KICKSTARTING YOUR PCB DESIGN WITH PARTQUEST

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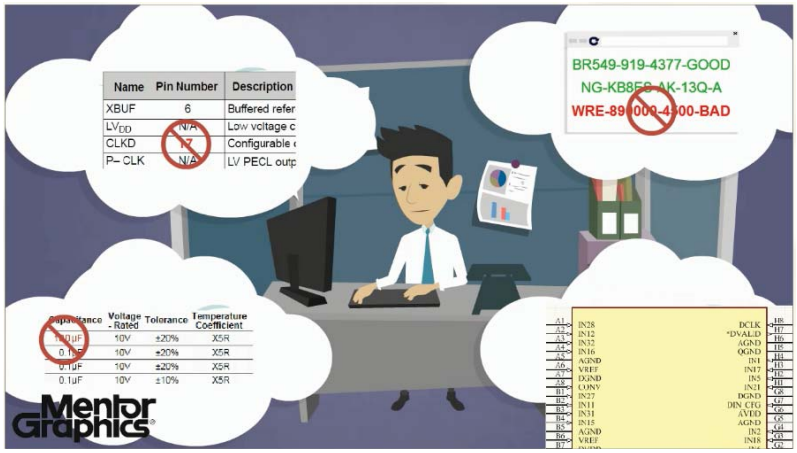
WHITEPAPER

Mentor Graphics®

PCB DESIGN

INTRODUCTION



Engineers and designers know that the building blocks for every PCB design are the design components. Component selection, availability, and symbol accuracy are imperative for design success. Tasks such as researching, selecting, and building component symbols and footprints are generally time consuming and prone to costly errors. Discovering that your PCB design can't be manufactured due to an error in pin mapping, an incorrect footprint, or finding out that specified parts have become unavailable can result in significant setbacks that impact the project's time-to-market and result in increased costs. Component errors that are commonly introduced into designs include:

- Component selection from an outdated or obsolete datasheet
- Incorrect or obsolete part numbers
- Pin number errors from the manufacturer datasheets or supplied symbols
- Part attribute errors where the parametric data are incorrect
- Symbol or land pattern errors where the part was built incorrectly

PARTQUEST = PROBLEM SOLVED!

Wouldn't it be great if you could avoid component problems by getting direct access to all the latest and greatest component data you need directly from the component distributers? Imagine knowing that your part numbers are in stock and that the parts have logic and package symbols that are ready to use in your design. This paper describes Mentor Graphics' PartQuest™, a component portal that lets you search for parts directly from component supplier databases and seamlessly incorporate them into your PCB designs.

WHAT EXACTLY IS PARTQUEST?

PartQuest is a new component research portal engine linked to component vendor databases like Digi-Key® which provides access to more than 4 million parts. PartQuest gives PCB design teams a serious competitive advantage by providing more than a typical component search engine. With PartQuest, you can easily download part data for direct integration of physical and logical symbols into your Mentor PCB design schematic and layout tools. See Figure 1 for an overview of the PartQuest workflow as described in more detail in this document.

