Global Digital Star Limited

SPECIFICATION

产 品 名 称（PARTNAME）：	5MP USB CMOS Camera Module
客 户（CUSTOMER）：	
供应商型号（MODEL NO）：	ZS-3732-56401 S2.0
客 户 型 号（Customer P/N）：	
拟 定 日 期（DATE）：	2014.03.31

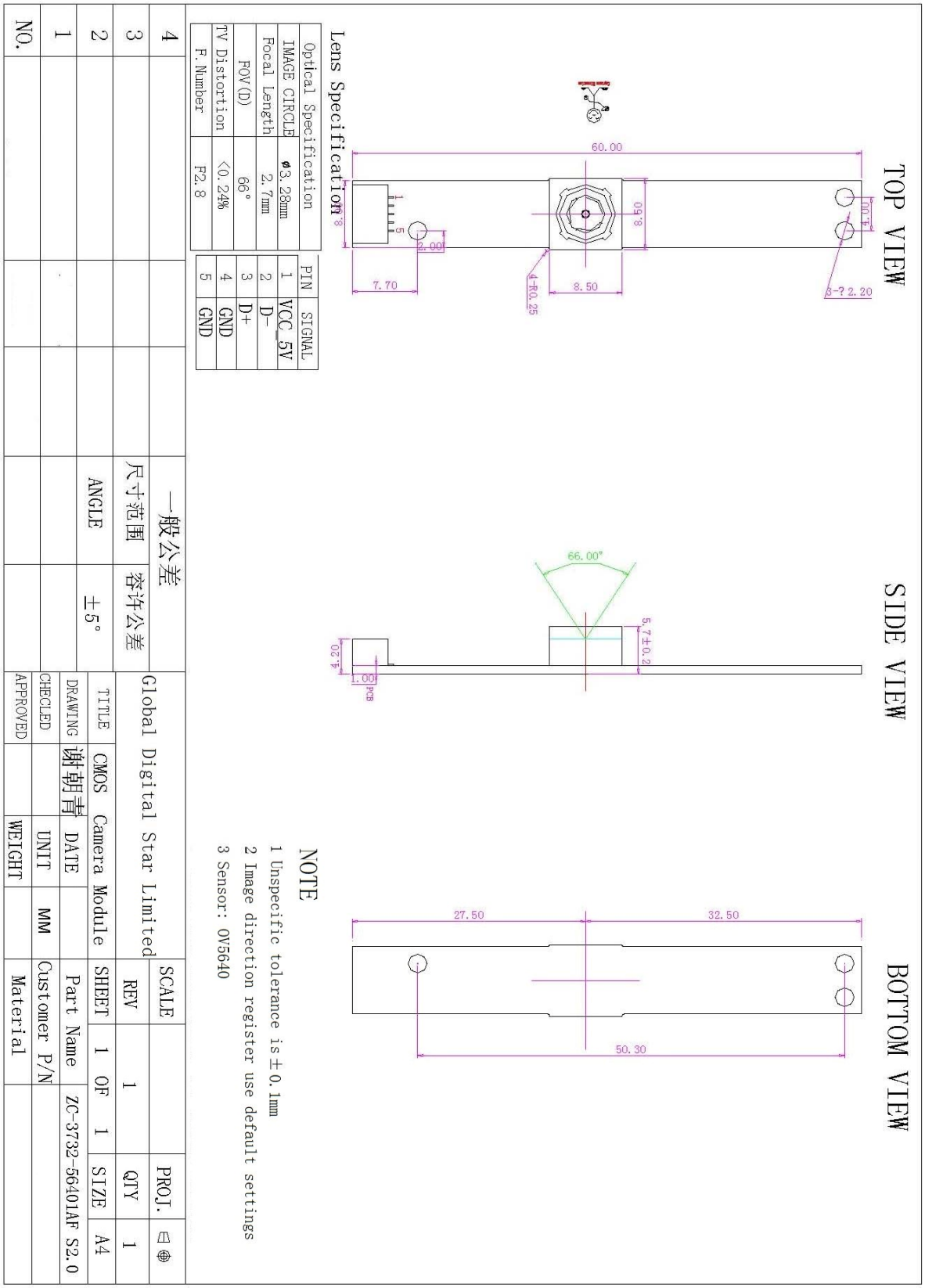
签 核 Approval Signature			客 户 确 认 回 签 Customer's Approval Signature
制作 Prepared By	审核 Checked By	核准 Approved By	

