



Chuangxin Online Test Center Laboratory

Add: F/r 401 Building A, Ying Da Feng industrial No,393,Jihua Rd.LongGang
Dis. Shenzhen China
Tel: 0755-83765367 Email: engineer@iclab-cn.com



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Project Inspection Report

Company : NA
Address : NA
Sample Name : SPC5644AF0MMG1
Manufacture : NXP
Date Code : 2038
Package Type : BGA-208
Sample Number : 500 PCS
Check Number : 50 PCS
Date of Received : 09/02/2021
Date of Tested : 10:00/09/03/2021 ~ 19:00/09/03/2021

WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

Inspected by Engineer
Sun da xiu

Reviewed by Project Manager
Lucy

Note:

1. This report will be invalid if reproduced in whole or in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used separately.
3. This report is only valid with the examination seal and signature of this institute.
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.
5. This report is only responsible for the samples tested.



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Items test

- External visual inspection
- Pin Correlation Test
- Programming test
- Solder ability Analysis
- Radiography (X-ray)
- ROHS test
- Key Functional Testing (KFT)
- Baking
- Tape and Reel
- Internal visual inspection
- Top permanency test

Methods & Equipment

1.1 Applicable Standard

- MIL-STD-883L-2019 2009.14
- GJB 128A-1997
- MIL-STD-883L-2019 2010.14

1.2 Optical Microscope

- Equipment Spec:
Top view: FINIAL Hi-scope System SEZ-260: X7 ~ X45
FJ-3A: X50-X500

1.3 Digital Caliper

- Equipment Spec:
MASTERPROOF : Standard Digital Caliper 0-150mm

1.4 Functional testing Equipment

- Transistor curve tracer XJ4822
XJ4822 is a CRT readout transistor curve tracer, which is used to measure the static parameters of transistors, diodes, MOSFETS and other semiconductor devices.
MAX collector voltage up to 3KV(option)
Step voltage $\pm 10V + \Delta VB \pm 5V$ with low internal resistance, especially for testing high power VMOS devices.



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1.5 Testing Environment

- Ambient Temperature: $25\pm 5^{\circ}\text{C}$
- Relative Humidity: 45%-65% RH

1.6 Testing Base

- [NXP SPC5644AF0MMG1]

<https://pdf1.alldatasheet.com/datasheet-pdf/view/557392/FREESCALE/SPC5644AF0MMG1.html>



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Analysis Summary

External Visual Inspection:

Applicable Standard: MIL-STD-883L 2019 2009.14

External Visual Inspection on 50 PCS samples marked with D/C 2038. Evidence of secondary coating was found on all inspected. Substrate show residues on all inspected. Device failed top permanency tested. BGA were in acceptable condition. Devices package and dimension matched to manufacturer's specification.

All devices failed the external visual inspection.

Specification dimension:

L: 17.00 BSC MM

W: 17.00 BSC MM

H: 2.00 MAX MM

Measurement dimension:

L: 17.00 MM

W: 17.00 MM

H: 1.67 MM

Pin Correlation Test Results:

Pin Correlation Test	Result:
Total quantity tested:	100 pcs
Total quantity passed:	100 pcs
Total quantity failed:	0 pcs
Note:	All devices passed the Pin Correlation Test .

Internal Visual Inspection:

Applicable Standard: MIL-STD-883L-2019 2010.14

Internal Visual Inspection was verified on 1PCS sample. Manufacturer FREESCALE marking was found on the die surface. Die M14X was also found on the die surface. Device confirmed to be a FREESCALE device.



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External Visual Inspection Result:

External Visual Criteria	Yes/No	Result
Mix-up	No	Pass
Top Scratches	No	Pass
Bottom Scratches	No	Pass
Residues	Yes	Pass
Indentation	No	Pass
Contamination	No	Pass
Cracks	No	Pass
Copper defect	No	Pass
Oxidization	No	Pass
Coplanarity	Yes	Pass
Sanding Marks	No	Pass
Secondary Coating	Yes	Fail
Top permanency Test	Yes	Fail

Pin Correlation Test :

Failure classification	Yes/No	Result
Damaged structure	No	Pass
Open structure	No	Pass
Short structure	No	Pass



