

# Assembly Training Products from SMART Group

## **Package On Package (PoP) Design, Assembly and Soldering - £99 plus VAT *New!***

The industry's first PoP Package assembly training material, the format choice is yours, interactive CD-ROM, on line training session, inspection posters or photo CD? This interactive CD is the first to cover the design, assembly and inspection of PoP. Package on Package (PoP) applications are growing in popularity for mobile and handheld professional electronics applications and, with it, placing further demands on assembly engineers. In simple terms PoP represents the stacking of components one on top of another either during the original component manufacture or during printed board assembly. As real estate is at a premium for logic and memory, PCB designers say the only way to go is up and up.

## **Conformal Coating Inspection and Defect Guide - £99 plus VAT *New!***

The CD-ROM provides a simple guide to the use of coatings, their application and process, product benefits, inspection and quality control. A practical defect guide session will also allow delegates to examine coated boards using different materials and inspect the coating application. A unique feature of the CD is a number of engineers answering questions on coating processes, process defects and quality control in manufacture.

## **Conformal Coating Inspection and Defect Guide Posters - £45 plus VAT *New!***

A separate 24 page colour poster guide is available. The photographic guide is ideal as a reference source for operators, inspection and training departments in your organisation and is provided as an Acrobat pdf file. The individual sheets can be printed as A4 for bench top reference or as A3 colour posters for reference in manufacture. Alternatively they can be viewed on a PC with each page featuring three images illustrating points to examine or steps in the inspection process. Currently the guide features over 20 individual pages for on site printing and display.

## **Conformal Coating Photo CD ROM Album - £99 plus VAT *New!***

A photo CD-ROM album featuring over 290 colour images is available to allow engineers to create their own training material, PowerPoint files, process documents and standards. The photo CD covers many defects listed and is one of over 15 of photo CD-ROMs available. The photographs can also be used in marketing and advertising material or in technical articles provided the source is credited. They can be simply pasted into any Word or PowerPoint document for in-house company use. Photographs are provided in either .tiff or .jpg file format. The images are not all one resolution but a mixture of high and low resolution.

## **Package On Package (PoP) Assembly and Soldering Posters *New!***

A set of 25 colour wall charts available covering inspection and quality control in Package on Package (PoP) assembly. The charts were produced to accompany the "Package on Package (PoP) STACK Package Assembly, Inspection & Rework Workshops" organised in Europe. The photographic poster guide is ideal reference source in your organisation and is provided as an Acrobat pdf file. The individual sheets can be printed at A4 for bench top reference or as A3 colour posters for display for operator reference or as a training aid.

## **Package On Package (Pop) Assembly and Soldering Photo CD ROM *New!***

Photo CD-ROMs provide process, quality engineers, marketing or editorial staff with a unique source of photographs which may be used in company inspection documents, technical presentations and web sites. The photographs can also be used in marketing and advertising material or in technical articles. They may be simply pasted into any Word or PowerPoint document for in house company use. Photographs on the CD may be provided in .jpg or .tiff file format. The PoP Photo CD-ROM contains over 380 images. The CD collection of photographs are either conventional photographs, x-ray images or microsections covering printed boards, surface mount or conventional joints as well as solder paste, components and solder joints. A selection of satisfactory and rejects images are provided on many of our seventeen photo CDs.

The CD photo album contains images which may be used freely provided the resulting product is not resold. The images may be used without reference but not credited or copyrighted to any other company or source. The images should not be incorporated into any other database or CD-ROM without permission. The seventeen photo CD ROMs are available for sale from Bob Willis. If you need some specific images for training course or presentation we can often provide other images or produce images for you.

***Soldertec Hand Soldering & De-Soldering Lead-Free Interactive CD-ROM - £99 plus VAT***

This is the first in a series of interactive CD-ROMs developed by Soldertec Global to assist engineers with the practical introduction of lead-free materials and processes. The other two CD-ROMs cover wave and reflow soldering. Introduced by *Kay Nimmo, Technical Director*, Tin Technology, the CD provides a step-by-step guide to materials, soldering steps, inspection and common defects which may be seen in manufacture. The CD also features an interactive quiz on hand, reflow and wave soldering to help assess staff's knowledge on the use of lead-free materials and the changes necessary in manufacture to meet the deadline of July 2006.

***Wave Soldering Process Introduction and Defect Guide 2 - £99 plus VAT***

This CD ROM provides a guide to all aspects of wave soldering with all the common process defects and lead-free. Each stage of the process including fluxing, pre heat, solder wave and conveyors are explained. The defect guide also includes defects specifically on printed boards and components which can cause soldering problems. At the first screen you can select the soldering process, equipment set-up, quality control, defect guide and CD ROM operation. Selecting the process you want to view takes you to each section, here you have access to a large manual on wave soldering including change for lead-free. As an example in the fluxing section details of foam, spray, wave and dip fluxing systems are explained along with video clips and still photographs.

