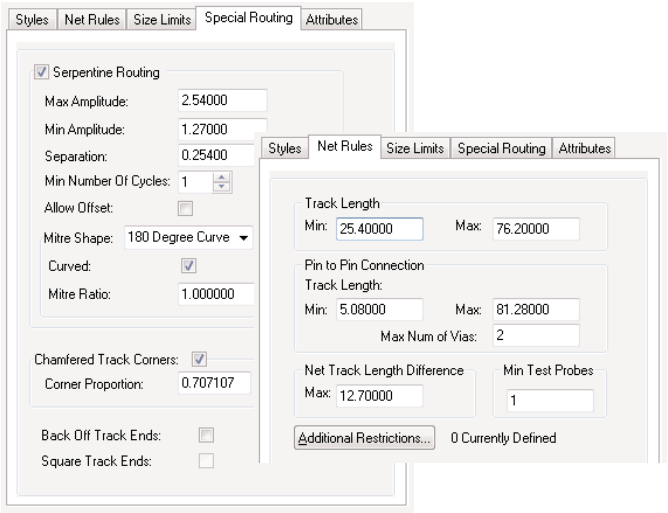
Interactive High Speed Option

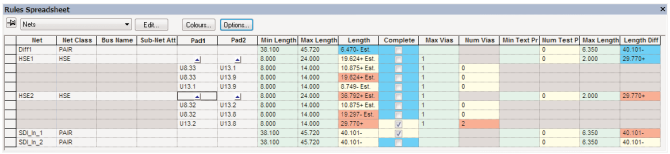
Constraints Driven Design Rules

Pulsonix delivers a powerful set of constraint rules-driven interactive High Speed design features. Conceived from the Schematic, the design is defined by the engineer during the early logical capture phase. All constraint rules are passed to the PCB design automatically where they are implemented using graphical guidance to ensure the layout is correct.



Rules Spreadsheet

Once your constraint rules have defined, they can then be displayed and filtered using the Rules Spreadsheet browser. This window can be customised to display the rules and values that you require during routing. This information is dynamic and updated in real time as the design is edited, keeping you informed at all times.

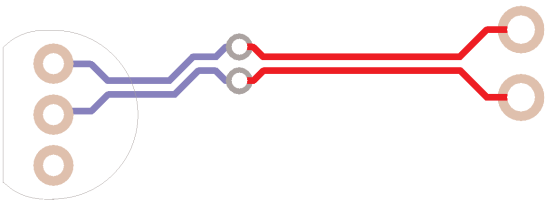


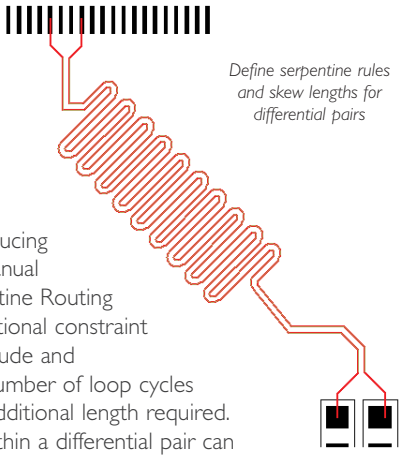
Customise the Rules Spreadsheet to display rules important to you

Differential Pair Routing

The advanced constraint rules allow Differential Pairs to be created easily and quickly. The two net pairs are routed interactively from their source using a dual path for both tracks and utilising an optional spacing rule between them to keep separation exact. The Differential Pairs may have rules that define how much they are allowed to differ in length once completed and what the minimum percentage of the overall length is allowed to deviate away from being 'paired'. When layer swaps are required, you can choose the via pattern to use. The interactive editor displays the legal via pattern available and the new track exit paths.

Used in combination with the other Net Length rules, precise control of the length of the Differential Pairs can also be defined. Once routed, inherent Differential Pair knowledge is retained so that track 'pair' still acts as one unit, making modification less error prone. These rules also form part of the post-layout Design Rule Checking.





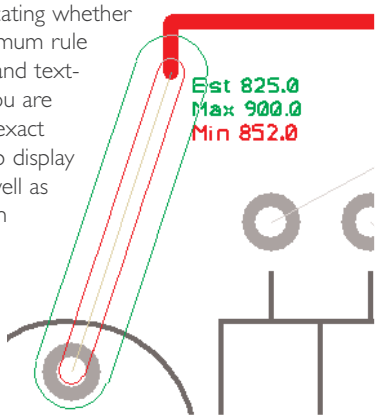
Define serpentine rules and skew lengths for differential pairs

Serpentine Routing

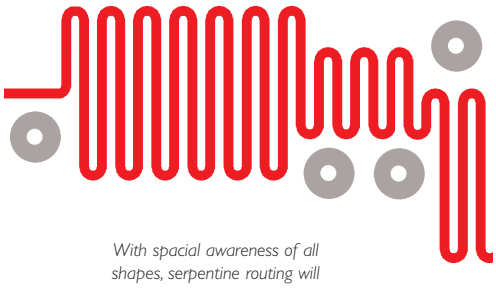
Serpentine Routing enables you to increase the length of high speed nets following your constraint rules without introducing spacing errors and without manual intervention. Using the Serpentine Routing command you can define additional constraint parameters, such as the amplitude and separation of each loop, the number of loop cycles to insert and the amount of additional length required. Length skew for each track within a differential pair can be defined and added using the serpentine routing tool.

