



Chuangxin Online Test Center Laboratory

Add: F/r 201Building A, Ying Da Feng industrial No,393,Jihua Rd.LongGang
Dis. Shenzhen China
Tel: 0755-83762185 Email:engineer@iclabcn.com

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Date:	2024/02/23
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Failure Analysis Report

Description	Integrated Circuit
Part No	AP3211KTR-G1
Date Code	N/A
Date of Received	2024. 02. 20
Customer Company	

Chuangxin Online FA Laboratory

IC Reliability Analysis Center

Checked _____ Approved _____ Date _____



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Failure Analysis Report

Description		Integrated Circuit	Part No	AP3211KTR-G1
Company	Name		Phone	N/A
	Address	N/A		
Date of received		2024.02.20	Analysis time	2023.02.21 2023.02.23
Quantity Returned		A total of 5pcs samples were received, and 5 samples were tested, numbered as F1-F5 (Marked with “NG”)		
Test Items		External Visual Inspection,Electrical characteristic analysis, X-ray Analysis,Internal Visual Inspection		
T&RH		24.5°C&52.2% RH		
Application Standard		JESD74A MIL-STD-883L 2019		
Device	No	Equipment		Equipment ID
	1	OM		FC-1001
	2	Semiconductor intrinsic cartographer		JX-48001
	3	X-Ray		X-R001
	4	Chemical DECAP		DP-1001
	5	Metallurgical Microscopy		FC-5A
Conclusion	To sum up, the test analysis shows that the failure of F5 is caused by EOS damage caused by overelectric stress.No obvious abnormality was found in the failed product F1-F4.			



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Failure analysis steps

1. Failure information:

Problem / Defect Description :

failure state:

A fault was found in the test.



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2. Analysis process:

2.1 External Visual Inspection:

External Visual Inspection on 5PCS samples(F1-F5), No obvious abnormality was found.

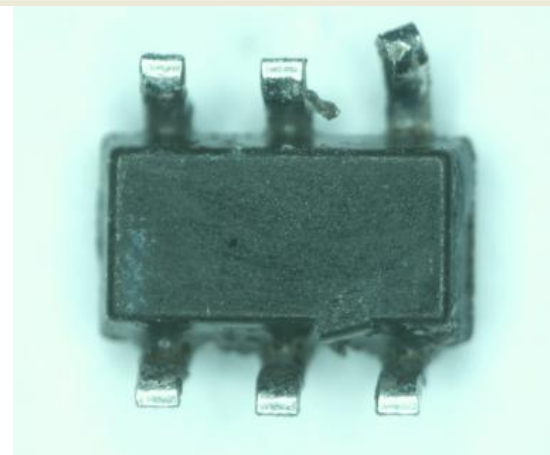
Incoming picture-1



F1-Top



F1-Bottom





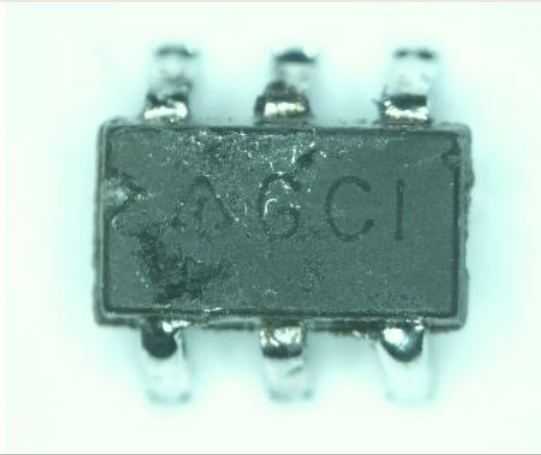
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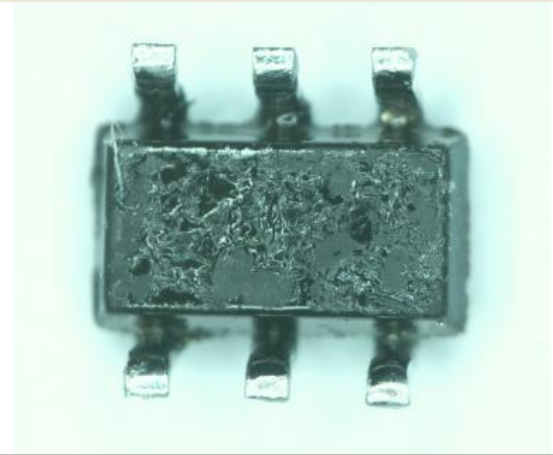
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F2-Top



