SF3323 Preliminary Datasheet

2M Pixel Automotive Camera

SEKONIX Corp. Image Solution Team

2Mega LVDS Automotive Camera

SF3323 - NVIDIA 2Mega Camera

Written by SEKONIX Image Solution Team _ Rev 1.0

Feature

- 1928 x 1208 Resolution (2.3M Pixel)
- Optical format: 1/2.7-inch
- Pixel size: 3μm x 3μm
- 30fps @ full resolution 4exp
- 27MHz clock input
- Analog power supply, from 8V (±10%)
- All glass lens, F# 1.6, H60° V36.6°
- MAXIM - MAX96705 Serializer
- FAKRA Z – TYPE Connector

Application

- Automotive ADAS
- Viewing Function
- 1080p 30 video applications

Table 1 : Specification Summary

	Parameter	Value
LENS	Model	SEKONIX NV601
	Construction	6G
	View angle	H : 60° , V : 36.6°
Sensor	Model	Onsemi AR0231 (RCCB or RGB)
	Pixel output interfaces	14-bit parallel
	Input clock	27Mhz
Interface	LVDS(PoC)	MAX96705 (MAXIM)
	Connector	FAKRA Z TYPE
Module	Data Interface	LVDS 12bit
	SIZE	30 X 30 X 24.2mm (without optic & cable)
	Power	8V
	Optical Axis	± 5 pixel
	Water Proof	TBD
	Operation Temp	-40 ~ 85 ℃
	Storage Temp	-40 ~ 105℃

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Table of contents

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1. Overview

1.1. Description

<PICTURE 1: SF3323 Camera Module >

SF3323 is consists of ONSEMI CMOS Image Sensor AR0231 (2M Pixel) and SEKONIX ultra high resolution lens, NV601 (H60°). Image output format is Bayer12 and is able to be changed by user's setting. Connecting interface utilizes MAXIM's MAX96705 and FAKRA Z Type connector is applied to the connecting interface. Aluminum die-casting for its housing is applied to this model. Waterproof function (IP69K) is not applied, but it is possible.

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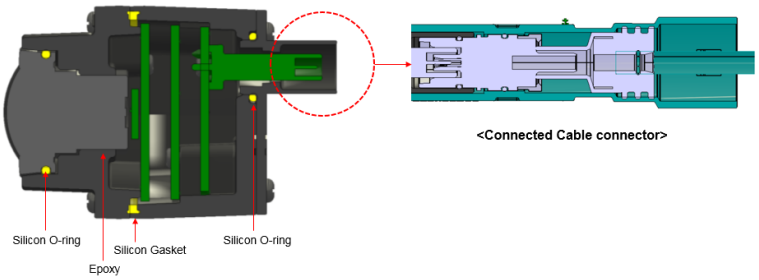
2. Product Composition

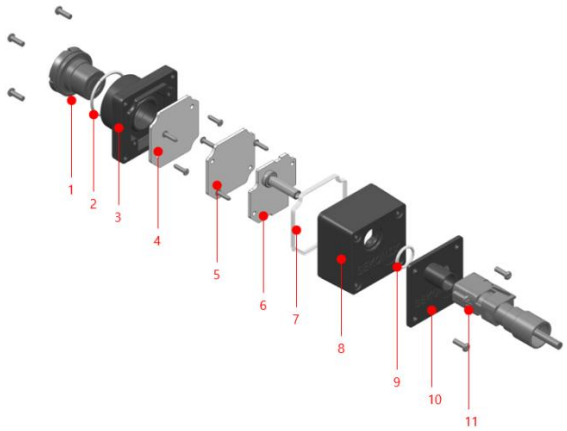
2.1. Components

The mechanical parts of SF3323 are hard and durable. Moreover, it has powerful performances against heat and water.

SF3323 consists of 11 components and automotive qualified design.