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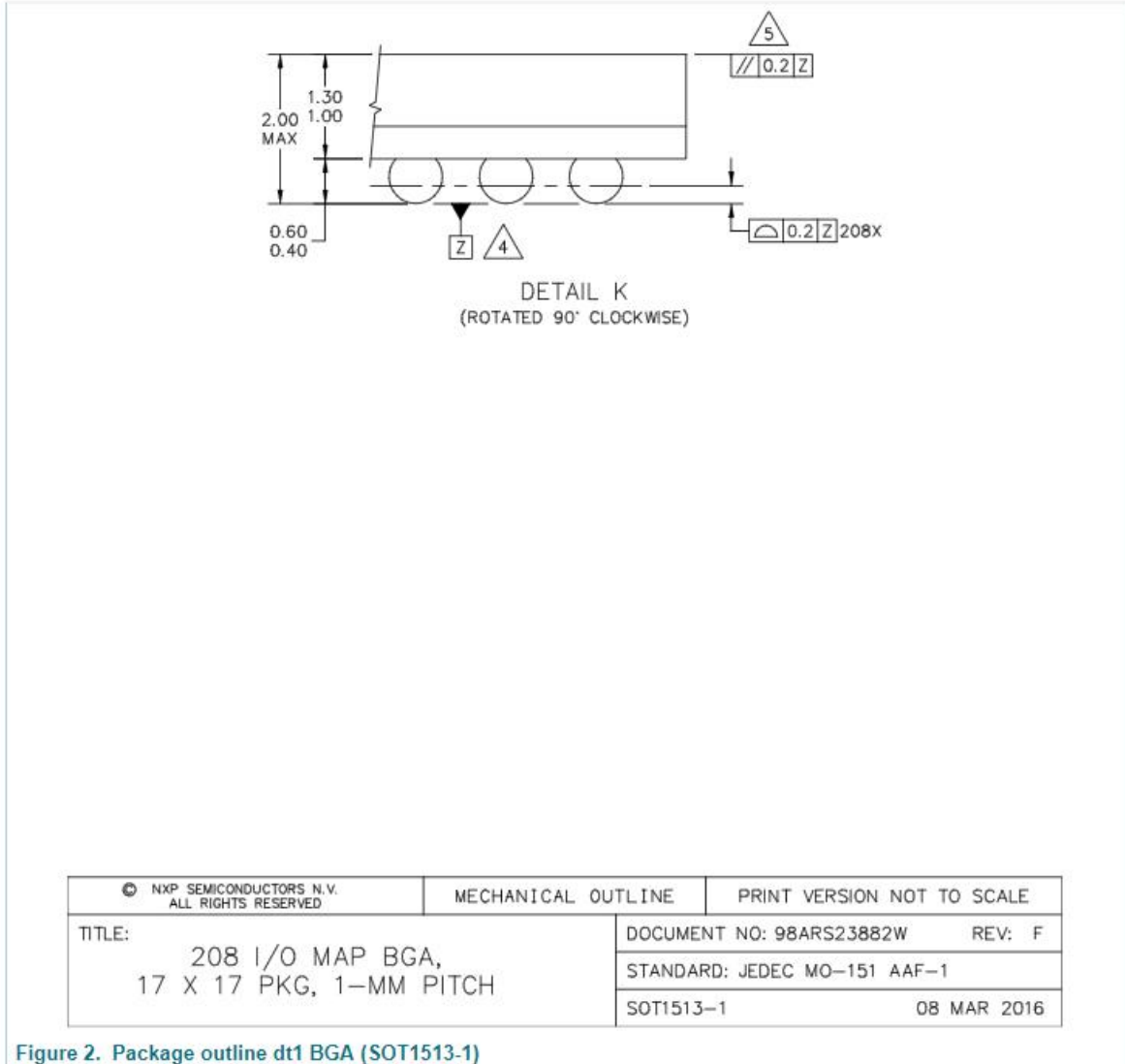


Figure 2. Package outline dt1 BGA (SOT1513-1)



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3. Receiving Inspection:

Gross Weight	1934g	Parts Total	500 PCS
Number Of Boxes	1	Full Label	Acceptable
Package type	Tray	Moisture protection	Acceptable
MSL	1	ESD protection	Acceptable

Received View-1



Received View-2



Received View-3



Received View-4





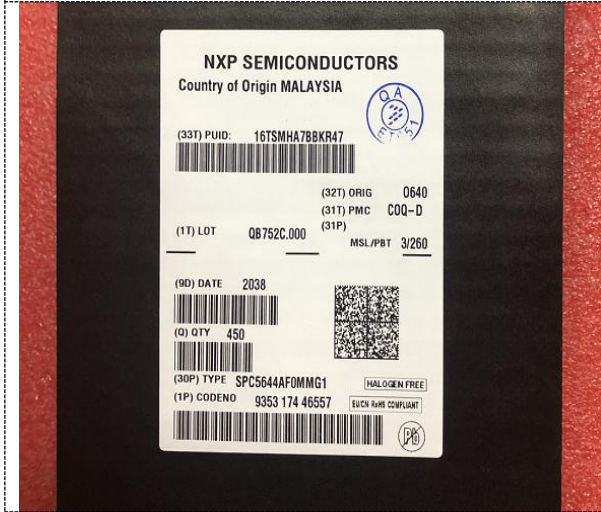
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Received View-5



Received View-6





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4. External Visual Inspection:

Applicable Standard: MIL-STD-883L 2019 2009.14

External Visual Inspection on 50 PCS samples marked with D/C 2038. Evidence of secondary coating was found on all inspected. Substrate show residues on all inspected. Device failed top permanency tested. BGA were in acceptable condition. Devices package and dimension matched to manufacturer's specification. All devices failed the external visual inspection.

