

DfR Solutions

reliability designed, reliability delivered

DfR Solutions Newsletter September/October 2008

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Prediction Tool: Also in [DfR News](#)

Quiz: How can you save money during a recession?

Answer: Outsourcing. Even when times are tough and money is tight, companies must continue to innovate and develop new products in preparation for better times. However, the upfront costs of hiring new staff can be astronomical. By outsourcing your reliability efforts, supplier audits, product testing, and failure analysis, you can ramp up in line with the design cycle, extend your cost accruals into the future and turn on activities only when you need them. Curious to find out more?

Give us a call at 301-474-0607 or [email us](#).

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DfR is Expanding!

It may be a recession, or a depression if you are really pessimistic, but DfR is continuing to look for highly talented personnel. We currently have specific needs in the following areas:

- Location: Pacific Northwest; Needs: Failure Analysis and Design for Reliability; Expertise: Moderate to Advanced
- Location: Taiwan; Needs: Failure Analysis; Expertise: Beginner to Moderate
- Location: Washington, DC; Needs: Supplier Quality; Expertise: Beginner to Moderate

To inquire about these positions or to submit your resume, please contact [Ed Dodd](#).

Reliability Performance of 2nd Generation Pb-Free Solders

As reported by DfR and other organizations, a slew of alternative Pb-free alloys (labeled 2nd generation) have been introduced because of the obvious limitations of SAC305. DfR has been at the forefront in capturing the reliability performance of these critical new solders. Click [here](#) (and [here](#)) to see examples of our comprehensive approach and the reliability performance of the leading 2nd generation solder, SN100C. For more information on solder reliability testing, please contact [Joelle Arnold](#).

HP Announces New Qualification Criteria for 2nd Gen Pb-free Solders

Speaking on 2nd generation Pb-free alloys, Hewlett Packard [announced](#) at SMTAI how it will qualify 2nd generation (non-SAC305) Pb-free solders. A quick review of the 12 page paper notes a separation between surface mount and through hole and a major emphasis on contamination reports and mixed Pb-free systems for BGAs. Given HP's influence in the marketplace and within iNEMI, which released its own [approach](#) on 2nd Gen Pb-free Solders, expect this document to have significant influence throughout the supply chain. For more information, please contact [Joelle Arnold](#).

Process and Design Guidelines for QFNs: Manufacturability and Compability

What happens when the fastest selling component package in the world is dreaded and feared by long-life, high-reliability OEMs? It's time for a DfR White Paper. In this [report](#), we introduce our readers to the quad-flat-pack-no lead, explain the drivers for its adoption, and some of the design and process rules that must be applied to ensure a trouble-free transition. For more information on how DfR can be your source of QFN reliability assurance, please contact [Nathan Blattau](#).

New! DfR now offers Premium HALT Services

What happens when you combine world-renowned insight into reliability and failure with the power of highly accelerated life testing (HALT)? A premium level of HALT services that includes complete access to our subject matter experts, the ability to perform failure analysis real-time in our facility, and a physics of failure (PoF) based assessment of the HALT results. This level of problem-solving is not available at any other organization. For more information or to reserve your HALT activity now, please contact [Bob Esser](#).

Did your semiconductor components just become less reliable?

When selecting components, OEMs and ODMs rely on component manufacturers to ensure the robustness of the parts being sold. These robustness (not reliability) qualifications are typically driven by compliance with JEDEC documents. Well, what happens when JEDEC makes passing the test easier?

JEDEC recently did this in the latest revision to [JESD47](#), which guides the component supply chain on how to qualify new components. For packaging, the standard sample size of 77 per lot shrank to 25 per lot and the -40 to 125C for 1000 cycles shrank to 850 cycles. It is especially interesting to note that the JEDEC requirement of 2300 cycles for 0 to 100C is more than 50% less than the IPC requirement of 6000 cycles for 0 to 100C. Anybody here see a problem? The application environments they use to justify their testing are also likely too benign. Are you interested in DfR's insight in component qualification practices? Please contact [John McNulty](#).

