

GODDARD SPACE FLIGHT CENTER

Test Lab Report Summary

<i>Report Number:</i>	Q10158DPA	<i>Project:</i>	SWIFT
<i>Part Type:</i>	Microcircuit	<i>System:</i>	BAT
<i>Part Number:</i>	MAX4583EEE	<i>Initiated Date:</i>	05/31/2001
<i>Date Code:</i>	0007	<i>Report Date:</i>	10/24/2001
<i>Manufacturer:</i>	MAXIM	<i>Investigator:</i>	C. Greenwell (562)
<i>Generic Number:</i>	MAX4583	<i>Requester:</i>	B. Meinhold (562)
<i>Purchase Spec:</i>	Commercial	<i>Approval / Date:</i>	

Step 1: INCOMING INSPECTION

<u>Test</u>	<u>Quantity</u>	<u>Passed</u>	<u>Failed</u>
External Visual	N/A	N/A	N/A
PIND Condition A	N/A	N/A	N/A

Step 2: DESTRUCTIVE PHYSICAL ANALYSIS

Destructive Physical Analysis (DPA) was conducted per GSFC document "Plastic Encapsulated Microcircuit (PEM) Guidelines for Screening and Qualification for Space Applications", except that cross-section was done without dye penetrant and glassivation integrity testing was not performed.

No rejectable defects or anomalies were observed during this analysis.

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Part Type: Microcircuit
 Manufacturer: MAXIM

Part No: MAX4583EEE
 Date Code: 0007

Summary of Analysis:

	<i>Serial Number</i>	<u>01</u>	<u>02</u>	<u>03</u>	<u>04</u>	<u>05</u>
<i>External Examination</i>						
1. Markings - legibility and correctness _____		A	A	A	A	A
2. Integrity of package seals _____		N/A	N/A	N/A	N/A	N/A
3. Condition of external leads and plating _____		A	A	A	A	A
4. Overall package condition _____		A	A	A	A	A
<i>Radiographic Examination</i>						
5. Die bonding material and die alignment _____		A	A	A	A	A
6. Package seal integrity _____		N/A	N/A	N/A	N/A	N/A
7. Presence of foreign material _____		A	A	A	A	A
8. Lead dress (if revealed) _____		A	A	A	A	A
<i>Acoustic Microscopy Inspection</i>						
9. Condition of material interfaces (delaminations) _____		A	A	A	A	A
10. Condition of molding material (voids, cracks) _____		A	A	A	A	A
<i>Internal Examination (including cross-section)</i>						
11. Presence of foreign material _____		A	A	A	A	A
12. Mechanical condition of die _____		A	A	A	A	A
13. Wire bonds and lead dress _____		N/P	N/P	A	A	A
14. Die bonding material _____		A	A	A	A	A
15. Condition of die surface _____		N/P	N/P	A	A	A
16. Condition of metallization _____		N/P	N/P	A	A	A
17. SEM Examination _____		A	A	A	A	A
<i>Bond Strength</i>						
18. Strength _____		N/P	N/P	A	A	A
19. Metallization adherence _____		N/P	N/P	A	A	A
<i>Die Bond Strength</i>						
20. Strength _____		N/P	N/P	N/P	N/P	N/P

SN's 01 and 02 subjected to cross-sectional examination.

(* = Refer to comments, A = acceptable, U = unacceptable, N/A = not applicable, N/P = not performed)

Appended Photographs:

