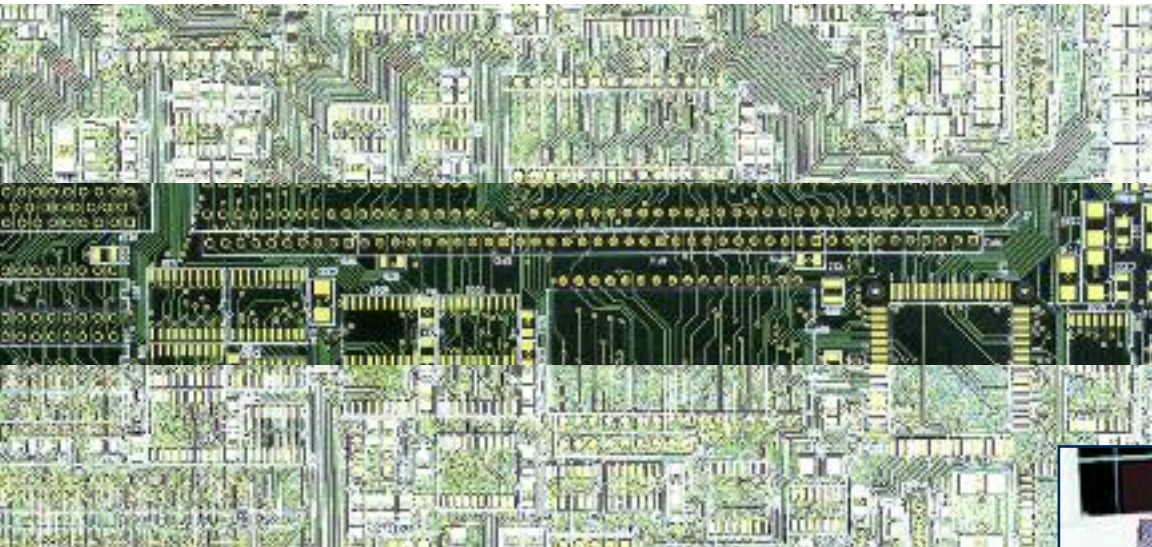


Controlled Impedance Test System



*Accurate impedance measurement
ensures signal integrity*

CITS900s4

Enhanced accuracy

Excellent R&R

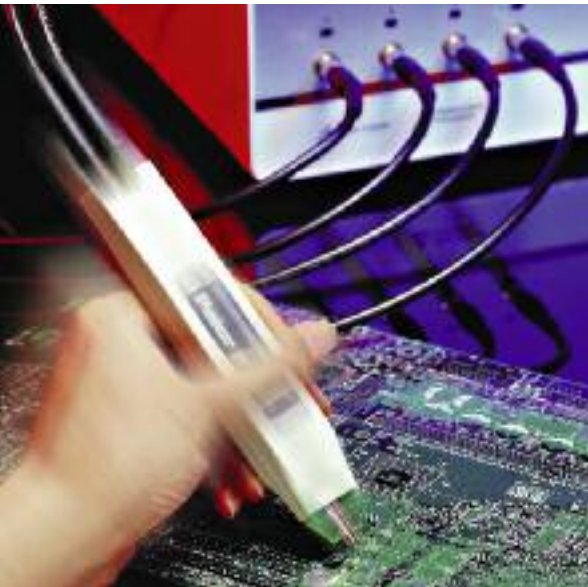
*Single ended &
differential measurement*

CITS900s4 - 4 Channels

Polar

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CITS900s4 has 4 channels to
test single ended and
differential
traces on the same coupon



As a PCB manufacturer, you are almost certainly now producing controlled impedance PCBs for your customers – it is estimated that within a few years these types of boards will account for some 70% of the market.

But how do you verify the PCB characteristics, control your production process and demonstrate quality conformance to your customers?

Controlled impedance PCBs are used across a broad range of applications to help ensure high frequency signal integrity. Designers invariably specify these types of PCBs whenever the edge speeds of digital signals are faster than 1ns, or analog signals climb above 300MHz.

New in CITS900s4

4 Channel versions

Enhanced differential
calibration

Accurate measurement of
close coupled traces

Crosstalk measurement

The dimensions of the trace and the properties of the PCB material – which can vary from batch to batch – determine the characteristic impedance of a PCB trace. To control trace impedance, PCB manufacturers usually vary trace width to compensate for different batches of PCB material. Historically, they were then forced to use specialist laboratory equipment, such as an oscilloscope-based time domain reflectometer (TDR) or a network analyser, to measure the characteristics of a PCB, or a representative trace etched on the board or a test coupon. This approach was complex, expensive, and far from ideal in a production environment.

