XTREME Semiconductor

Your High Reliability Solutions Company

# Avoiding Counterfeit Components

## Aging Aircraft 2009

***Presented by Marty Lanning, XTREME Semiconductor***

***May 5, 2009***

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QML DSCC CERTIFIED

# Company Information

**A Texas Company founded in January 2004**
**Founders: Paul Hilfer and Marty Lanning**
**Web Site – www.xtremesemi.com**

**Leander, TX**

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# Who is XTREME Semiconductor?

- A "*Solutions*" Company Providing Support for Obsolete, Legacy, and End-Of-Life Semiconductor Products.
  - Manufacturer of Legacy Mil/Aero Products
    - MIL-PRF-38535 QML Q Certified
    - Custom Packaging, Source Control Drawings
  - Procurement and Validation Source for Obsolete Semiconductor Product (End-of-Life/Legacy)
    - Reference Standards
      - IDEA-STD-1010A
      - SAE AS5553

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# Avoiding Counterfeit Components

- **Problems Facing the Industry:**
  - **Ongoing Demand for Obsolete Semiconductor Product**
  - **Minimal Support for Obsolete Products from the Original OCM**
  - **Few "Quality" Aftermarket Product Suppliers**
  - **Industry Accepted Quality Standards and Procedures are not implemented by many of the Brokers servicing this Market**
  - **Steady Stream of Counterfeit Products Entering the Market Primarily from China**

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# Avoiding Counterfeit Components

- **Broker Market Overview**
  - **Not All Brokers & Independent Distributors are the Same**
    - **Many have minimal Quality Systems and no ESD Controls**
  - **Some have No Experience in the Semiconductor Market**
    - **The Internet has Created Virtual Companies**
    - **Product Quality is Compromised**
  - **Most Offer no Traceability back to the Original OCM**
    - **Limited or No Product Warranty**
    - **No Product Support**
  - **Buying Obsolete Products Requires <u>More</u> Support, Not <u>Less</u>**

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# Avoiding Counterfeit Components

- **Definition:**
  - **Counterfeit Semiconductor:**

***"The Intentional Misrepresentation or Alteration of a Product with the Intent to Defraud or Deceive the Purchaser."***

- **Common Examples:**
  - **Re-marking, Re-branding, Re-furbishing**
  - **Substituting Substandard or Inferior Product as Original**
  - **Passing One Manufactures Product Off as Another**
  - **Previously Used or Salvaged Product Sold as New**

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# Avoiding Counterfeit Components

- What is the "***True Cost***" of Receiving a Counterfeit Product? Some of the Cost to Consider are:
  - Processing Multiple Purchase Orders
  - Incoming Inspection
  - Problem Solving and Disposition
  - Administrative Efforts to Process Returns
  - Lost Production Time and Revenue
  - Damage to Companies Quality Reputation

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# Avoiding Counterfeit Components

- **Option 1: Buy from an Authorized or Franchised Distributor when Inventory Exists**
  - **Lowest Risk**
  - **Traceability (C of C) back to the OCM**
- **Option 2: Buy "*VALIDATED or CERTIFIED*" product from a Trusted Aftermarket Source**
  - **Lower Risk Solution**
  - **Some offer a Product Warranty**
- **Option 3: Purchase from Brokerage or Non-Franchised Suppliers:**
  - **Highest Overall Cost and Risk**
  - **No Traceability (C of C) and No Product Warranty**

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# Avoiding Counterfeit Components

- **What is Lot Validation and Why is it Important?**
  - **Confirming the Lot Number and Lot Date Code with OCM or other Known Good Sources**
  - **Visually Inspect for Re-marked, Used or Re-furbished Material**
  - **Confirmation of the Die Identification (Mask ID)**
  - **X-Ray to Confirm Lot Consistency**
  - **Test to Validate the Original OCM Product Specification**
- **Mitigates the Risk of Buying Broker Material**

