APPLETEC Ltd.

2 Granite St., Mitzpe Sapir Ind. Area Zip 44862 P.O.B. 13183 Tzur Yigal, Israel
Tel: 972-9-7498777 Fax: 972-9-7498999 Internet Site: www.appletec.net

Camera Module Technical Data Sheet

Appletec Part No.

AP-VisiON-ARX3A0-55

Revision 1.0

2021/05/31

Prepared By	Polina T	**Date**	2021/05/31
Checked By	Mark V	**Date**	2021/05/31
Approved By	Mark V	**Date**	2021/05/31

Customer： _____

Customer Signature and Seal	**Data：**

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Model No.	AP-VisiON-ARX3A0-55
Description	0.3M CAMERA MODULE with ARX3A0 image sensor
Customer Name	
Version	1.0

Revision History

Revision	Date	Prepared By	Description
1.0	**2021/05/31**	Polina T	**First Release**
Approved by		**Checked by**	**Edited by**

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1. General Description

The ARX3A0 is a 1/10.3−inch CMOS (pseudo Global Shutter sensor) digital image sensor with an active−pixel array of 560 (H) x 560 (V) – VGA resolution in a 1:1 aspect ratio with 2.2 micron BSI Pixel. It is capable of capturing images at an extremely high speed of 360fps. It has simulated GSE at 1000:1 with advanced BSI Technology. ARX3A0 utilizes advanced architecture that enjoys extremely low power consumption and employs very flexible trigger and burst modes that can help to minimize system level latency and support accurate multiple camera synchronization. ARX3A0 also enjoys sensitivity boost at near IR wavelength from NIR+ Technology. ARX3A0 produces extraordinarily clear, sharp, low motion artifact, super low power consumption digital pictures, and has the ability to capture continuous video making it the perfect choice for a machine vision applications, such as SLAM and Eye tracking applications.

2. Die Database

- Die Outline
- Singulated Die Size: 3400 µm ±25 µm x 3450 µm ±25 µm
- Bond Pad Location and Identification Tables

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3. Features

- Small Optical Format (1/10.3−inch)
- Small Die Size 3.35 mm x 3.40 mm
- 560 (H) x 560 (V) [1:1] VGA in Square at 360 fps for Fast Video Capture Machine Vision Application.
- 2.2 micron BSI non−Stacked pixel
- Ultra Fast Electronic Rolling Shutter 360 fps
- Super Low Power Mode and Motion Detection Function
- Superior Low−light Performance
- Interlaced Multi−exposure Readout
- High Dynamic Range (HDR)
- Still and Video Applications Support for External Mechanical Shutter
- On−chip Phase−locked Loop (PLL) Oscillator
- 1D Dynamic Defect Correction
- Trigger Mode for Precise timing Control
- Frame Buffer Mode for ROI Control or Slow MIPI Support.
- Data Interfaces:
- MIPI 1 or 2−Lane D−PHY (no Parallel)
- Auto Black Level Calibration
- High−speed Configurable Context Switching
- Temperature Sensor
- Fast Mode Plus Compatible 2 Wire Interface

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4.Key Performance Parameters

• Optical Format: 1/10.3−inch (1:1)
• Active Imager Size: 1.25 mm x 1.25 mm:
1.78 mm Diagonal
• Active Pixels: 560 (H) x 560 (V)
• Pixel Size: 2.2 micron x 2.2 micron Back Side
Illumination (BSI)
• Color Filter Array: Monochrome, Bayer
• CRA: 0°, (Mono), 28° (RGB)
• Shutter Type
♦ Electronic Rolling Shutter (ERS)
• Maximum Data Rate/Master Clock
♦ 800 Mbps for both MIPI 1st data lane (lane 0)
♦ and 2nd data lane (lane 1) when operating on two
MIPI lanes
• Frame Rate
♦ 0.3 Mp Full Resolution at 360 fps
• ADC Resolution: 10−bit, On-die
• Responsivity: 38.7 ke−/lux*sec
• Dynamic Range: 74.3 dB Linear
• SNRMAX: 40 dB
• Supply Voltage:
♦ Digital I/O: 1.8 V
♦ Digital, PLL, MIPIPhy: 1.2 V
♦ Analog: 2.7 V
• Operating Temperature: –30°C to +70°