Many electronics designers – especially those pushing performance boundaries in the defence/aerospace, communications and IT industries – are now taking controlled impedance PCBs a stage further, by using close coupled signals and mixed dielectric pcb stackups to improve noise immunity and reduce timing errors on very high speed interconnects. For PCB manufacturers serving these rapidly growing electronics sectors, verifying the differential impedance of these balanced traces has proved difficult until now.





The total test solution

The CITS900s4 uses TDR techniques to measure the reflection of fast rise-time pulses, and provides a graphical view of a conductor's characteristic impedance along its length. It automatically reports when a measurement is outside the tolerance you specify.

CITS900s4 has 4 channels that allow you to permanently connect two or more test probes making it ideal when

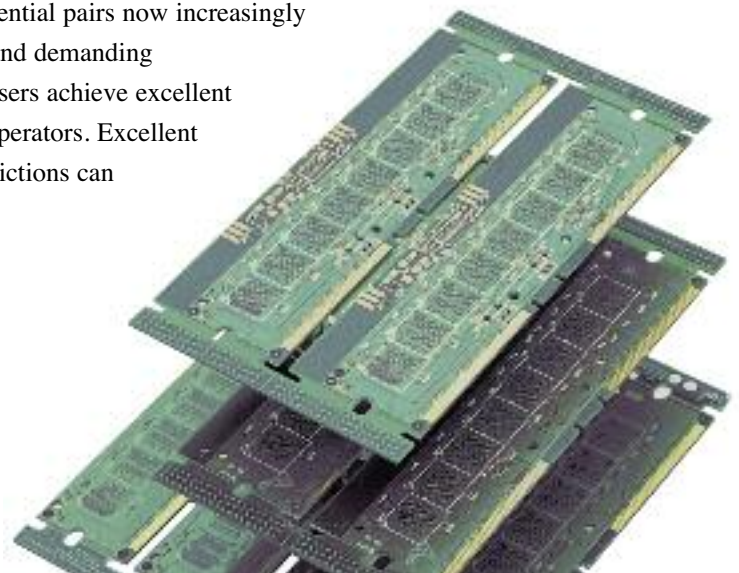
your coupons have both single ended and differential traces. The CITS900s4 software automatically prompts the user to select the correct probe.

CITS900s4 provides you with the ideal solution for easily and accurately verifying the impedance of PCBs both single-ended trace impedance and the differential impedance of balanced traces.

Enhanced Accuracy

High accuracy is assured over a wide range of impedance measurement as each CITS900s4 is factory calibrated at 28, 50, 75 and 100 ohms against precision reference airlines, traceable to National Standards. You obtain accurate and repeatable results. In addition the calibration is further extended to measure tightly coupled differential pairs now increasingly used on mixed dielectric builds and demanding communications applications. Users achieve excellent gage R&R using non-technical operators. Excellent correlation with field solver predictions can be achieved.

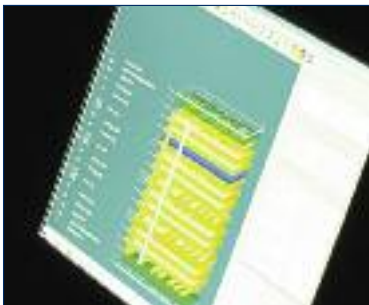
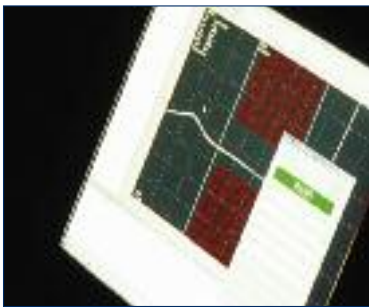
You can share graphical test results by email and view using the CITSView software which is available for download from www.polarinstruments.com





Exceptional ease of use

CITS900s4 is exceptionally easy to use. Powerful software automates every aspect of testing, enabling the entire process to be controlled by a mouse or footswitch. You simply select a test file containing the PCB test impedances and tolerances, position the probe and press the footswitch. Typical PCBs and coupons have a number of different impedances and the CITS900s4 can execute a series of impedance tests automatically, prompting you to reposition the probes as appropriate.



Results

Test results are clear, the CITS900s4 automatically processes the data to produce a simple display of impedance versus distance and reports a PASS or FAIL for each test. Automatic datalogging enables test results, together with system set-up data and measurement criteria, to be easily exported to a wide variety of third-party database or spreadsheet packages for real-time statistical process control.

Statistical Process control

Basic SPC data is provided from the optional Datalog report generator (DRG). The DRG allows you to process your results and share them electronically with your clients.

Professional SPC is provided by QC-Calc real time SPC software. QC-Calc interfaces directly with the CITS to provide you with SPC data on impedance control in real time. For more information please look at: www.prolinksoftware.com

Applications

CITS900s4 is a robust instrument suitable for use in production environments by non-technical operators. It is also widely used by contract manufacturers and OEMs to verify conformance from PCB suppliers.