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# *XTREME* Solutions

- ***XTREME* Semiconductor Offers Our Customers "*Certified* EOL Product"**
  - **Warranted to be Authentic OCM Product**
    - **Warranty: Will Perform to Manufacturers Data Sheet**
      - **One (1) Year from the date of shipment**
    - **Visual: Anomaly Inspection**
      - **100% up to 100pcs**
    - **Die ID: Die and Mask ID Verification**
      - **One (1) piece minimum from each lot Date Code or Lot**
    - **Electrical Test: 25℃ Limited DC/ Limited Functional Testing**
      - **100% up to 100pcs**
    - **X-Ray Inspection: Verifies Lot for Consistency**
      - **100% up to 100pcs**
    - **Customized Test solutions:**
      - ***XTREME* can provide customized "Lot Validation Plans" to meet unique customer needs or specific product applications.**

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# *XTREME* Solutions

- "*Certified* EOL Product" Process Development Considerations:
  - Must be a Cost Effective Solution
  - Assumption: Product is Valid OCM Material
  - Process Objective is to Authenticate Real OCM Material
  - Look for Anomalies that invalidate the Primary "Assumption"
  - Process to be effective in Authenticating Most IC's and Discrete Components

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# *XTREME* Solutions

- **Criteria for Sourcing Obsolete Product**
  - **Avoid Brokers/Distributors Sourcing in China**
  - **Utilize Brokers/Independent Distributions who are Active Members of IDEA and or ERAI**
  - **Contact Authorized Distribution: Rochester**
  - **Look for Stocking Distributors: Use sites such as Stockingdistributors.com or Parthunter.com**
  - **Do Research Prior to Buying**
    - **Request pictures, lot date information, lot numbers**
    - **Determine EOL date of product prior to purchase**

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# *XTREME* Solutions

- **Inspection Results of Brokerage Material: 2007-2008**
  - **30-35% of all lots inspected by *XTREME* were rejected**
    - **Includes bent leads, damaged or Incorrect material**
  - **Sixty-nine (69) lots/devices types were rejected as counterfeit material.**
  - **10-20% of lots presented to *XTREME* from Brokers are rejected prior to purchase. Rejection criteria:**
    - **Visual Anomalies**
    - **Lot Date Code Issues**
    - **Refurbished or Poor Condition**

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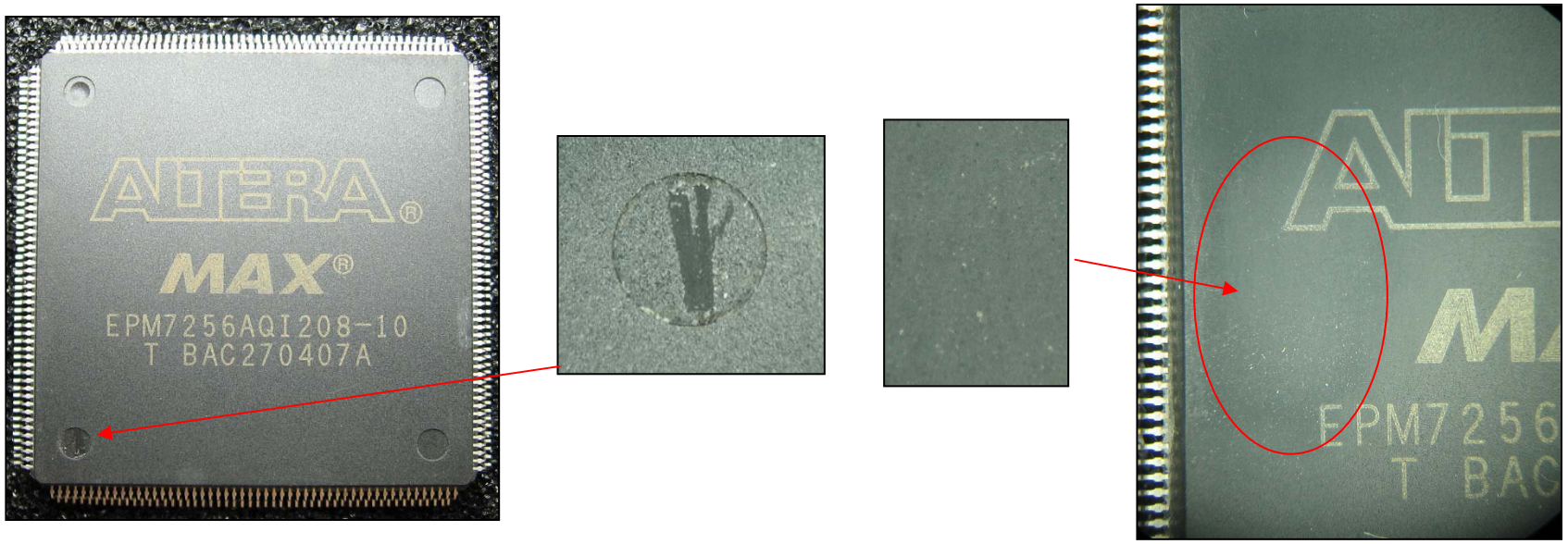
# *Validation Process: Example of Re-Marking*

