fiXtress™
Driving reliability and efficiency

Virtual PCB Prototyping tool for:

- Schematic Modeling Analysis
- Electrical Stress Simulation
- Thermal Analysis
- Electrical Stress Derating
- Operational MTBF & Service Life Prediction

Designing highly effective, reliable and innovative systems and products is no easy task in today's complex environment. Some of the major challenges that engineers face today include the elimination of functional design errors and the reduction of electrical power stress. Addressing these challenges, **BQR fiXtress** identifies issues early on in the design cycle that provide time and cost savings while boosting quality and reliability.

Leveraging a broad range of unique and sophisticated algorithms that enable simulations resulting in realistic and easy-to-build electrical stress models, **fiXtress** automates the validation process at the schematic design stage to optimize your designs.

Get to market faster

With **fiXtress's** virtual prototyping software tools, design problems are identified early on, reducing the number of prototypes needed to validate a design speeding up time to market, and more than often saving the hardware board development cycle at least one spin.

BQR fiXtress includes BOM and PDM data interfaces and is available in three packages – Basic, Standard and Pro – for standalone and floating users. This flexibility allows you to select the level of testing your specific product or systems need.
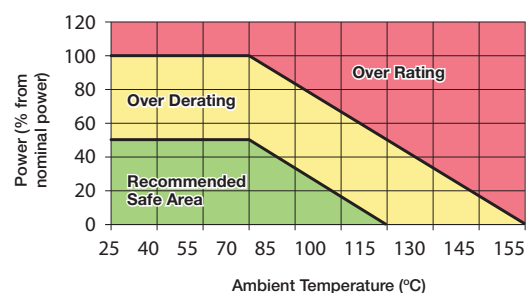
Benefits of fiXtress

- Identifies issues at an early stage when correction is easier and less costly
- Accelerates time to market and reduces design spins
- Fine tunes component rating values to meet exact power performance goals
- Eliminates the need to build time-consuming complex models like SPICE
- Compatible with any EDA tool to support advanced PCB analysis
- Improves design process by adding standardization to design and components data
- Intuitive and easy to use

fiXtress includes the following modules:

	fiXtress Feature	Basic	Standard	Pro
MTBF Prediction Models	MIL-HDBK-217-F2/G, HRD5, Bellcore, IEC-62380, SN-29500, (IEC-61709) and NSWC-98	1 Prediction Only	1 Prediction Only	All Predictions
	CAD/BOM Interface	+	+	+
	Stress Derating Analysis	+	+	+
	PCB Thermal Analysis	–	+	+
	PDM/PLM to fiXtress Library Interface	–	+	+
	PCB Schematic Medeling and Rules Checker	–	–	+
	Components Stress Simulator	–	–	+
	Type of License	1 Standalone	1 Floating	1 Floating

Stress Derating Criteria

Power (% from nominal power) vs Ambient Temperature (°C)
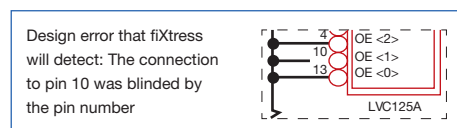
Over Rating / Over Derating / Recommended Safe Area

fiXtress™

Improve your product quality & reliability

⚡ Schematic modeling analysis and functional errors detection

fiXtress eliminates time-consuming, manual schematic checking for functional errors. This feature also extends the functionality of traditional DRC tools with the ability to identify errors that normally are only detected in the field.

> Design error that fiXtress will detect: The connection to pin 10 was blinded by the pin number
>
> 4 — OE <2>
> 10 — OE <1>
> 13 — OE <0>
> LVC125A

⚡ Electrical stress simulation

By providing accurate operating power dissipation, voltage and current data for each component, fiXtress enables reliable stress analysis, improving the design process.

⚡ Stress de-rating analysis

BQR fiXtress automatically determines the applicable stress with any EDA tool to ensure proper component selection, saving valuable redesign time and maximizing circuit performance and reliability parameters. By performing comprehensive analyses, **fiXtress** ensures that each interface meets the necessary output and input requirements, and that all fan-in/fan-out needs are met.

⚡ PCB thermal analysis

fiXtress calculates the average PCB heating above the environment temperature, then automatically calculates the exact junction temperature for each semiconductor and IC.

⚡ MTBF prediction

Unlike standard parts count analysis, **fiXtress** uses the actual temperature and electrical stress imposed on each component, and increases system reliability by using a comprehensive four-stage analysis.

⚡ Proven technology, tools and services

For over two decades, BQR has been providing the tools and services for Reliability, Availability, Maintenance and Safety (RAMS) and Integrated Logistic Support (ILS) to some of the world's leading brands and organizations. With the successful completion of thousands of projects, BQR's extensive experience provides our customers reliability they can count on along with substantial savings benefits they can enjoy.

⚡ BQR fiXtress Solution Features

- Simulates digital, analog, RF, active and passive components, including high-frequency and Bus-Simulation
- Prevents PCB failure by identifying components that are over stressed
- Validates PCB predicted MTBF results against design criteria
- Imports PCB Bill of Materials (BOM) and Netlist directly from all major CAD tools, as well as Excel/ CSV import
- Considers over 40 types of component groups
- Performs high-edge profile analysis and finds worst-case scenarios
- Alerts to detected overstress and makes recommendations for improvement
- Allows user-defined de-rating curves, in addition to predefined de-rating curves
- Manages project trees, the core-database and HTML reports
- Predicts failure rates according to numerous standards allowing simulation of different environments
- Provides optimization and curve sensitivity for Ambient/Case temperature, quality levels, environments and prediction methods
- Ensures that each interface meets the necessary output and input requirements to perform a given function

⚡ How fiXtress works

Inputs: BOM | Freq. | DC-DC | Netlist | Connectors Signals

Schematic Modeling — Functional Errors Detection
fiXtress Library
PDM/PLM/CAD Library

Error List — YES / NO

Power, Ojc
PCB Layout
fiXtress Schematic Thermal Simulator
External PCB Thermal Simulator
Dt

Stress Simulation
Stress De-rating & Thermal Library
PDM to fiXtress Library Translator

Stress De-rating
De-rating Templates

Overstressed/Over Design Comp. — YES / NO

MTBF
MTBF Library