<IMG 1: Section >



<IMG 2: Parts tear-down>

No	Part Name	Material	U/S	No	Part Name	Material	U/S
1	Optical Lens	-	1	7	Middle GASKET	Silicon	1
2	Lens O – ring	Silicon	1	8	Rear Body	ALDC12	1
3	Front Body	ALDC12	1	9	Cable O-RING	Silicon	1
4	1st PCB	-	1	10	Cable Holder	PC + ABS	1
5	2nd PCB	-	1	11	Cable Ass'y	-	1
6	3th PCB	-	1				

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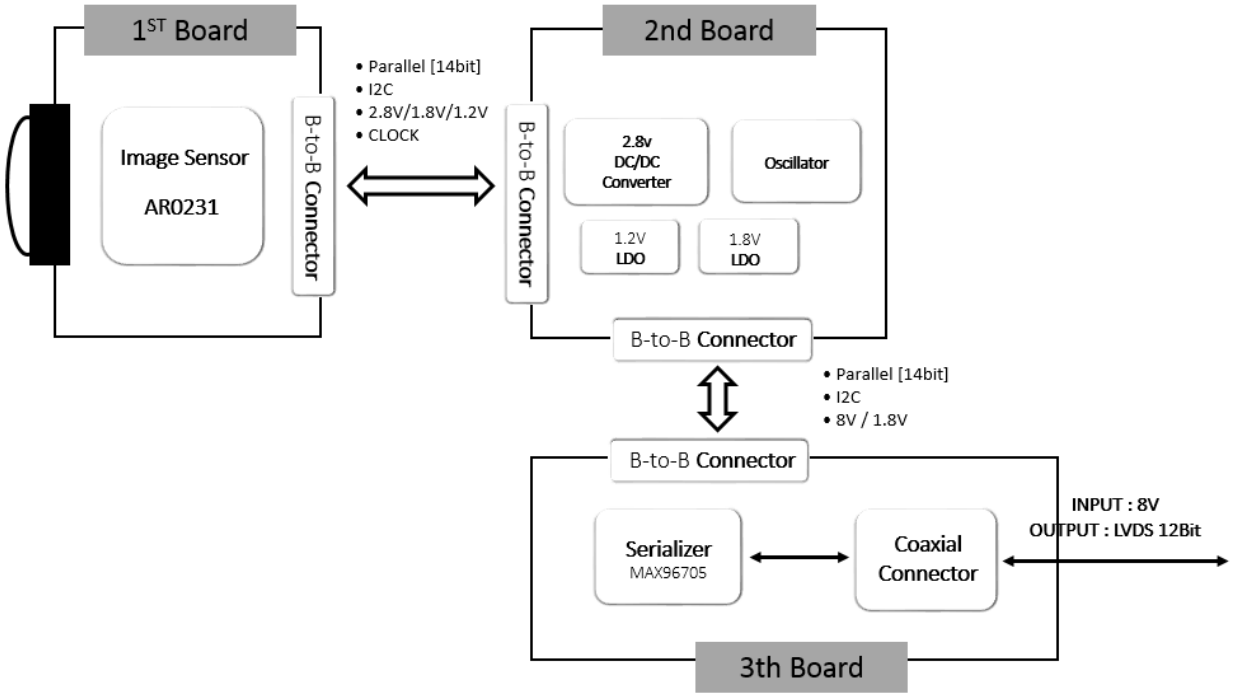
2.2. Block Diagram



