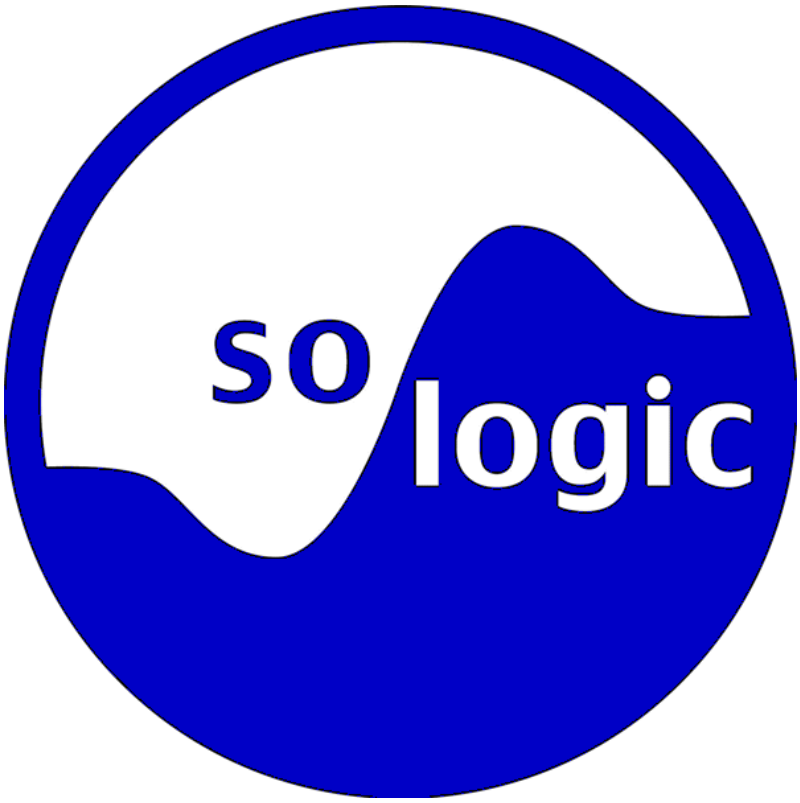
FPGA DATABASE TUTORIAL



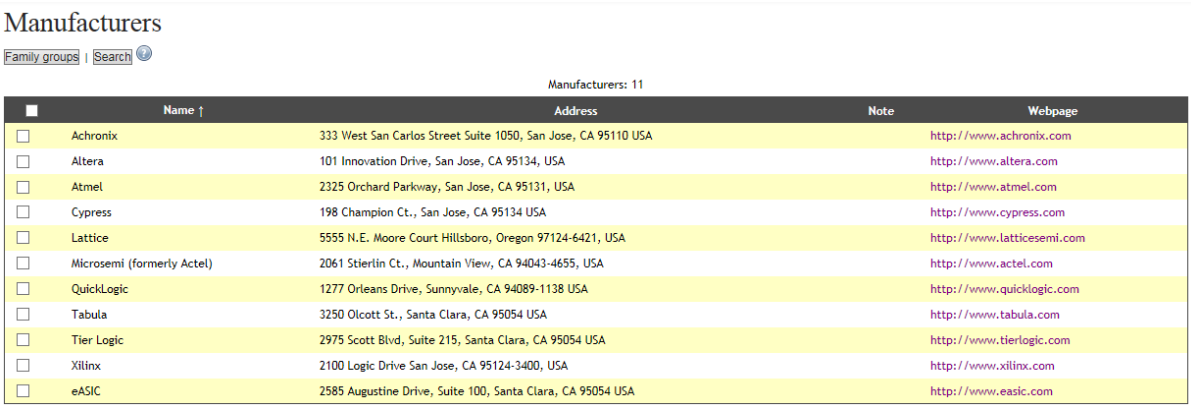
1. INTRODUCTION

So-logic's FPGA database is a directory of all FPGA/CPLD families that have ever existed on the market and are known to so-logic company. In this database you will find families and sub-families of the following manufactures: **Xilinx**, **Altera**, **Lattice**, **Atmel**, **Microsemi**, **Cypress**, **Achronix**, **QuickLogic**, **Tabula**, **Tier Logic** and **eASIC** with their devices and majority of the data for each device.

The database also contains a search engine, that allows you to perform search through the database according to specify parameters. In order to be able to use this feature, you will be asked to register first. Although the registration is mandatory, it is free of charge.

We are trying to keep the database updated, because our employers use it for the internal purposes. If you find any mistake in the database, please let us know.