New! DfR now offers pre-audit assessments of Lead-Free Control Plans (LFCPs)

How are high reliability industries, such as avionics, military, medical, and telecommunications, dealing with the increasing obsolescence of SnPb parts and the inevitability of Pb-free? Through the implementation of Lead-Free Control Plans (LFCP) as specified by the suite of GEIA documents. These documents are being implemented at the largest OEMs and are being required throughout the supply chain. Through our subject matter experts and our close interaction with standards development, DfR is able to help you with all aspects of LFCPs, including:

- Drafting a lead-free control plan in compliance with GEIA-STD-0005 documents
- Reviewing and editing an existing lead-free control plan
- Assisting suppliers with LFCP requirements
- Auditing in-house and supplier conformance to LFCPs

For information on this critical service, please contact [Craig Hillman](#).

DfR News

DfR Launches New Website

The source of information you have come to rely on has just gotten better! New tools and more articles and white papers are now even easier to access. A new clean look focuses on the facts, not the frills. Especially exciting is our new set of [FREE calculators](#) that can assess the reliability of the individual components that make up your electronic products. Can't find something at the best reliability site on the web? [Let us know](#).

DfR Invited to Present on Physics of Failure (PoF) at HDBK-217 and VITA Meetings

Based on our growing reputation in extending the science of PoF into the area of practical implementation, DfR Solutions has been asked to give an invited presentation at two important working groups. On November 13 in Indianapolis, IN, DfR will present to the [Navy-Crane Working Group](#) that is developing the newest version of MIL-HDBK-217 (more on that in our next newsletter). On November 20 in Scottsdale, AZ, DfR will present to VITA 51 Working Group that was tasked to address shortcomings in reliability predictions. For more information on PoF training, please contact [Jim McLeish](#).

DfR Selected by AVSI to Develop IC Wearout Prediction Tool

DfR is proud to announce that it has been selected by the leading avionics consortium, AVSI, to develop a more effective tool in predicting the failure rates and wearout behavior of current and future generation integrated circuits. Using algorithms developed by [Prof. Joey Bernstein](#), this [web-based tool](#) will provide users a life curve based on actual on-die mechanisms. This breakthrough will allow OEMs to accurately predict the behavior of current generation technology specific to their use environment, instead of waiting years for industry-gathered field data of

questionable accuracy. Want more information? Please contact [Bob Esser](#).

DfR Expands Michigan Office

DfR Solutions is proud to announce that Dr. Prakash Sathe has joined our Michigan office as an associate in reliability and warranty analysis. Dr. Sathe holds a Ph.D. in Industrial and Operations Engineering and brings extensive and successful Quality, Reliability, and Durability (QRD) leadership experience from the automotive and electronics industries. Dr. Sathe has particular expertise in design for six sigma (DfSS), failure mode effects analysis (FMEA), practices designed to reduce down-time during production and improve time-to-market, 'Voice of the Customer' to convert customer expectations into product requirements, and various warranty activities (management, forecasting, analysis and cost reduction). Dr. Sathe will also be assisting DfR in our expansion into India. Dr. Sathe works closely with Indian suppliers and assists them in upgrading their systems to meet global OEM expectations. He has extensive knowledge of the Indian electronics industry and is available to assist companies in locating capable suppliers, finding joint venture partners or with new green field start up operations in India. For more information, please contact [Jim McLeish](#).

Upcoming Events

CARTS Europe (Helsinki, Finland: October 20)

In collaboration with Dennis Zogbi of Paumanok Publications, DfR will present our latest teardown of the AMD Phenom 9500 and the Intel Core 2 Quad Q6600. For more information, please contact [Tammy Smittenaar](#).

DfR in Finland and Sweden (October 20-22, 2008)

DfR Solutions will be visiting companies in Northern Europe in late October. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

SAE Convergence (Detroit, MI: October 20-22)

DfR Solutions will exhibit at Convergence 2008. Stop by and visit us at Booth #1328! For more information on the conference, visit the [SAE website](#) or contact [Jim McLeish](#).