Specification dimension:

L: 17.00 BSC MM

W: 17.00 BSC MM

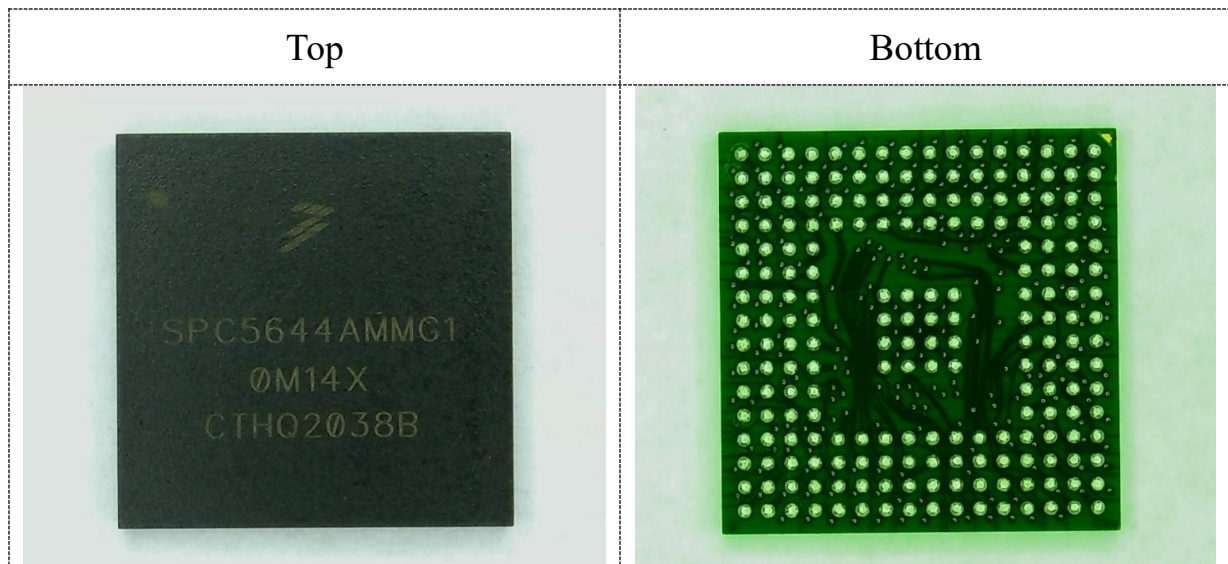
H: 2.00 MAX MM

Measurement dimension:

L: 17.00 MM

W: 17.00 MM

H: 1.67 MM





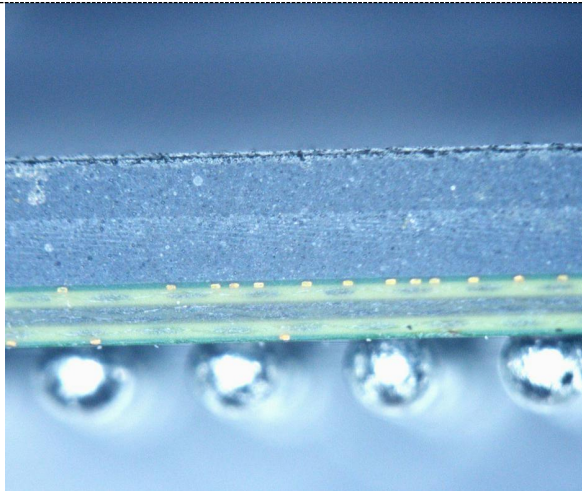
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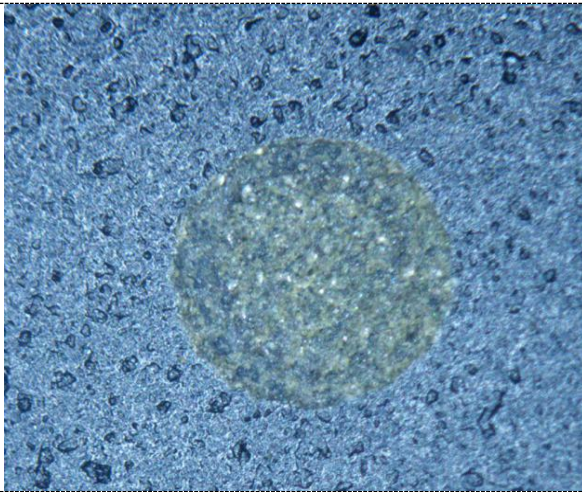
Side