- **Sanding & painting the surface of the device is a common technique used by Counterfeiters to alter the marking or misrepresent the product.**

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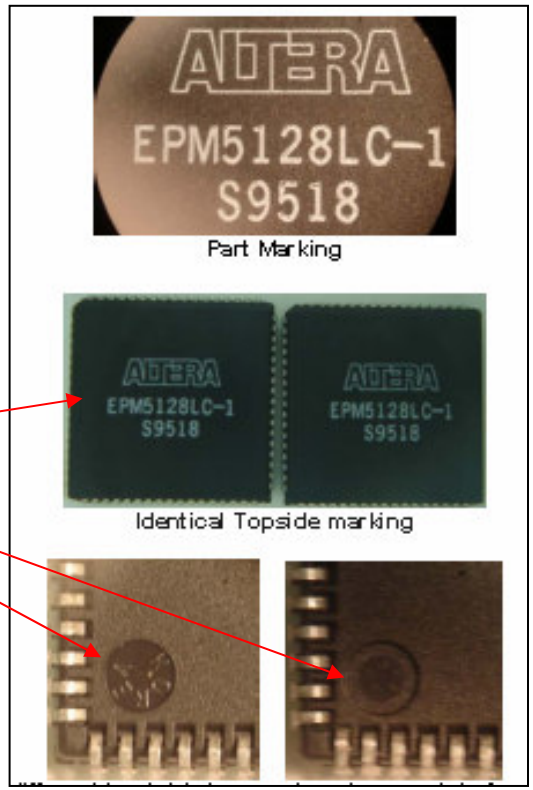
# *Validation Process: Example of Re-Marking*

**This Material has been re-marked and several lots of material combined into one. Notice that both products have the same lot number and product marking, but have two different packages styles.**

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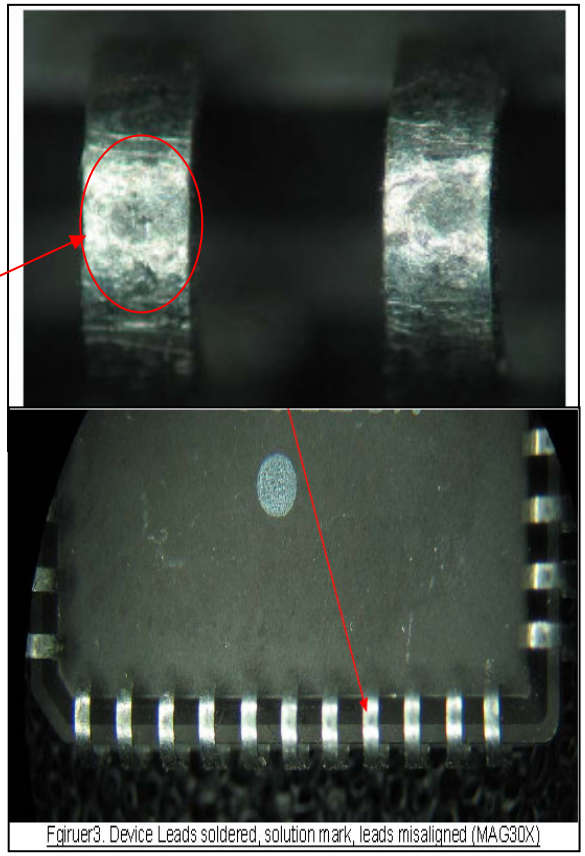
# *Validation Process: Example of Used Material*

