ON Semiconductor®

Product Bulletin

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Title of Change:	AR0144AT Datasheet Update
Effective date:	03 Feb 2021
Contact information:	Contact your local ON Semiconductor Sales Office or Andrew.Ko@onsemi.com
Type of notification:	This Product Bulletin is for notification purposes only. ON Semiconductor will proceed with implementation of this change upon publication of this Product Bulletin.
Change Category:	Documentation Change
Change Sub-Category(s):	Datasheet/Product Doc change

Sites Affected:

ON Semiconductor Sites	**External Foundry/Subcon Sites**
None	None

Description and Purpose:

Updated AR0144AT datasheet to correct errors. There is no product or design change.

1. Updated Table 2, “Available Part Numbers” with new OPNS

Old Table 2

ORDERING INFORMATION

Table 2. AVAILABLE PART NUMBERS

Part Number	Product Description	Orderable Product Attribute Description
AR0144ATSM20XUEA0−DPBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Dry pack with PF, Double Sided BBAR Glass
AR0144ATSM20XUEA0−DRBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Dry pack without PF, Double Sided BBAR Glass
AR0144ATSM20XUEA0−TPBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Tape & Reel with PF, Double Sided BBAR Glass
AR0144ATSM20XUEA0−TRBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Tape & Reel without PF, Double Sided BBAR Glass
AR0144ATSM20XUEAD3−GEVK	Mono, iBGA	Mono, Demo kit
MARS1−AR0144ATSM−GEVB	Mono, iBGA	MARS Parallel board
MARS1−AR0144ATSMS−GEVB	Mono, iBGA	MARS MIPI board
GAZET1−AR0144ATSM−GEVK	Mono, iBGA	GazeT Driver Monitoring System kit

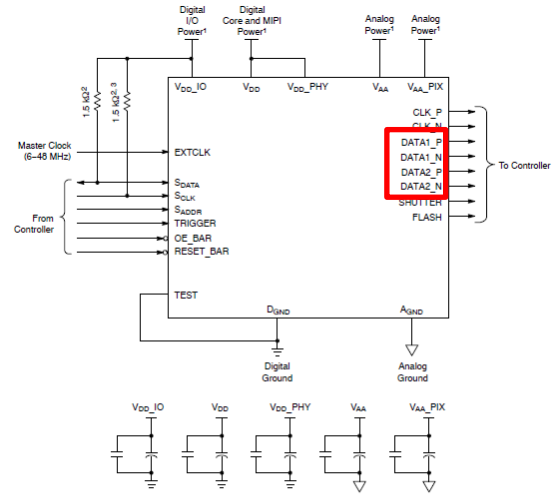
New Table 2

Table 2. AVAILABLE PART NUMBERS

Part Number	Product Description	Orderable Product Attribute Description
AR0144ATSM20XUEA0−DPBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Dry pack with PF, Double Sided BBAR Glass
AR0144ATSM20XUEA0−DRBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Dry pack without PF, Double Sided BBAR Glass
AR0144ATSM20XUEA0−TPBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Tape & Reel with PF, Double Sided BBAR Glass
AR0144ATSM20XUEA0−TRBR	Mono, iBGA	Mono, iBGA, CRA = 20°, Tape & Reel without PF, Double Sided BBAR Glass
AR0144ATSM20XUD20	Mono, Bare Die	Mono, CRA = 20 deg
AR0144ATSM20XUEAD3−GEVK	Mono, iBGA	Mono, Demo kit
AR0144ATSM20XUEAH3−GEVB	Mono, iBGA	Mono, Headboard
MARS1−AR0144ATSM−GEVB	Mono, iBGA	MARS Parallel board
MARS1−AR0144ATSMS−GEVB	Mono, iBGA	MARS MIPI board
GAZET1−AR0144ATSM−GEVK	Mono, iBGA	GazeT Driver Monitoring System kit

2. Updated Figure 4, “Serial 2-Lane MIPI Interface”

Old Figure 4



Notes:
1. All power supplies must be adequately decoupled.
2. ON Semiconductor recommends a resistor value of 1.5 kΩ, but a greater value may be used for slower two−wire speed.
3. This pull−up resistor is not required if the controller drives a valid logic level on S_{CLK} at all times.
4. The parallel interface output pads can be left unconnected if the serial output interface is used.
5. ON Semiconductor recommends that 0.1 μF and 10 μF decoupling capacitors for each power supply are mounted as close as possible to the pad. Actual values and results may vary depending on the layout and design considerations. Refer to the AR0144AT demo head-board schematics for circuit recommendations.
6. ON Semiconductor recommends that analog power planes be placed in a manner such that coupling with the digital power planes is mini-mized.