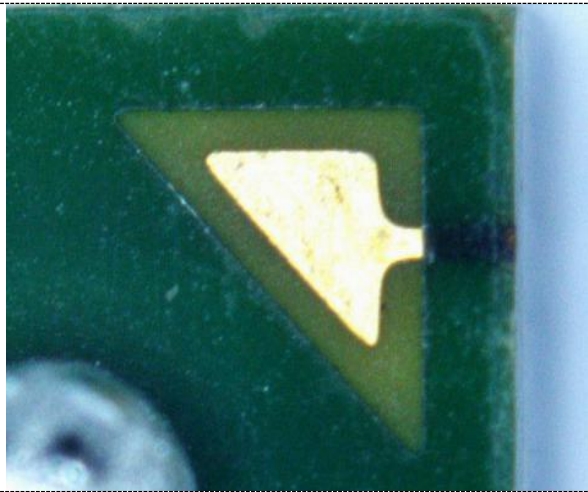
Laser Marking



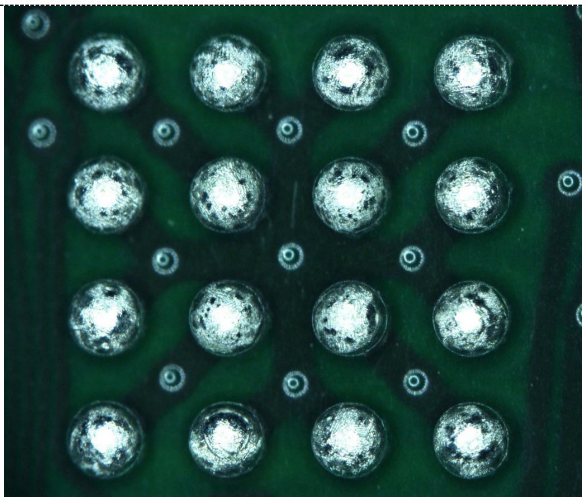
Top Pin



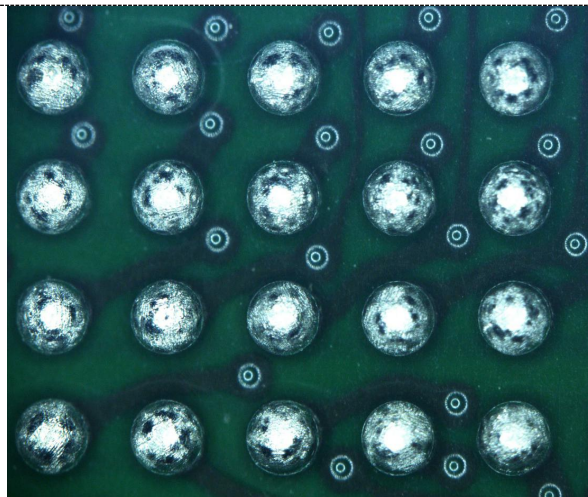
Bottom Leads



BGA-1



BGA-2





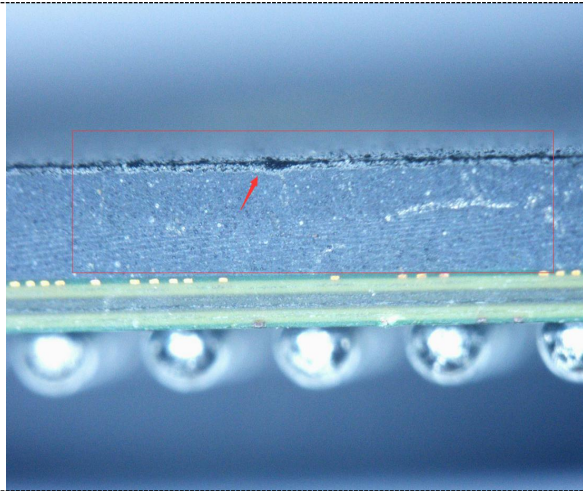
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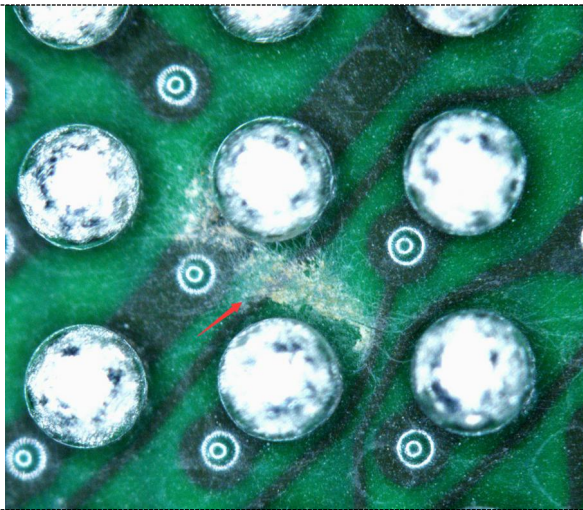
Secondary Coating



