

DESIGN NOTES

Updated Web Site Features an Improved Parametric Search Tool

For several years, Mini-Circuits has provided the Yoni parametric search tool to help engineers locate an appropriate product among the large catalog of the company's product offerings. This search tool has been updated to Yoni2, a patent pending search tool with highly efficient algorithms to streamline the sorting process.

Yoni2 is much more than a simple sorting routine for compiled data sheet numbers. This search engine uses an extensive data base of measured data on the company's products. This data was captured using an automated high-speed measurement system with high performance vector network analyzers and programmable signal sources. Millions of data points were collected under different conditions appropriate for engineering evaluation and comparison, such as frequency, power level and temperature.

Why would an engineer need so much data simply to select a component such as a mixer, VCO or coupler?

The screenshot shows the Mini-Circuits Designer's Guide website. At the top, it says "Mini-Circuits® Designer's Guide" and "RF/IF & Microwave Components". Below that is the "Yoni2 (Patent Pending) DYNAMIC SEARCH" section. It prompts the user to "Pick a component to search:" and lists several categories: Amplifiers, Directional Couplers, Frequency Mixers, Power Splitters/Combiners, RF Transformers, Voltage Controlled Oscillators, and Filters. To the right of the list is a graphic of various electronic components and a text box that reads: "A genius that searches millions of actual measured data points from thousands of models in Mini-Circuits' database. If a model exists, Yoni2 will find a solution to meet your specific requirement." Below the text box is a link for "Yoni2 Video Tour".

One good reason is to buy "just enough" performance to meet design objectives rather than select a device with, say, much broader bandwidth—and higher cost—than is required. Data sheet graphs may not show enough detail to clearly determine the exact performance over the desired frequency range.

High Frequency Electronics has ongoing tutorial-level coverage of core engineering techniques. Topics for the next few months include:

March—

Ad Hoc Networks

April—

Using Today's Test Instruments

May—

Optical Modulation

June—

Update on Coaxial Cables

July—

Design Methods for EMC

August—

On-Chip Passive Devices

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Another reason for a more extensive search is to compare multiple devices, each of which may meet minimum specifications. An accurate comparison of key specifications over temperature and frequency may be necessary to select the best component among several that appear to be similar.

Although manufacturers like Mini-Circuits may not always approve, some components are used outside their primary performance range. Cost, availability and design tradeoffs may drive an engineer to choose a device that is not ideal, but will function adequately in his or her circuit. With plenty of data points, it is easy to determine if the gain, loss or VSWR performance degrades gracefully beyond the edges of the specified performance ranges.

The screen captures to the right show the Yoni2 entry window for power splitter/combiners and the results of a search. In this case, the search was for a 2-way 0° splitter for a cable modem application, with a frequency range of 5-500 MHz, 20 dB minimum port-to-port isolation, 0.5 dB maximum excess insertion loss, 0.25 dB maximum amplitude unbalance and 1° maximum phase unbalance.

After performing this initial search, the user can examine individual product specifications, or if the list is too long, perform another search with tighter search parameters.

If a match is not found for the search criteria, the user can enter new specifications, or allow Yoni2 to do a new search. The “error” screen includes selections for identifying which parameters are the “top priority” and “next priority.” By checking these boxes, Yoni2 can quickly do another search. If the entered parameters still do not result in a successful search, the user should review the selected parameters—one or more may be an erroneous entry or an impractical value.

Many companies have useful selection guides and product locators on their Web sites. A visitor to the Mini-Circuits site can still scan product categories that are listed much as they would be in a printed catalog. For someone familiar with the scope of available products, this may work well.

For most users, however, the sheer volume of products available from Mini-Circuits requires a more intelligent search tool to speed the selection process.

The Yoni2 search window for power splitter/combiners allows users to enter either a few key parameters or more detailed specifications.

Model Name	Frequency [MHz]		Case Style	Price [US\$]
	Low	High		
PSC-2-1W	1	650	A01	18.00
SBTC-2-10L	5	1000	AT1029	02.14
TCP-2-10	5	1000	DB714	01.99
ZESC-2-1W	1	750	K18	37.45
ZX10-2-12	2	1200	FL905	
ADP-ED10326/1	0.30	970	CD636	
ADP-ED7802/1	0.20	700	CD636	
ADP-ED7943/1	0.29	879	CD636	
ADP-ED9274	0.55	1400	CD542	
ADP-ED9774/2	5	1400	CD542	
ADP-ED9872/1	0.10	1024	CD636	
TCP-ED12111/1	2	1000	DB714	
LPSC-ED9779/1	0.40	1000	QQQ130	
SBTC-ED12458/1	5	1000	AT790	

Results of a search for a 5-500 MHz 2-way 0° splitter for a cable modem. The user can review data sheets of products that may be suitable, based on package type, specified frequency range, and price (for stocked standard products).

The newly updated and highly capable Yoni2 search tool fills the bill nicely. Interested readers can try Yoni2 for themselves at www.minicircuits.com

Got an idea for the “Design Notes” column? Just write down your notes and send them to: editor@highfrequencyelectronics.com