F2-Bottom



F3-Top



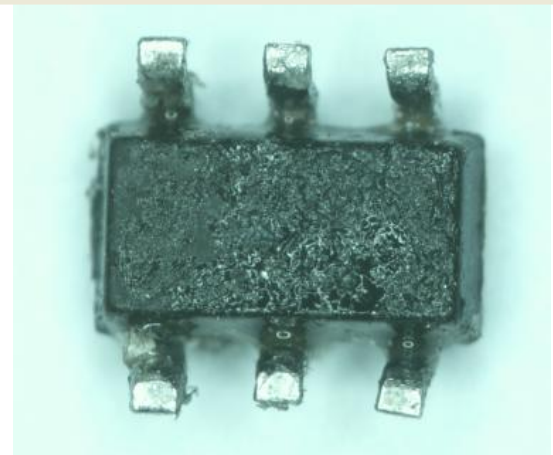
F3-Bottom



F4-Top



F4-Bottom





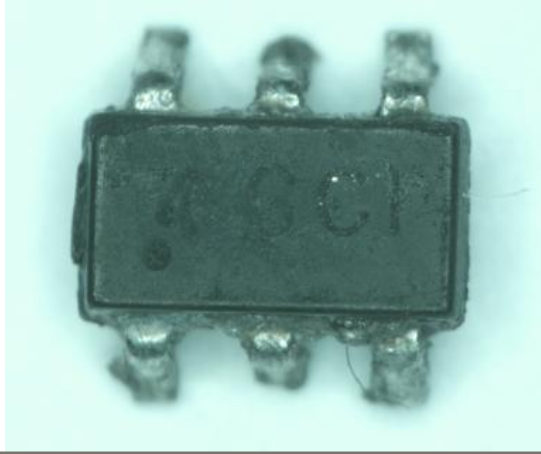
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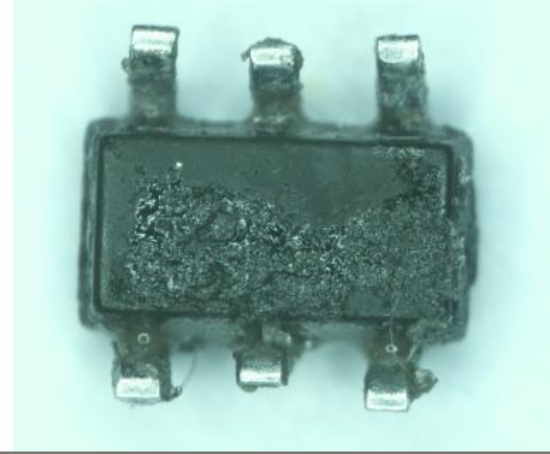
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F5-Top



