IBIS

INTERFEROMETRIC BUMP INSPECTION SYSTEM

IBIS is a brand new production tool used for measuring and characterising solder bumps on chip carriers.

It is a true production speed system with the capability of inspecting up to 3000 devices per hour performing both 2D and 3D inspection with critical dimension metrology. IBIS is suitable for all coined and non-coined bump applications.

IBIS uses white light interferometry and high speed, high resolution Silicon sensors to gain digital images of the device under inspection. Massively parallel digital signal processing technology is then used to analyses the image data at speeds far beyond competing systems resulting in a system which can be used for 100% inspection of chip carriers at production volumes.

The 2D inspection sub-system primarily reports on bump position, bump diameter and gross defects such as short circuits, missing bumps and additional bumps.The 3D inspection sub-system concerns itself with bump height metrology including 100% bump height measurement with a resolution of 0.05μ and repeatability at 3σ level of better than 1.0μ. IBIS identifies and reports any non-co-planarity of the device before subsequent processes, thus increasing product yields.

The IBIS system is configured to accept chip carriers on JEDEC trays with automatic handling through the system. The inspection results are available in the form of data files which characterise the samples and include defect maps.

A detailed specification appears overleaf.

World leaders in optical test solutions

SPECIFICATION

SAMPLE SIZE AND REQUIREMENTS:
Maximum sample size 50mm x 50mm
Maximum scan size (single scan) 15mm x 20mm
Extended scan area (multi scan) 28mm x 38mm
Clearance between optical head and workpiece is approximately 2.5cm
System will accept Gerber 274X for reference, but will be able to run without data if not available
Custom sizes available

METROLOGY:
Height Resolution 0.05µ
Repeatability at 3σ level better than 1.0µ
Absolute accuracy is determined by He/Ne laser
Maximum 'out of plane' distance permissible 180µ
Minimum bump diameter approx 50µ
Minimum bump spacing 30µ.

INSPECTION PARAMETERS:
Operator definable parameters for defects includes:
Bump height limits +/- (height of bump from top surface of solder mask)
Bump volume limits +/-
Coplanarity of bump tops with respect to a best-fit-plane or a three-point-contact

Further faults detected include:
Detection of debris between bumps
Missing bumps
Additional bumps

PRODUCTION FIGURES:
Scan time for good substantially flat specimen approx 0.5 secs
Scan time for +/- 30µ 'out of plane' specimen approx 1.2secs
Scan time for large warped specimen between 2 & 4 secs
Scan time reduces for specimen less than 15mm x 15mm
Load / unload time for table is 0.5 secs typical

SYSTEM OUTPUT:
Fault report format is a data file in MS Excel format available over LAN giving details of individual defects, positions of defective samples in trays, maps of defects and reason for rejection
Two levels of reporting are available, one for production mode and the other for defect analysis mode with comprehensive log file/colour chart output

APPROXIMATE DIMENSIONS AND SERVICES:
Width 0.8 m
Depth 1.2m
Height 1.5m
Weight 200kg
Services required:
Electricity at 110/230V, 50/60Hz
Compressed air 6 bar, clean and dry.
Environment:
Ambient temperature between 10C and 30C at humidity of 10% - 90% non-condensing

Lloyd Doyle Limited
Molesey Road
Walton on Thames
Surrey
KT12 3PJ
UK

Telephone: +44 1932 245000
Fax: +44 1932 220555

www.lloyd-doyle.com