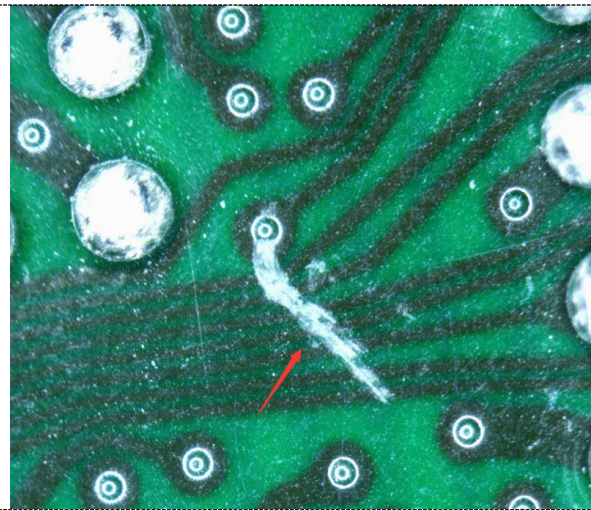
Top permanency Test (Fail)



Residues-1



Residues-2



L=17.00 MM

W=17.00 MM





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H=1.67 MM





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5.Pin Correlation Test:

Applicable Standard: GJB 128A-1997

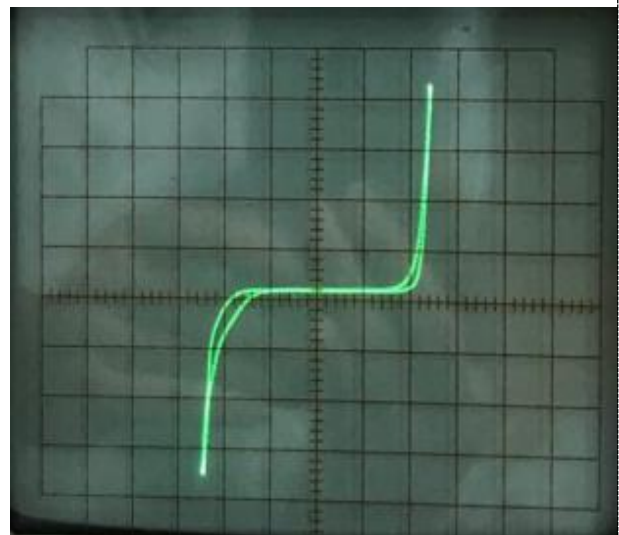
Device Pin Characteristics Correlated to Manufacture Datasheet specified Pin Descriptions. With use of Curve Tracer this verifies Device's Pin out and checks for damage to devices via Opens/Shorts Test.