F5-Bottom





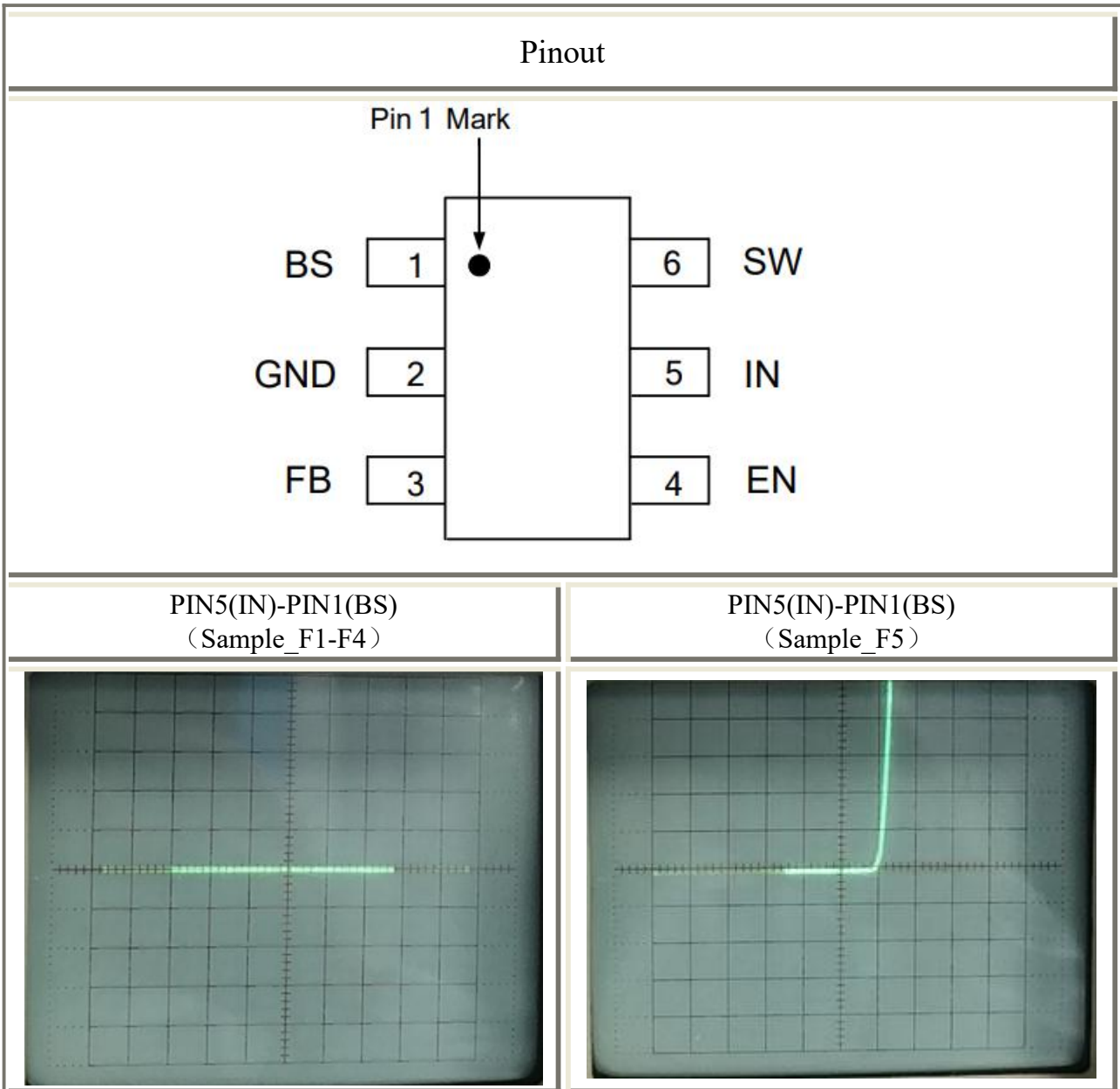
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2.2 Electrical characteristic analysis:

Electrical characteristics analysis 5 PCS samples(F1-F5),No obvious abnormality was found in the failed product F1-F4.Electric leakage between PIN6(SW)-PIN2(GND) of invalid sample F5, short circuit between PIN5(IN)-PIN6(SW).





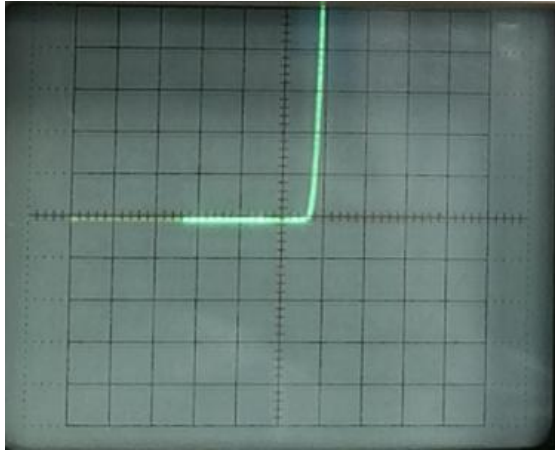
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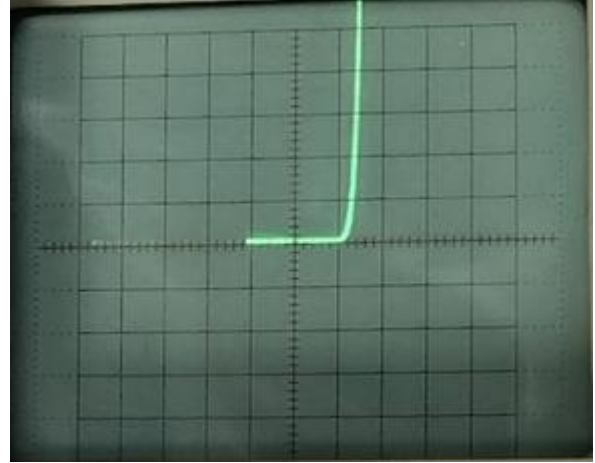
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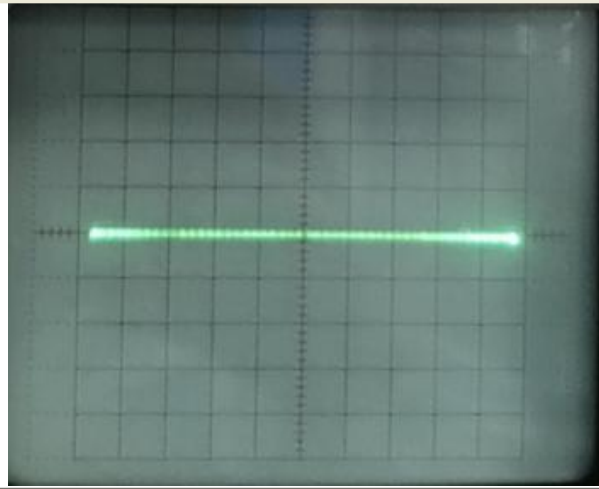
PIN5(IN)-PIN2(GND)
(Sample_F1-F4)