Accessories

There are a wide number of accessories to support your specific application including:



Probes

There is a wide range of probes with footprints to suit your coupon layout. These have been designed to ensure maximum repeatability and accuracy of measurement. For more information on probes consult www.polarinstruments.com

Verification kit and airlines

A range of airlines (28, 50, 75 and 100 ohms) and semi-rigid references (25, 50, 75 and 100 ohms) with Certificates of Accuracy

traceable to National Standards (NIST and NPL). These allow you to verify the accuracy of your CITS.

Data Report Generator

This is an optional software module that imports data from the CITS datalog and produces customer reports including calculation of C_p and C_{pk}

Professional Statistical process control

Professional real time SPC software (QC-Calc) optionally allows you to output real time SPC data from the CITS900s4. More information on QC-Calc is available from www.prolinksoftware.com

Coupon Holder

This will adjust to hold most sizes of coupon and ensures maximum accuracy of measurement.

Polarcare Protect for CITS900s

Enjoy enhanced protection for your measurement system

By offering enhanced protection during the standard warranty period and ongoing protection throughout the operational life of the CITS Polarcare Protect safeguards the investment that you have made in the Polar CITS and the role that it plays in maintaining traceable impedance measurement records for your customers.





* **USA / CANADA / MEXICO**
 (CITS sales and service)
Polar Instruments
 T: (650) 344 1416
 E: richard.smith@polarinstruments.com

USA / CANADA
 (Software sales & support)
Polar Instruments Inc
 T: (503) 356 5270
 F: (650) 344 7964
 E: ken.taylor@polarinstruments.com

* **ASIA / PACIFIC**
Polar Instruments (Asia Pacific) Pte Ltd
 T: +65 6873 7470
 F: +65 6873 7471
 E: terence.chew@polarinstruments.com

UNITED KINGDOM / EUROPE
Polar Instruments (Europe) Ltd
 T: +44 23 9226 9113
 F: +44 23 9226 9114
 E: neil.chamberlain@polarinstruments.com

* **JAPAN**
Polar Instruments - Japan Branch
 Tel: +81 44-276-9112
 Fax: +81 44-276-9136
 E: japan@polarinstruments.com

* **KOREA**
Polar Instruments Korea Corp
 T: +82 2 2644 2493/4
 F: +82 2 2644 2495
 E: jsbae@polarinstruments.com

* **GERMANY, AUSTRIA, SWITZERLAND**
Polar Instruments GmbH
 T: +43 7666 20041-0
 F: +43 7666 20041-20
 E: hermann.reischer@polarinstruments.com

REST OF WORLD
Polar Instruments Ltd
 (Head office)
 Garenne Park, Guernsey
 UK. GY2 4AF
 United Kingdom
 T: +44 1481 253081
 F: +44 1481 252476
 E: martyn.gaudion@polarinstruments.com

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CITS900s4

Measurement Capability

Range	20 – 150 ohm (single-ended) 40 – 200 ohm (differential)
Accuracy	1% at 50 ohm (Calibrated against traceable standards at 28, 50, 75 and 100 ohm)
Testable length	2m maximum
Horizontal display resolution	0.2mm (0.008")
Vertical display resolution	0.03 ohm

System Inputs & Outputs

Test probe channels	CITS900s4 - 4 channel
Pass/Fail outputs	Opto-isolated, open collector
Socket for anti-static wrist strap	4mm
Computer communication port	USB 2.0
Power input	IEC, 85V-250V @ 80/60Hz, 0.1 to 0.06A

Standard Accessories

Description	Part Number
Probe cable	WMA360
100 ohm differential probe	IPD100
50 ohm probe	IP50
Sample coupon	MPCD1325
Footswitch	ACC323
Anti-static wrist strap & cable	ACC185 + ACC175
Operator Manual	MAN200
Power cord	
50 ohm reference impedance	ACC254
Torque wrench	ACC313
SMA adaptors	MQX428
USB cable	ACC371

Optional Accessories

50 ohm probe, variable pitch	IP50V
Datalog Report Generator software	ACC230
Service Manual	MAN201
Verification kit (semi rigid)	ACC229
28 ohm, 50 ohm, 75 ohm and 100 ohm reference airlines	ACC232 - ACC235

PC Requirements

PC running Windows XP Professional. 1.6GHz or higher, 1Gb RAM, SVGA monitor, USB 2.0

This paper comes from sustainable and well managed forests. The timber is treated as a crop with the replanting programs exceeding the quantity of felled trees. The suppliers have achieved FSC and PEFC accreditation. The paper is elemental chlorine free and fully biodegradable without harmful effect to the environment.

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