Device Pinout

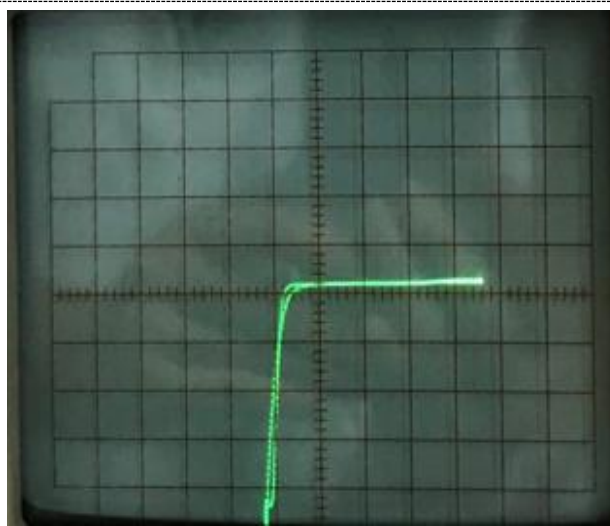
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A	VSS	AN9	AN11	VDDA1	VSSA1	AN1	AN6	VRH	VRL	AN7	VSSA0	ANV3205	MD02	MD0X	VRCS3	VSS
B	VDD	VSS	AN8	AN21	AN1	ANA	REFRPC	AN2	AN3	AN3	VDDA0	ANV3200	MD03	MD01	VSS	VDD
C	VEFB1	VDD	VSS	AN17	AN4	AN6	AN1	AN2	AN2	AN2	AN3	ANV4301	ANV430X	VSS	MS03	TDK
D	VRCS2	AN9	VDD	VSS	AN18	AN2	AN6	AN4	AN6	AN5	AN6	VDDER7	VSS	TMS	EYTD	NC
E	ETPUA8	ETPUA1	AN7	VDD									NC	TD	EYTD	MS01
F	ETPUA8	ETPUA8	ETPUA8	AN8									VDDER4E	VDD	MD0	JCOMP
G	ETPUA8	ETPUA7	ETPUA2	ETPUA2		VSS	VSS	VSS	VSS				DSPI_B_PCS2	DSPI_B_PCS2	DSPI_B_PCS	DSPI_B_PCS
H	ETPUA3	ETPUA2	ETPUA17	ETPUA18		VSS	VSS	VSS	VSS				GPC0B	DSPI_B_PCS4	DSPI_B_PCS2	DSPI_B_PCS
J	ETPUA8	ETPUA18	ETPUA14	ETPUA13		VSS	VSS	VSS	VSS				DSPI_B_PCS3	DSPI_A_TX	GPC0B	DSPI_B_PCS
K	ETPUA8	ETPUA15	ETPUA7	VDDVH4B		VSS	VSS	VSS	VSS				CAN_C_TX	DSPI_A_RX	PROTUT	VDDER3
L	ETPUA2	ETPUA11	ETPUA6	TDRCLKA									DSPI_B_TX	CAN_C_RX	MD10	MD10FS
M	ETPUA8	ETPUA8	ETPUA1	ETPUA6									DSPI_B_RX	PLUSREF	BOOTCFG1	VSS
N	ETPUA8	ETPUA8	ETPUA6	VSS	VDD	VRCS2	EM032	EM030	EM031	VDDVH4B	EM032	MD07	MD07	MD07	MD07	MD07
P	ETPUA8	ETPUA2	VSS	VDD	GPC02F	NC	EM036	EM038	MD011	MD04	MD04	MD04	MD04	MD04	MD04	MD04
R	NC	VSS	VDD	GPC02B	EM034	EM033	EM039	EM031	MD016	MD016	MD016	MD016	CAN_A_TX	CAN_B_RX	VDD	VSS
T	VSS	VDD	NC	EM030	EM031	SP1219	MD03	MD03	MD03	MD03	MD03	MD03	MD03	MD03	MD03	MD03

¹ This pin (N13) should be tied low.

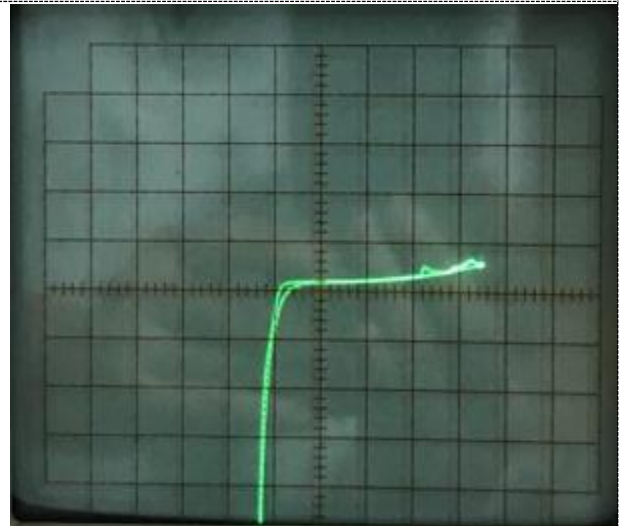
VSS TO AN9



VSS TO DSPI_B_PCS1



VSS TO EMIOS4





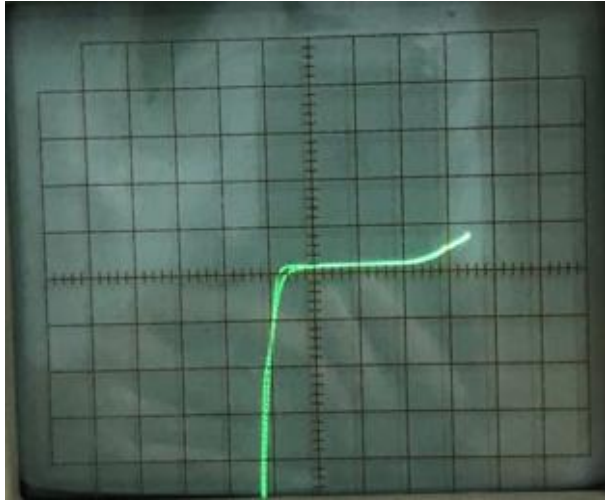
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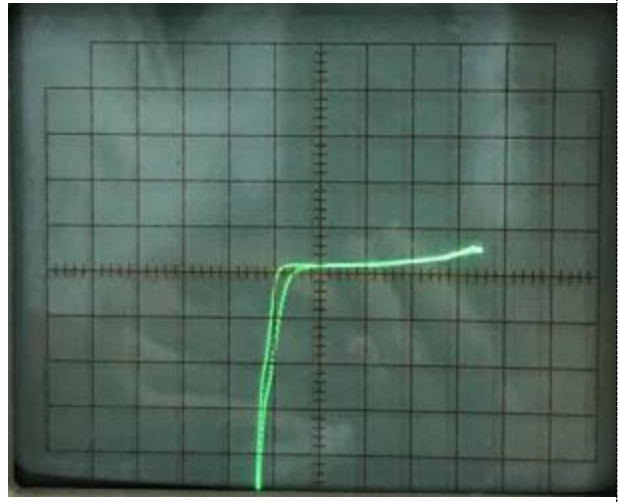