**Visual indicators of material that has been used and refurbished.**


**Scratches around Mounting holes**

**PCB Solder Marks**



Fgiruer3. Device Leads soldered, solution mark, leads misaligned (MAG30X)

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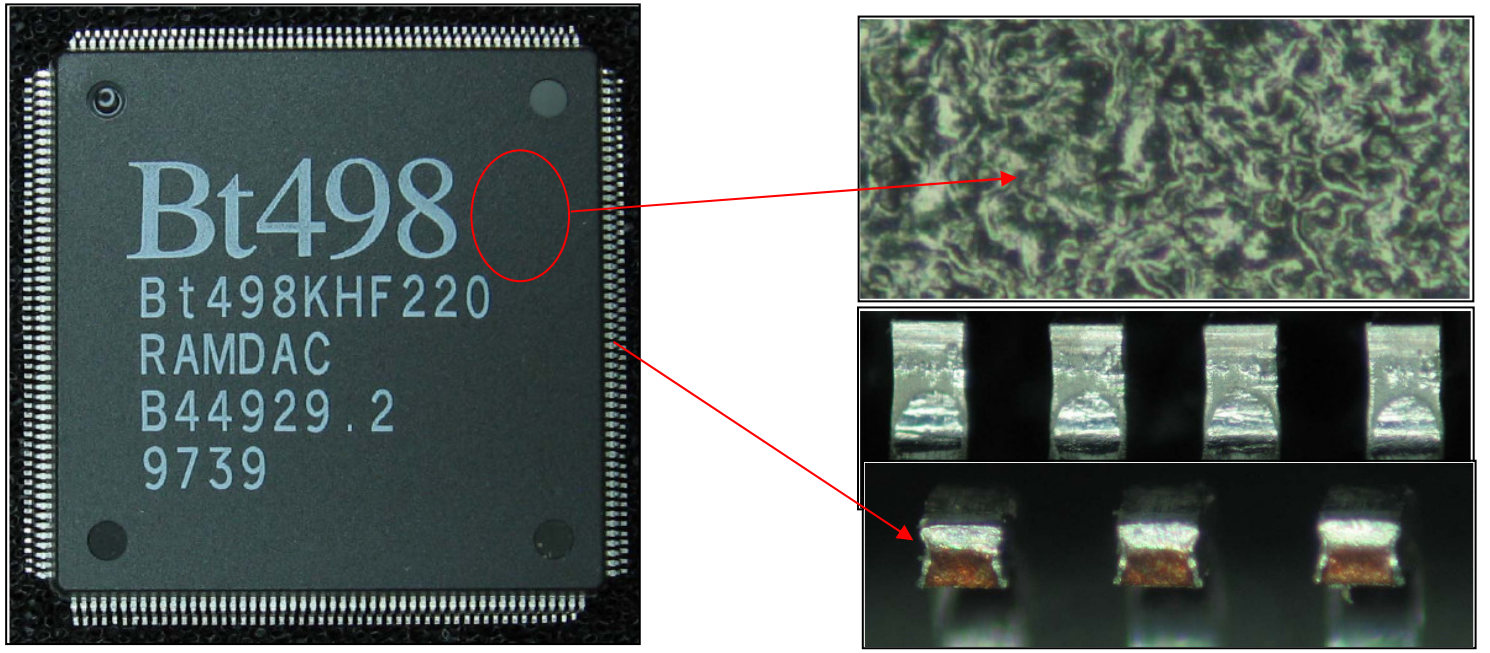
# *Validation Process: Example of NEW Material*