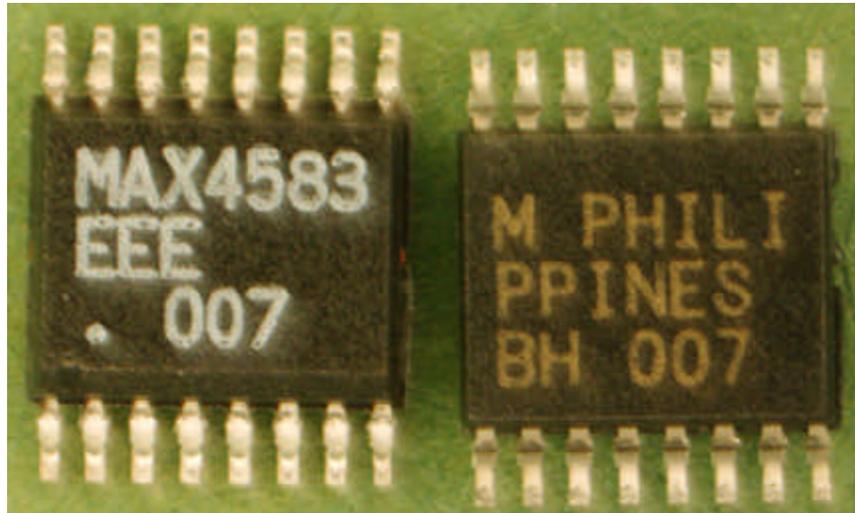


Figure 1. External top and bottom views of the MAX4583EEE devices. 14X

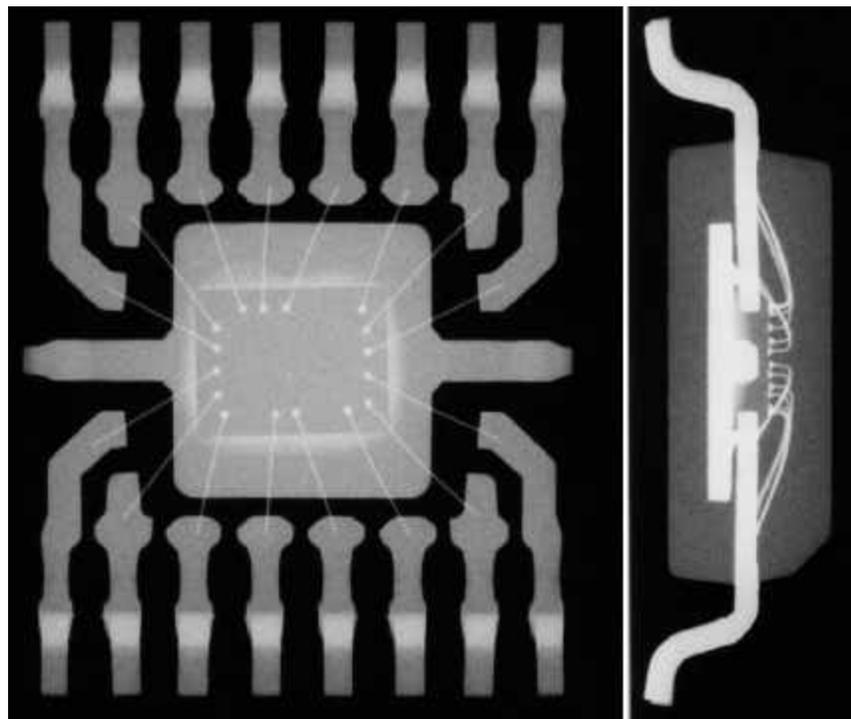


Figure 2. Top and side view radiographic images. 16X

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Appended Photographs:

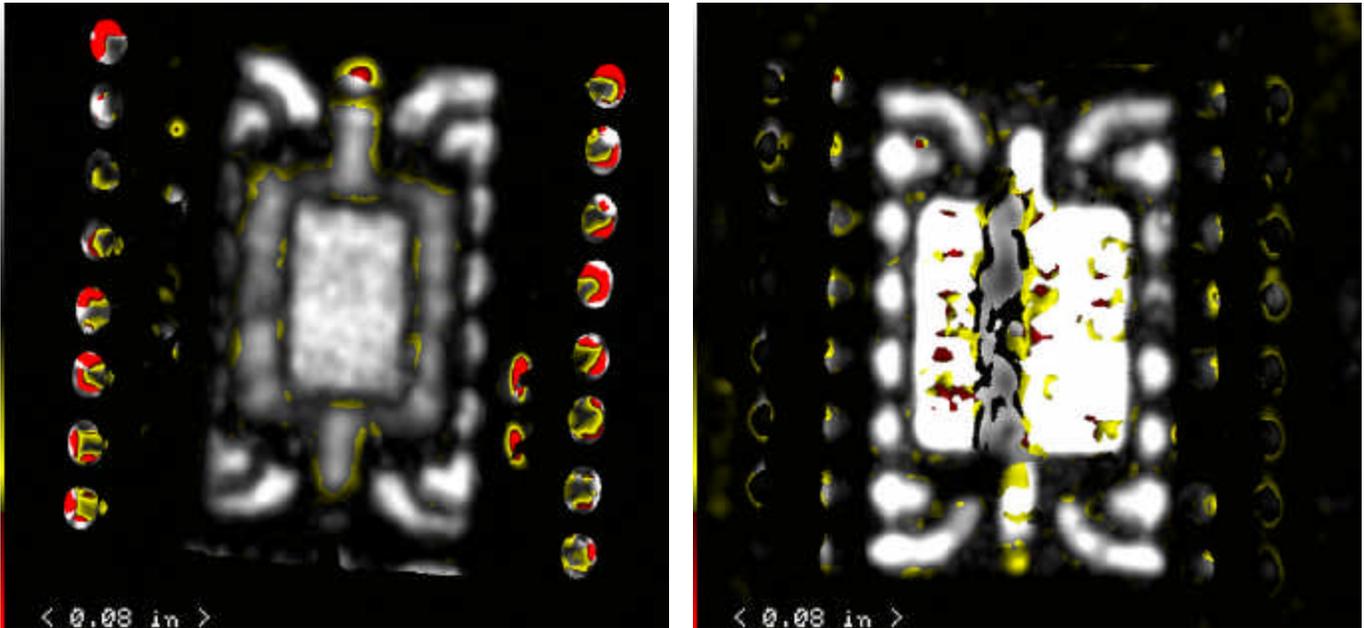


Figure 3. Top (left) and bottom C-SAM images of SN 01.

