1/4.2-inch 5 MP CMOS Digital Image Sensor

AR0544

General Description

The **onsemi** AR0544 is a stacked 1/4.2-inch back side illuminated (BSI) CMOS active-pixel digital image sensor with a pixel array of 2592 x 1944 (2608H x 1960V including border pixels). The AR0544 has enhanced NIR response.

It incorporates sophisticated on-chip camera functions such as Wake on Motion (WOM), context switching and multiple subsampling modes. It is

Table 1. KEY PERFORMANCE PARAMETERS

Parameter		Value
Optical format		1/4.2-inch 5 MP (4:3)
Active pixels		2592 x 1944
Pixel size		1.4 μm Back Side Illuminated (BSI)
Chief ray angle (CRA)		11°
Color Filter Array		RGB, Monochrome
Input clock frequency		6 48 MHz
Interface		2-lane MIPI using D-PHY @; Max data rate: 1.72 Gbps/lane
ADC resolution		10-bits, on die
Gain Control: Gain Table		Linear Mode: 0 50.62 dB (Analog gain range: 0 ~ 27.37 dB, Digital gain range: 0 ~ 23.25 dB)
Subsampling		Subsampling: Skipping (RGB, Mono), Binning (RGB), Summing (Mono)
Temperature sensor		10-bit, controlled by two-wire serial I/F
Frame Rate	Full Size, Linear Mode	60 fps
Compression		DPCM: 10 8
3D support		Frame rate and exposure synchronization
Supply voltage	Analog, Pixel	2.8 V (2.7 V < VSu4.6079 472.1953 Tm-37airray

Table 2. 10-bit MODES OF OPERATION

Mode Name	Mode Description	Resolution	Frame Rate
Native	5 MP Linear Mode Full Resolution	2592 x 1944	60
LI Native	5 MP LI-HDR Mode	2592 x 1944	30
Crop	1080P Linear	1920 x 1080	110
SLP Native	5M Linear Mode Full Resolution, Lowest Power	2592 x 1944	1
Bin4	0.3 MP Linear, Lowest Power	648 x 486	1
WoM Bin4	Wake On Motion w/ Streaming	648 x 486	1
WoM Bin4Skip2 (Note 2)	Wake On Motion without Streaming	324 x 243	1

2. Sensor resolution is actually 648 x 486. GB columns are skipped which helps reduce power consumption. The stream output of the sensor cannot be used in this mode.

Table 3. 12-bit MODES OF OPERATION

Mode Name	Mode Description	Resolution	Frame Rate
eDR Native	5M eDR Mode	2592 x 1944	30

Table 4. ORDERING INFORMATION

Part Number	Product Description	Orderable Product Attribute Description
AR0544CSSC11SMKA1-CP	5 MP 1/4.2” CMOS Image sensor RGB 11° CRA	CSP with Protective Film
AR0544CSSC11SMKA1-CP2	5 MP 1/4.2” CMOS Image sensor RGB 11° CRA	CSP with Protective Film Low MOQ
AR0544CSSC11SMKA1-CR	5 MP 1/4.2” CMOS Image sensor RGB 11° CRA	CSP without Protective Film
AR0544CSSC11SMKAH3-GEVB	5 MP 1/4.2” CMOS Image sensor RGB 11° CRA	Demo3 Headboard
AR0544CSSM11SMKA1-CP	5 MP 1/4.2” CMOS Image sensor Mono 11° CRA	CSP with Protective Film
AR0544CSSM11SMKA1-CP2	5 MP 1/4.2” CMOS Image sensor Mono 11° CRA	CSP with Protective Film Low MOQ
AR0544CSSM11SMKA1-CR	5 MP 1/4.2” CMOS Image sensor Mono 11° CRA	CSP without Protective Film
AR0544CSSM11SMKAH3-GEVB	5 MP 1/4.2” CMOS Image sensor Mono 11° CRA	Demo3 Headboard
AR0544CSSC33SMKA1-CP	5 MP 1/4.2” CMOS Image sensor RGB 33° CRA	CSP with Protective Film
AR0544CSSC33SMKA1-CP2	5 MP 1/4.2” CMOS Image sensor RGB 33° CRA	CSP with Protective Film Low MOQ
AR0544CSSC33SMKA1-CR	5 MP 1/4.2” CMOS Image sensor RGB 33° CRA	CSP without Protective Film
AR0544CSSC33SMKAH3-GEVB	5 MP 1/4.2” CMOS Image sensor RGB 33° CRA	Demo3 Headboard
AR0544CSSH11SMKA1-CP	5 MP 1/4.2” CMOS Image sensor RGBIR 11° CRA	CSP with Protective Film
AR0544CSSH11SMKA1-CP2	5 MP 1/4.2” CMOS Image sensor RGBIR 11° CRA	CSP with Protective Film Low MOQ
AR0544CSSH11SMKA1-CR	5 MP 1/4.2” CMOS Image sensor RGBIR 11° CRA	CSP without Protective Film
AR0544CSSH11SMKAH3-GEVB	5 MP 1/4.2” CMOS Image sensor RGBIR 11° CRA	Demo Headboard

3. Refer to AR0544 Die Data Sheet for Die Part Numbers & Ordering Information.

ODCSP47 4.67x3.68x0.63, 0.50P
CASE 570DD
ISSUE O

DATE 04 JAN 2024

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS [mm].
3. SOLDER BALL DIAMETER IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER PARALLEL TO DATUM C.
4. COPLANARITY APPLIES TO THE SPHERICAL CROWNS OF THE SOLDER BALLS.
5. DATUM C, THE SEATING PLANE IS DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.
6. GLASS: 0.400 THICKNESS; REFRACTIVE INDEX = 1.52.
7. AIR GAP BETWEEN GLASS AND P-