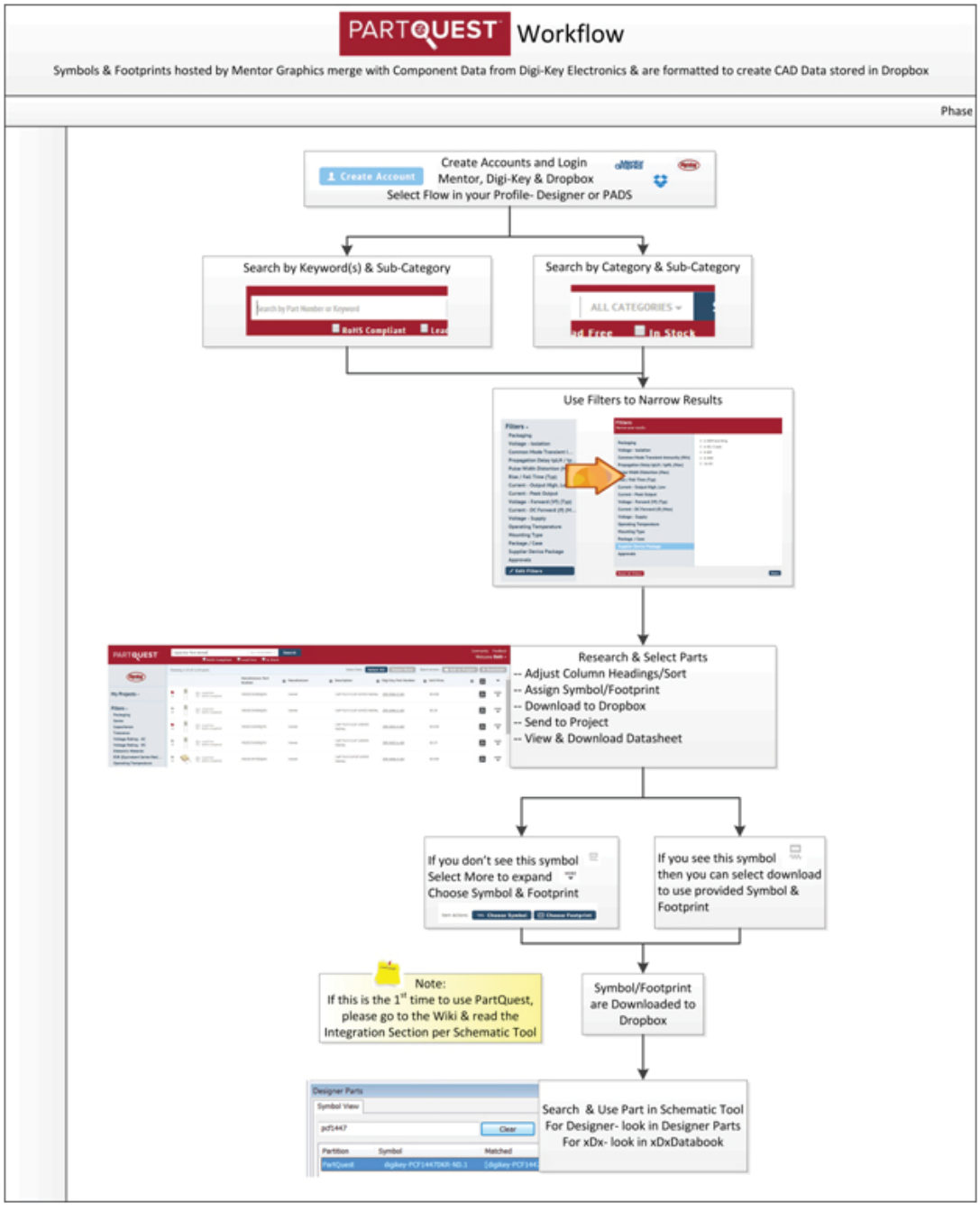


Figure 1: The PartQuest Workflow: search, select, save, and use.

445,000 PARTS AND GROWING

PartQuest enables users to access more than 445,000 ready-to-use parts with pre-existing symbol and footprint data. New parts are added continually to ensure that you always keep up with the latest technologies.

HOW DOES PARTQUEST WORK?

PartQuest data is accessible directly through your favorite web browser at PartQuest.com. See Figure 2. Sign in using your Mentor Graphics SupportNet login and password. Follow the instructions for setting up a Digi-Key account and a Dropbox location where you can assign symbols to parts and download them as desired. Once these accounts are linked in your PartQuest profile, you are all set to start your quest for components using PartQuest.

Figure 2: PartQuest homepage

SEARCHING FOR PARTS

PartQuest component searches can be driven two ways. The first is by typing keywords or, if known, the manufacturer's part number directly into the search field on the home page. The second way is to select the "ALL CATEGORIES" pull-down and choose the desire search location. See Figure 3. This provides a listing of all the main component categories. After you've selected the desired component search location, all applicable sub-categories will be displayed to enable you to further refine your search. Searches can also be narrowed by RoHS Compliant, In Stock, or Lead Free.