Content

1. Key Specifications

Module No.	ZC-NB5640 S1.0
Module Size	60mm × 8mm × 5.7mm
Temperature (Operation)	-30°C to 70°C
Temperature (Stable Image)	0°C to 50°C
Assembly technique	SMT (ROSH)
Focus	Fix focus / Auto focus optional
Object distance	15CM-130CM
Resolution	600LW/PH (Center)
PCB printing ink	black
interface	USB 2.0
Power	USB bus power
Power consumption	110mW（VGA）; 130 mW （UXGA）;
Operating system request	Windows 2000 、 Windows XP、7
Package	Anti-electrostatic tray
Certifications	FCC and CE
Sensor Type	OV5640 (1/4)
Active Array Size	2592*1944 (4：3)
Sensitivity	TBD
Pixel Size	1.4μm x1.4μm
Maximum Image Transfer Rate	See table2-1 for details
S/N Ratio	TBD
Dynamic Range	TBD
Package	CSP, Bare Die
Lens Type	
Lens Construction	4P+IR
F/No	2.8
EFL	1.8
BFL(Optical)	0.58mm
FOV	60°
TV Distortion	<0.24%
Relative Illumination (Sensor)	55%
IR Filter	650±10nm
DSP Type	SM3732
AGC/AEC/Whiter balance	Auto
Output Formats	USB suspend out
Fixed Pattern Noise	< 0.03% of $V_{PEAK-TO-PEAK}$
Package	LQFN-40pin

2. Module Mechanical Dimension



3. Appearance Specification

No.	Item	Standard	Importance Class
1	Top side of Lens	No obvious impurity and oil impurity on the front of lens within the half area; The defect(unfeeling) limitation: width≤1mm, length≤2mm, the defect number≤2; No feeling defect; The width of defects and gaps on the outside of Lens≤0.3mm. Others are unlimited.	A
2	Screw glue	Normally screw glue shall be symmetrical distributed around lens circle side. Particular circs, glue distribution must not disturb customer's assembly operation.	A
3	L1 Glass	No defect and dust check from 45° angle under the reflexing light and from 0° under the highlight	A
4	Holder	No obvious impurity and distortion of outline. The width and length of defect is unlimited, the depth≤0.1mm and ≤1/4 of the thickness of Holder.	B
5	Sealed glue	Sealed glue distributing between holder and FPC must be symmetrical and smooth. Not allow glue leakage and asymmetric thickness. After holder assembly, the thickness distance between one side and its opposite side shall be less than 0.2mm. Excess glue over the holder shall not make the outside dimension be out of control.	A
6	FPC/PCB	Edge defect limitation: width≤1/2H (H is minimum.)、length≤1mm、defect numbers per edge≤2(No tearing gap inby edge for FPC); Edge outshoot limitation (width≤0.3mm, length≤1mm). No obvious impurity and crease on the surface. If there was shield film on the surface, the spot size of the film shall be less than 0.3mm×1mm and no line is exposed. If it was not be cleaned and did not influence the total thickness, it would be permitted. Label and mark shall be clear enough to be discerned.	A
7	Connector	No dust, fingerprint, and not allows to turning colors, distortion; Solder must be well; No open circuit or short circuit	A

No.	Item	Standard	Importance Class
8	Gold finger	No dust, fingerprint, and not allows to turning colors, burned, unsmoothed and peeled; No open circuit or short circuit; The defect width shall be smaller than 20% of gold finger's width. No copper/nickel exposed in defect. Numbers of defected pin shall be less than 3. The defect limitation:width≤0.08mm,length≤5mm.	A
9	Stiffener	Holder anchor pole length overtopping the steel plate shall be less than 0.2mm. No dust, rust and deep scratch on the steel surface without Double coated tapes.	B
10	Double coated tapes	Adhered direction shall be right. Not allows to excess steel plate edge. No alveoli and stick. Not allows to peel glue and rip protective paper when tear the protective paper.	B
11	Protective film	No dust in the glue side. Not allows to float or drop. Adhered direction shall be right.	B

Remark:

1. The definition of the appearance importance class

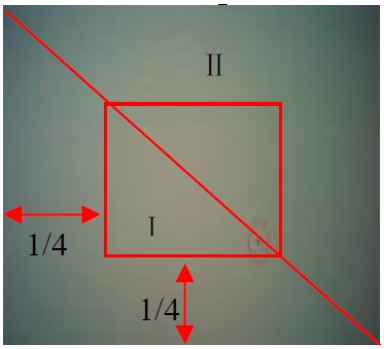
A： The defect can be found in the finished product, or have obvious visual differences from good products, such as crack, defect and dust, or influence image quality, or are appointed by the customer. We will emphasize these items and check all products.