Here is the link to the so-logic's FPGA database:
http://www.so-logic.net/en/fpga/table/producers



Manufacturers

Family groups | Search

Manufacturers: 11

	Name ↑	Address	Note	Webpage
☐	Achronix	333 West San Carlos Street Suite 1050, San Jose, CA 95110 USA		http://www.achronix.com
☐	Altera	101 Innovation Drive, San Jose, CA 95134, USA		http://www.altera.com
☐	Atmel	2325 Orchard Parkway, San Jose, CA 95131, USA		http://www.atmel.com
☐	Cypress	198 Champion Ct., San Jose, CA 95134 USA		http://www.cypress.com
☐	Lattice	5555 N.E. Moore Court Hillsboro, Oregon 97124-6421, USA		http://www.latticesemi.com
☐	Microsemi (formerly Actel)	2061 Stierlin Ct., Mountain View, CA 94043-4655, USA		http://www.actel.com
☐	QuickLogic	1277 Orleans Drive, Sunnyvale, CA 94089-1138 USA		http://www.quicklogic.com
☐	Tabula	3250 Olcott St., Santa Clara, CA 95054 USA		http://www.tabula.com
☐	Tier Logic	2975 Scott Blvd, Suite 215, Santa Clara, CA 95054 USA		http://www.tierlogic.com
☐	Xilinx	2100 Logic Drive San Jose, CA 95124-3400, USA		http://www.xilinx.com
☐	eASIC	2585 Augustine Drive, Suite 100, Santa Clara, CA 95054 USA		http://www.easic.com

2. HOW TO USE SO-LOGIC's FPGA DATABASE

Manufacturers page is the welcome so-logic's FPGA database page. Here you can find the list of all manufacturers that the database contains. If you would like to see what families the database contains under some manufacturer, please select the desired manufacturer and press ***Family groups*** button, see Illustration 1. ***Family groups*** button will display family group table for selected manufacturer.

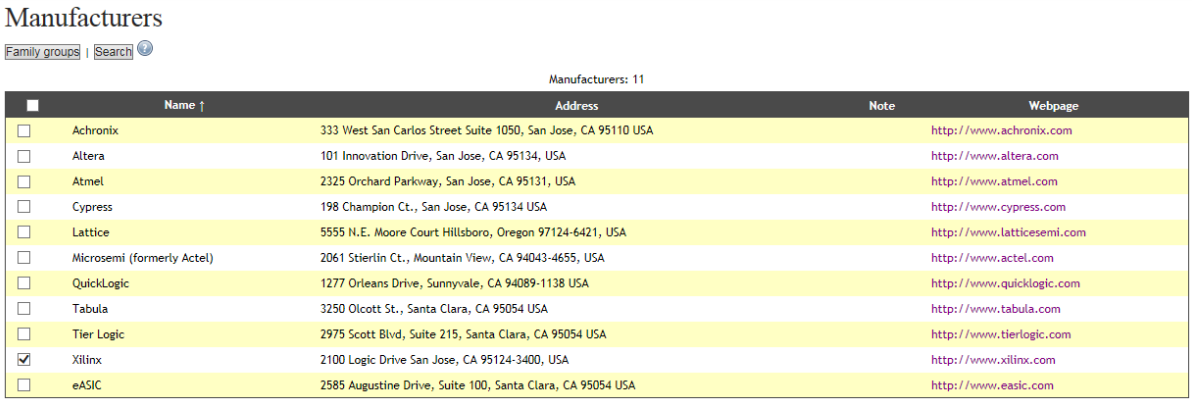


Illustration 1: Manufacturers page

If you would like to search through the database in pursuit of some specific device, you can use ***Search*** button, see Illustration 1. To use this feature, so-logic's account is necessary. You can search through the database by *Names* (device, family, package, I/O standard, or temperature standard), by *Device*, *Package*, *IO standard* or *Temperature standard* characteristics, see Illustration 2.