FILTERING THE SEARCH RESULTS

Advanced filtering makes it easy to find the exact parts you are looking for. After the desired component location and category are selected, component options for that category are displayed. Detailed filtering lets users narrow the search results according to your desired search parameters. Clicking "done" narrows the search

Figure 3: Filtering search results

results further and returns a listing of all the available parts that are an exact match. To expedite part searches you may select as many filters as desired and apply them before moving on to the next set of filters. See Figure 4.

Once the matching parts are displayed, clicking on component rows selects/deselects the part. See Figure 5. Parts can then be added to a project that you've defined using the "My Projects" feature or, if desired, downloaded immediately.

SAVING SEARCH RESULTS USING THE "MY PROJECTS" FEATURE

The "My Projects" feature enables you to collect and save parts that you've searched for and selected on a per-project or per-design basis. When saving to your project, your session is saved and your project parts remain available to select and to download from PartQuest when needed. See Figure 6.

PART DETAILS, COMPLIANCE, AND LIBRARY DATA AVAILABILITY

The column just to the right of the component image provides users with a quick way to identify whether the component is Lead Free, RoHS Compliant, and when an associated schematic symbol and footprint is available for download.

ASSIGNING SYMBOLS TO PARTS

If there are no symbols associated to the part you've selected, you can easily assign a symbol to your parts. Selecting "More" in the far right column not only displays the components' pricing, availability and parametric data, it also enables you to easily choose a symbol, and a footprint for the part to download. See Figure 7.