SMTA Nutmeg Vendor Day (Southbury, CT: October 21)

DfR Solutions will highlight some of the most recent concerns regarding the reliability of lead-free components and assemblies. For more information, please contact [Leslee Johns](#) or [Tammy Smittenaar](#).

DfR in Connecticut (October 21 - 22)

DfR Solutions will be visiting companies in Connecticut in late October. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

SMTA Long Island Academy (Hauppauge, NY: October 23)

DfR Solutions will present a half-day version of our popular course, 'The Reality of Pb-free Reliability.' If you are interested in attending this course, please contact [Melissa Serres Marx](#) or [Tammy Smittenaar](#).

IMAPS Symposium on Microelectronics (Providence, RI: November 5)

John McNulty will present 'Processing and Reliability Issues for Eutectic AuSn Solder Joints.' If you are interested in more information on this topic, please go to the [IMAPS website](#) or contact [Tammy Smittenaar](#).

DfR in Boston (November 2-5)

DfR Solutions will be visiting companies in the Boston area in early November. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

MIL-HDBK-217 Working Group (Indianapolis, IN: November 13-14)

DfR Solutions will provide an introductory presentation on the concept of Physics of Failure as a reliability prediction tool. For more information, please contact [Jim McLeish](#).

Technology World 2008 (Conventry, England: November 17-18)

DfR Solutions will present an invited seminar, 'Common DfR Mistakes by Systems Designers' as part of '[Breakthroughs – Bending the Design Rules](#)'. This talk will focus on critical design decisions, such as capacitor selection, component placement, board layout, and the role board plating plays in corrosion resistance (especially in high-sulfur environments). For more information, please contact [Bob Willis](#) or [Tammy Smittenaar](#).

DfR in England and France (November 17-20)

DfR Solutions will be visiting companies in England and France in mid November. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

VITA 51.2 Working Group on Physics of Failure (Scottsdale, AZ: November 20)

DfR Solutions will provide an introductory presentation on the concept of Physics of Failure as a reliability prediction tool. For more information, please contact [Jim McLeish](#).

IPC/JEDEC Conference on Pb-Free Electronics (Dallas, TX: December 8-10)

DfR Solutions will present 'The Reality of Pb-free Reliability.' If you are interested in attending this course, please contact [IPC](#) or [Tammy Smittenaar](#).

DfR in East Texas (December 8-12)

DfR Solutions will be visiting companies in East Texas (Dallas, Austin, Houston) in mid November. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

LEAP Working Group (Dallas, TX: January 2009)

DfR Solutions will present an insightful presentation on vibration and Pb-free to this important avionics Pb-free consortium. For more information, please contact [Tammy Smittenaar](#).

SMTA Anaheim Academy (Anaheim, CA: February 10-12, 2009)

DfR Solutions will present 'Selecting a Lead-Free Solution for High-Reliability Applications (Industrial, Telecom, Automotive, Medical, Military, and Avionics)' at the SMTA academy program in conjunction with the Electronics West Trade Show. If you are interested in attending this course, please contact [Melissa Serres Marx](#) or [Tammy Smittenaar](#).

IPC APEX Expo (Las Vegas, NV: March 31-April 2, 2009)

DfR Solutions will be presenting several seminars at IPC APEX. They include 'The Reality of Pb-free Reliability,' 'Design for Reliability: A Physics of Failure Based Approach,' and 'Next Generation Technologies in Electronic Packaging and Production.' If you are interested in attending these courses, please contact [Michelle Michelotti](#) or [Tammy Smittenaar](#).

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Our patented lead-free solder SN100C is based on a unique formulation of tin, copper, nickel and germanium that delivers cost-effectively high performance in production and reliability in service. SN100C matches the performance of the tin-lead solder it replaces in delivering smooth, bright, crack-free fillets and high first pass yield. And its combination of strength and ductility ensure superior performance in high strain conditions

such as vibration. Visit our [website](#) for more information.

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