

## Product Analysis Report

Work Order:	172069	Quantity Received:	25
Customer:	FireAlps	Quantity Inspected:	13
PO Number:	N/A	Report Date/Time:	7/20/21 5:59 PM
Prepared By:	Chan Chiu	Approved by:	Roderick Soriano

### PRODUCT INFORMATION

Part Number:	STM32F101C8T6	Package Type:	LQFP-48
Manufacturer:	STMicroelectronics		
Product Description:	STM32F101x8 STM32F101xB, Medium-density access line, ARM®-based 32-bit MCU with 64 or 128 KB Flash, 6 timers, ADC and 7 communication interfaces		
Datasheet Reference:	<a href="https://www.kynix.com/uploadfiles/pdf65976/STM32F101C8T6.pdf">https://www.kynix.com/uploadfiles/pdf65976/STM32F101C8T6.pdf</a>		

### REPORT SUMMARY

Result:	Refurbished and Remarked	Risk Level:	
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25 pieces of STMicroelectronics STM32F101C8T6 were received for analysis, from which 13 pieces were used for External Visual Inspection (EVI). Product arrived in tray with 10% HIC reading.

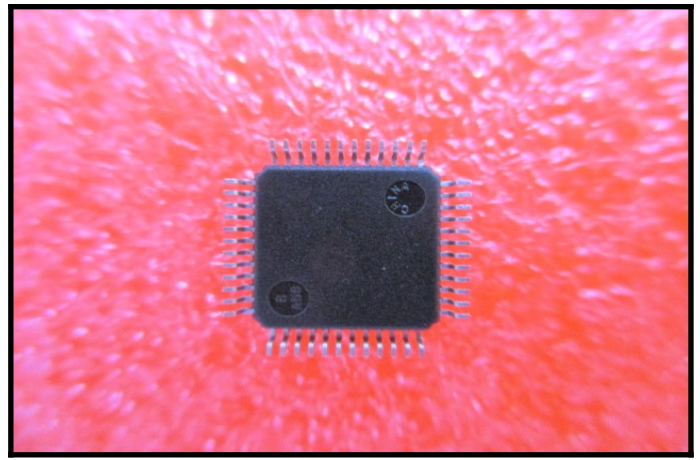
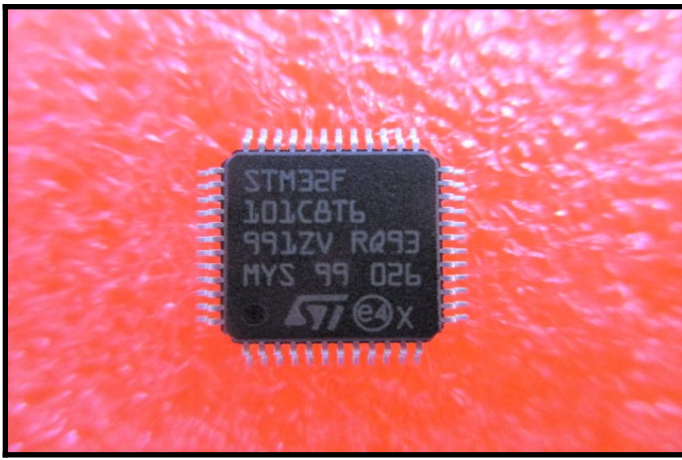
The part nomenclature STM32F101C8T6: STM32 is the Device family, F is the Product type, 101 is the Device subfamily, C is the Pin count, 8 is the Flash memory size, T is the Package and 6 is the Temperature range.

Samples fail scrape tests for remarking and resurfacing, indicating that they are remarked.

Samples did not exhibit exposed base metal from trimming and stress marks from forming, indicating that they are re-plated. The samples exhibit black coating, contamination, scratches, cracks and chips on the body. Samples have minor contamination, scratches, exposed copper and dents on the pins.

Dimensions D, D1, E, E1, A, A2, e and b were measured and were within manufacturer specification. The devices have the same exterior configuration as shown on the Package Outline Drawing (POD).

The parts are classified "Refurbished and Remarked".



Body (top-side)

Body (bottom-side)

## EXTERNAL VISUAL INSPECTION

### REMARKING / RESURFACING TEST

Pass:  Fail:

### MARKING INSPECTION

Pass:  Fail:  F.A.R.:

### BODY INSPECTION

Pass:  Fail:  F.A.R.:

### TERMINAL INSPECTION

Pass:  Fail:  F.A.R.:

### MECHANICAL CHARACTERISTICS INSPECTION

Pass:  Fail:  F.A.R.:

## DOCUMENT AND PACKAGE INSPECTION

Number of Boxes:	<input type="text" value="1"/>
Document & Labels:	<input type="text" value="Match part number"/>
Date Code:	<input type="text" value="2026+"/>
Lot Code:	<input type="text" value="990261ZV"/>

## GENERAL INSPECTION

Package Carrier:	<input type="text" value="Trays"/>
ESD Protection:	<input type="text" value="ESD Protected"/>
MSL Protection:	<input type="text" value="MSL3, No"/>
Country of Mfg.:	<input type="text" value="Malaysia, China"/>

Address:  
White Horse Laboratories Ltd.

