Agenda

» Counterfeit electronic components
» Supply chain security
» Industry standards
» Government initiatives
COUNTERFEIT ELECTRONIC COMPONENTS
Prevalence

- Approximately 1% of semiconductor sales\(^1\)
- Reports have quadrupled since 2009\(^2\)
- 1,800 cases in U.S. weapon systems identified during 2009-2010 (>1 million parts in total)\(^3\)
- Authorized distribution channel contaminated\(^4\)

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\(^1\) Kae-Nune and Pesseguier, “Qualification and Testing Process to Implement Anti-Counterfeiting Technologies into IC Packages”


\(^3\) Senate Armed Services Committee Report, “Counterfeit Electronic Parts”

\(^4\) U.S Department of Commerce, “Defense Industrial Base Assessment: Counterfeit Electronics”
Contributing Factors

» Obsolescence
» Shortages
» Ease of counterfeiting
» Difficulty in detecting
Counterfeiters

» Well-financed
» In tune with market conditions
» Increasingly sophisticated techniques

1 Bastia, “Next Generation Technologies to Combat Counterfeiting of Electronic Components”
2 IHS, “Supply Chain Risk Insight into Market Sense and Respond Actions of Counterfeiters”
Product Types

» Practically every type of electronic component
- 85% - ICs
- 6% - Transistors
- 3% - Diodes
- 3% - Inductors, Capacitors, Resistors
- 1% - Optoelectronics
- 1% - Relays
- <1% - Connectors

» In-production and obsolete components

1 ERAI
2 IHS, “Supply Chain Risk Insight into Market Sense and Respond Actions of Counterfeiters”
Classes

» Used
» Remarked
» Overproduced
» Defective
» Cloned
» Repackaged
» Forged Documentation

Harmful Effects

» Government
  • National security and civilian safety
  • Cost of enforcement
  • Lost tax revenue

» Industry
  • Cost of risk mitigation
  • Cost to identify and replace counterfeit product
  • Lost sales and damage to brand

» Consumers
  • Product failure
  • Safety

Avoidance

» Reduces the stress on the inspection system
» Reduces the probability of an escape
Obtaining Knowledge

Knowledge

Experience
Symposiums
Business Partners
Industry Affiliations
Areas of Knowledge

- Supplier Selection
- Counterfeiting Techniques
- Product
- Inspection Techniques
- Lessons Learned
- Industry Standards
Supplier Management

» Maintain a register of approved suppliers
  • ISO 9001 and/or AS9120 certified
  • ANSI/ESD S20.20 certified
  • Member of IDEA with IDEA-ICE 3000 Inspectors
  • Supplier selection and inspection systems
  • E&O liability insurance

» Require Buyers to use approved suppliers

» Conduct regular on-site audits of suppliers
Don’t focus only on the initial cost of the product
Focus on the total cost of ownership
  • Purchase Cost
  • Failure analysis
  • Rework
  • Downtime
Supplier Rating System

Objective
• Quality
• Timeliness
• Volume

Information from external sources

Single global platform

Supplier ratings drive supplier selection
## Supplier Ratings in Part Search

### VMS (Velocity Market Search)

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Velocity Electronics LP
Purchasing Controls

» Increase scrutiny in certain conditions
» Limit channels for certain types of product
Blacklisted Suppliers

» Automatically blacklist counterfeit suppliers
» Prevent purchases from blacklisted suppliers
Inspection Protocol

» Same inspection protocols regardless of source
» IDEA-STD-1010
» Driven by commodity type
» Statistically valid random sampling plan
» IDEA-ICE-3000 certified Inspectors
Detection Methods

- Packaging/documents
- Microscopy
- X-ray
- Decapsulation
- XRF
- Marking permanency
- Dimensions
- LCR
- Scrape
- Acetone
- NMP
- Dynasolve
- SEM
- EDS
- SAM
- FTIR
- Curve tracer
- Functional test
- Solder test
- Blank check
Difficulties

» Subjective
» Time
» Cost
» Destructive
» Product types
» False failures
Inspection Equipment

Microscopes

X-Ray
Inspection Equipment

XRF
Inspection Equipment
Reporting and Disposition

» Report suppliers of counterfeit product
» Seize counterfeit product to prevent its reentry into the supply chain
Case Study #1

Samsung K6T4008V1C-GB70
Contacts
Bodies
Visual Comparison

Suspect

Known-Good
X-Ray Comparison

Suspect

Known-Good
Decap Comparison

Suspect

Known-Good
Case Study #2

ON Semiconductor MC33063ADG
Datasheet Comparison

[Image of a chip with the text "33063/PCRL" and a diagram with the labels "8", "3x063", and "ALYWA"]]
X-Ray Comparison

Suspect

Known-Good
Decap Comparison

Suspect

Known-Good
Case Study #3

Ramtron RM25640-G
Visual Comparison

Suspect

Known-Good
**X-ray Comparison**

Suspect

Known-Good
SAE Industry Standards

» AS5553A
  • Avoidance, Detection, Mitigation, Disposition

» ARP6178
  • Tool for Risk Assessment of Distributors

» AS6081
  • Independent Distributors

» AS6496
  • Authorized/Franchised Distributors

» AS6171
  • Test Methods Standard
Other Industry Standards

» IDEA-STD-1010-B
  • Acceptability of Electronic Components

» IDEA-ICE-3000
  • Professional Inspector Certification Exam

» IDEA-QMS-9090
  • QMS Standard for IDEA Members

» CCAP-101
  • Counterfeit Components Avoidance Program
Government Initiatives

» Senate Armed Services Committee (Nov 2011)
» Section 818 of FY2012 NDAA (Dec 2011)
» DFARS Case 2012-D055 (May 2014)
» DFARS Case 2014-D005 (due Nov 2014)
» FAR Case 2013-002 (due Nov 2014)
VELOCITY OVERVIEW
Velocity at a Glance

» Distributor of broad-level electronic components
» Supplier selection and inspection systems
»Founded in 1999
» 144 employees
» 25 experienced IDEA-3000 certified inspectors
» Certified to:
  • AS9120 and ISO 9001
  • ANSI/ESD S20.20
  • CCAP-101
  • ISO 14001 and OHSAS 18001
Global Sourcing, Inspection, Sales

Corporate Headquarters: Sales, Sourcing, Inspection, Storage, Distribution
Sales, Sourcing, Inspection, Storage, Distribution
Sales & Sourcing Office
Sales Office
Bringing Value to Our Customers

- Supply Chain Security
- Channel Flexibility
- Supply Chain Solutions
- Cost Savings

Bringing Value to Our Customers
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Director of Quality and Operations
512.973.9500
jjowers@velocityelec.com