**We analyze the component surface and leads to look for evidence of the device being re-surfaced or re-tinned.**

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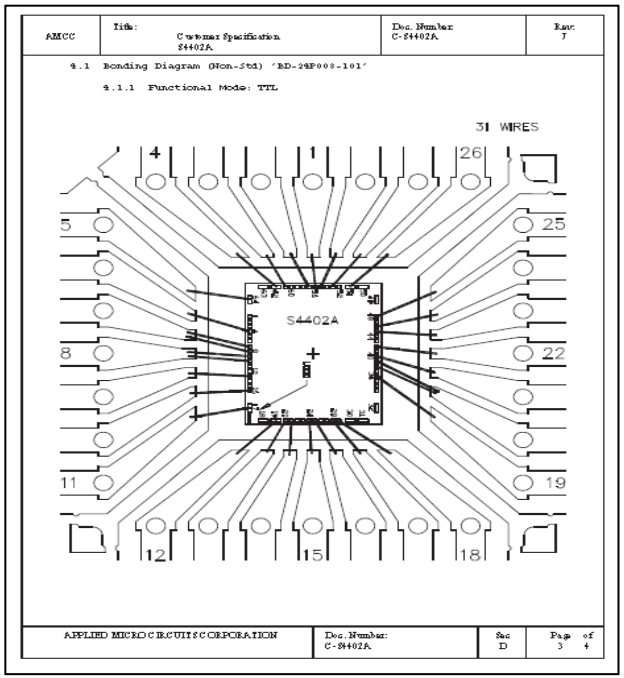
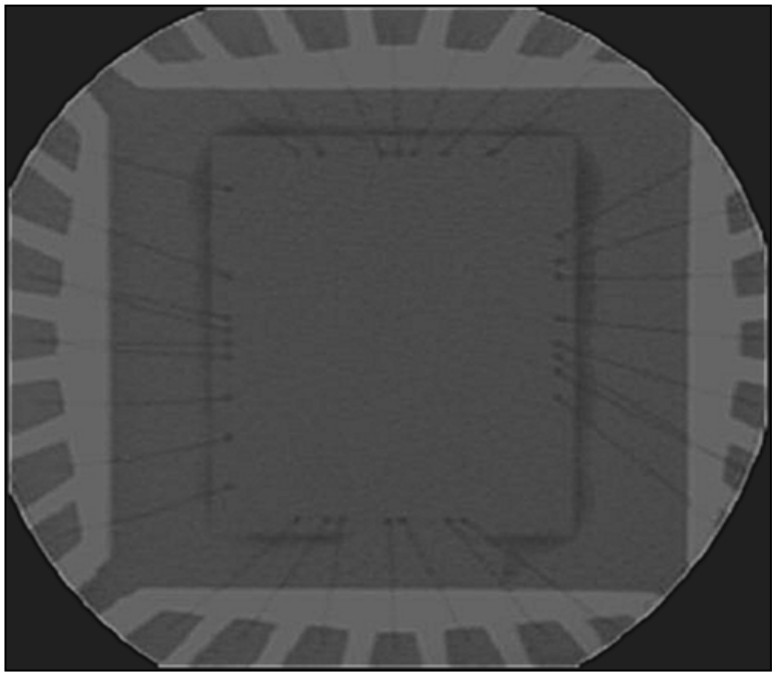
# *Validation Process: Benefits to Using of X-Ray*