Dyanamic Length Indicators & Head-up Display

During track routing, the interactive display shows an 'oval' around the area to be routed indicating whether the track is within the minimum or maximum rule limits you have defined. A colour-coded and text-based head-up display shows whether you are working within the constraint rules. The exact rule defined is also shown in the head-up display for pin-to-pin and track length rules as well as the actual track path being routed and an estimate of the final track length.



A 'head-up' display shows you colour-coded rules as the design is edited and the track lengths change

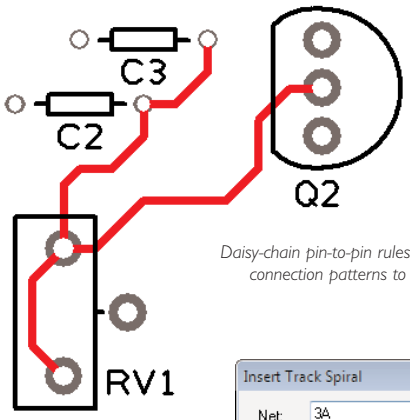


With spacial awareness of all shapes, serpentine routing will avoid all design obstacles

Interactive High Speed Option

Pin-to-Pin & Daisy Chain Routing

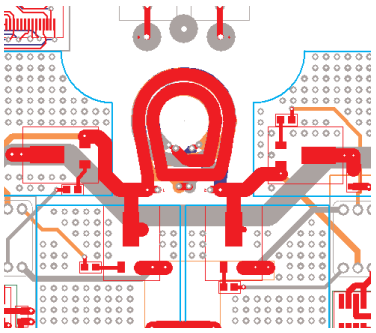
Net Classes allow you can create specific track sequences using pin-to-pin rules; rules for min/max pin-to-pin length and the overall track length. Where the exact net path required is critical daisy-chain routing gives you precise control to determine the sequence. Once defined, these rules are used during routing and can be further checked using the DRC Manufacturing feature.

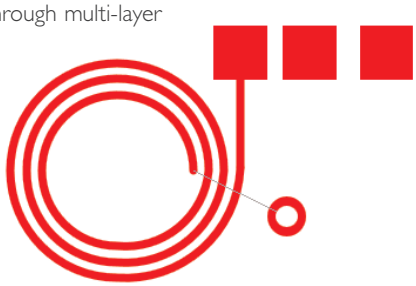


Daisy-chain pin-to-pin rules enable precise connection patterns to be created

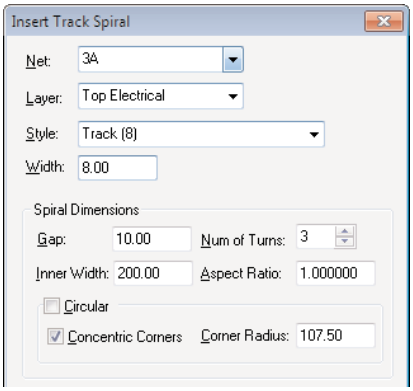
Interactive Spiral Tracks and Shapes

Advanced spiral creation is supported for copper, tracks and shapes, these can be used on electrical and non-electrical layers. When created as tracks or copper, they can also be connected to as part of a net. Full DRC checking to these items is also permitted. Spirals can be associated with pads and vias within a footprint and reused on multiple designs. Complex spirals can also be used to create components such as planar transformers for use through multi-layer and embedded component technologies.





Define spirals for planar transformers spanning multiple layers



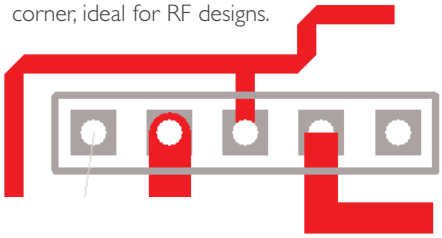
Define accurate spirals by simply entering the parameters

RF Design features

As part of the RF design suite, Pulsonix provides essential features to facilitate this; square-ended tracks and chamfered track corners. Both features are enabled on a Net Class basis to allow control of these features.

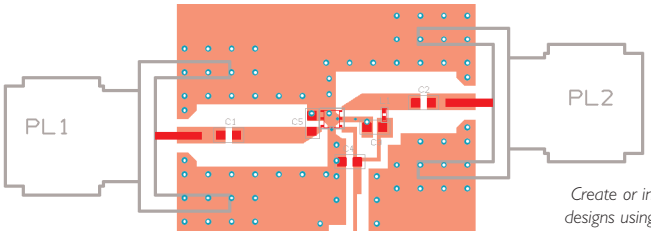
Square-ended tracks provide precise track ends when an 'open-ended' square end is required without the use of a square landing pad to achieve this.

Chamfered corners allow a traditional 45-degree inside and outside mitre to contain a 90-degree inner corner and 45-degree outer corner, ideal for RF designs.



Chamfered corners provide 45 degree 'outside' and 90 degree 'inside' edges

Square-ended tracks provide precise track ends when an 'open-ended' square end is required



Create or import RF designs using Pulsonix

Pulsonix High Speed Feature & Rules Summary:

- Differential pair definition and routing
- Interactive routing of track pairs
- Pattern control for vias
- Track length rules
- Pin-to-Pin rules
- Maximum Length deviation rule
- Net length rules during routing
- Dynamic display of Min/Max rules
- Head-up of rules in text and updating
- Graphical net length indicators
- Min/Max Track length rules
- Min/Max Pin-to-Pin Track length rules
- Net Track length differences rule
- Conditional Track length Min/Max rules
- Daisy chain Pin-to-Pin topology rules
- 90 and 45 degree serpentine routing
- Spiral creation using intelligent rules
- Circular/square spiral shapes
- Square-ended tracks
- Chamfered track corners for true RF mitres

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