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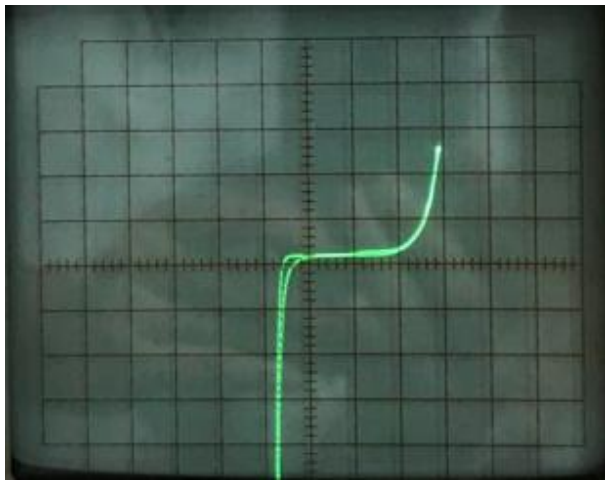
VSS TO ETPUA30



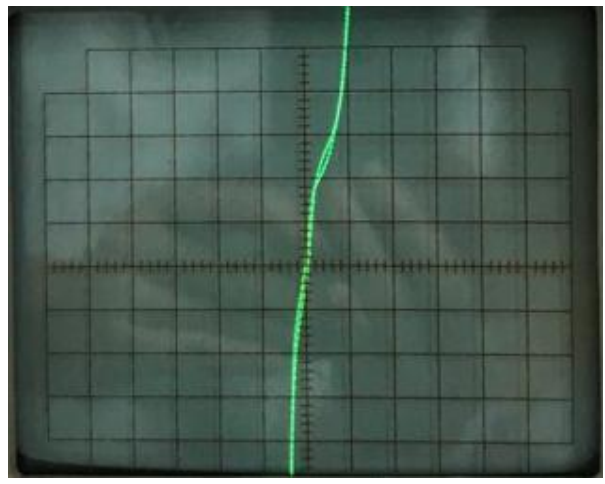
VSS TO GPIO219



VSS TO MDO0



VSS TO VDD



Pin Correlation Test Results:

Pin Correlation Test	Result:
Total quantity tested:	100 pcs
Total quantity passed:	100 pcs
Total quantity failed:	0 pcs
Note:	All devices passed the Pin Correlation Test .



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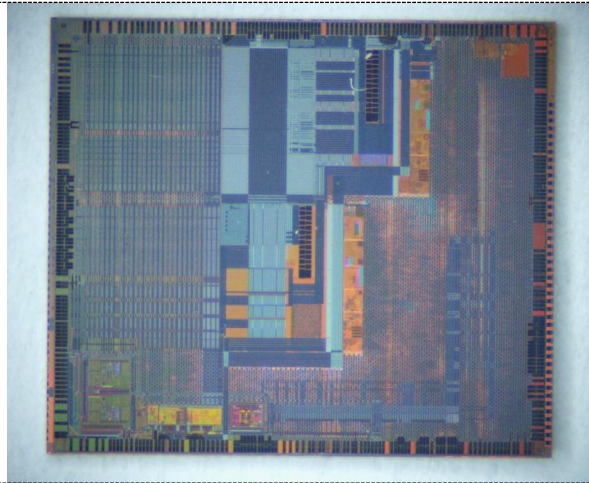
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6.Internal Visual Inspection:

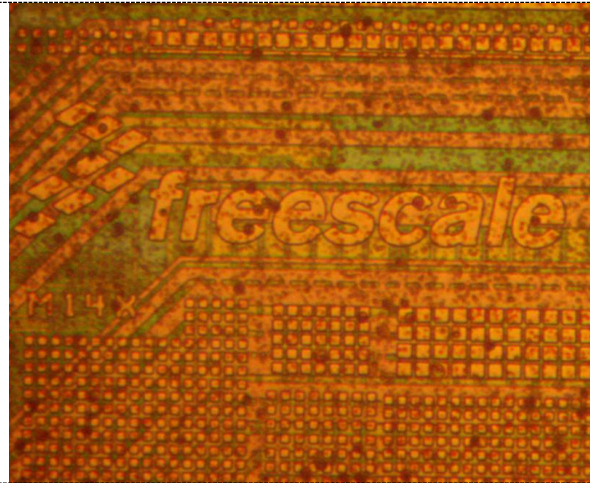
Applicable Standard: MIL-STD-883L-2019 2010.14

Internal Visual Inspection was verified on 1PCS sample. Manufacturer FREESCALE marking was found on the die surface. Die M14X was also found on the die surface. Device confirmed to be a FREESCALE device.