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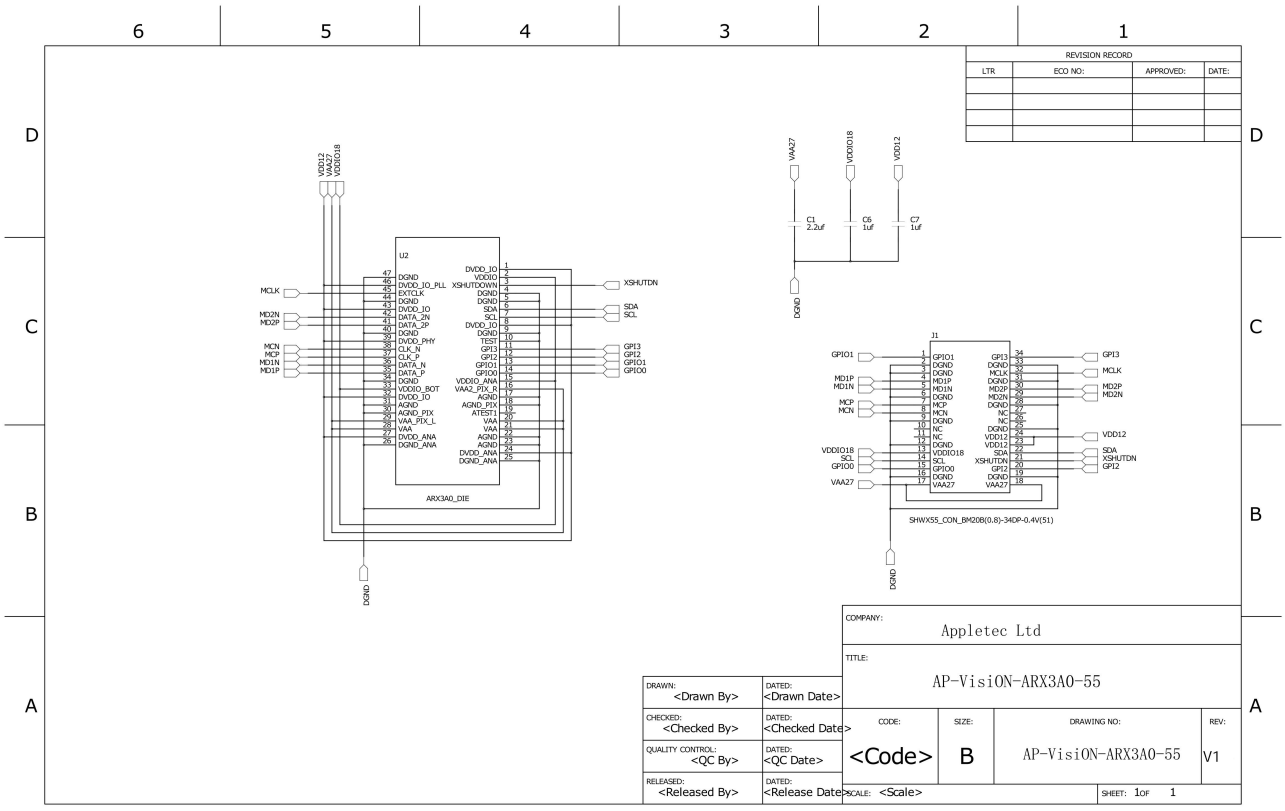
5. Schematic



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6. 34 Pin Connector Descriptions

Pin	Name	Pin	Name
1	GPIO-1	34	GPI3
2	DGND	33	DGND
3	DGND	32	MCLK
4	MD1P	31	DGND
5	MD1N	30	MD2P
6	DGND	29	MD2N
7	MCP	28	DGND
8	MCN	27	NC
9	DGND	26	NC
10	NC	25	DGND
11	NC	24	VDD 1.2V
12	DGND	23	VDD 1.2V
13	VDDIO 1.8	22	SDA
14	SCL	21	XSHUTDN
15	GPIO-O	20	GPIO2
16	DGND	19	DGND
17	VAA 2.7	18	VAA 2.7