<IMG 3: Block diagram>

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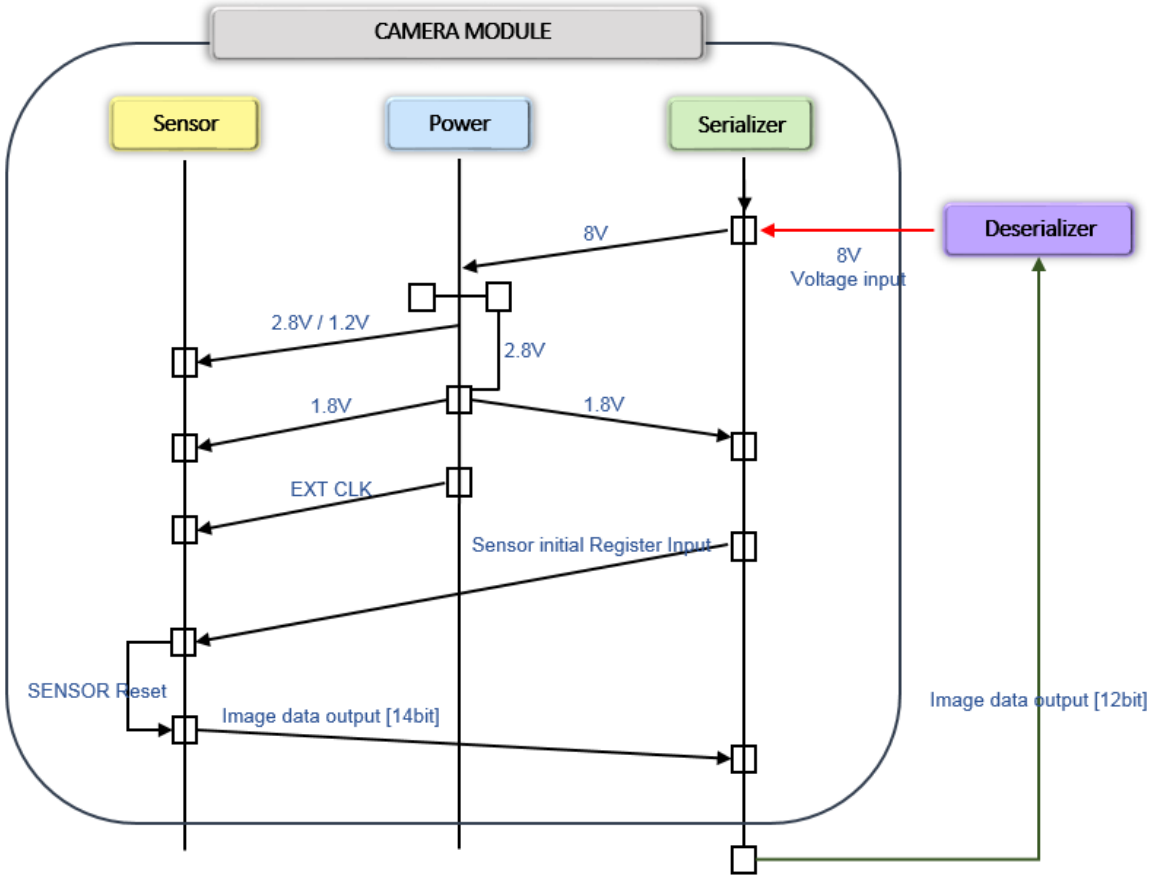
2.3. System Operating Flow



<IMG 4: System flow>

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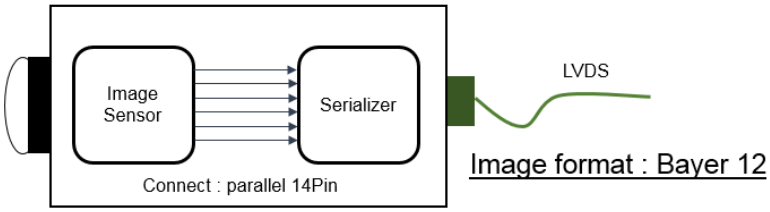
2.4. Image Data Format

Image Sensor Output sets 14bit but Serializer (MAX96705) support only 12bit. Therefore, it provides 12bit data except top 2bit. And Image format applies Bayer12.