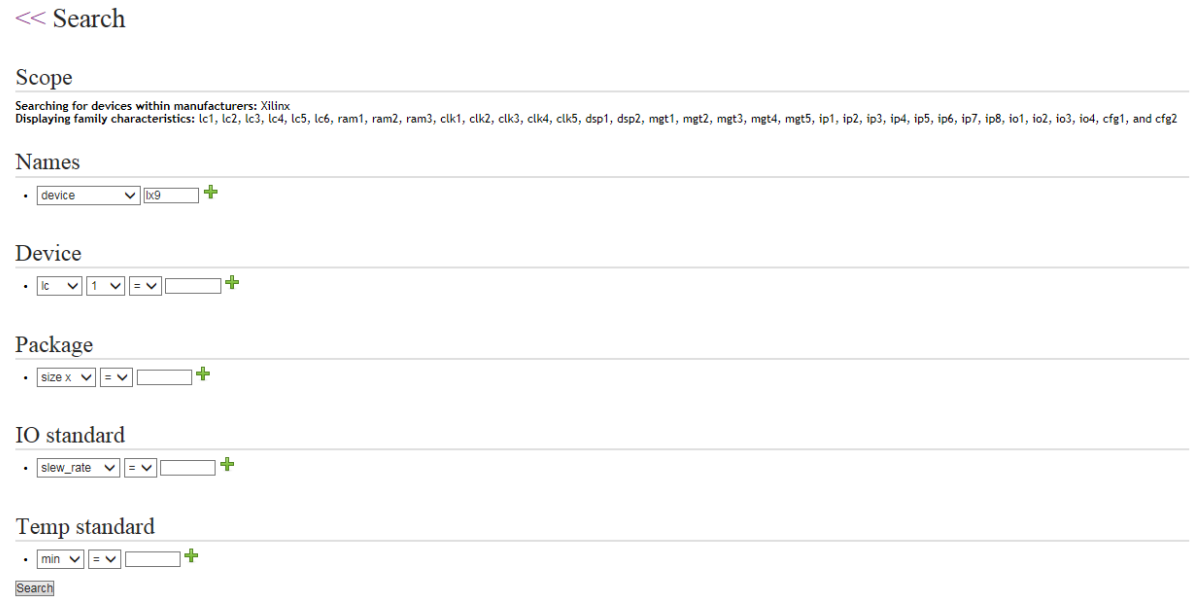
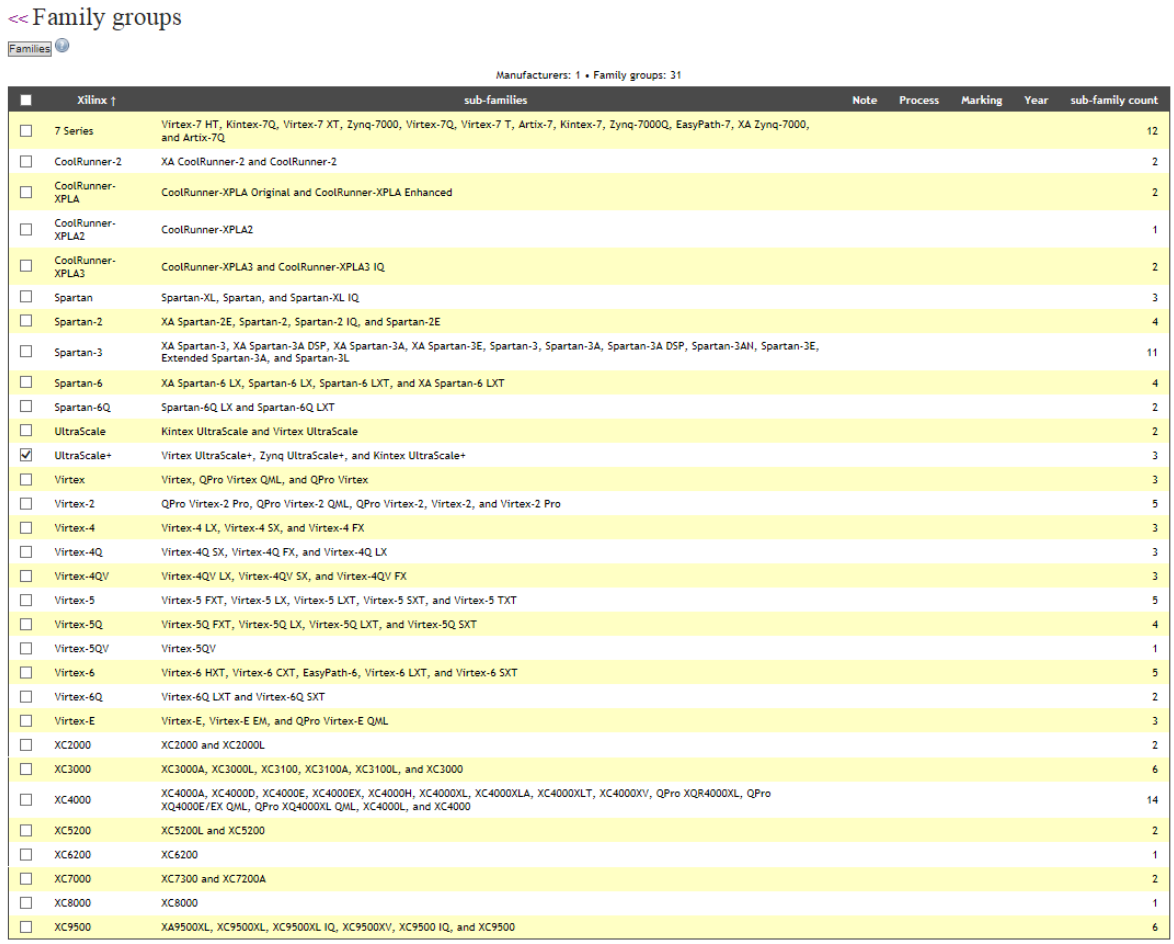


Illustration 2: Search engine page

After you selected desired manufacturer and pressed ***Family groups*** button, software will display **Family groups** table for selected manufacturer, see Illustration 3.