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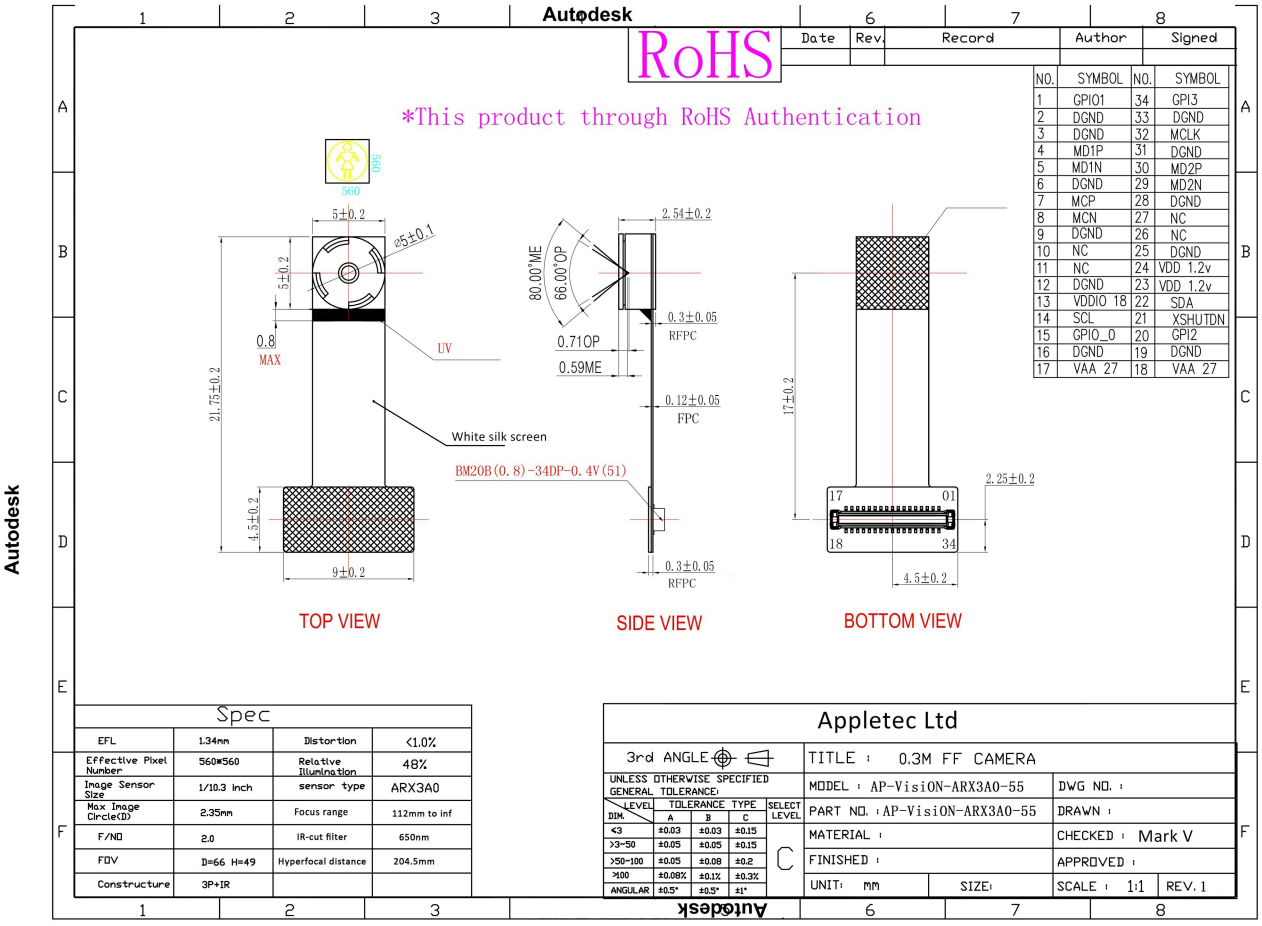
7. Mechanical Drawing