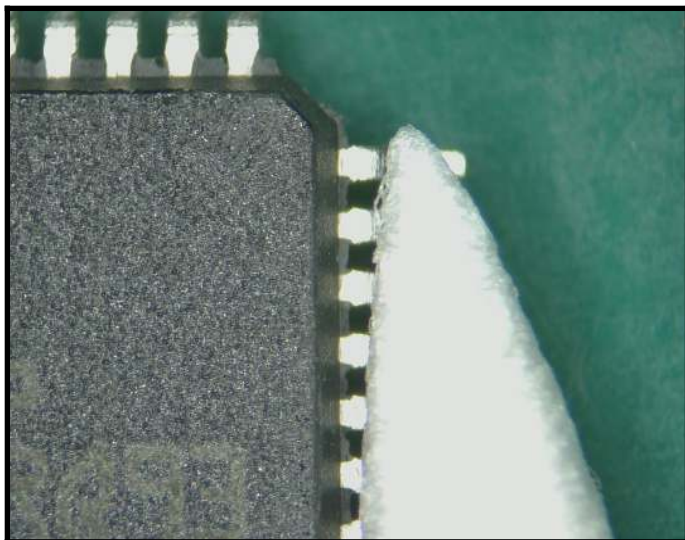
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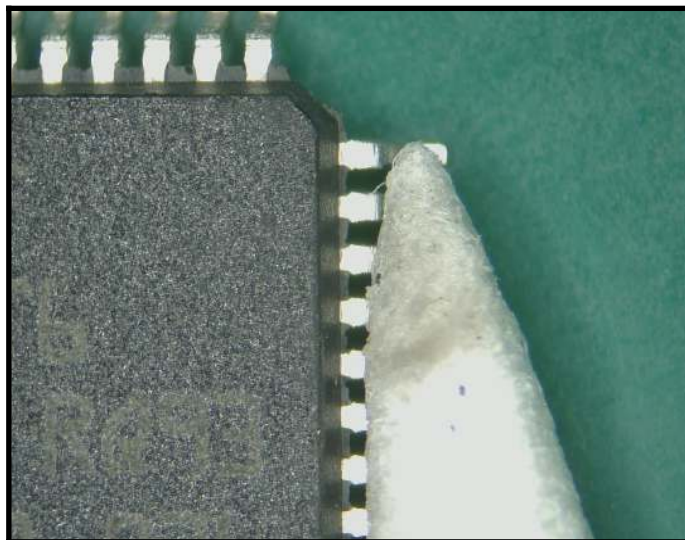
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<b>Wo Number</b>	172069
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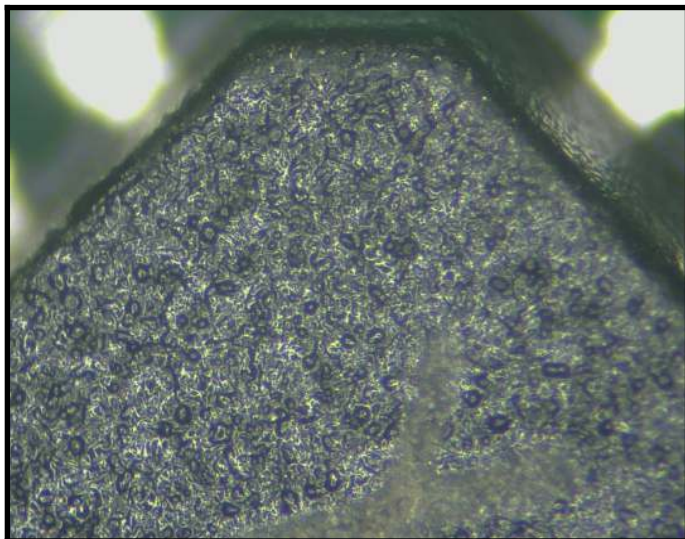




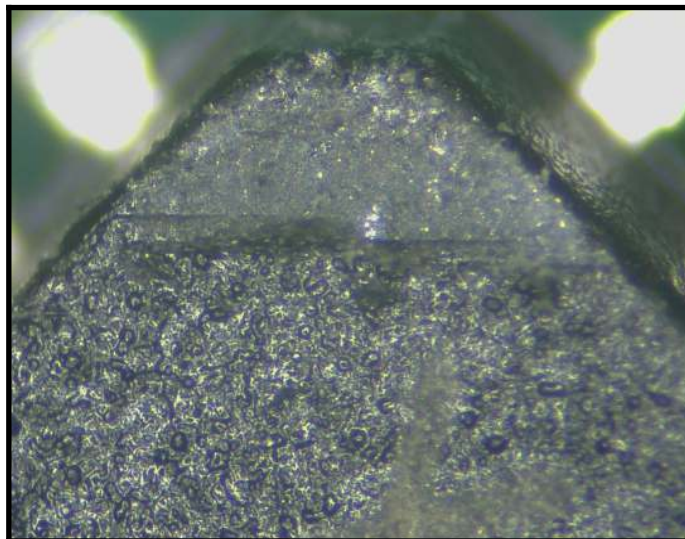
Marking (top-side) Before chemical resurfacing test



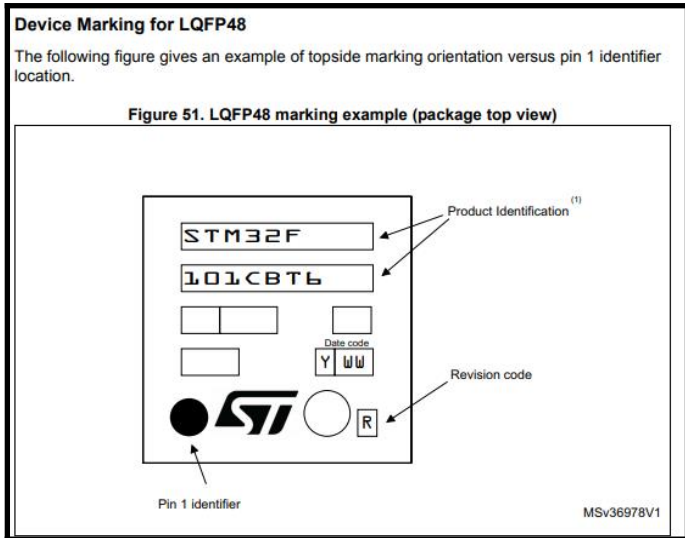
Marking (top-side) After chemical resurfacing test (Pass)



