



Datasheet for Design Engineers

Physics-Driven AI for Electronics Design

Quilter removes the manual layout bottleneck to make PCB design instant, infinite, and autonomous, so engineers can innovate instead of routing traces.

Teams using Quilter complete in minutes what previously took weeks.

Every engineer can now independently generate an infinite number of fab-ready boards, without needing to use layout tools. They treat board layout like code compilation, validating concepts multiple times daily before committing resources.

Senior engineers stay focused on architecture and innovation instead of routing traces, while teams explore 10-100x more design variants and ship products weeks faster than competitors waiting for manual layout.

Physics validation ensures boards work on first spin, eliminating costly respins. Engineers now assume boards are instant and unlimited. PCB design automation is no longer optional for competitive hardware development.



PCB Design for a Hardware-Rich World

Hardware today is as iterative and experimentation-driven as software. Quilter enables Hardware-Rich Development™¹ where teams generate real boards early and often to accelerate learning, testing, and innovation.

With Quilter, any engineer or engineer-adjacent R&D team member can generate a board, review constraints, and test ideas without waiting on layout.

- 1 **Provide Inputs:** Upload your schematic, constraints, and requirements.
- 2 **Automated Design Generation:** Quilter creates multiple design options based on your inputs.
- 3 **Review and Refine:** Evaluate trade-offs, adjust constraints as needed, and choose the best design.
- 4 **Fabrication-Ready Outputs:** The selected design is optimized for manufacturing and performance.

Key Features

The list below covers Quilter's most impactful and commonly used features. For a complete and regularly updated reference, including all supported constraints, checks, and integration behaviors, visit docs.quilter.ai.

Physics Driven Layout

Differential Pairs

Detects diff-pairs, computes impedance from your stack-up, and routes length-matched traces so your high-speed signals meet spec in the first run—no tuning required.

Timing-Sensitive Signals

Matched-delay buses like DDR and HDMI are routed with length-skew constraints applied automatically, locking in timing paths without manual tuning or guesswork.

Power Pours

Identifies power nets and strategically places components and auto-generates functional copper pours that reduce prep time and get you to first spin faster.

Bypass Capacitors

Places bypass caps precisely near power pins and validates placement using physics rule checks, eliminating the manual work behind stable power delivery.

Physics Rule Checks

Runs unit-test-style checks (length, impedance, power, etc.) let you explore new constraints without the risk of silent failure.

Component Group Handling

Automatically groups and places tightly coupled components like PMICs and caps, ensuring power integrity and signal quality without hand-tuning.

Workflow Integration

Native Format I/O

Read and write native files from Altium, Cadence, and KiCAD, enabling seamless integration into your existing toolchain without painful conversions.

Preserved Pours & Pre-Routed Trace Respect

Pre-placed components and pre-routed traces are preserved exactly as submitted, so you keep control over critical nets while Quilter handles the rest.

Placement Regions

Placement constraints from Altium Room and KiCAD Areas are honored during layout without re-annotation.

Iteration & Control

Candidate Sorting

Design candidates are ranked by constraint coverage, fab rules, or layout density, helping you explore more design directions, test constraints, and decide with confidence.

Edit & Iterate Workflow

Download board files from key layout stages (floorplan, placement, routing), make targeted changes offline, and re-upload without restarting your job—so you can refine step-by-step, stay on track, and avoid rework.

Job Duplication for Iteration

Copy any job, update inputs or constraints, and recompile instantly to explore variants or fix issues without starting from scratch.