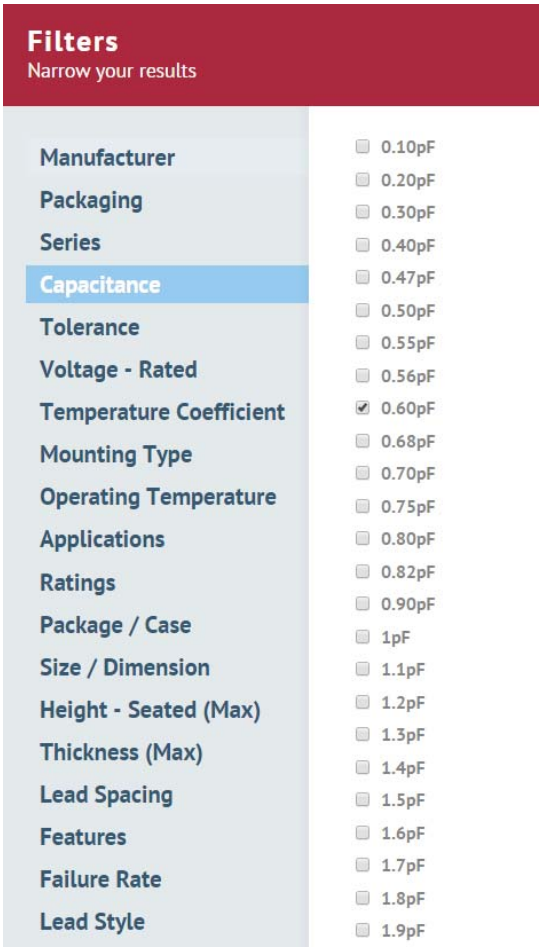


Figure 4: Selected parts rows are highlighted

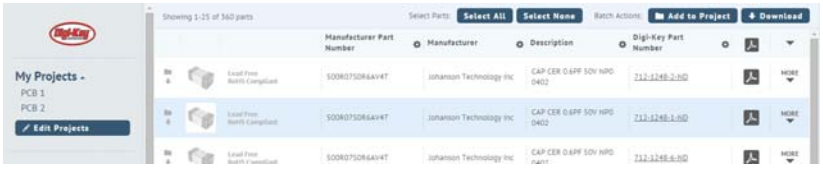


Figure 5: Selected parts rows are highlighted

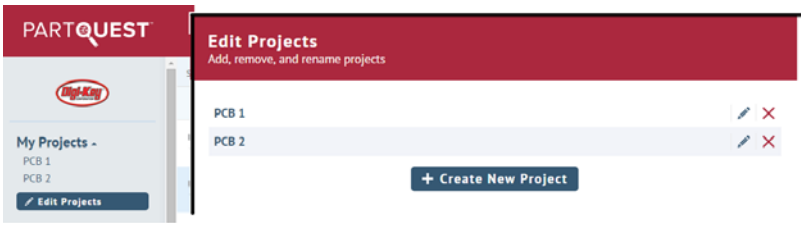


Figure 6: Saving part selections to a design project using "My Projects"

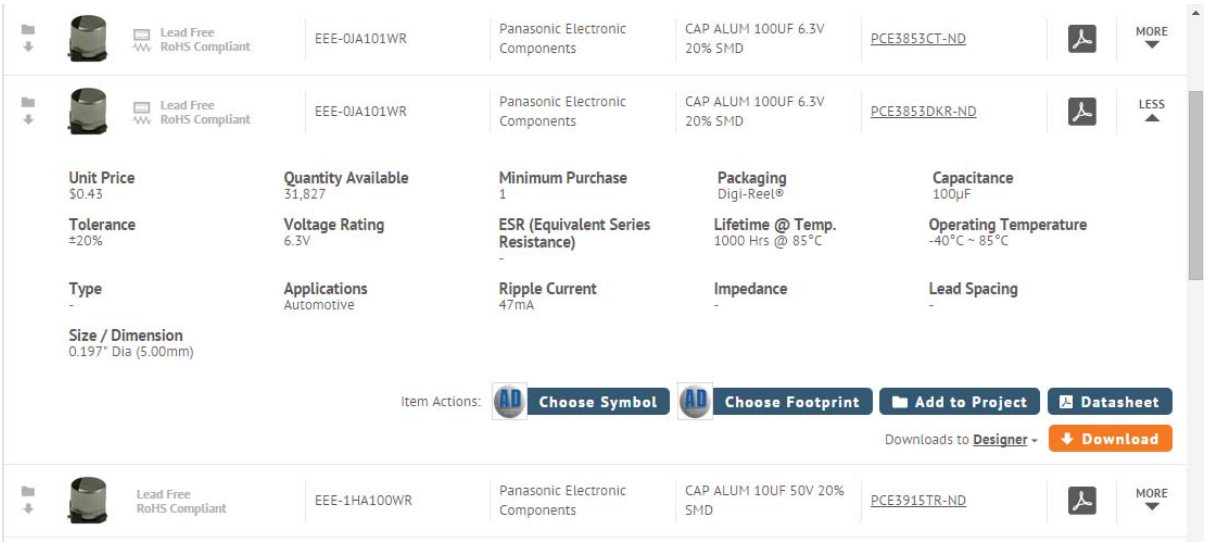


Figure 7: Example part data view when "More" is selected

Selecting "Choose Symbol" presents you with a selection of standard symbols to associate with your part. Clicking on the desired symbol associates it with your part. Your part is now ready to download for use in your schematic design. See Figure 8.

Additionally, once you've assigned a symbol to a part, an icon of the selected symbol appears just to the left of the "Choose Symbol" button as shown in Figure 9 on the next page.