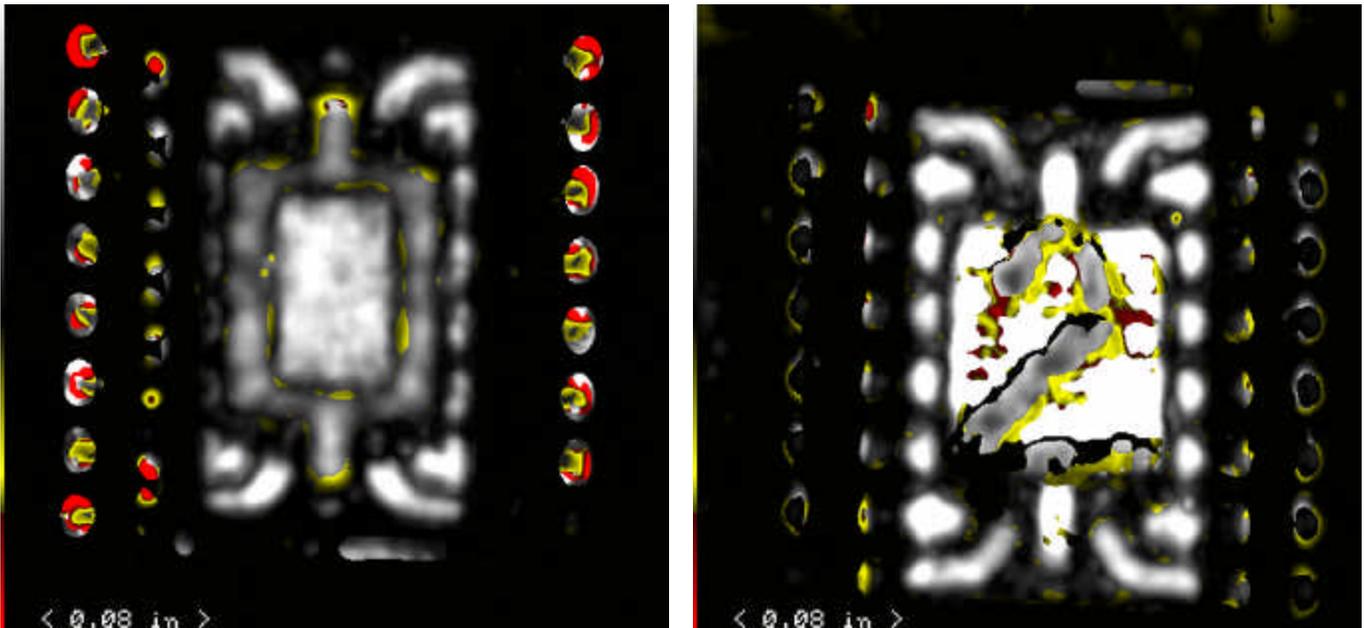


Figure 4. Top (left) and bottom C-SAM images of SN 02.

Appended Photographs:

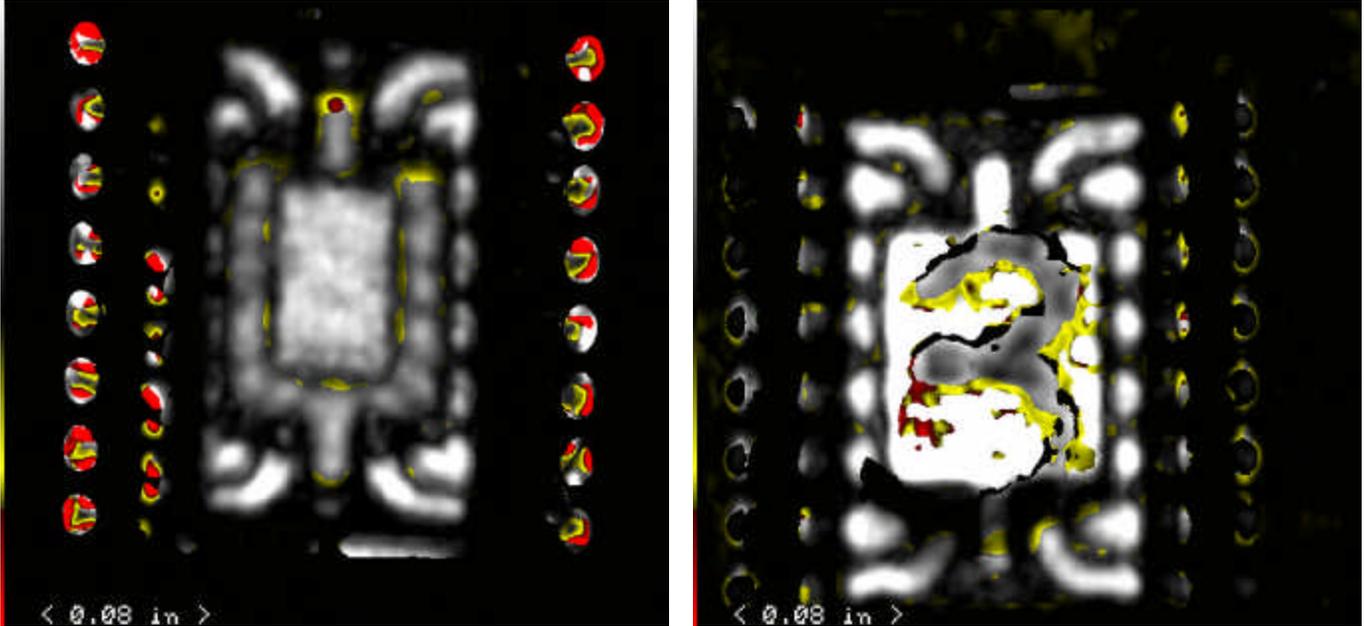


Figure 5. Top (left) and bottom C-SAM images of SN 03.

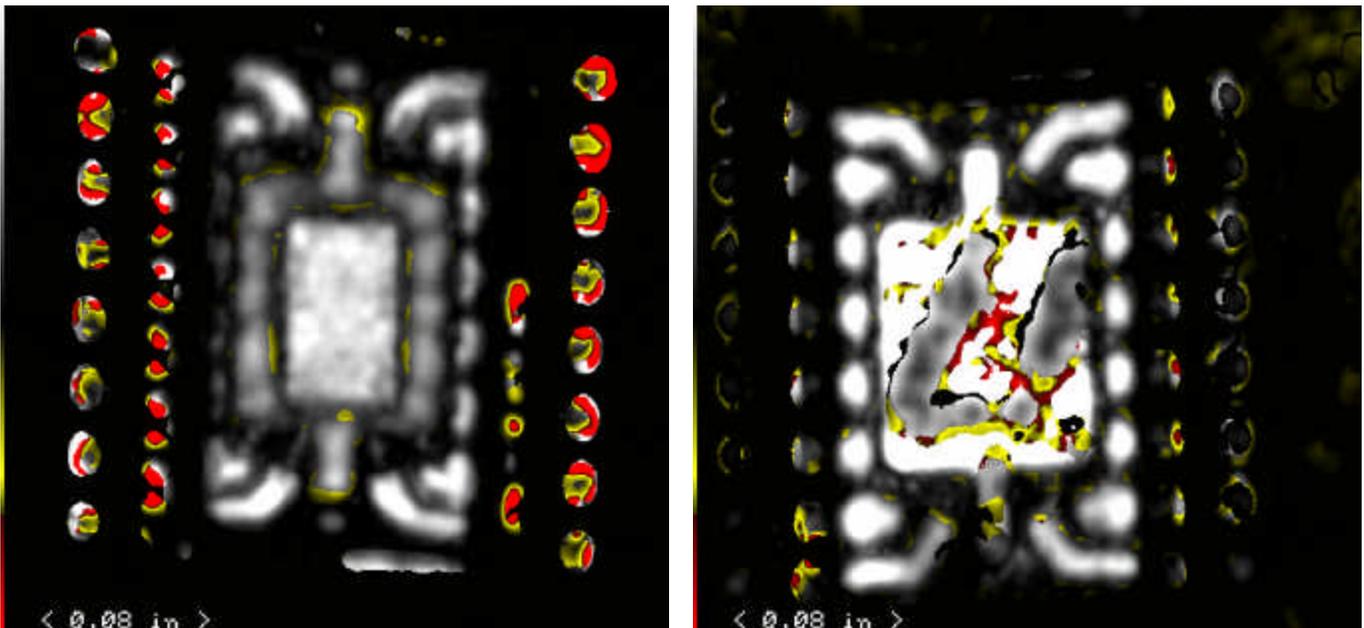


Figure 6. Top (left) and bottom C-SAM images of SN 04.

Appended Photographs:

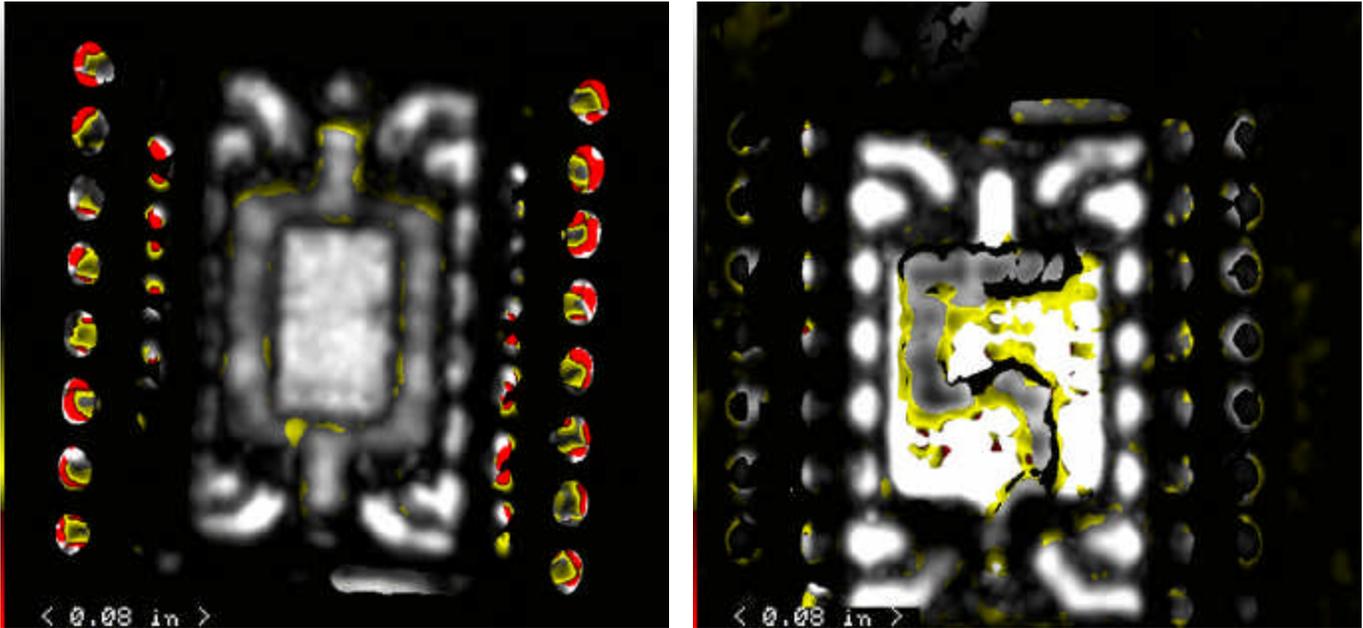


Figure 7. Top (left) and bottom C-SAM images of SN 05.

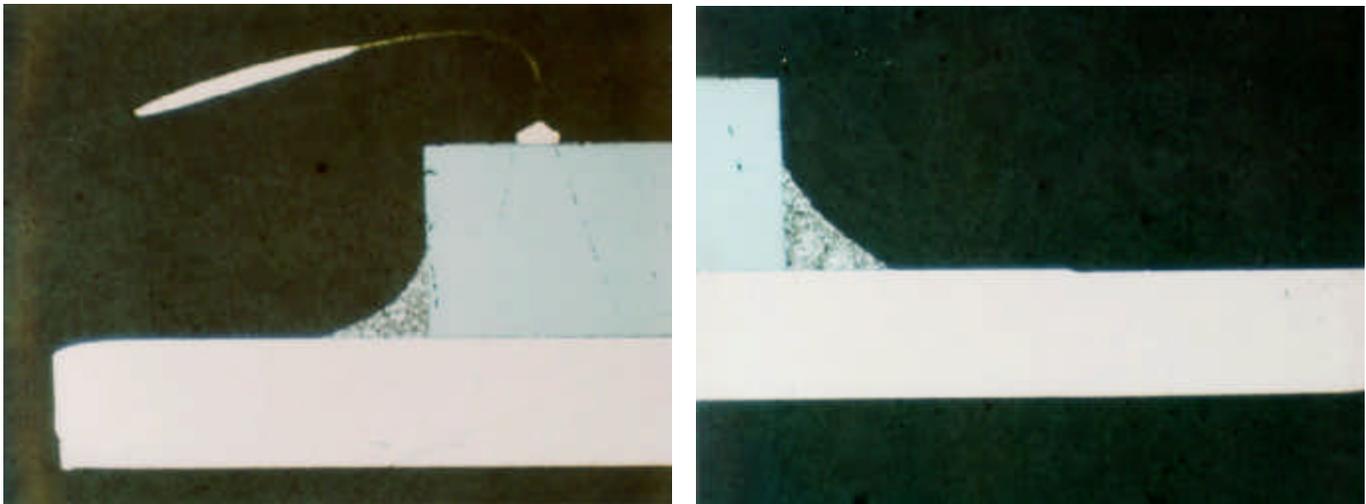


Figure 8. Cross-section images of SN 01 and SN 02, left and right, respectively. Both images - 100X

Appended Photographs:

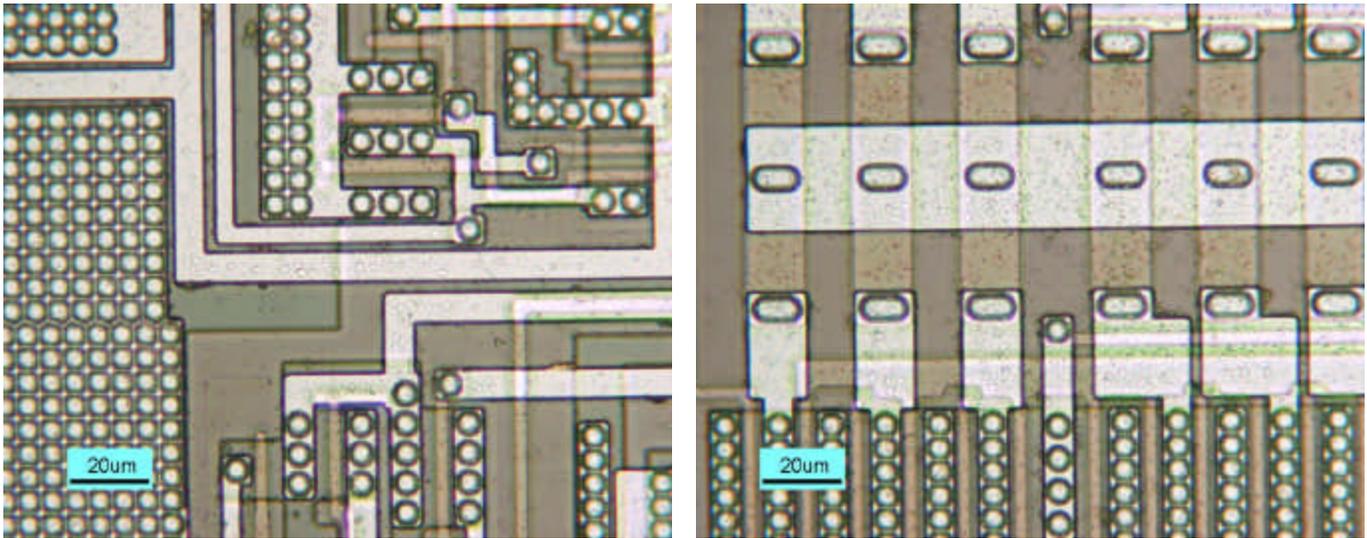


Figure 9. Optical micrograph images show typical features on SN 03 die.

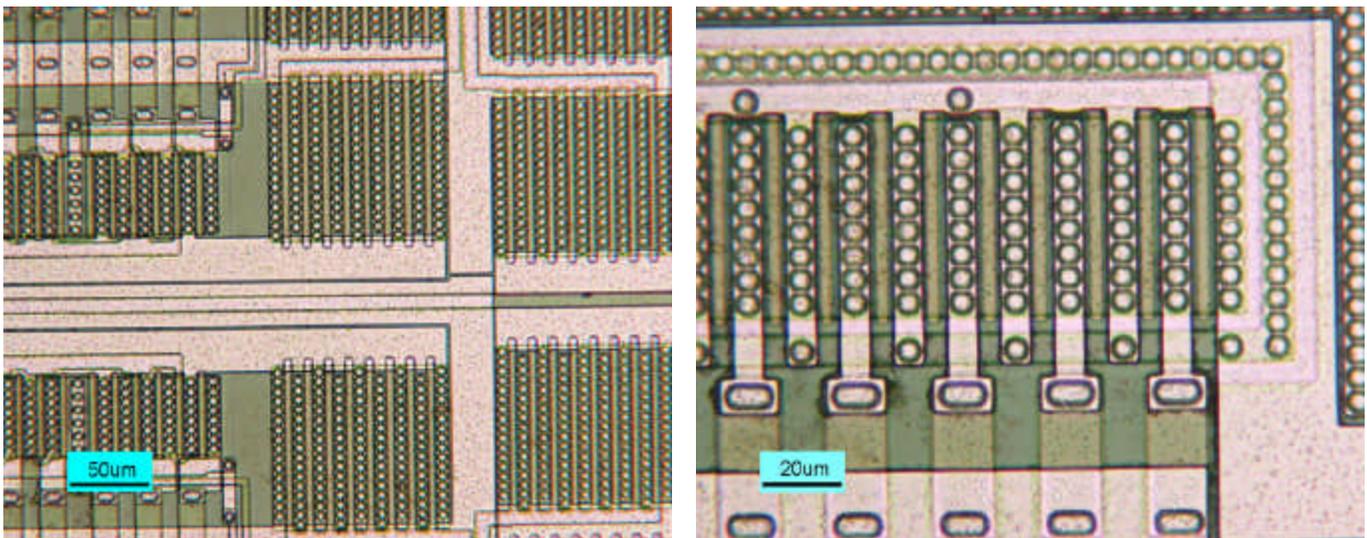


Figure 10. Optical micrograph images of SN 04.