B： The defect can be found in the finished product and has visual difference from the good one, but will not affect customer's aesthetic judgement. Or the defect can not be found in the finished product and will not generate functional problem, but will slightly influence sequential manufacture process or condition. We will supervise these items in the manufacturing process and check products selectively.

2. Sampling standard

Referenced standard: GB/T 2828.1-2003/ISO 2859-1:1999 and ANSI/ASQC.4-1993 Ⅱ

4. Image Specification

No.	Item	Standard	Important Class
1	TV Line	Center≥1000 8 point of 0.7 viewing field ≥800	A
2	Shading	The lightness of 90% viewing area ≥ 40% of center lightness(Lens correction Shading [Turn off]); The lightness of 90% viewing area ≥ 60% of center lightness(Lens correction Shading [Turn on])	A
3	Dust	No dust in the center viewing area; Border area according to the limit samples	A
4	Dead pixel	No in the viewing area.	A
5	Wound 	Ⅰ area：Blemish number≤1 Ⅱ area：Blemish number≤4	B
6	Color	Color distortion ratio of center±15%	B
7	Gray Scale	Margin of two near scales'brightness≥6	B
8	Distortion	＜1%	B
9	Flare	No flare in 45°viewing angle; No ghost in full viewing angle	B

5. QA Plan

No.	Item	Sampling frequency	Measure	Remark
	Image and reliability item			
1	TV Line	AQL 0.65 Ⅱ Class	Same as production	100% Inspection
2	Shading	AQL 0.65 Ⅱ Class	Same as production	100% Inspection
3	Dust	AQL 0.65 Ⅱ Class	Same as production	100% Inspection
4	Dead pixel	AQL 0.65 Ⅱ Class	Same as production	100% Inspection
5	Wound pixel	AQL 1.5 Ⅱ Class	Same as production	100% Inspection
6	Color	AQL 1.5 Ⅱ Class	Same as production	100% Inspection
7	Gray Scale	AQL 1.5 Ⅱ Class	Same as production	100% Inspection
8	Distortion	N=5,c=0 per batch	Same as production	Sampling by QA
9	Flare	N=5,c=0 per batch	Same as production	Sampling by QA
	Appearance Check Items			
1	Top side of Lens	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
2	Screw glue	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
3	L1 Glass	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
4	Holder	AQL 1.5 Ⅱ Class	Same as production	100% Inspection
5	Sealed glue	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
6	FPC/PCB	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
7	Connector	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
8	Gold finger	AQL 1.0 Ⅱ Class	Same as production	100% Inspection
9	Stiffener	AQL 1.5 Ⅱ Class	Same as production	100% Inspection
10	Double coated tapes	AQL 1.5 Ⅱ Class	Same as production	100% Inspection
11	Protective film	AQL 1.5 Ⅱ Class	Same as production	100% Inspection

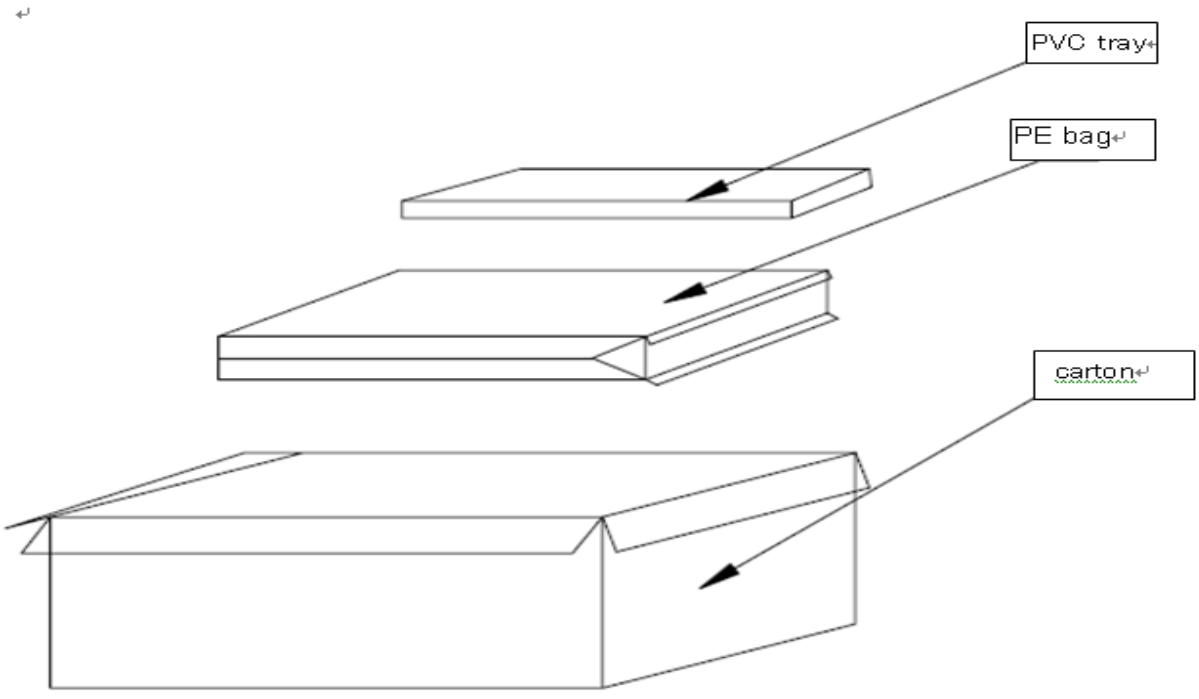
Sample: Referenced standard: GB/T 2828.1-2003/ISO 2859-1:1999 and ANSI/ASQC.4-1993 Ⅱ