Figure 4. Serial 2−lane MIPI Interface

New Figure 4

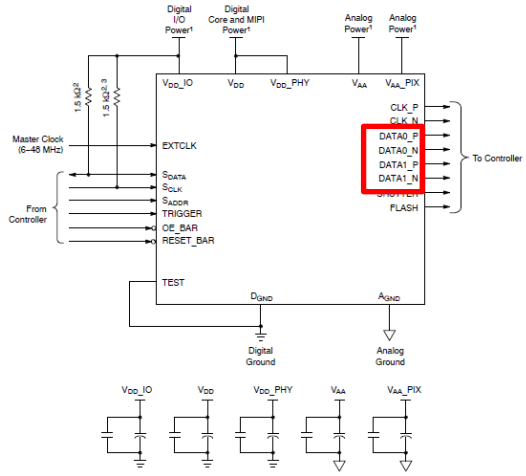


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Figure 4. Serial 2−lane MIPI Interface

3. Updated Figure 5, “Parallel Pixel Data Interface

Old Figure 5

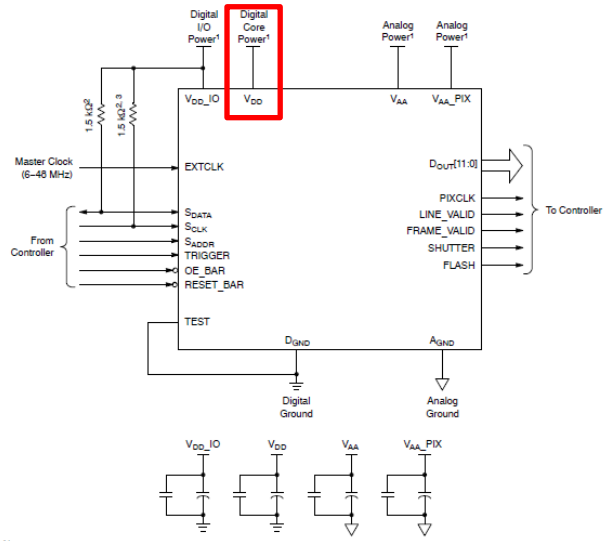

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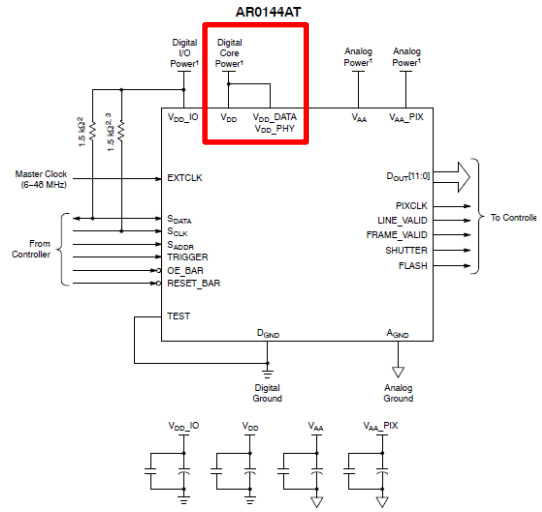
Figure 5. Parallel Pixel Data Interface

New Figure 5



Notes:
1. All power supplies must be adequately decoupled.
2. ON Semiconductor recommends a resistor value of 1.5 kΩ, but a greater value may be used for slower two−wire speed.
3. This pull−up resistor is not required if the controller drives a valid logic level on S_{CLK} at all times.
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6. ON Semiconductor recommends that analog power planes be placed in a manner such that coupling with the digital power planes is minimized.

