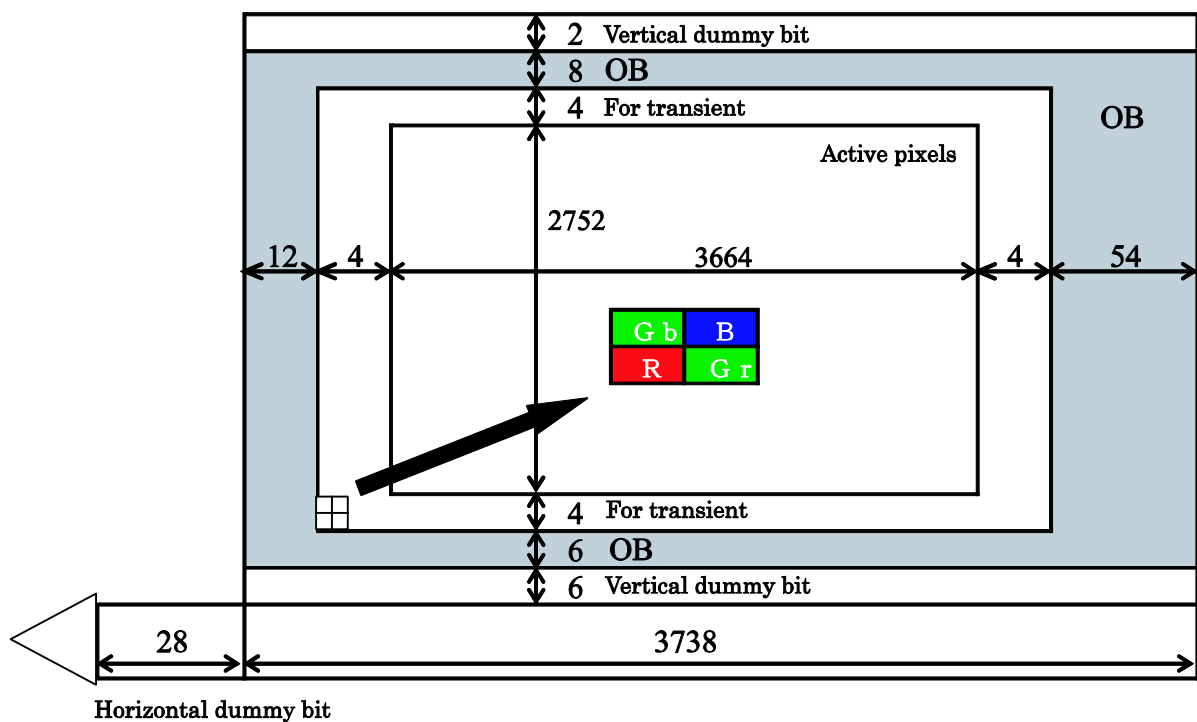
■ System Block Diagram



■ Block Diagram



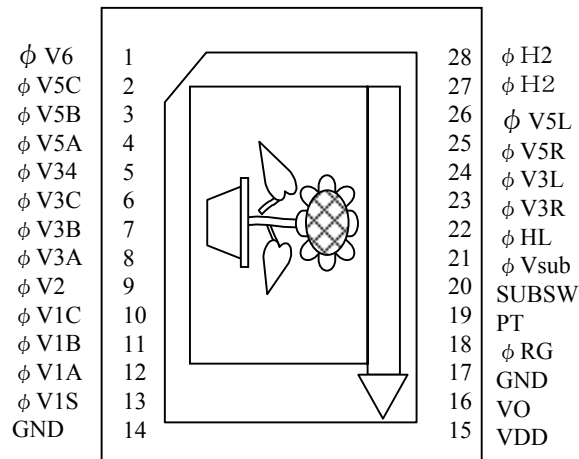
■ Element Construction



■ Pin Description

Pin No.	Symbol	Pin Description	Pin No.	Symbol	Pin Description
1	ϕ V6	Vertical shift register clock pulse (6)	15	VDD	Power supply
2	ϕ V5C	Vertical shift register clock pulse (5C)	16	VO	CCD output
3	ϕ V5B	Vertical shift register clock pulse(5B)	17	GND	GND
4	ϕ V5A	Vertical shift register clock pulse(5A)	18	ϕ RG	Reset pulse
5	ϕ V34	Vertical shift register clock pulse(4)	19	PT	P-Well
6	ϕ V3C	Vertical shift register clock pulse(3C)	20	SUBSW	Substrate control
7	ϕ V3B	Vertical shift register clock pulse(3B)	21	ϕ Vsub	Substrate
8	ϕ V3A	Vertical shift register clock pulse(3A)	22	ϕ HL	Horizontal shift register clock pulse
9	ϕ V2	Vertical shift register clock pulse(2)	23	ϕ V3R	Vertical shift register clock pulse(1C)
10	ϕ V1C	Vertical shift register clock pulse(1C)	24	ϕ V3L	Vertical shift register clock pulse(1B)
11	ϕ V1B	Vertical shift register clock pulse(1B)	25	ϕ V5R	Vertical shift register clock pulse(1A)
12	ϕ V1A	Vertical shift register clock pulse(1A)	26	ϕ V5L	Vertical shift register clock pulse(1S)
13	ϕ V1S	Vertical shift register clock pulse(1S)	27	ϕ H1	Horizontal shift register clock pulse(1)
14	GND	GND	28	ϕ H2	Horizontal shift register clock pulse(2)

■ Pin Arrays



■ Device Parameter

Parameter	Value	Unit
Total pixel number	$3,738 \text{ (H)} \times 2,776 \text{ (V)} = 10,369,212$	pixel
Effective pixel number (Transient exist)	$3,676 \text{ (H)} \times 2,764 \text{ (V)} = 10,134,720$	pixel
Active pixel number	$3,664 \text{ (H)} \times 2,752 \text{ (V)} = 10,083,328$	pixel
Pixel dimension	$2.000 \text{ (H)} \times 2.000 \text{ (V)}$	μm^2
Image sensing block dimension	$7.328 \text{ (H)} \times 5.504 \text{ (V)}$	mm^2

■ Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Saturation output	Vsat	-	-	550	-	mV
Sensitivity	SoG	-	-	230	-	mV
Smear	Sm	-	-	-83	-	dB

■ Package