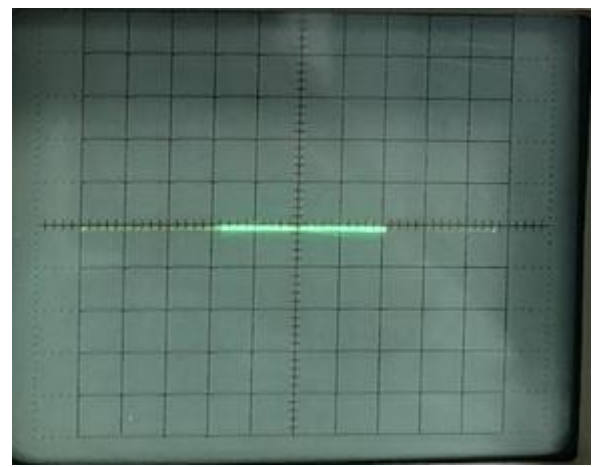
PIN5(IN)-PIN2(GND)
(Sample_F5)



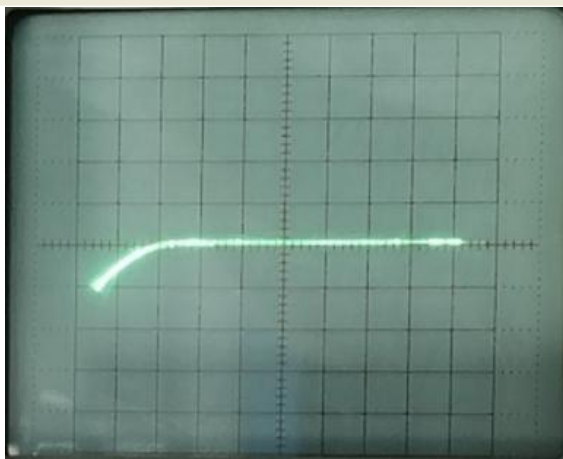
PIN5(IN)-PIN3(FB)
(Sample_F1-F4)



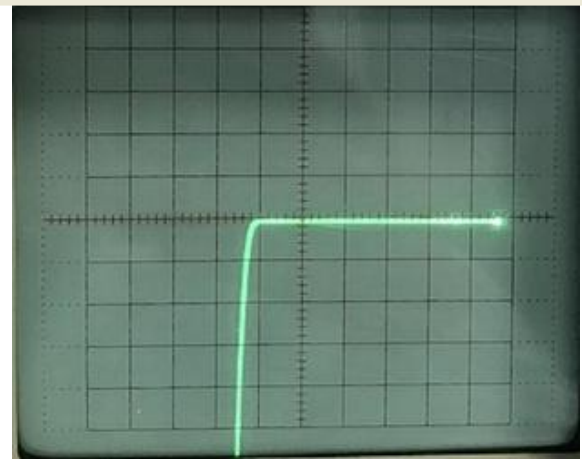
PIN5(IN)-PIN3(FB)
(Sample_F5)



PIN6(SW)-PIN2(GND)
(Sample_F1-F4)



PIN6(SW)-PIN2(GND)
(Sample_F5)