<IMG 5: Image data format >

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3. Specification

3.1 Lens Specification

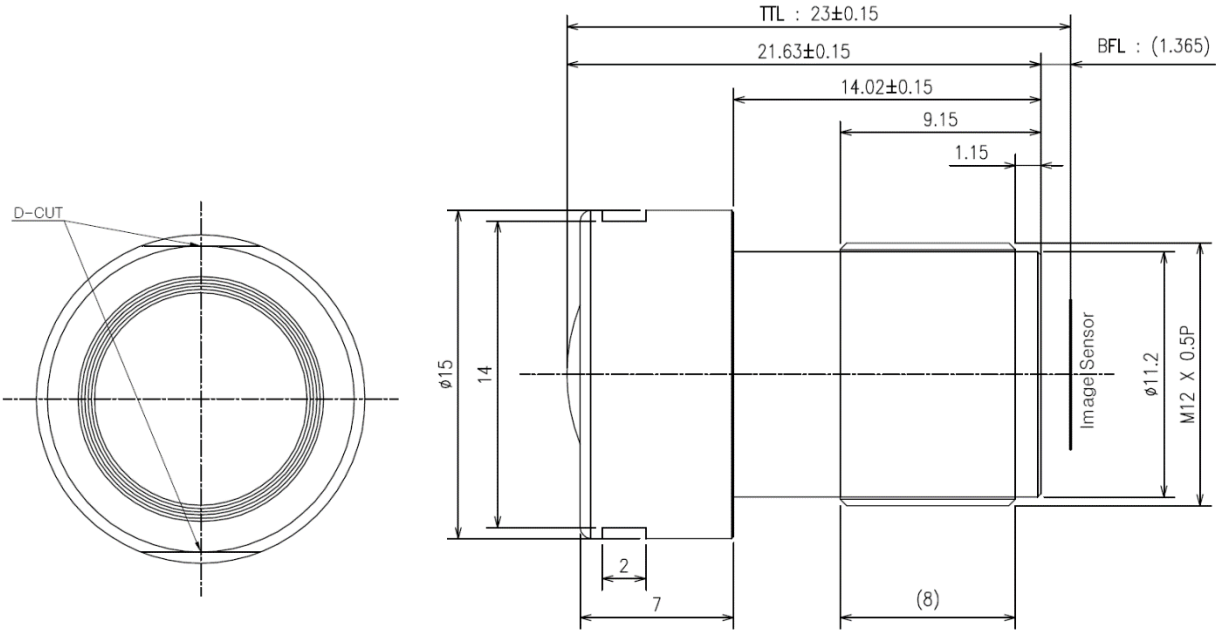
The lens of SF3323 designed and made by Sekonix – NV601.

The NV601 lens designed and optimized for best performance with ONSEMI AR0231 sensor.

Furthermore, it targets to meet automotive qualification.

<PIC 2 : NV601>

Model Name	SEKONIX NV601
Grade	1 / 2.7” 2Mega
Lens Construction	6G
Effective Focal Length (EFL)	5.8mm
Flange Back Length (FBL)	1.365mm
Total Conjugate Length (TCL) : S1 ~ Image	23
Viewing Angle	H : 60°, V : 36.6°
Chief Ray Angle	18.2°
F-number (F/#)	1.6
MTF	87.2% at 0.0F 60 lp/mm 60.5%((S+T)/2) at 0.8F 80 lp/mm
Relative Illumination	67%(D)
IR CUT wavelength	650 ± 10nm
Lens dimension	Ø 15 x 21.63mm
Mount Dimension	M12 x 0.5P



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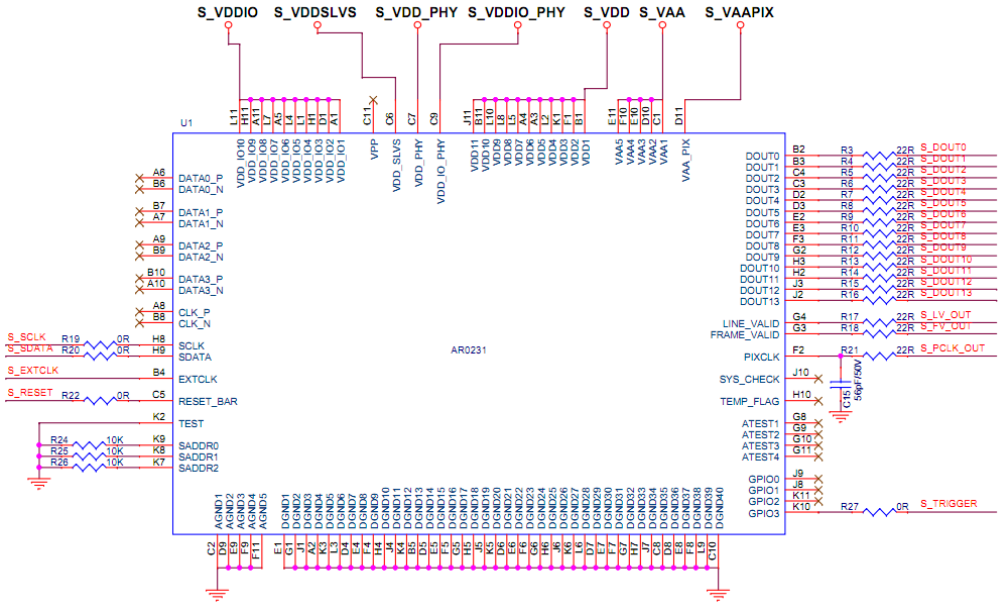
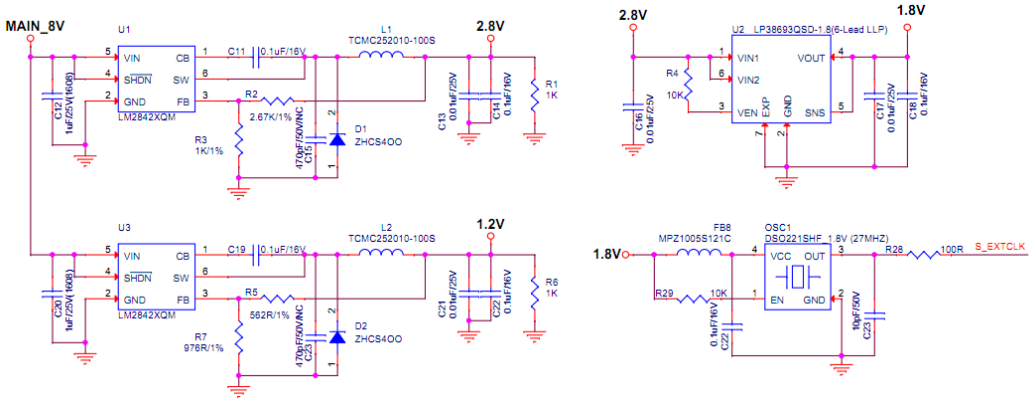
3.2 PCB Circuit