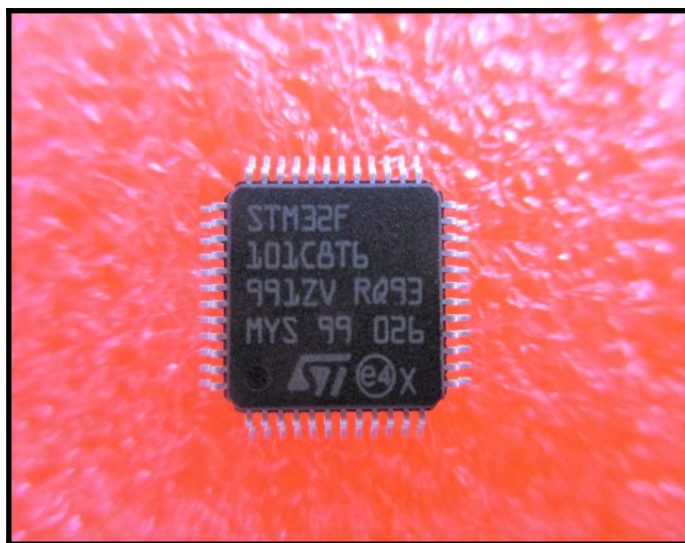
Marking (top-side) Before mechanical resurfacing test



Marking (top-side) After mechanical resurfacing test (Fail)



Marking



Marking (top-side)



### Ordering information scheme

Table 52. Ordering information scheme

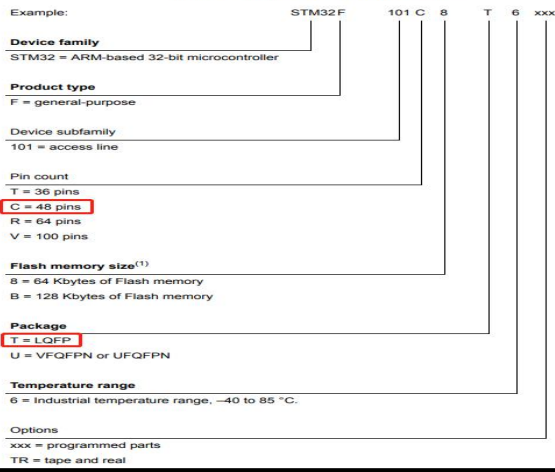


Table 50. LQFP48 - 48-pin, 7 x 7 mm low-profile quad flat package mechanical data

Symbol	millimeters			inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	-	-	1.600	-	-	0.0630
A1	0.050	-	0.150	0.0020	-	0.0059
A2	1.350	1.400	1.450	0.0531	0.0551	0.0571
b	0.170	0.220	0.270	0.0067	0.0087	0.0106
c	0.090	-	0.200	0.0035	-	0.0079
D	8.800	9.000	9.200	0.3465	0.3543	0.3622
D1	6.800	7.000	7.200	0.2677	0.2756	0.2835
D3	-	5.500	-	-	0.2165	-
E	8.800	9.000	9.200	0.3465	0.3543	0.3622
E1	6.800	7.000	7.200	0.2677	0.2756	0.2835
E3	-	5.500	-	-	0.2165	-
e	-	0.500	-	-	0.0197	-
L	0.450	0.600	0.750	0.0177	0.0236	0.0295
L1	-	1.000	-	-	0.0394	-
k	0°	3.5°	7°	0°	3.5°	7°
ccc	-	-	0.080	-	-	0.0031

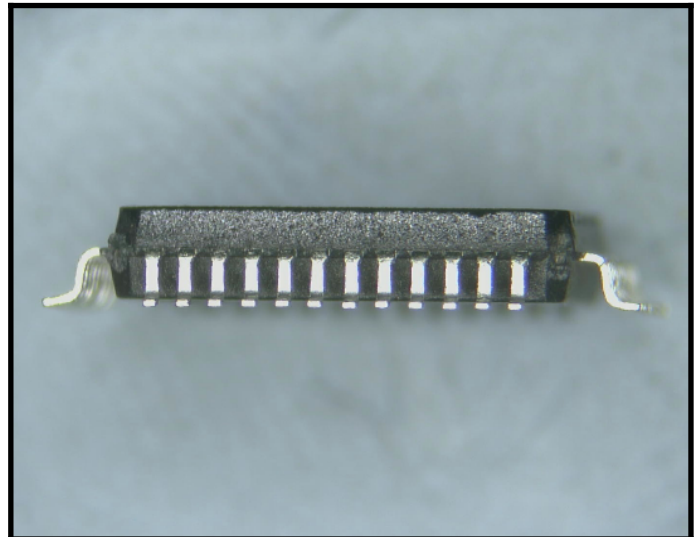
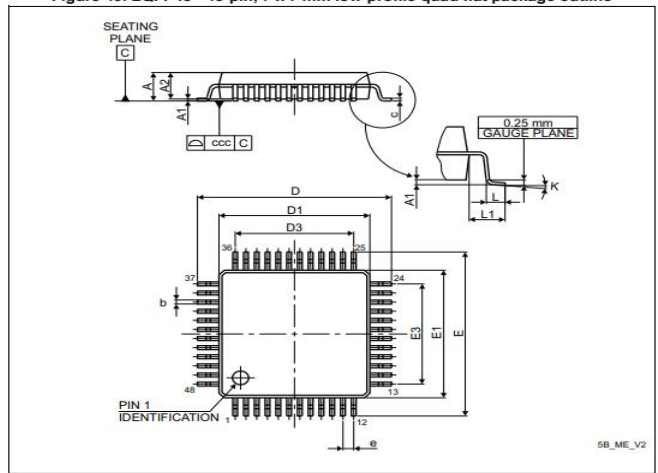
Ordering Information