**X-Ray Can Be Used to Validate Lot Consistency and is a Non-Destructive Test**



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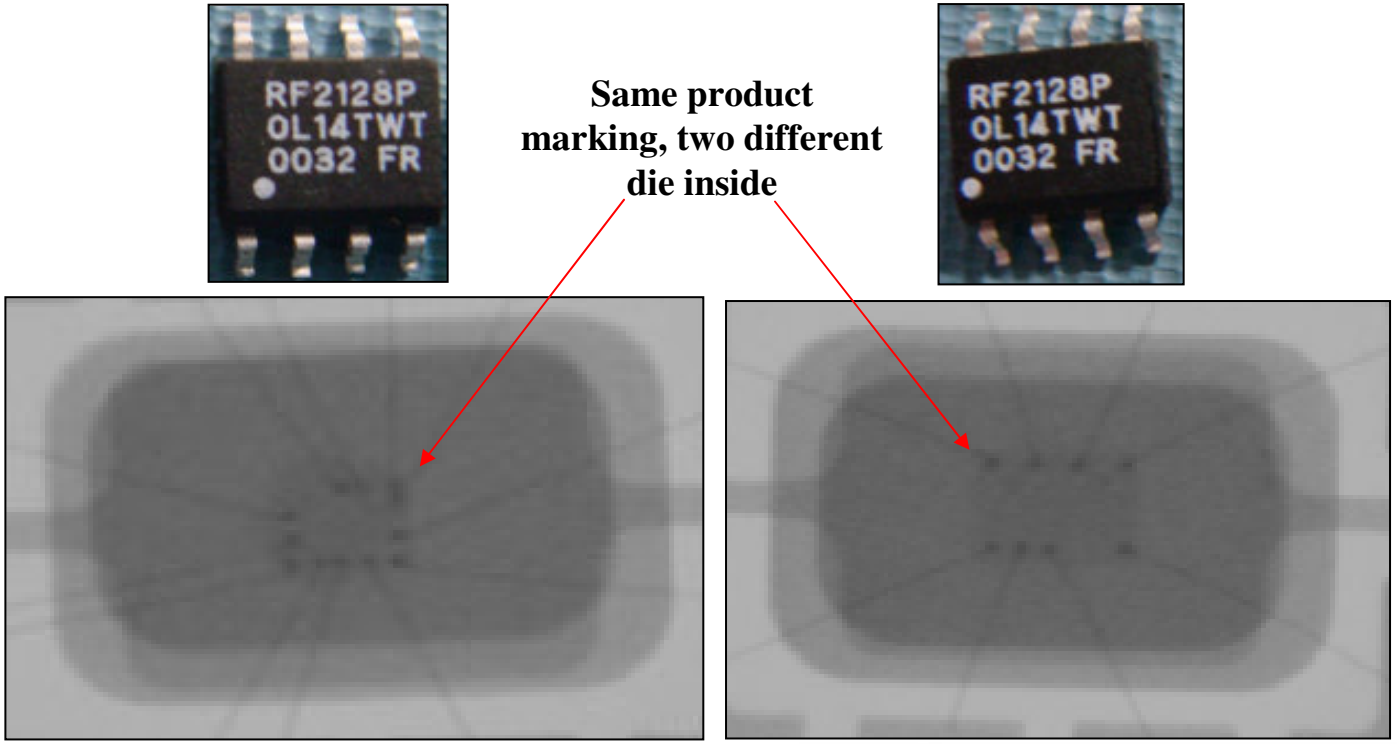
# Validation Process