<IMG 6: Image Data Format >

▪ IMG6 is the schematic drawing for sensor PCB board. And it is connected by B-to-B connector to second board.



<IMG 7: Image Data Format >

▪ IMG7is the schematic drawing for second PCB board. And it supplies I/O power to IC parts.

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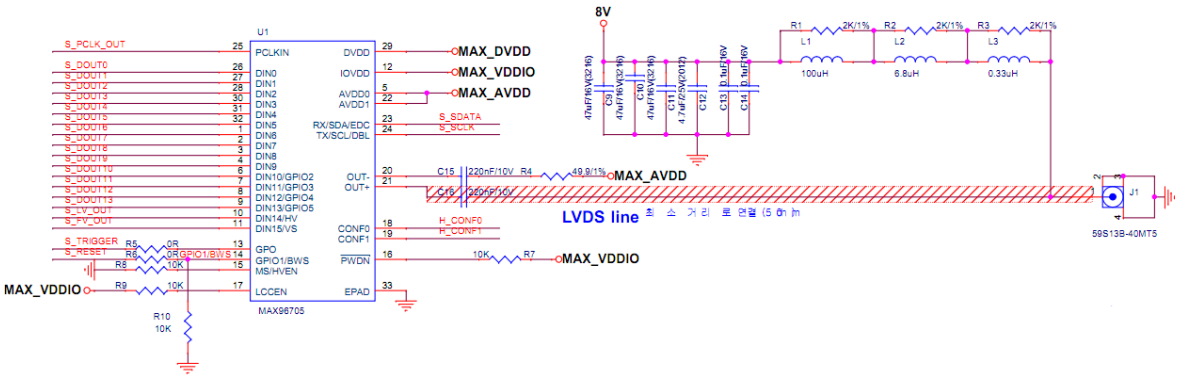


<IMG 8: Image data format >

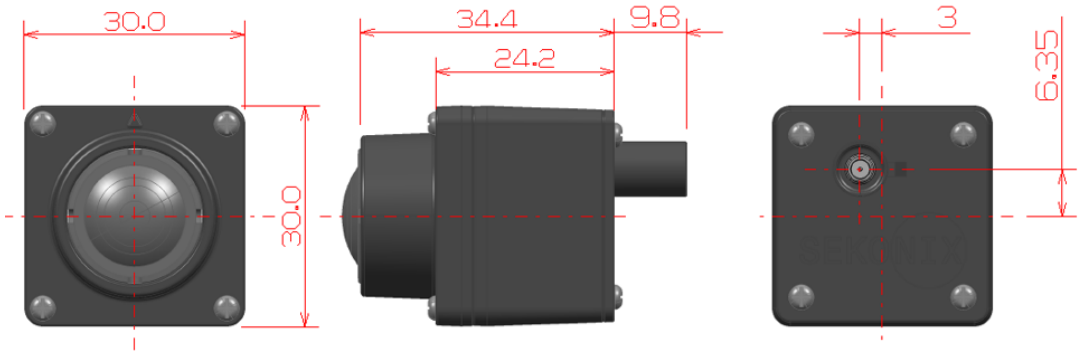
IMG8 is the schematic drawing for third PCB board. And it has MAXIM's MAX96705 Serializer for sending data from the sensor to counter part by LVDS line.