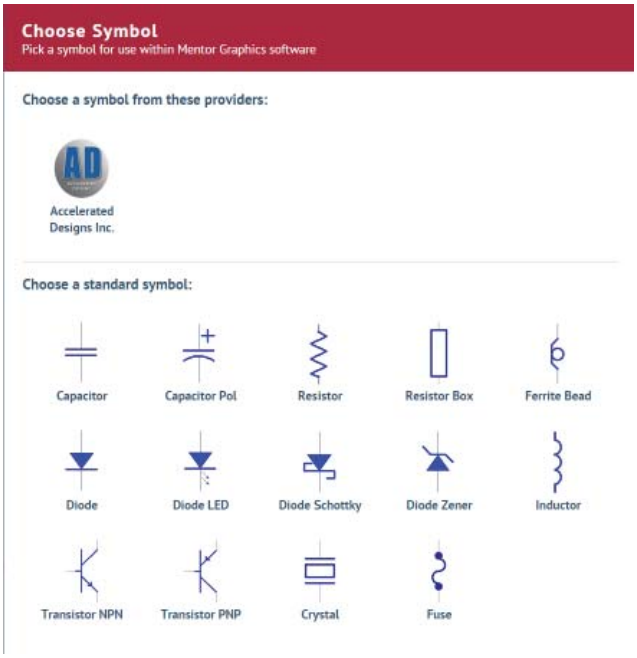


Figure 8: Example of the Choose Symbol menu

Figure 9: Once assigned, the symbol icon appears to the left of the Choose Symbol button

READY TO DOWNLOAD AND USE!

Once you have created or linked your Dropbox location, selecting "Download" will place the selected parts from the Partquest screen, or from a My Project area that you created, into your design location. Once the download is complete simply launch xDX Designer or PADS® Layout, navigate to the Tool menu, and select the "Import PartQuest Parts" command — see Figure 10. Your parts are now available to be placed into your design.

CONCLUSION

Discovering that your PCB design can't be manufactured due to an error in pin mapping, an incorrect footprint, or finding out that specified parts have become unavailable, can result in significant setbacks that impact the project's time-to-market and result in increased costs. PartQuest solves this problem by providing Mentor Graphics customers with real-time component research capabilities and fast integration with their PCB design tools. PartQuest not only minimizes the time required to identify components and subsequently format their associated data for use within Mentor Graphics PCB tools, it also eliminates the time and risks associated with manual part creation. Stop spending countless hours researching, selecting, and building component symbols and footprints; visit PartQuest.com today!

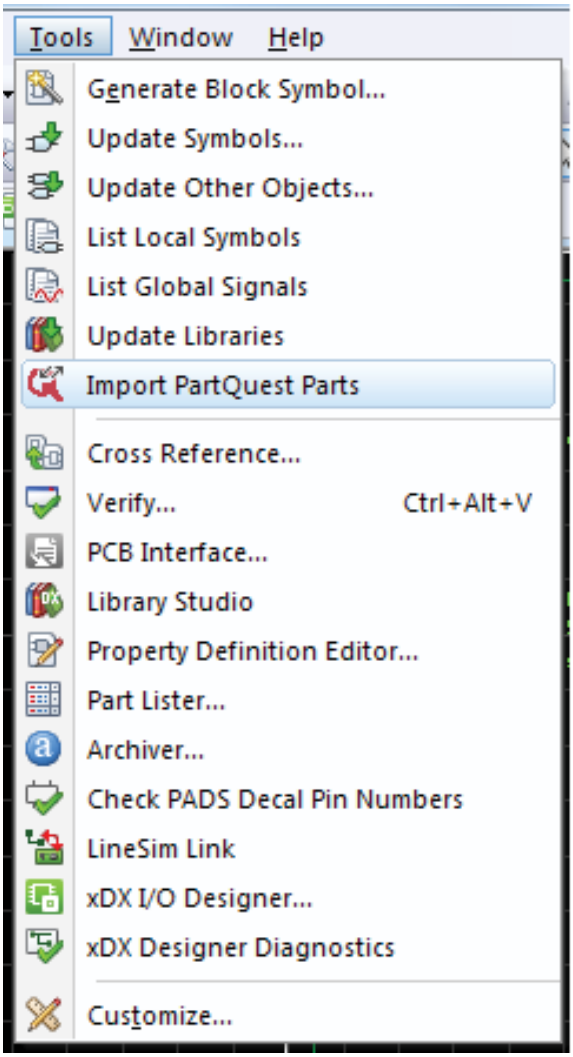


Figure 10: Importing parts into xDX Designer

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