Mechanical Dimensions

Dimension specification

### LQFP48 package information

Figure 49. LQFP48 - 48-pin, 7 x 7 mm low-profile quad flat package outline

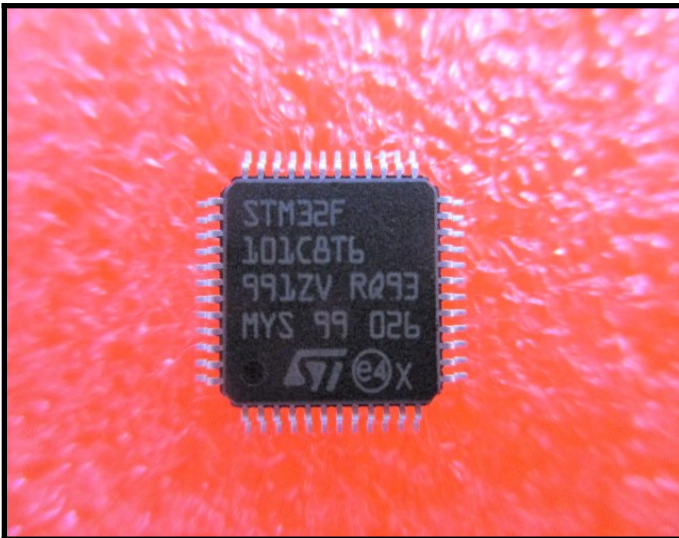


Mechanical Dimensions

Package Outline Drawing

Mechanical Dimensions

Part as shown on POD



Mechanical Dimensions

Part as shown on POD



Dimension Measurement

D=9.00mm(Pass)

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Dimension Measurement	E=9.00mm(Pass)
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Dimension Measurement	D1=6.89mm(Pass)
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Dimension Measurement	E1=6.90mm(Pass)
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Dimension Measurement	A=1.51mm(Pass)
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Dimension Measurement	A2=1.40mm(Pass)
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Dimension Measurement	b=0.19mm(Pass)
