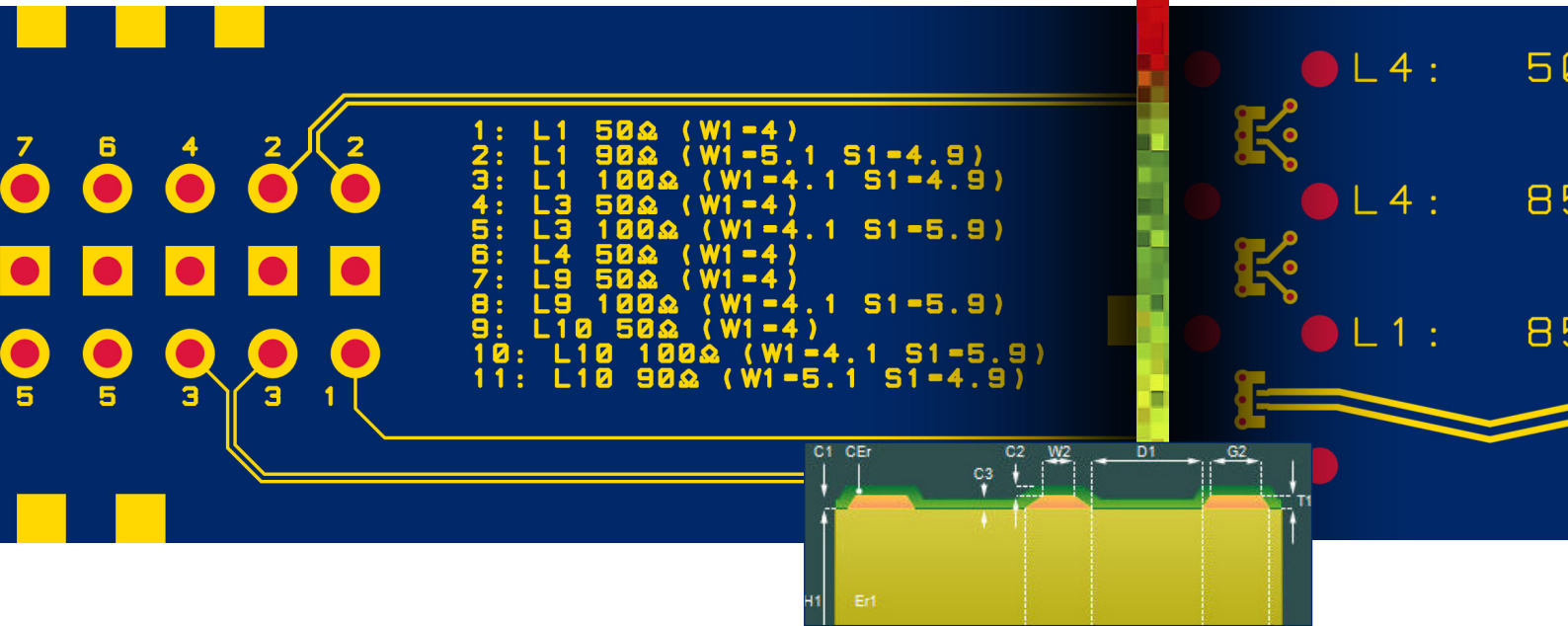


# Impedance & insertion loss coupon generator



Replaces time consuming manual  
or scripted coupon generation

CGen PCB

CGen Si

*Coupon generator for  
Speedstack or standalone use*

*Real-time editing with easy  
graphical displays*

*Reduces cost time & errors*

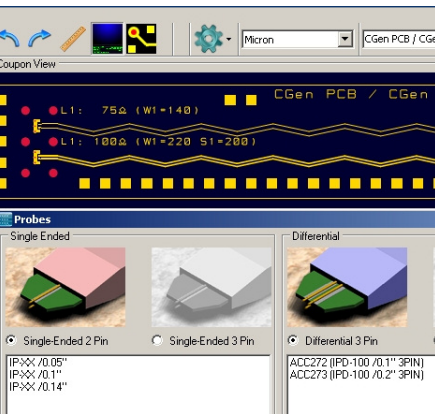
*Speeds front end tooling*

*Creates and exports Gerber  
RS274X and NC drill files*

**Polar**

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## Accurate impedance & insertion loss coupon generation.