Also included on the CD ROM are procedures for Parts Per Million Monitoring, process control procedures and set-up methods. A spreadsheet is provided which may be used for defect monitoring using the PPM procedure. The defect guide browser provides examples of defects rather than defect categories which makes it easy to compare process problems with the disk content. Clicking on the photograph provides a full screen view with an explanation of the possible causes. Each process stage is described in detail with suggested modification to the process for lead-free alloy introduction.

***NPL Lead-Free Soldering "Cook Book 3" Interactive CD-ROM - £99 plus VAT***

NPL interactive "Lead-Free Assembly and Soldering Cook Book 3" CD-ROM is now on two CD-ROMs to include even more international views on lead-free making a total of 20. The latest views on lead free come from the likes of Dieter Bergman-IPC, Jennie Hwang, Phil Zarrow-ITM and Bill Kenyon all from the USA giving their prospective on issues faced by the industry. This was the World's First interactive resource on lead-free soldering technology It remains the first ever produced, now its on version 3 produced jointly by The National Physical Laboratory and Bob Willis in 1999 to address the following aspects of the technology:

Design Rules, PCB Solderable Finishes, Component Terminations, Impact on Process Conditions, Impact on Existing Equipment, Hand Soldering, Screen Printing, Reflow Soldering, Wave Soldering, Cleaning, Rework, Visual Inspection, Joint Reliability, In Circuit Test. Whether a large OEM or a small CEM, a supplier or user, this project brings together all you ever wanted to know about Lead-Free assembly technology.

***Printed Circuit Design & Lead-Free Defect Guide - £99 plus VAT***

Printed board design and layout is the key to Zero Defect Manufacture for tin/lead and lead-free. This CD-ROM provides a basic introduction to Conventional, Surface Mount, Ball Grid Array and Pin In Hole/Intrusive Reflow Assembly and many of the specific issues on lead-free. The interactive CD-ROM contains the following guidelines: Conventional and surface mount layout Surface mount and Conventional footprints Resist, via hole, tracking and panel layout Solder paste stencil rules Printed Board Specifications Lead-Free PCB surface finishes. The defect guide browser provides photographic examples of defects or poor design rather than defect categories which makes it easy to compare potential problems with the disk content. Clicking on the photograph provides a full screen view with an explanation of the possible causes. Two full animations of the surface mount and conventional assembly processes are included on the disk which includes the BGA, double sided assembly and through hole/Intrusive reflow conventional assembly and wave soldering.

***Soldertec Lead-Free Wave Soldering Interactive CD-ROM - £99 plus VAT***

Third in a series of interactive CD-ROMs developed by Soldertec Global to assist engineers with the practical introduction of lead-free materials and processes. Introduced by Kay Nimmo, Technical Director, Tin Technology, the CD provides a step-by-step guide to wave soldering, wetting, fluxing, process control, inspection. Process animations explain the wave soldering process options and video is used to further enhance the process stages. Inspection criteria for wave solder joints are illustrated for different alloys. Common wave soldering defects are included which may be seen in manufacture, reasons and possible corrective action is provided. The CD also features an interactive quiz on wave, reflow and hand soldering to help assess staff's knowledge on the use of lead-free materials.

***(SMART Group also has 25 training videos on all aspects of electronics manufacture, ask for a video list)***

**Conventional/ Surface Mount & Lead-Free Process Animations - £99 plus VAT**

If you are using PowerPoint for training or sales presentations and need to illustrate the conventional and surface mount assembly process stages we have a new CD-ROM for you. The CD features two presentations one on conventional through hole assembly, the second features surface mount and mixed technology assembly process stages. A third animation of surface mount and mixed technology assembly updates the process stages for lead-free requirements.

Stages included in Surface Mount include:

Screen printing  
Component Placement  
Reflow Soldering  
Adhesive Application  
Wave Soldering  
Cleaning  
Rework

Conventional Assembly includes

Through hole insertion  
Hand soldering  
Fluxing  
Preheat  
Wave soldering  
Cleaning  
Inspection  
Rework/Test

Each stage of the process is illustrated with animations and commentary, each slide describes the basic process stages. The PowerPoint format makes it ideal to edit each presentation, leave out or add additional photographs, text depending on your requirement.