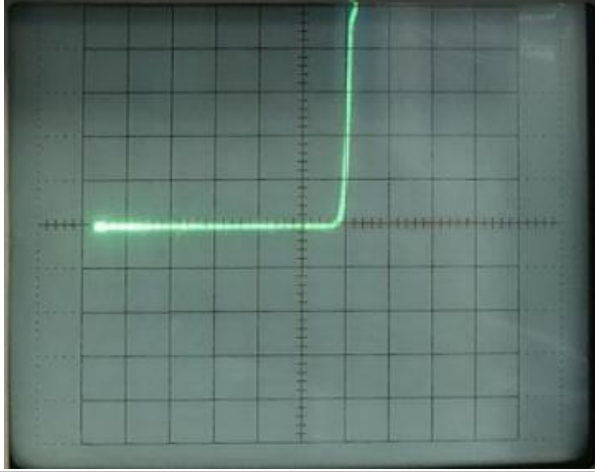


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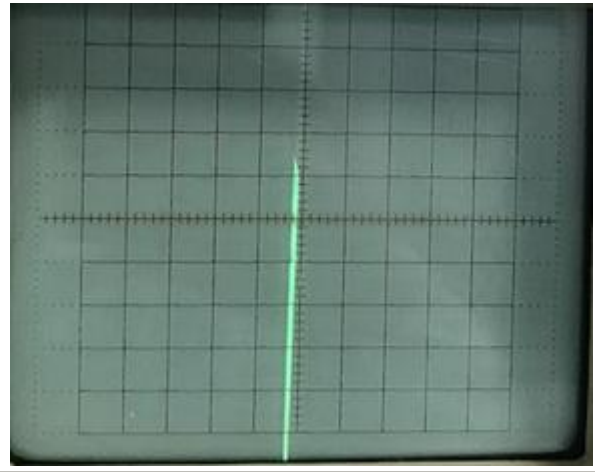
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PIN5(IN)-PIN6(SW)
(Sample_F1-F4)



PIN5(IN)-PIN6(SW)
(Sample_F5)





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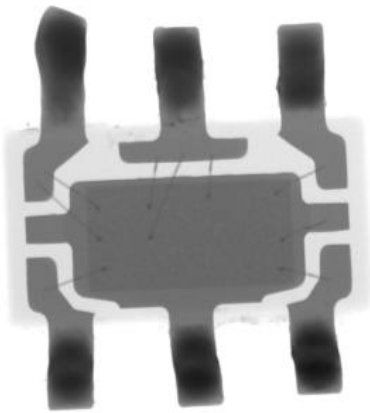
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2.3 X-ray Analysis:

X-ray Inspection on 5 PCS samples(F1-F5).No structure or bonding wire abnormal was found.