You can reduce the time-consuming process of manually creating impedance coupons to minutes and powerful new features take coupon generation to new levels of control and flexibility.

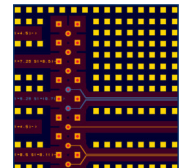
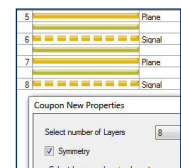
### Powerful new features

Through a series of easy stages CGen presents a choice of coupon styles and impedance probes and allows coupons to be edited in real-time before automatically creating and exporting a complete set of Gerber files. This makes front-end generation of CAM photo tools for PCB fabrication faster, more cost-effective and significantly reduces errors during preparation and test. Enhanced real-time editing and generation routines, as well as a new copper-thieving algorithm, ensure greater control and accuracy.

### Easy import of stackup data

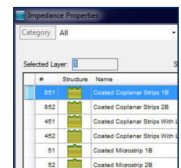
Impedance-controlled layer stackup designs can be entered manually or imported directly into CGen from Speedstack or industry-standard stackup tools. Power users familiar with scripting can also import third party XML stack files.

Although CGen may be used as a standalone system for coupon generation, it performs best alongside Speedstack layer stackup design & documentation system with either Polar Si8000m impedance solver or Si9000e insertion loss field solver tools. This creates a comprehensive and seamless process from layer stackup design with impedance and transmission line calculations to coupon generation. The coupon design can be shared between different companies within the PCB fabrication process, increasing the speed and minimising the risk of human error and mis-communication.



### Impedance Coupons CGen PCB

Once the stackup and impedance structures requirements have been defined CGen offers a series of impedance coupon styles to support a variety of test probe selections. By optimising the structure positioning CGen reduces coupon real-estate during panelisation; CGen outputs the coupons in industry standard Gerber format. CGen also guides you to use the most popular (and lowest cost) probe styles to minimise your test system running costs.



- Seamless integration from stackup to coupon design
- Supports manual, scripted or imported files
- Imports third party XML stack files
- Direct import from Speedstack PCB & Speedstack Si
- Compatible with Si8000m & Si9000e Polar impedance field solvers

### Coupons or on boards?

Often customers ask us – which is best – on board or on coupon test? Both have their advantages and disadvantages. For example testing the PCB itself tests “the actual trace”, but the trace may be difficult to locate and probing and ground point access less easy than on a coupon – so some of the perceived advantages of “on board” may be eroded by the compromises needed for test access. In addition testing on board increases unnecessary handling and adds a production step in the PCB process. Coupons can be optimised for test and minimise the chance of operator error – or the need to compromise the interconnection that is sometimes necessary on board. However – neither method is “right or wrong” fabricators and OEMs need to work together to decide if the advantages of one method outweigh the other for each particular application. Should you choose the on board rather than the coupon test route, Polar CITS880s is optimised for on board test – and supports both variable pitch and groundless differential on board test probes for such dedicated applications.

## Insertion loss coupons CGen Si

**CGen Si incorporates all the features of CGen and adds new single-ended and differential insertion loss coupon styles including both SPP & SET2DIL coupon capability.**

CGen Si generates coupons which meet the OEM guidelines and include advanced features such as fiber weave mitigation which is regularly deployed on ultra high speed traces to minimise the effects of varying substrate characteristics as the transmission line traverses the weave. (Note though that designs for insertion loss coupons are still being fine tuned by OEMs and final adjustment of launch and via structures may still be required. Polar always recommends an open dialog between fabricator and the board design authority when working on higher speed designs).

### Extensive suite of editing tools

Extensive editing features for the stackup and structures allow changes to be made and displayed in real time providing greater control over different elements within the coupon build. Coupon properties such as signal-pad, anti-pad ground and hole sizes can also be edited. CGen also supports copper pours and fills as well as dynamic adjustment of copper thieving.