7.1 Camera Module Drawing



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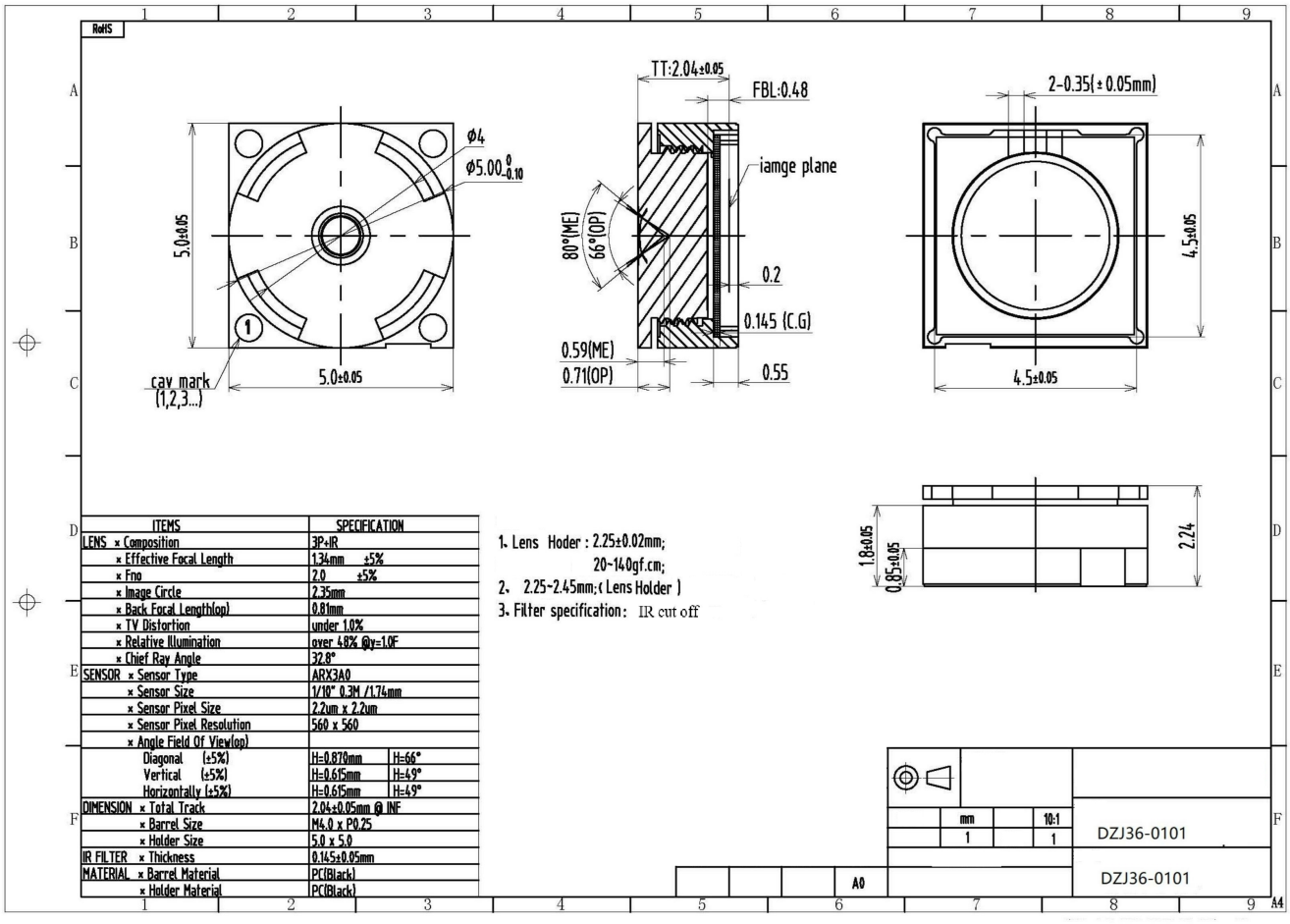
7.2 Lens Drawing