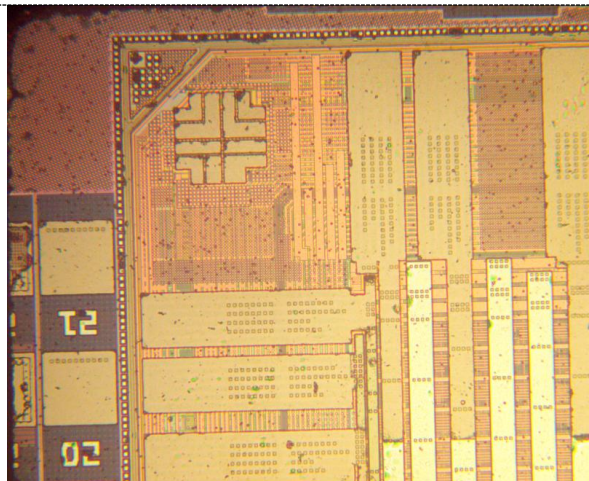
Die Topography



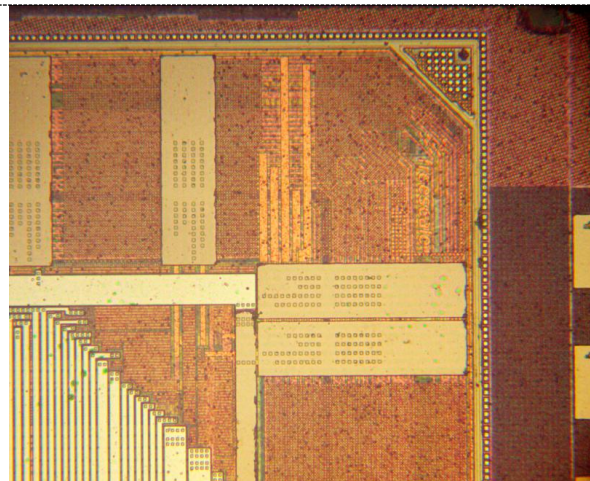
Die Logo



Die Corner-1



Die Corner-2





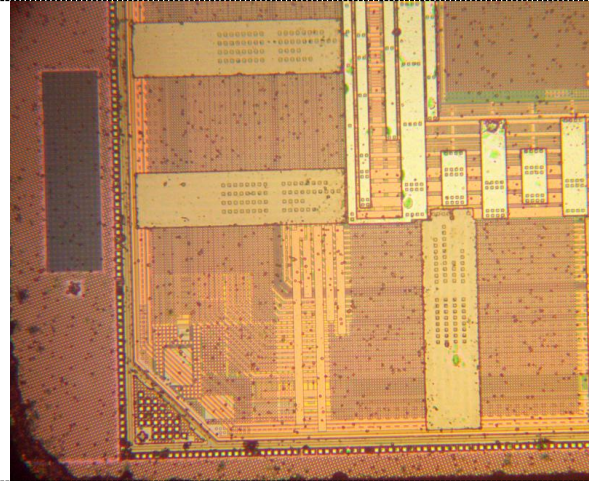
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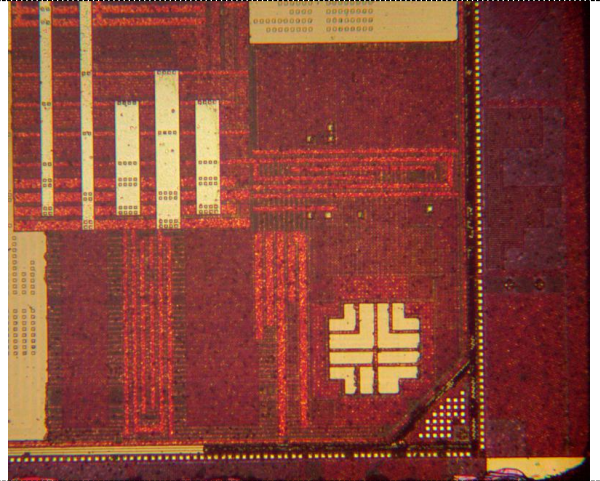


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Die Corner-3



Die Corner-4



End

For more information, please visit: <http://www.iclabcn.com>

CXO Lab WeChat official account