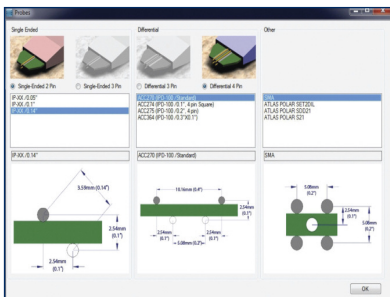
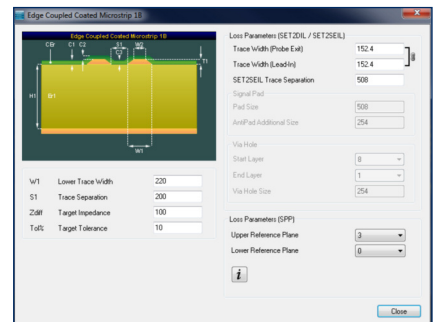
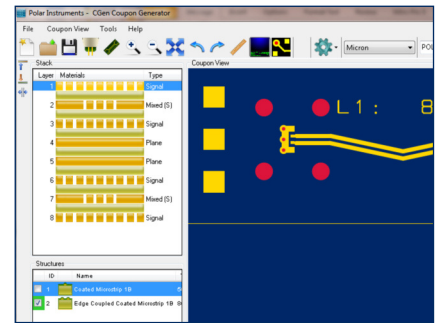
Any errors on impedance coupons are highlighted, allowing the operator to correct potential problems before panelisation.

### File creation and export

Once the layer stackup for the coupon has been finalised, CGen creates and exports Gerber RS274X files and an NC drill file. The extended Gerber RS274X files enhance precise positioning of the photo-plot and ensure that comprehensive stack data is passed seamlessly and accurately to industry-standard CAD/CAM software for the panelisation process.

### Save money on testing with preferred probes

Minimise your IP probe costs by ensuring your coupons are designed for testing with Polar preferred probes. For a full list of probe footprints please refer to Application Note AP146 and related notes on the Polar website.



- Choice of single-ended and differential-loss coupon styles
- Choice of test-probe footprints
- Add, remove or replace layers
- Preview edits in real-time
- Track changes and highlight errors
- Dynamically adjust copper thieving
- Automatically engineer test probe interconnects



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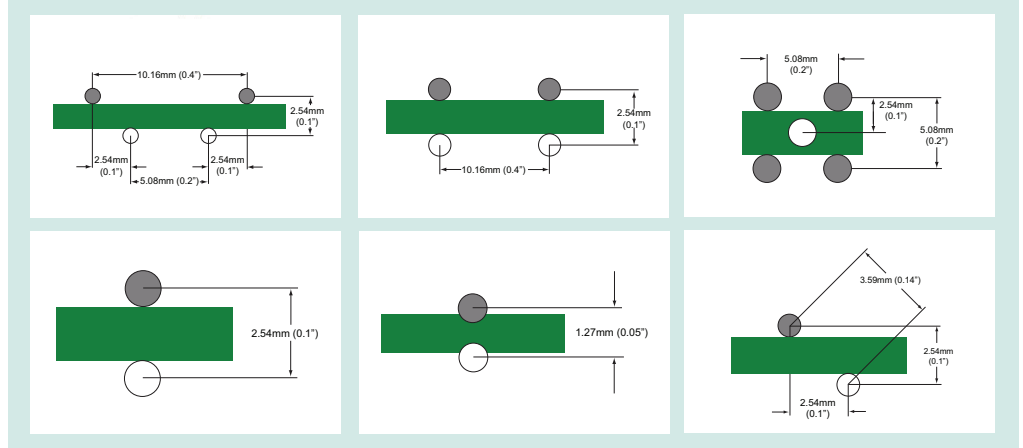
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**Probe footprints**



**Specifications**

Import	Speedstack stackup Si8000m impedance structure Si9000e impedance or loss structure XML Coupon file
Export	Gerber RS274X(A) Gerber RS274X(B) NC Drill CITS impedance test file
Layer count	Unlimited
Coupon styles	CGen PCB – 7 impedance styles CGen Si – as above plus: Differential SPP Single ended SPP SET2DIL SET2SEIL

**Ordering information:**

CGen PCB	Impedance coupon generator
CGen Si	Impedance & insertion loss coupon generator

**About Polar Instruments**

*Polar Instruments is a market leader in designing and manufacturing tools to simplify and enhance the design, fabrication and testing of printed circuit boards (PCBs). Their innovative tools include the industry-standard Controlled Impedance Test System (CITS) which provides the global PCB industry with an easy-to-use test system for high-speed digital and RF boards, as well as class-leading tools for fast and accurate design and testing of controlled impedance in PCBs. Polar also leads the industry in tools for automated PCB layer stackup design and documentation. Polar Instruments was established in 1976 and now has operations and channel partners in the US, UK, Europe and Asia Pacific.*

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