ITEMS	SPECIFICATION	
LENS × Composition	3P+IR	
× Effective Focal Length	1.34mm ±5%	
× Fno	2.0 ±5%	
× Image Circle	2.35mm	
× Back Focal Length(op)	0.81mm	
× TV Distortion	under 1.0%	
× Relative Illumination	over 48% @y=1.0F	
× Chief Ray Angle	32.8°	
SENSOR × Sensor Type	ARX3A0	
× Sensor Size	1/10" 0.3M /1.74mm	
× Sensor Pixel Size	2.2um x 2.2um	
× Sensor Pixel Resolution	560 x 560	
× Angle Field Of View(op)		
Diagonal (±5%)	H=0.870mm	H=66°
Vertical (±5%)	H=0.615mm	H=49°
Horizontally (±5%)	H=0.615mm	H=49°
DIMENSION × Total Track	2.04±0.05mm @ INF	
× Barrel Size	M4.0 x P0.25	
× Holder Size	5.0 x 5.0	
IR FILTER × Thickness	0.145±0.05mm	
MATERIAL × Barrel Material	PC(Black)	
× Holder Material	PC(Black)	

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8. Environmental and Reliability Specification

No	Test name	Condition	Sample size	Judgement
1	High temperature storage	80℃+/-2℃ 96H	5 PCS	1. No imaging change before and after 2. No transformation and broken mechanically 3. No focus changing of lens 4.Visual Inspection OK
2	Low temperature storage	-40℃+/-2℃ 96H	5 PCS	
3	High temperature operating	65℃+/-2℃ 96H	5 PCS	
4	Low temperature operating	-20℃+/-2℃ 96H	5 PCS	
5	Humidity storage	60℃, 95%[RH]	5 PCS	
6	Thermal shock	-40℃(0.5H)~80℃(0.5H)/cycle	5 PCS	
7	Vibration test	30Hz,0.38mm&55Hz,0.19mm, XYZ direction,0.5H/direction,	10PCS	
8	Drop test	1m/one direction. 1time/direction, total 6 direction	10PCS	

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9.Packaging Information

9.1 The default label contents

Supplier: Appletec
Customer Part Number: XXXXX
Part Number: XXXX Quantity:
XXXXX
Country Of Origin:
CN Lot Number:
XXXXXX

Note: Appletec has the right to update the label form and contents and will inform the customers.

9.2 Packing SPEC

- Modules are placed into a tray.
- Insert tray into a ESD protect bag.
- All the finished goods are placed in box.

10.Precautions

10.1 storage and operating conditions

To keep the product and packaging material in good condition, care must be taken to control temperature and humidity in the storage area.

- Recommended conditions:
- Moisture proof Scale：MSL3 exposure ≤30℃/60%RH,168 hours floor life
- Ambient temperature: 22±6℃
- Humidity: 20～60%RH
- No rapid change on temperature and humidity
- Bake condition: If the modules exposure under high temperature and humidity surroundings，they must be put in the dry case which humidity ＜ 10％RH more than five times of exposed time to recover the module's floor life.

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- The products listed in this catalog are not designed for use under the following conditions. Storage and/or usage under following conditions are prohibited.
  - Exposure to corrosive gas such as chlorine, hydrogen sulfide, ammonia, sulfur dioxide, nitrogen oxide, etc.
  - Exposure to direct sunlight.
  - Exposure to dust.
  - Exposure to excessive moisture or wet locations.
  - Exposure to salt water or sea breezes.
  - Exposure to strong static electricity or electromagnetic waves.

10.2 Transportation and Handling

- Minimize any mechanical vibration or shock and avoid dropping of the product during transportation or dropping the product that contains the substrate.
- Since the application of static electricity or over voltage may cause defect in the product or deterioration of its reliability, caution must be taken against exposure to any static electricity generated by electrified items such as workbenches, soldering irons, tools, carrying containers, etc.
- Caution shall be taken to avoid overstress to the product.