**Ball Grid Array Optical Soldering Guide & Defects - £45 plus VAT**

Thirteen colour wall charts illustrating BGA inspection criteria and defects are available as a pdf. This allows a company to print A4 and A3 charts for use in their own factory to aid inspection. The set provides examples of tin/lead and lead-free joints on plastic ball grid array devices. Also included are examples of the Ceramic Ball Grid Array, Column Grid Array and many common process defects seen in manufacture. (Available as a printable pdf file)

**BGA X-Ray Inspection Wall Charts - £45 plus VAT**

Ball Grid Array Soldering & Defect Guide – 15 posters provided as a pdf file which can be printed as A4 or A3 charts in colour for onsite use. Examples includes X-Ray inspection guide of satisfactory BGA solder joints, flip chip, column grid array, CSP and ceramic ball grid array. Common area array process defects like popcorning, open circuits, voiding, ball damage, distorted columns are also included. (Available as a printable pdf file)

**Lead-Free Assembly and Soldering Photo CD-ROM - £99 plus VAT**

This CD-ROM provides the process or quality engineer with a source of photographs of process examples which may be used in company inspection documents or presentations. The photographs can also be used in marketing and advertising material or in technical articles. They may be simply pasted into any Word or PowerPoint document for in house company use. Photograph are provided in .tif or .jpg file format.

The photographs are either, conventional photographs, X-rays and microsections for surface mount or conventional joints as well as solder paste print, components and solder joints. There are over 350 images covering both satisfactory and reject joints and other process defect examples.

**BGA Inspection and Lead-Free Defect Guide CD-ROM - £99 plus VAT**

Interactive CD-ROM covering optical and X-ray inspection of solder joints. It includes an introduction to the lead-free assembly process with specific attention to BGA and area array devices. It provided a step by step guide to the procedure of inspection for optical and X-ray showing you how to do it. Inspection criteria are included for X-ray and visual criteria on different lead-free terminations and pad surfaces. The CD also includes many defect examples and causes as well as illustrating the reflow of different terminations with Bob Willis's unique micro video clips.

CD-ROM will include - Modern Lead-Free Assembly Processes, Lead-free Alloys, BGA – Area Array Reflow, Inspection Techniques, Inspection Procedures, Optical Inspection, X-Ray Inspection, Defect Guide, Inspection Criteria

**Lead-Free Visual Inspection Reference & Defect Guide Colour Wall Charts - £45 plus VAT**

Each poster shows three examples of satisfactory joints with different lead-free alloys, including Tin/Silver/Copper, Tin/Copper/Nickel and Tin/Bismuth for wave soldered terminations. Reflow terminations are shown for each of the most common terminations along with common process issues and lead-free defects on wave and reflow soldering. The 12 posters are provided as a pdf file and can be printed as A4 or A3 charts in colour for display on your own company site.

**Lead-Free Solder Paste Printing Charts - £45 plus VAT**

Lead-Free Solder Paste Printing - 10 A3 Colour posters The posters cover the use and storage of lead-free solder paste, removal from the fridge, handling, placement on the stencils and paste reuse. Also included is checking stencils after cleaning and examples of satisfactory printing on BGA, through hole and fine pitch QFP. They are ideal for shop floor use and are provided as a pdf file and can be printed as A4 or A3 wall charts in colour.

**Soldertec Lead-Free Reflow Soldering Interactive CD-ROM - £99 plus VAT**

Second in a series of interactive CD-ROMs developed by *Soldertec Global* to assist engineers with the practical introduction of lead-free materials and processes. Introduced by *Kay Nimmo, Technical Director, Tin Technology*, the CD provides a step-by-step guide to solder paste materials, convection and vapour phase soldering steps, lead-free inspection and common reflow defects.

*(SMART Group also has 25 training videos on all aspects of electronics manufacture, ask for a video list)*

**Please send order together with your cheque or card details for selected items to:**

**Tony Gordon, The SMART Group, 94 Easton Street, High Wycombe, Bucks HP11 1LT, England**

Name: \_\_\_\_\_ Job title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Postcode: \_\_\_\_\_ Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

VAT exemption. number (for EEC countries excluding UK) \_\_\_\_\_

**OR** to pay by Visa/Mastercard please also complete the following and fax order form to **(+44) 1494 473975**  
(please ensure all sections are completed fully in order to comply with credit card companies' requirements to validate transactions)

Card type: Visa/Mastercard Card no: \_\_\_\_\_

Card Security code (3 digits printed on card signature strip): \_\_\_\_\_ Card expiry date: \_\_\_\_\_

Cardholder's name: \_\_\_\_\_ Signature: \_\_\_\_\_

Cardholder's full statement address: \_\_\_\_\_

\_\_\_\_\_ Postcode: \_\_\_\_\_

**The SMART Group, 94 Easton Street, High Wycombe, Bucks HP11 1LT**  
**Telephone: 01494 465217 Facsimile: 01494 473975**  
**email: [info@smartgroup.org](mailto:info@smartgroup.org) web: [www.smartgroup.org](http://www.smartgroup.org)**