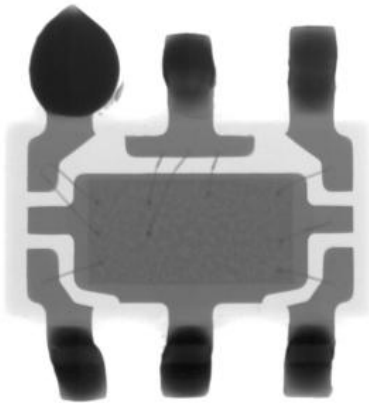
F1-Top View-All



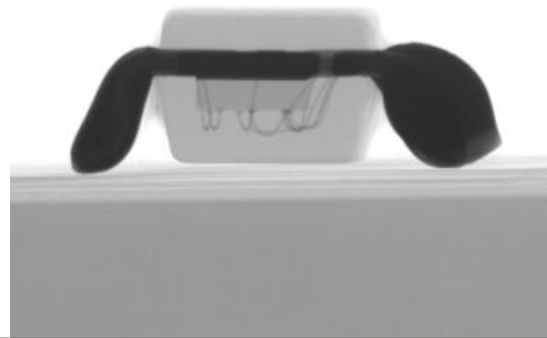
F1-Side View-All



F2-Top View-All



F2-Side View-All



F3-Top View-All



F3-Side View-All



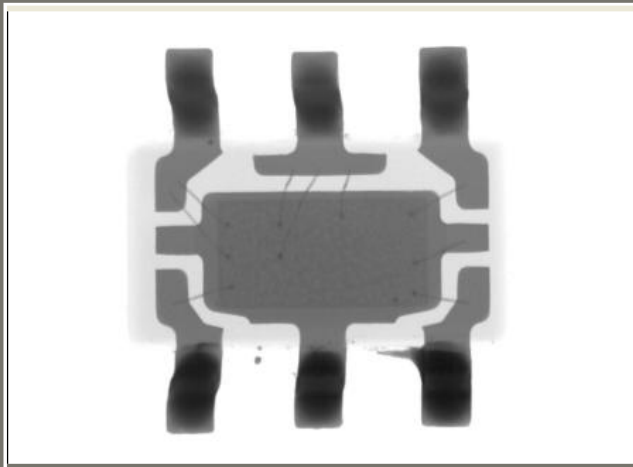


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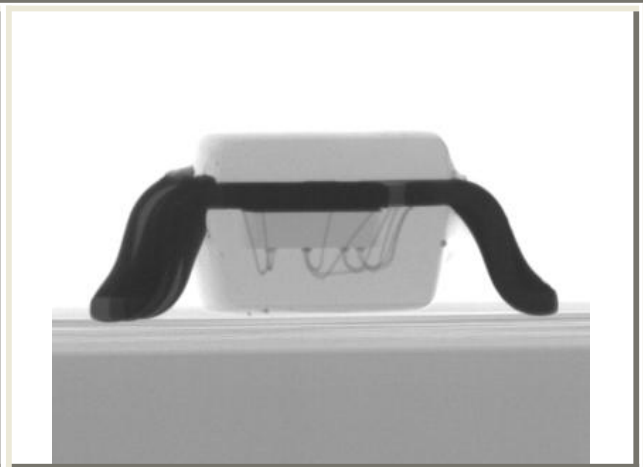
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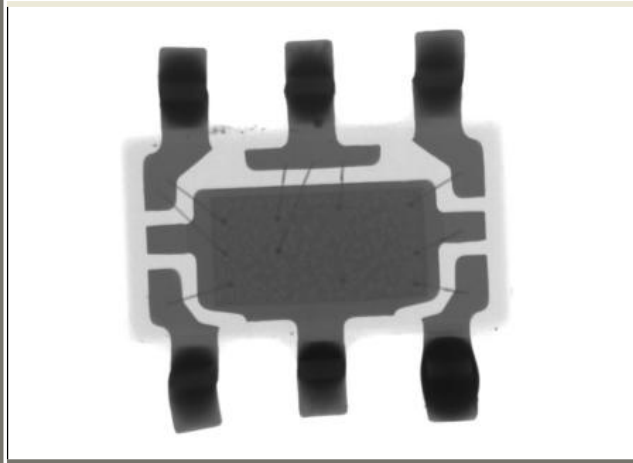
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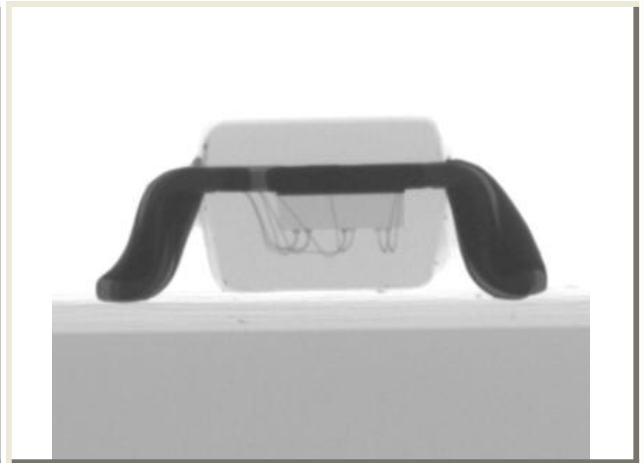
F4-Top View-All



