Interactive High Speed Option

PULSONIX

Support for High Speed Designs

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.

Interactive Length Indicators

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.

Pin-to-Pin & Daisy Chain Routing

By editing Net Classes 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.

Features and rules summary:

- Interactive net length rules during interactive routing
- Display of Min/Max rules using dynamic octagons
- Head-up of rules in text with dynamic update
- Graphical net length indicators showing Min/Max rules
- Rule tolerances shown with colour changes
- 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
- Max number of vias rule
- Number Test probes per net rule
- Min/Max track width rules

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

Est 825.0
Max 900.0
Min 852.0
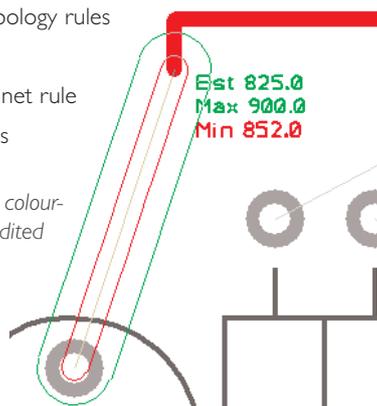
Differential Pair Routing

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.
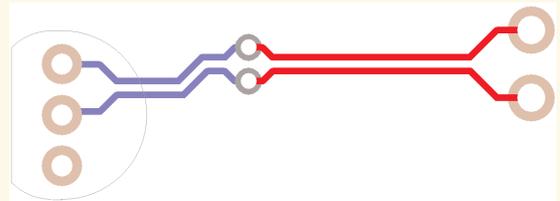
Features and rules summary:

- Differential pair definition and routing
- Interactive routing of track pairs
- Pattern control for vias during layer swapping
- Rule checks for paired tracks
- DRC check and reporting
- Gap definition rule
- Minimum percentage pair routing rule
- Track length rules
- Pin-to-Pin rules
- Maximum Length deviation rule
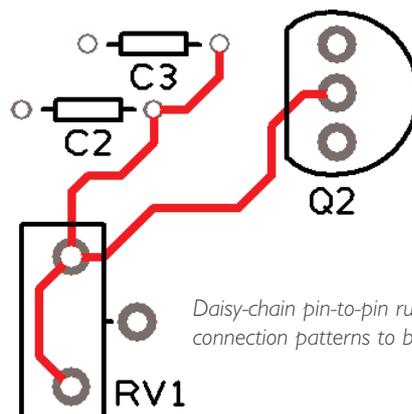
Daisy-chain pin-to-pin rules enable precise connection patterns to be created

C3
C2
Q2
RV1

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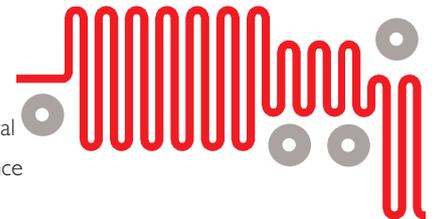# Interactive High Speed Option

![Pulsonix logo]

Support for High Speed Designs

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.

Features and rules summary:

- ■ Serpentine routing patterns
- ■ 90 and 45 degree serpentine routing
- ■ Min/Max amplitude
- ■ Number of cycles
- ■ Track separation distance
- ■ Cycle reduction and removal
- ■ Automatic obstacle avoidance
- ■ Additional length rule
- ■ Min/max track length rules obeyed
- ■ Offset controls to allow 'bending' around obstacles

Interactive Spiral Tracks and Shapes

The High Speed option also contains RF design features. Advanced Spiral creation is supported for copper, tracks and shapes. These can be used on electrical and non-electrical layers as required. 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.

Features and rules summary:

- ■ Advanced Spiral creation using intelligent rules
- ■ Circular/square spiral shapes
- ■ Gap rules defined
- ■ Number of turns
- ■ Inner spiral width defined
- ■ Aspect ratio for non-square shapes
- ■ Corner radius defined for shapes
- ■ Available for Copper & non-elec shapes
- ■ Spirals can be added to Footprints
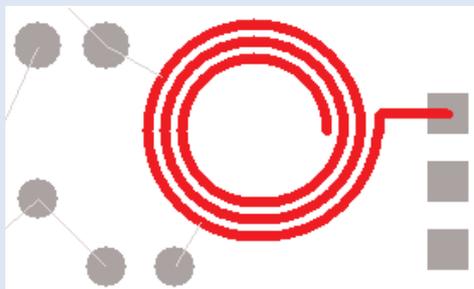
RF Design features

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.
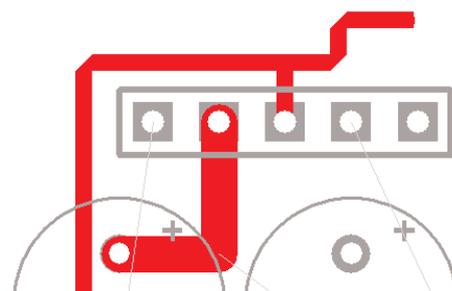
Square-ended tracks and chamfered corners provide advanced RF technology features to Pulsonix

Features summary:

- ■ Square-ended tracks
- ■ Chamfered track corners for true RF mitres
- ■ Defined within the Net Class rules

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