Fairchild On-Line Design Tool: Power Supply WebDesigner

**LED Lighting Application**

- **Require Isolation?**
  - Yes
  - **LED Flyback:** Online system design and simulation tool for isolated single-stage Flyback LED driver with Fairchild’s latest active PFC Flyback ICs, suitable for both Non-dimming and Triac Dimming lighting application
  - No
  - **LED BuckBoost:** Online system design and simulation tool for non-isolated single-stage BuckBoost LED driver with Fairchild’s latest active PFC Flyback ICs, suitable for both Non-dimming and Triac Dimming lighting application

- **Triac Dimming?**
  - Yes
  - **PSR Flyback:** Online system design and simulation tool for primary-side regulated (PSR) Flyback converter, featuring with low cost solution
  - No
  - **SSR Flyback:** Online system design and simulation tool for secondary-side regulated (SSR) Flyback converter

- **Vout<40% Vin (rms)?**
  - Yes
  - **LED Buck:** Online system design and simulation tool for continuous conduction mode non-isolated active PFC Buck LED driver, suitable for low cost and ultra long life LED lighting application
  - No

- **Power > 30W? or Multiple Output? or Fast Load Regulation?**
  - Yes
  - **Off-Line Power Supply, Adapter & Charger**
  - No

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**Fairchild On Line Design Tool**
User Interface

Here are some Tool tips for the columns: Design Value, (USE), and Recommended value.

Design Value: These are the values used by the tool. This value is automatically populated with Recommended Value when (Use) Box is checked. You can change the Design Value at anytime by clicking in the box and over-writing the value in the box.

(Use): When this Check Box is checked, the Design Value will always equal the Recommended Value. If this box is unchecked, the Design Value remains constant, independent of the Recommended value.

Recommended: At the launch of the tool default, Recommended values are displayed based on the current Design Values. Changing a Design Value causes the tool to update all Recommend value going forward.
**User Interface: Tool Function Buttons**

The **Auto Complete** button may be used in any of the steps at any time to complete the design using the displayed **Design Values**. Click on **Auto Complete** to generate a complete design schematic, BOM as well as the simulation circuit for the system performance analysis.

Click on **Next** to guide you through the step by step tabs. This allows you fine tune the **Design Values** in every step to create an optimized custom circuit design.

Click the **Reset** button to refresh the tool and restart the design from the very beginning.

**Tabs**: Active tabs are dark blue. Grey tabs are the steps that need to be visited. **Design Tips**: Click on **Help** to reveal the Design Tips and Tool Help Information.
Design Optimization

**Tool Tip:** User can tune the **Design Value** for desired circuit performance based on the specific application requirements, guided by calculation results at every step, i.e.:

- Adjust the Voltage and Current Derating factors
- Choose different Fairchild MOSFET product
- Adjust the Transformer Turn Ratio
- Click on Fairchild Part No. to obtain the product datasheet
Magnetics Design Tool

Fairchild On-line tool is also implemented with a powerful magnetics design tool for Transformer or Inductor design. Guided by the calculated breakdown Losses Information of core and winding, the user can complete/optimize the magnetic component design by choosing different core, bobbin, winding wire, or even by defining a customized core and bobbin. In the final, a complete Magnetics component Design Specification is also provided.

Tool Tip: Click on Expend & Collapse Button to reveal/hide detailed design result in every step.
Design Guiding Information

The tool provides various design Guiding Information through every design step.

The loop-gain Bode Plot indicates control-system stability for a particular line & load conduction, provides the guidance for the system stability optimization. The tool may display CAUTION messages within the design step suggesting ways for design improvement. These messages are only visible when potential design improvement is required.

The efficiency plot or the break-down losses information to provide the guidance for the system efficiency optimization:

The differential Conducted Emission plot predicts the EMI performance for the frequency range below 500kHz, provides the design guidance for EMI filter design.
Design Verification

After completing design, the tool will display a complete circuit schematic. Click on the Simulation Schematic tab allows the user to simulate and verify the design.

**Tip:** Click on these buttons to run an analysis

**Tip:** Double click on the load symbol to setup load condition for in Component Window simulation.

**Tool Tip:** Click on the Design tab to jump back into the design steps and make design adjustments. This is recommended to make changes to the design. Advanced user may change the component parameters by clicking on the component symbol on the schematic.
Analysis Results

Tool Tip: Click on Result to view, explore, zoom, measure and investigate the simulation waveform in Webscope window.
**Webscope**

**Tool Tip:** Drag the markers (vertical cursors) to define the time interval for waveform measurement.

**Tool Tip:** Use checkmarks to display/hide particular waveforms, or use the four black buttons: (Hide ALL, Show All, Move Down, Move up) to expose a waveform hidden behind another.

**Tool Tip:** In the drop down menus, the measurement is performed within the specified time interval ($\Delta T$).
**Bill of Materials (BOM)**

**Tool Tip:** Click on the BOM tab to generate a complete Bill of Materials.

**Tool Tip:** Click on the Vendor tabs to search its inventory.

**Tool Tip:** To choose an alternative part, click on the Find icon to open Part Search Tool.

**Tool Tip:** Click the Select icon to change and add the part number to BOM.

**Tool Tip:** Adjust the search filters of the Part Search Tool to search the desired components.
Save the Design and Report

**Tool Tip:** Click on **Save** to save the design.

**Tool Tip:** Click on **Report** to generate a PDF summary of the design.

**Tool Tip:** Click on **Give Feedback** to request technical support or to provide general feedback.

**Tool Tip:** Click **Save/Print** to download or print the Report in PDF format.