Appended Photographs:

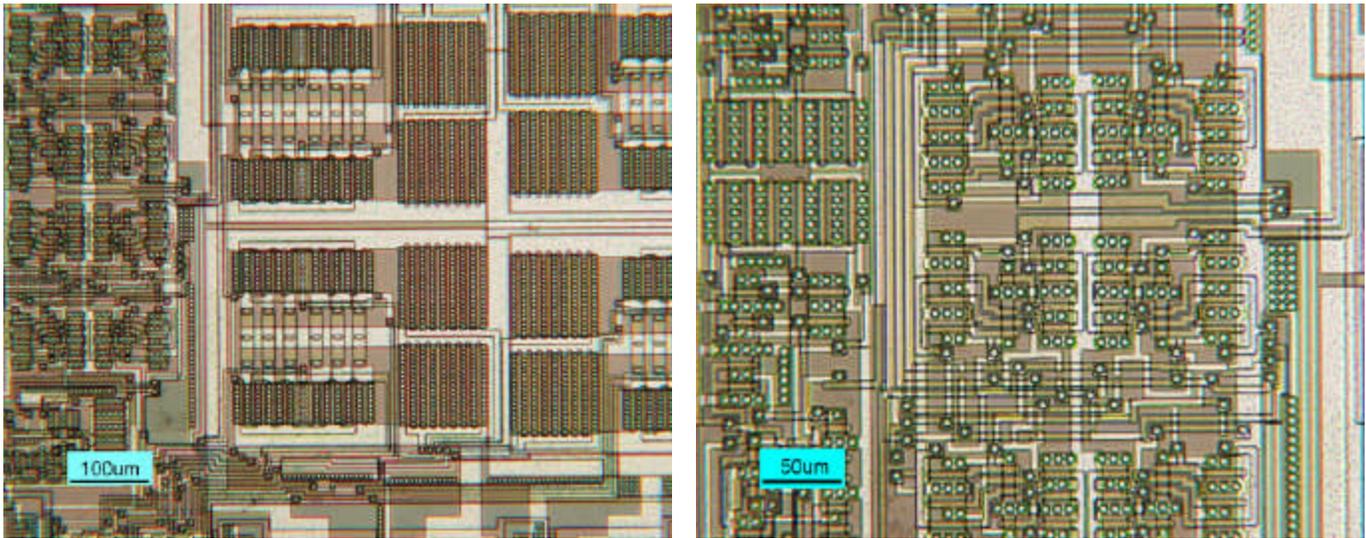


Figure 11. Optical micrograph images of SN 05.

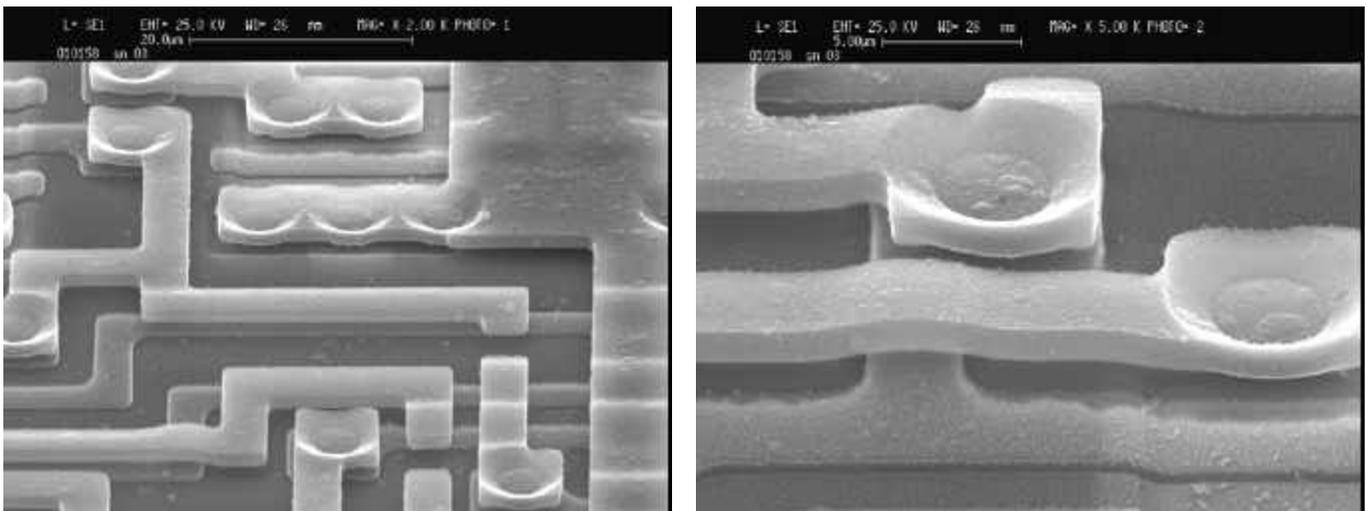


Figure 12. SEM micrographs of SN 03 show general metal features.