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Wo Number	172069
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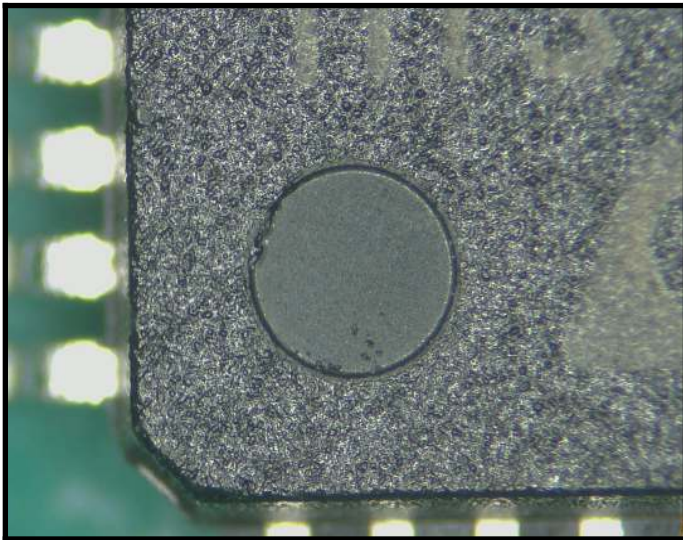




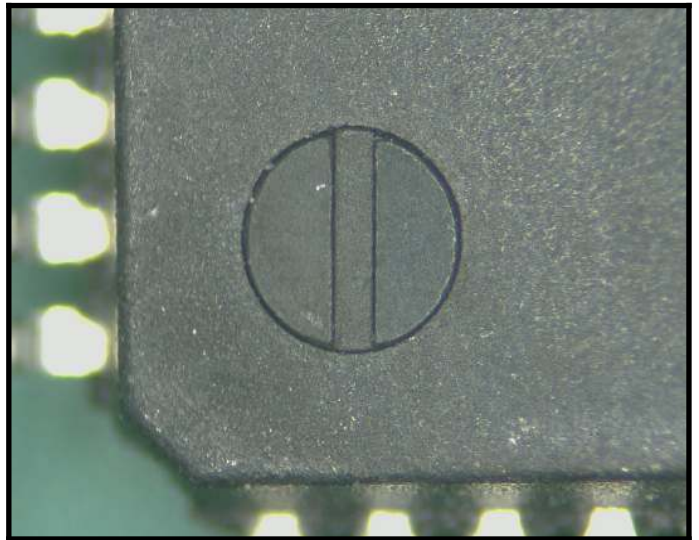
Dimension Measurement	e=0.50mm(Pass)
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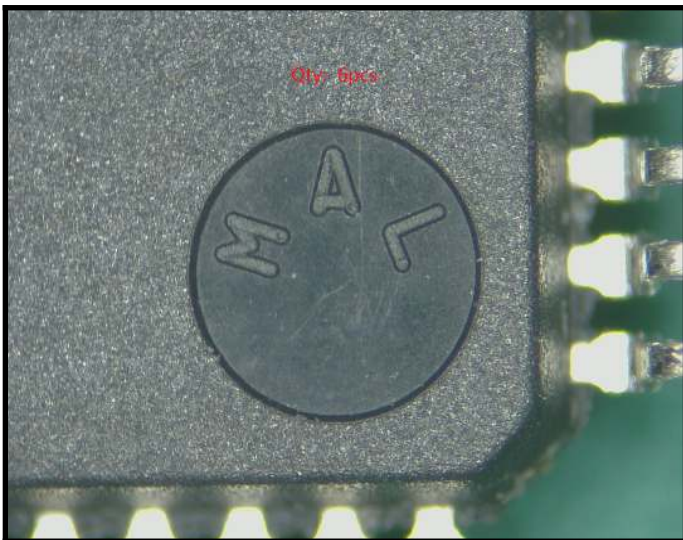
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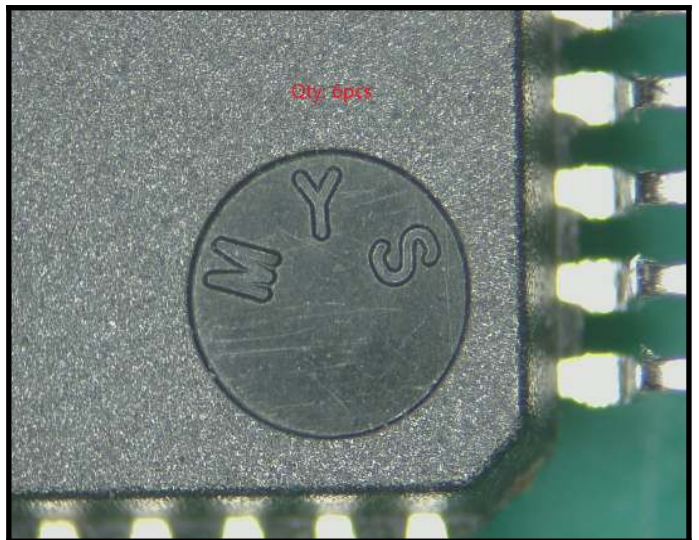
Body (top-side)	Pin 1 indicator
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Body (bottom-side)	Pin 1 indicator
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Body (bottom-side)	Country of origin toolmark
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Body (bottom-side)	Country of origin toolmark
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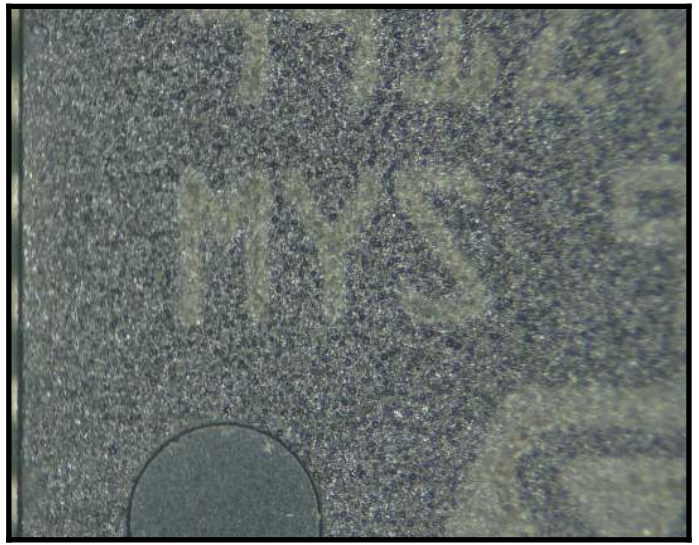
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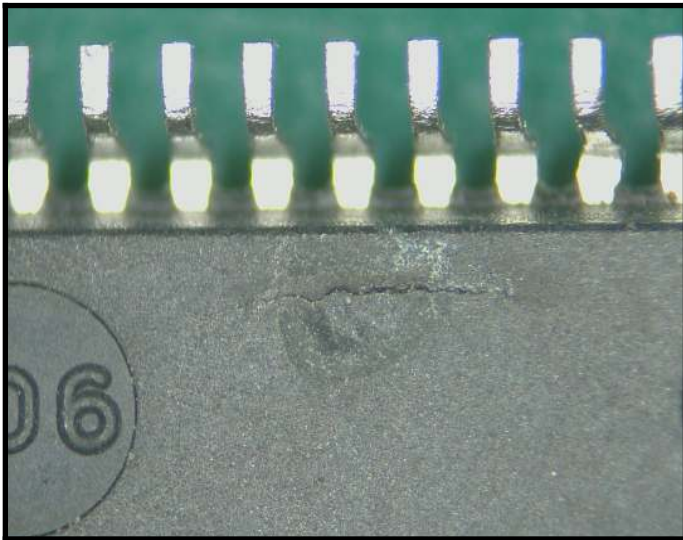