4. Updated Table 3, “Pin Descriptions, 63 Ball iBGA Package”

Old Table 3

Table 3. PIN DESCRIPTIONS – 63–BALL iBGA PACKAGE (continued)

Name	CSP Ball	Type	Description
EXTCLK	B3	Input	External input clock
V_{DD}_PHY	C5	Power	MIPI power (may leave unconnected if parallel interface is used)

New Table 3

Table 3. PIN DESCRIPTIONS – 63–BALL iBGA PACKAGE (continued)

Name	iBGA Ball	Type	Description
EXTCLK	B3	Input	External input clock
V_{DD}_PHY	C5	Power	MIPI power

5. Removed reference to slave mode in “Features” and “Features Overview” section.

6. Updated Table 12, “DC Electrical Characteristics”

Old Table 12

Table 12. DC ELECTRICAL CHARACTERISTICS

Symbol	Definition	Condition	Min	Typ	Max	Unit
V_{DD}	Core Digital Voltage		1.14	1.2	1.26	V
V_{DD}_IO	I/O Digital Voltage		1.7/2.5	1.8/2.8	1.9/3.1	V
V_{AA}	Analog Voltage		2.5	2.8	3.1	V
V_{AA}_PIX	Pixel Supply Voltage		2.5	2.8	3.1	V
V_{DD}_PHY	MIPI Supply Voltage		1.14	1.2	1.26	V
V_{IH}	Input HIGH Voltage		V_{DD}_IO * 0.7	–	–	V
V_{IL}	Input LOW Voltage		–	–	V_{DD}_IO * 0.3	V
I_{IN}	Input Leakage Current	No Pull–up Resistor; V_{IN} = V_{DD}_IO or D_{GND}	20	–	–	μA
V_{OH}	Output HIGH Voltage		V_{DD}_IO * 0.7	–	–	V
V_{OL}	Output LOW Voltage	V_{DD}_IO = 2.8 V	–	–	V_{DD}_IO * 0.3	V
I_{OH}	Output HIGH Current	At Specified V_{OH}	–12	–	–	mA
I_{OL}	Output LOW Current	At Specified V_{OL}	–	–	12	mA

CAUTION: Stresses greater than those listed in Table 13 may cause permanent damage to the device. This is a stress rating only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

New Table 12

Table 12. DC ELECTRICAL CHARACTERISTICS

Symbol	Definition	Condition	Min	Typ	Max	Unit
V_{DD}	Core Digital Voltage		1.14	1.2	1.26	V
V_{DD_IO}	I/O Digital Voltage		1.7/2.5	1.8/2.8	1.9/3.1	V
V_{AA}	Analog Voltage		2.5	2.8	3.1	V
V_{AA_PIX}	Pixel Supply Voltage		2.5	2.8	3.1	V
V_{DD_PHY}	MIPI Supply Voltage		1.14	1.2	1.26	V
V_{IH}	Input HIGH Voltage		V_{DD_IO} * 0.7	–	–	V
V_{IL}	Input LOW Voltage		–	–	V_{DD_IO} * 0.3	V
I_{IN}	Input Leakage Current	No Pull−up Resistor; V_{IN} = V_{DD_IO} or D_{GND}	–	–	20	μA
V_{OH}	Output HIGH Voltage		V_{DD_IO} − 0.3	–	–	V
V_{OL}	Output LOW Voltage	V_{DD_IO} = 2.8 V	–	–	0.4	V
I_{OH}	Output HIGH Current	At Specified V_{OH}	−12 (Note 16)	–	–	mA
I_{OL}	Output LOW Current	At Specified V_{OL}	–	–	12 (Note 16)	mA

16.A slew rate setting of 7 is needed to acheive IOH and IOL minimum and maximum specifications

CAUTION: Stresses greater than those listed in Table 13 may cause permanent damage to the device. This is a stress rating only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied

List of Affected Standard Parts:

***Note**: Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the **PCN Customized Portal**.*

AR0144ATSM20XUEA0-DPBR	AR0144ATSM20XUEA0-DRBR	AR0144ATSM20XUEA0-TPBR
AR0144ATSM20XUEA0-TRBR	AR0144ATSM20XUD20	