※ SF3323 video output has been tested with MAXIM's Deserializer (MAX96706).

4. Mechanical

4.1 Module dimension

Compact design for the vehicle mounting. Metal housing for enhanced heat prevention and duration. Rear body is integral with FAKRA Z type connector without pigtail Cable



<IMG 9: Image data format >

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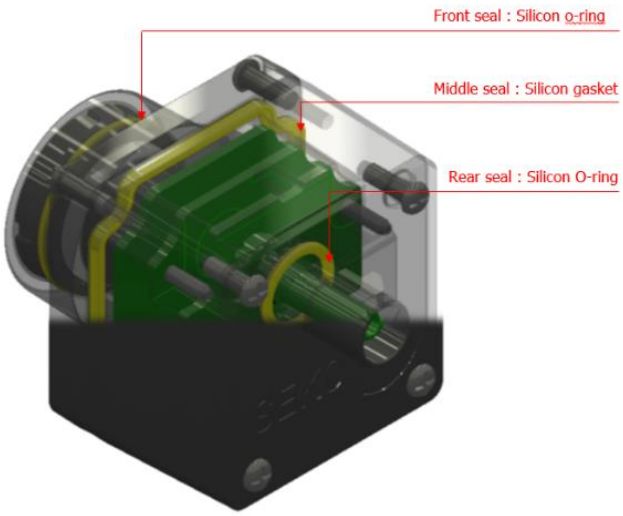
4.2 Water Proof

- Currently SF3322 DOES NOT support waterproof. (But it can be done)
- Please contact us if you need waterproof requirement.



<IMG 10: Image Data Format >

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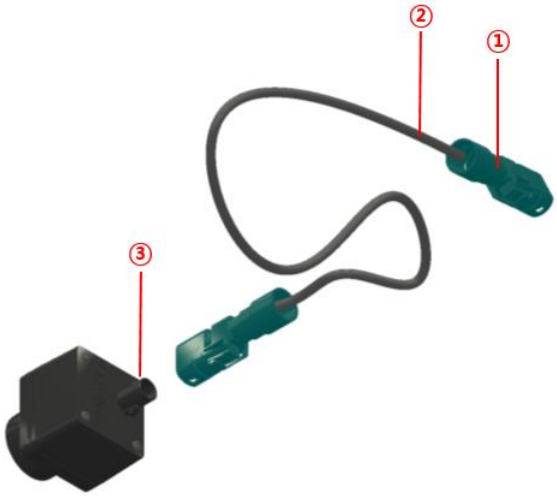
4.3 Cable Connector



<IMG 11: Camera and cable connector >

① Cable connector –IP69K can be supported if we use 59Z061-000-Z connector

※ FAKRA types connectors can also support IP69K

② Cable length: 3m (RG316 Cable)

③ Connector housing – FAKRA Z Type connector applied for ISO20860-1

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Additional Characteristics

Family items

Part Numbers	Descriptions
SF3321	190°(H)
SF3322	Same system with SF3323 but different View Angle : 100°(H)
SF3323	Same system with SF3323 but different View Angle : 60°(H)

Additional version

Part numbers	Product Description
SF3121	SIZE : 27X27X24.2 ISP applied (Onsemi AP0202) Image output Format YUV
SF332xA	Smaller Size version of SF332x - X: 1 - 190°(H), Y: 2 - 100°(H), 3 - 60°(H) - Sensor only, without ISP, Size : 27 x 27 x 20

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Revision History

Date of change	Revision	Page	Contain of change
20160824	**1.0**		

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