Appended Photographs:

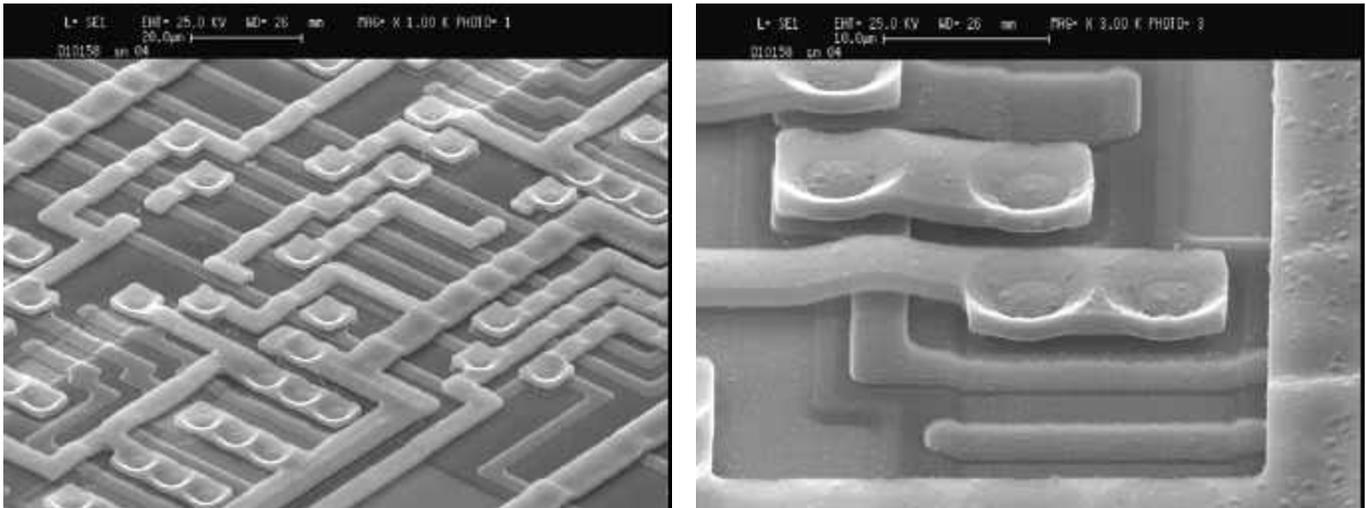


Figure 13. SEM micrographs of SN 04.

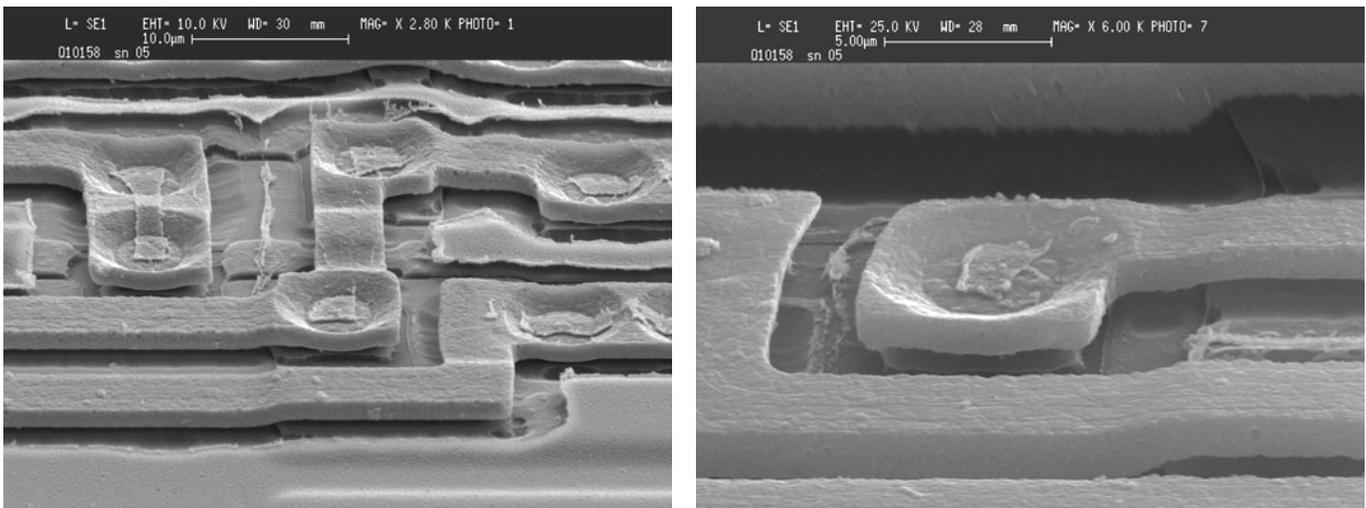


Figure 14. SEM micrographs of SN 05. The deprocessing etch on this sample was not as clean as on the SN's 03 and 04. Etch artifact is left on the die surface.