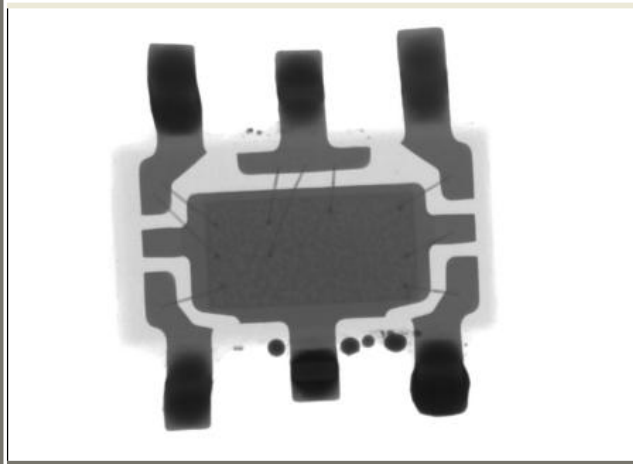
F4-Side View-All



F5-Top View-All



F5-Side View-All





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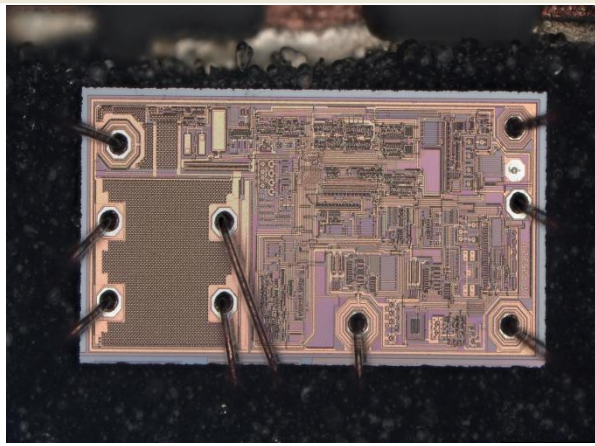
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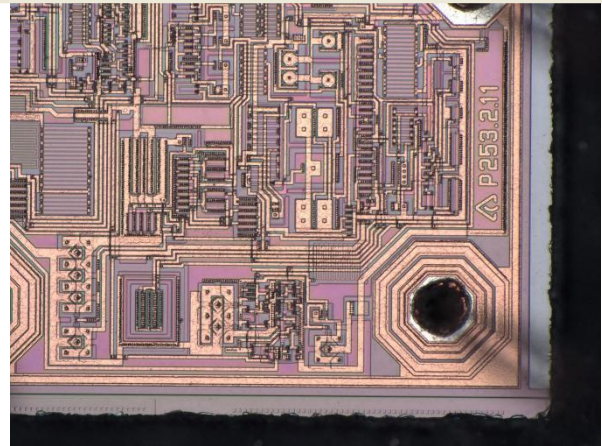
2.4 Internal Visual Inspection:

Internal Visual Inspection was verified on 2PCS (F1,F5) samples. No abnormality was found on the Die surface of F1.EOS damage was found on Die surface of invalid F5.