6. Reliability Specification

NO.	Item	Conditions & Requirements	Test Device
1	Low Temp. Storage	-30℃,96 hours, UP & Down 30mins each	High & Low Cabinet
2	Low Temp. Operate	-30℃,96 hours, UP & Down 30mins each	Low Temp. Cabinet
3	High Temp. Storage	80℃, 96 hours, UP & Down 30mins each	High Temp. Cabinet
4	High Temp. Operate	70℃, 96 hours, UP & Down 30mins each	High Temp. Cabinet
5	High Temp.& Humidity Storage	60℃, 90%RH, 120hours Up & Down 30mins each	High Temp. Constant Humidity Cabinet
6	High Temp.& Humidity Operate	40℃, 90%RH, 48hours Up & Down 30mins each	High Temp. Constant Humidity Cabinet
7	Hot & Cold Impact Test	-30℃ → 80℃（each 30min） high & low temp switch time is < 5mins Total： 10cycles	High & Low Temp.
8	Random Drop Test （packed）	at high of 150cm, 10 times	Oak floor
9	Vibrate Test （packed）	10Hz ～ 200Hz～ 10Hz, Frequency 2mm, XYZ three directions, vibrate 2 hours	Vibrate Test Desk
10	Static Test （off power）	150Pf, 330 ohm ±8KV, air discharge test 10 times	Static Test Device
1. Camera Module meet standards after all required tests. 2. Test Conditions: Illumination：Small light box 1500±10%LUX Big light box 6000±10%LUX Color Temp. S： 4400±150K			PC Test Software MODULE Test Platform

7. Package Specification

NO	NAME	CONTENT
1	Material Type	Anti-static plastic tray, Anti-static bag and non-wood carton
2	Material Spec	Anti-static plastic tray：290*240mm Anti-static bag： 300*350mm Non-wood carton：300*250*115mm
3	Packing Qty	Per tray：100pcs Per bag: 10 trays, 1000pcs Per Carton：4 bags, 4000pcs
4	Packaging Method	Vacuum packaging
5	Storage	Environment Temperature：-20℃ --- 65℃ Storage: one year



8. Handing Precautions For Using CCM Modules

—DO NOT try to open the unit enclosure as there is no user-serviceable component inside. To prevent damage to the camera module by electrostatic discharge, handling the camera module only after discharging all static electricity from yourself and ensuring a static-free environment for the camera module.
—DO NOT touch the top surface of the lens.
—DO NOT press down on the lens.
—DO NOT try to focus the lens.
—DO NOT put the camera module in a dusty environment.
—To reduce the risk of electrical shock and damage to the camera module, turn off the power before connect and disconnect the camera module.
—DO NOT drop the camera module more than 60 cm onto any hard surface.
—DO NOT expose camera module to rain or moisture.
—DO NOT expose camera module to direct sunlight.
—DO NOT put camera in a high temperature environment.
—DO NOT use liquid or aerosol cleaners to clean the lens.
—DO NOT make any charges or modifications to camera module.
—DO NOT subject camera module to strong electromagnetic field.
—DO NOT subject the camera module to excessive vibration or shock.
—DO NOT Impact or nip CCM module with spiculate things
—DO NOT alter, modify or change the shape of the tab on the metal frame.
—DO NOT make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
—DO NOT damage or modify the pattern writing on the printed circuit board.
—Absolutely DO NOT modify the zebra rubber strip (conductive rubber) or heat seal connector
—Except for soldering the interface, DO NOT make any alterations or modifications with a soldering iron.
—DO NOT twist FPC of CCM.