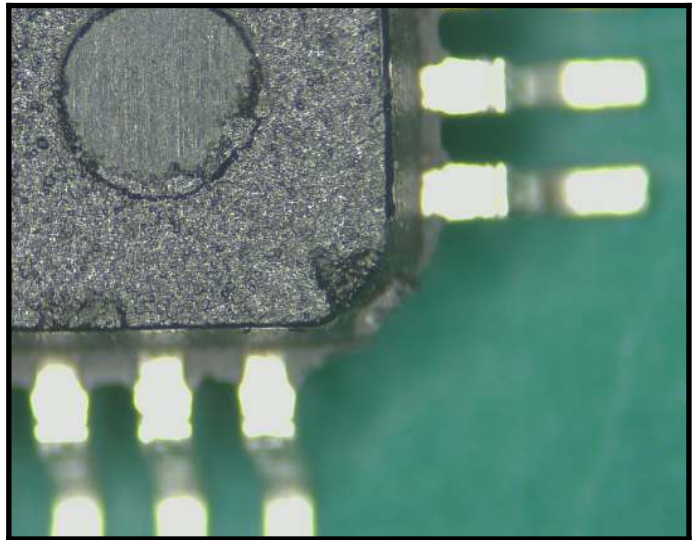
Body (bottom-side)	Country of origin toolmark
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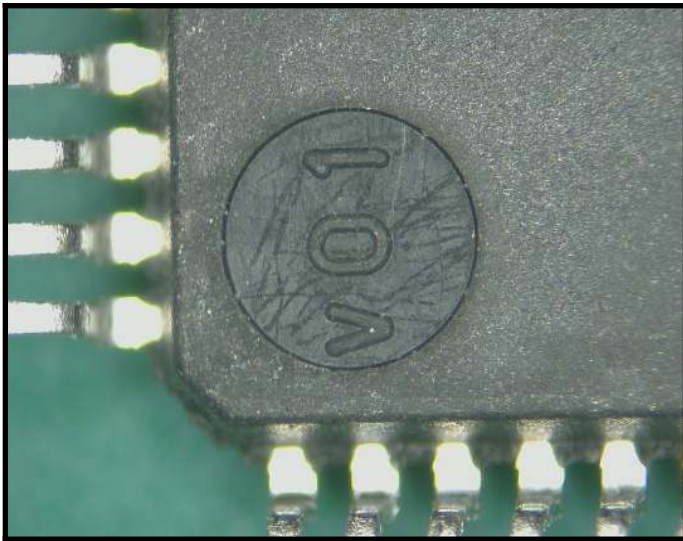
Body (top-side)	Country of origin marking
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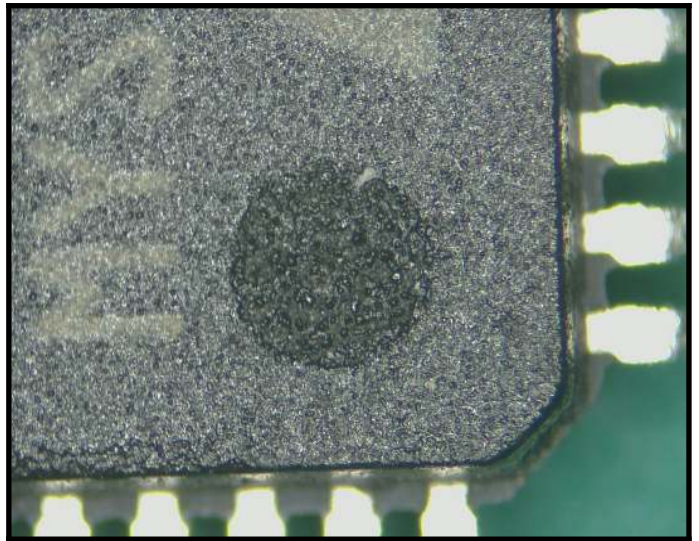
Body	Cracks, 1pc
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Body	Chips, 3pcs
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Body	Scratches, 5pcs
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Body	Contamination, 5pcs
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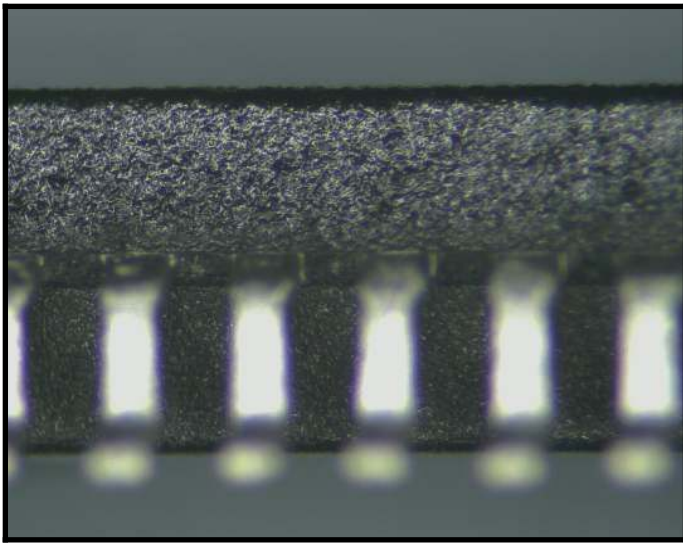
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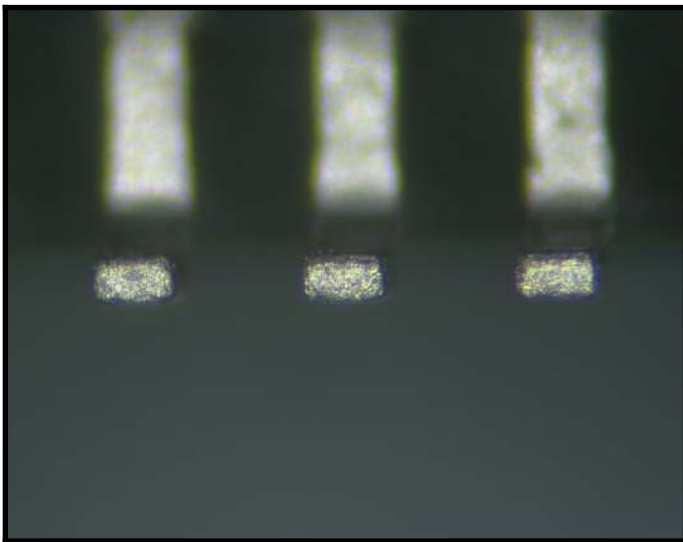
<b>Wo Number</b>	172069
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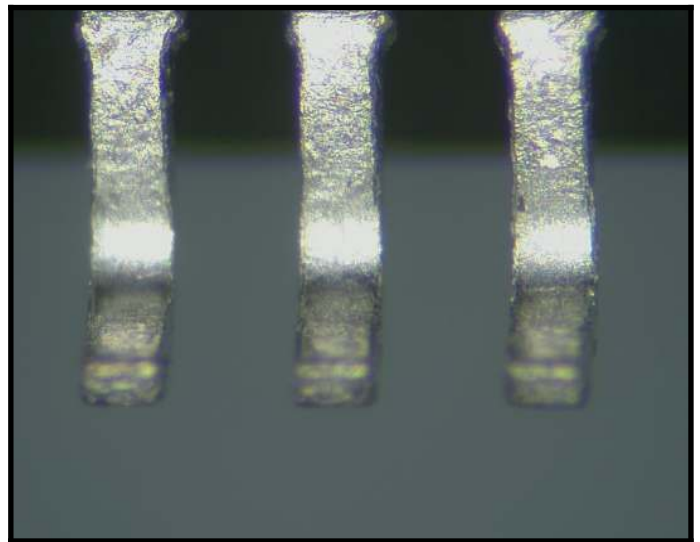
Body (side view)