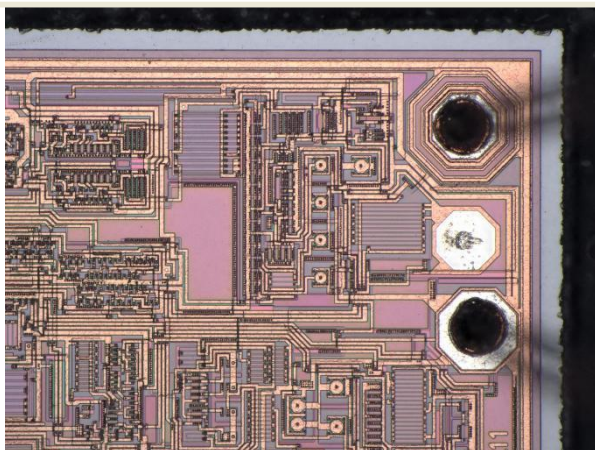
F1-Die Topography



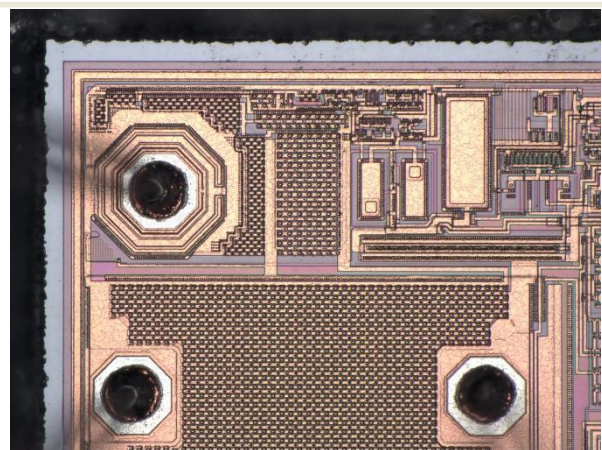
F1-Die Corner-1



F1-Die Corner-2



F1-Die Corner-3



F1-Die Corner-4



F5-Die Topography



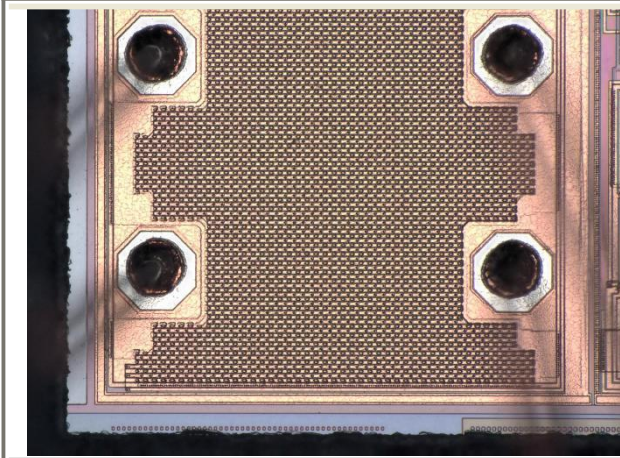


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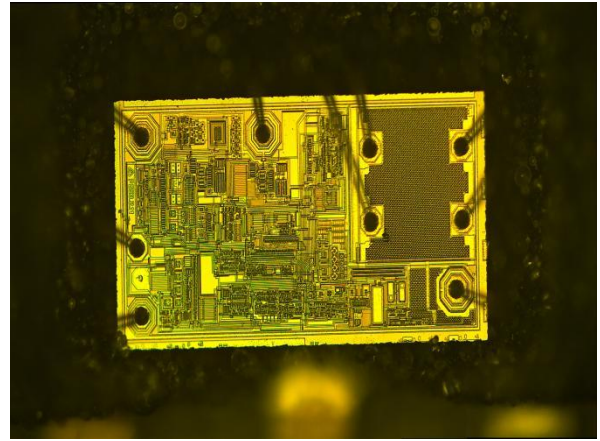
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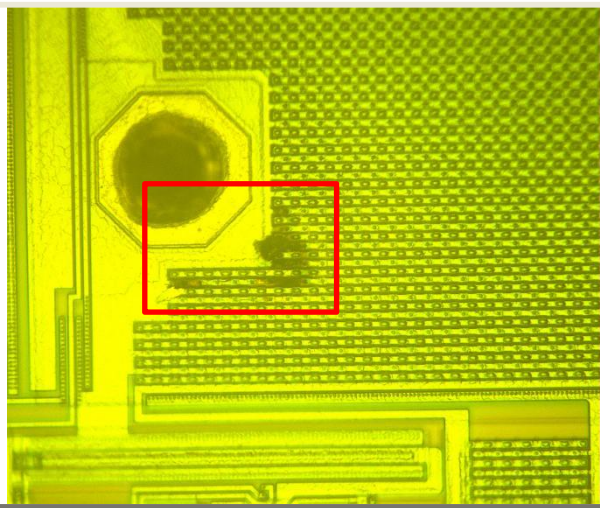
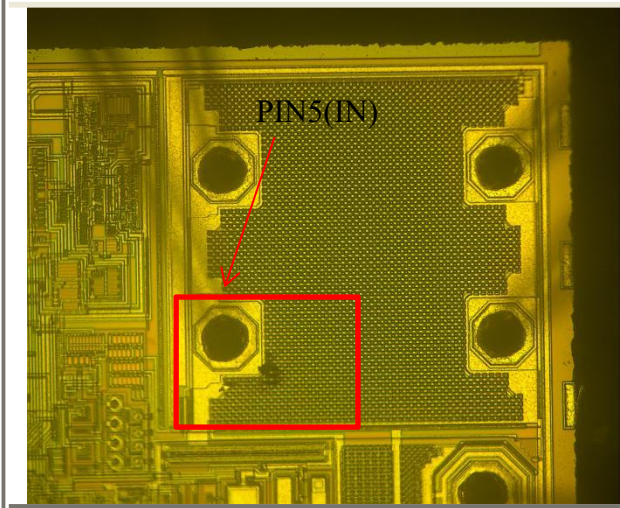
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F5-EOS-1



F5-EOS-2





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3. Summary of analysis :

External Visual Inspection Result:

External Visual Inspection on 5PCS samples(F1-F5), No obvious abnormality was found.

Electrical characteristic analysis Result:

Electrical characteristics analysis 5 PCS samples(F1-F5),No obvious abnormality was found in the failed product F1-F4.Electric leakage between PIN6(SW)-PIN2(GND) of invalid sample F5, short circuit between PIN5(IN)-PIN6(SW).

X-ray Result:

X-ray Inspection on 5 PCS samples(F1-F5).No structure or bonding wire abnormal was found.

Internal Visual Inspection:

Internal Visual Inspection was verified on 2PCS (F1,F5) samples. No abnormality was found on the Die surface of F1.EOS damage was found on Die surface of invalid F5.

To sum up, the test analysis shows that the failure of F5 is caused by EOS damage caused by overelectric stress.No obvious abnormality was found in the failed product F1-F4.

Suggestion:

1. It is recommended to provide a comparative analysis of good products to further confirm the failure point.
2. Optimize the protection circuit and take anti-static measures.



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NOTICE

1. The report is not reviewed and the signature of the approver is invalid.
2. The report does not the stamping of the test report seal and riding seam seal is invalid.
3. The conclusion of the report is only responsible for the entrusted samples.
4. The report may not be copied in part without the written approval of this laboratory.
5. Report alteration is invalid.
6. If there is any objection to the test result, it can be implemented according to the appeal procedure.

CXO Lab WeChat official account