**X-Ray can be used to identify counterfeit material in a lot of mixed material**

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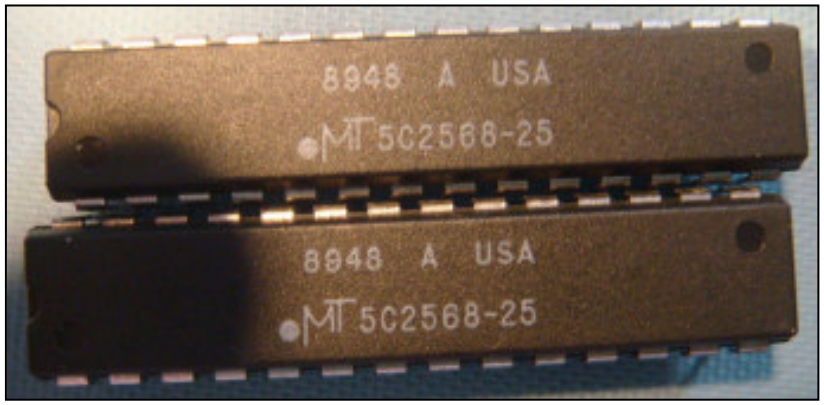
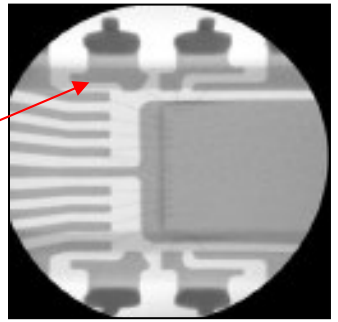
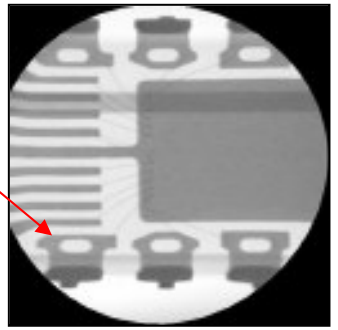
# *Validation Process: Uses for X-Ray*

**Using X-Ray we were able to detect two different die types and lead frames used in the same lot of material. Upon further investigation we also identified two different die revisions.**



**Micron S06A Revision**



**Micron S12D Revision**

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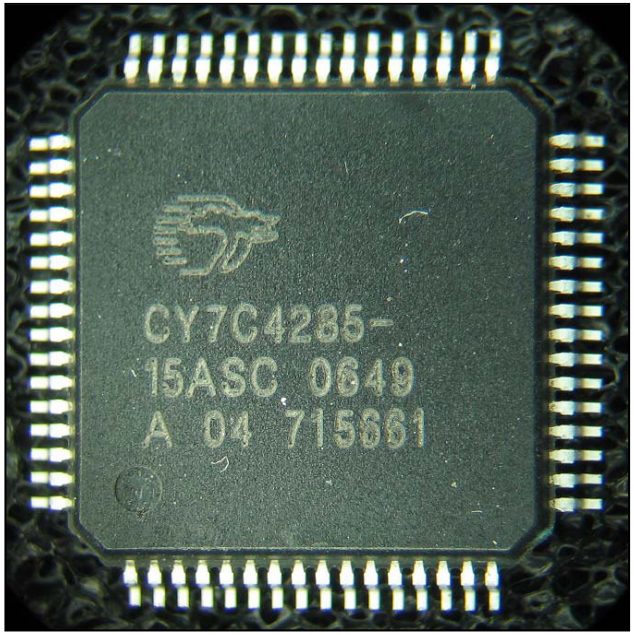
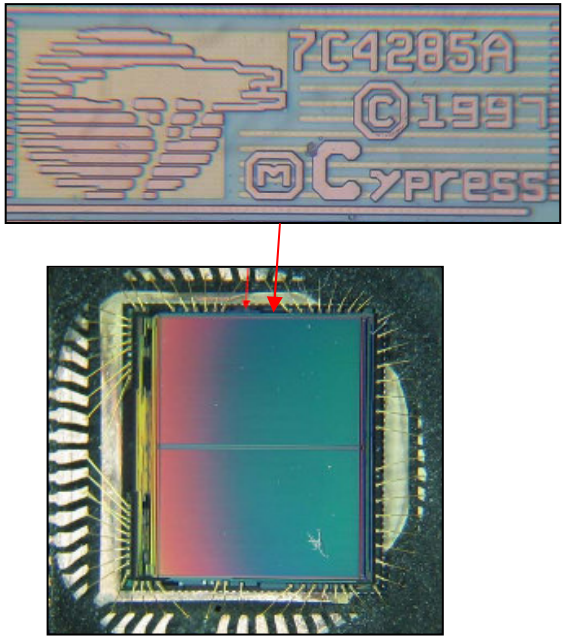
# *Validation Process: Example of Die Identification*