Black coating



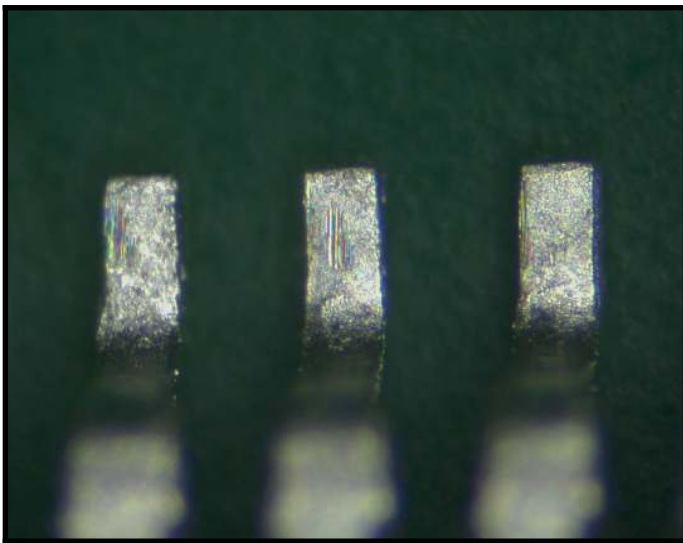
Terminal

No exposed base metal from trimming



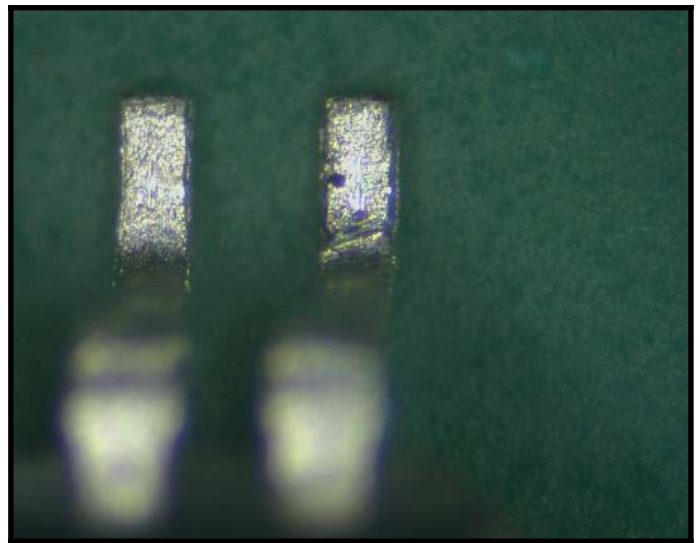
Terminal

No stress marks from forming



Terminal

Scratches, 10pcs



Terminal

Dents, 3pcs

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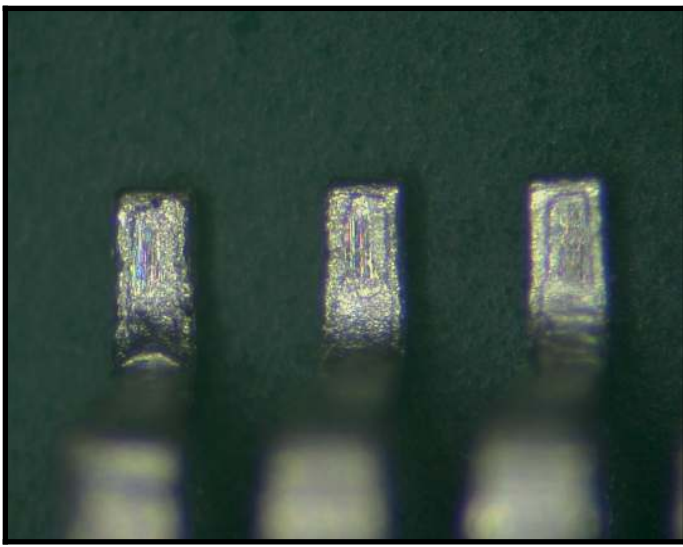
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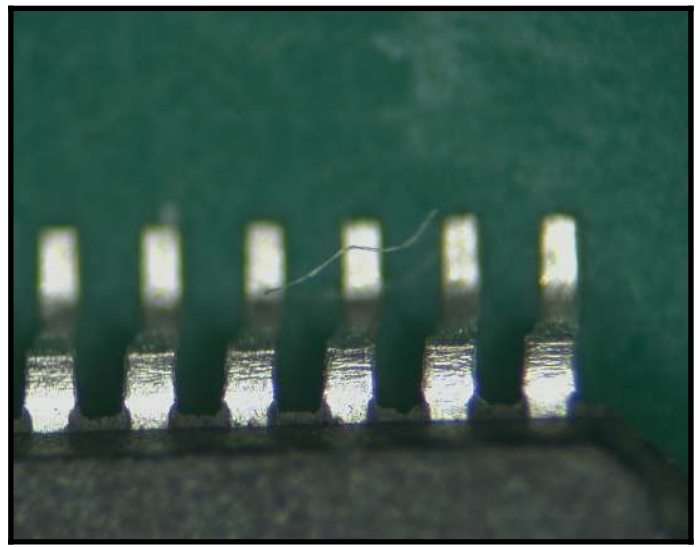
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<b>Wo Number</b>	172069
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Terminal	Exposed copper, 1pc
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Terminal	Contamination, 7pcs
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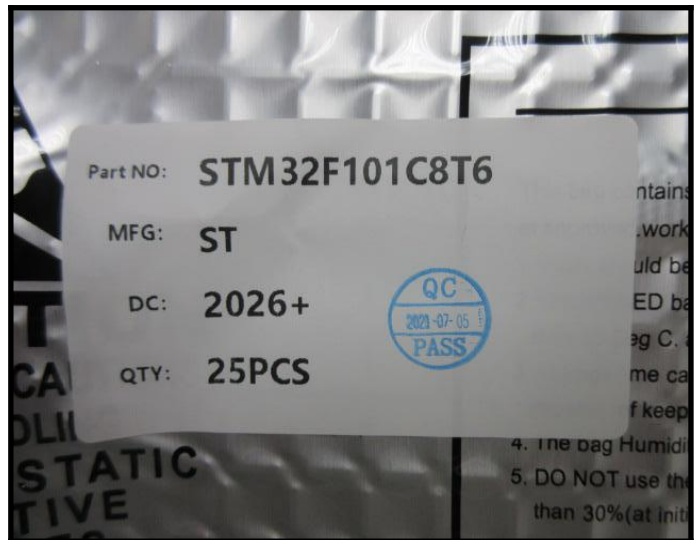
Packaging (Box)	Box as received
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Packaging (Box)	Open box
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Packaging (MBB)	Moisture Barrier Bag (MBB)
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Packaging (MBB)	MBB label
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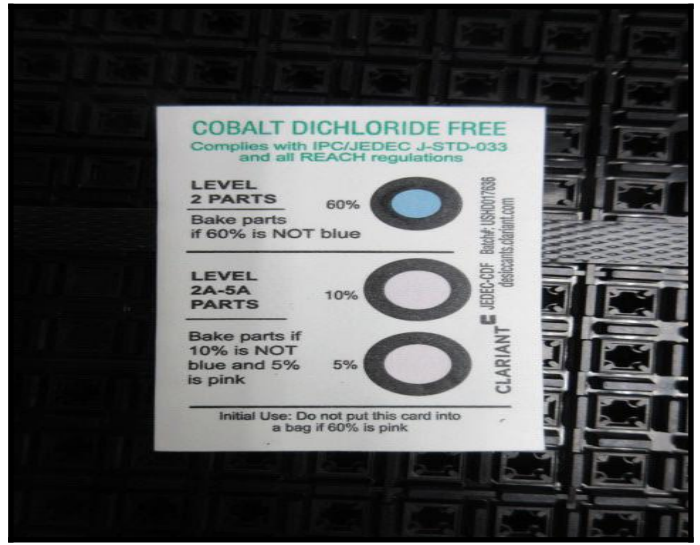
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Wo Number	172069
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Packaging (MBB)	HIC and Desiccant
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Packaging (MBB)	HIC reads 10%
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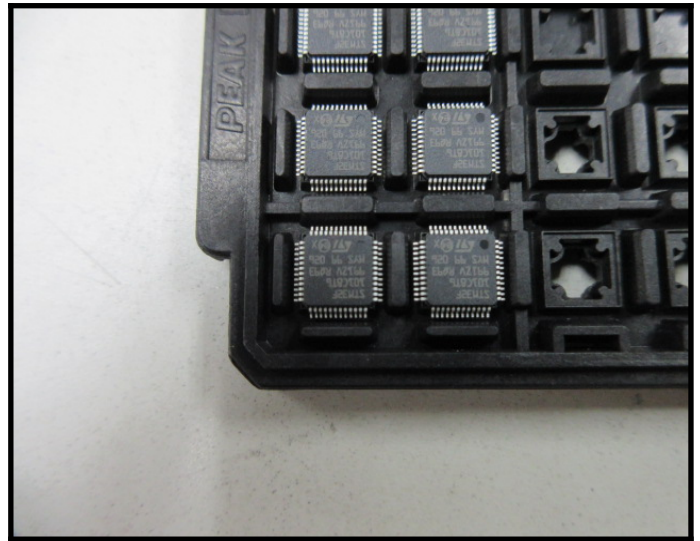
Packaging (Carrier)	Trays stack aligned
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Packaging (Carrier)	Tray size
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Packaging (Carrier)	Tray temperature
---------------------	------------------



Packaging (Carrier)	Parts aligned in tray
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#### Definitions (as defined within AS6081):

- **KNOWN AUTHENTIC PART (Golden Sample)** – A part which has either been purchased directly from the manufacturer, their authorized distributors, or authenticated by the manufacturer with supporting documentation.
- **UNUSED** – Electronic parts that have not been previously used (i.e., attached to a board or powered up since leaving the supply chain). Unused material can contain mixed date codes, lot codes, or countries of origin, and should be received in original factory or third-party packaging. The material may have minor scratches or other physical defects as a result of handling, but the leads should be in good condition and should not be refurbished. The material should be guaranteed to meet the manufacturer's full specifications. Unused programmable parts should be received without having been previously programmed.
- **USED (REFURBISHED OR PULLED)** – Product that has been electrically charged and subsequently pulled or removed from a socket or other electronic application. Used product may be received in non-standard packaging, and may contain mixed lots, date codes, be from different facilities, etc. Parts may have physical defects such as scratches, slightly bent leads, test dots, faded markings, chemical residue or other signs of use, but the leads should be intact. Used product may be sold with a limited warranty, and programmable parts may still contain partial or complete programming which could impact the part's functionality.
- **REFURBISHED** – Parts that have been renovated to restore them to a "like new" condition, e.g., leaded parts may have had their leads realigned and re-tinned and subjected to cleaning agents and chemical processing.
- **COUNTERFEIT PART** – A fraudulent part that has been confirmed to be a copy, imitation, or substitute that has been represented, identified, or marked as genuine, and/or altered by a source without legal right.

#### Report Explanations:

- "Result" is the condition of devices, per the definitions provided by AS6081 (above) with the addition of "Remarked", which is any device whose original marking has been replaced. A device could, for example, be Unused but also have been remarked, so the Result would be "Unused/Remarked".
- "Risk Factor" is a calculation of the remaining risk of a device being counterfeit or substandard from the results of the processes conducted, and risk associated with not conducting some processes.
- Minor observations such as scratches and loose contamination from normal handling, packaging, storage and aging are defined and allowed within the JEDEC manufacturing standards. Images of minor observations are not included in the report but are on file and available upon request.
- "FAR" in the process summary on Page 2 means "Further Analysis Recommended". It is not always possible to reach a conclusion on a single process. When we recommend additional tests to verify an observation found in one process, or gaps in the requested test plan, we will identify those areas of risk as "FAR".
- Note that definitions are as defined within the AS6081 standard.

#### Notes and Disclaimers

1. Product analysis results are applicable for the inspected samples only.
2. Inspection methods are assigned Pass/Fail Criteria based upon JEDEC JES9B manufacturing standard. Military-grade products are inspected to MIL-STD specifications. Observations outside of those tolerances are deemed to make the product unfit for use.
3. Observations defined by IDEA-STD-1010B, AS6081, AS6171 and WHL expertise and experimentation affect the risk level and classification of the inspected product.
4. "Reference samples" are previously tested and/or inspected product which are used for comparison purposes to the devices analyzed for this report. "Known-good samples" are provided by the customer to compare to unverified product. "Golden samples" are acquired by WHL with direct traceability to the original manufacturer.
5. All source and measurement equipment are calibrated and suitable for the processes conducted with calibration certifications available upon request.
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7. WHL is obligated by our Nondisclosure and Confidentiality policy and agreements with our customers. Reports will be verified but no additional information will be supplied by WHL without the prior written approval of the party that requested and ordered the analysis.
8. All conducted methods are established, and test plan approved, by the customer.
9. White Horse Laboratories is an ISO 9001:2015 and ANSI/ESD S20.20-2014 certified company.

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