**Validation of the Mask and Die ID is key to determining the authenticity of a device.**

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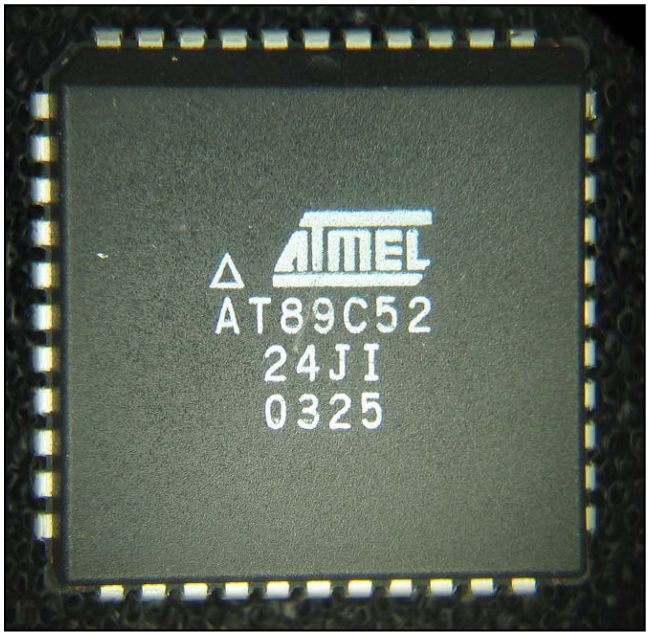
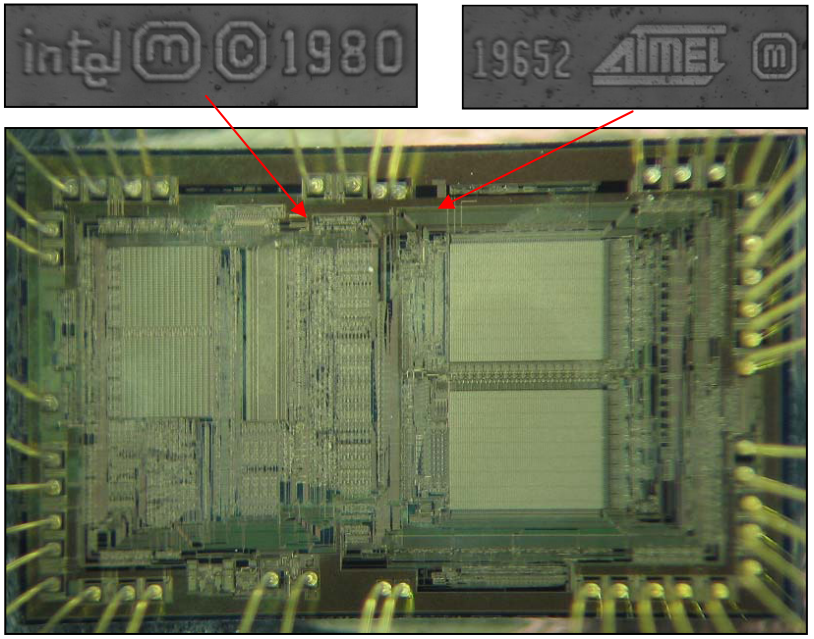
# *Validation Process: Example of Die Identification*

**This information is validated on every lot of *XTREME* "*Certified* EOL Product".**

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# *Certified EOL Product*

- **What you can expect from *XTREME* Semiconductor "*Certified* EOL Product"?**
  - **Original OCM Material, no Counterfeits**
  - **Certificate of Compliance (C of C)**
  - **Test Data:  Die Photos, X-Ray's, Elect. Test Summary**
  - **Warranty: One-Year from the Date of Shipment**
  - **100% Satisfaction**

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# *"Certified EOL Product"*

***Eliminates the Risk***


***Let Us Answer Your Questions….***

***Come see us at Booth 417***

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