<< Family groups

Families

Manufacturers: 1 • Family groups: 31

	Xilinx ↑	sub-families	Note	Process	Marking	Year	sub-family count
☐	7 Series	Virtex-7 HT, Kintex-7Q, Virtex-7 XT, Zynq-7000, Virtex-7Q, Virtex-7 T, Artix-7, Kintex-7, Zynq-7000Q, EasyPath-7, XA Zynq-7000, and Artix-7Q					12
☐	CoolRunner-2	XA CoolRunner-2 and CoolRunner-2					2
☐	CoolRunner-XPLA	CoolRunner-XPLA Original and CoolRunner-XPLA Enhanced					2
☐	CoolRunner-XPLA2	CoolRunner-XPLA2					1
☐	CoolRunner-XPLA3	CoolRunner-XPLA3 and CoolRunner-XPLA3 IQ					2
☐	Spartan	Spartan-XL, Spartan, and Spartan-XL IQ					3
☐	Spartan-2	XA Spartan-2E, Spartan-2, Spartan-2 IQ, and Spartan-2E					4
☐	Spartan-3	XA Spartan-3, XA Spartan-3A DSP, XA Spartan-3A, XA Spartan-3E, Spartan-3, Spartan-3A, Spartan-3A DSP, Spartan-3AN, Spartan-3E, Extended Spartan-3A, and Spartan-3L					11
☐	Spartan-6	XA Spartan-6 LX, Spartan-6 LX, Spartan-6 LXT, and XA Spartan-6 LXT					4
☐	Spartan-6Q	Spartan-6Q LX and Spartan-6Q LXT					2
☐	UltraScale	Kintex UltraScale and Virtex UltraScale					2
☑	UltraScale+	Virtex UltraScale+, Zynq UltraScale+, and Kintex UltraScale+					3
☐	Virtex	Virtex, QPro Virtex QML, and QPro Virtex					3
☐	Virtex-2	QPro Virtex-2 Pro, QPro Virtex-2 QML, QPro Virtex-2, Virtex-2, and Virtex-2 Pro					5
☐	Virtex-4	Virtex-4 LX, Virtex-4 SX, and Virtex-4 FX					3
☐	Virtex-4Q	Virtex-4Q SX, Virtex-4Q FX, and Virtex-4Q LX					3
☐	Virtex-4QV	Virtex-4QV LX, Virtex-4QV SX, and Virtex-4QV FX					3
☐	Virtex-5	Virtex-5 FXT, Virtex-5 LX, Virtex-5 LXT, Virtex-5 SXT, and Virtex-5 TXT					5
☐	Virtex-5Q	Virtex-5Q FXT, Virtex-5Q LX, Virtex-5Q LXT, and Virtex-5Q SXT					4
☐	Virtex-5QV	Virtex-5QV					1
☐	Virtex-6	Virtex-6 HXT, Virtex-6 CXT, EasyPath-6, Virtex-6 LXT, and Virtex-6 SXT					5
☐	Virtex-6Q	Virtex-6Q LXT and Virtex-6Q SXT					2
☐	Virtex-E	Virtex-E, Virtex-E EM, and QPro Virtex-E QML					3
☐	XC2000	XC2000 and XC2000L					2
☐	XC3000	XC3000A, XC3000L, XC3100, XC3100A, XC3100L, and XC3000					6
☐	XC4000	XC4000A, XC4000D, XC4000E, XC4000EX, XC4000H, XC4000XL, XC4000XLA, XC4000XLT, XC4000XV, QPro XQR4000XL, QPro XQ4000E/EX QML, QPro XQ4000XL QML, XC4000L, and XC4000					14
☐	XC5200	XC5200L and XC5200					2
☐	XC6200	XC6200					1
☐	XC7000	XC7300 and XC7200A					2
☐	XC8000	XC8000					1
☐	XC9500	XA9500XL, XC9500XL, XC9500XL IQ, XC9500XV, XC9500 IQ, and XC9500					6

Illustration 3: Family groups table

In the **Family groups** table, you can select desired family group and press ***Families*** button, see Illustration 3. ***Families*** button will display a list all families for selected family group, see Illustration 4.

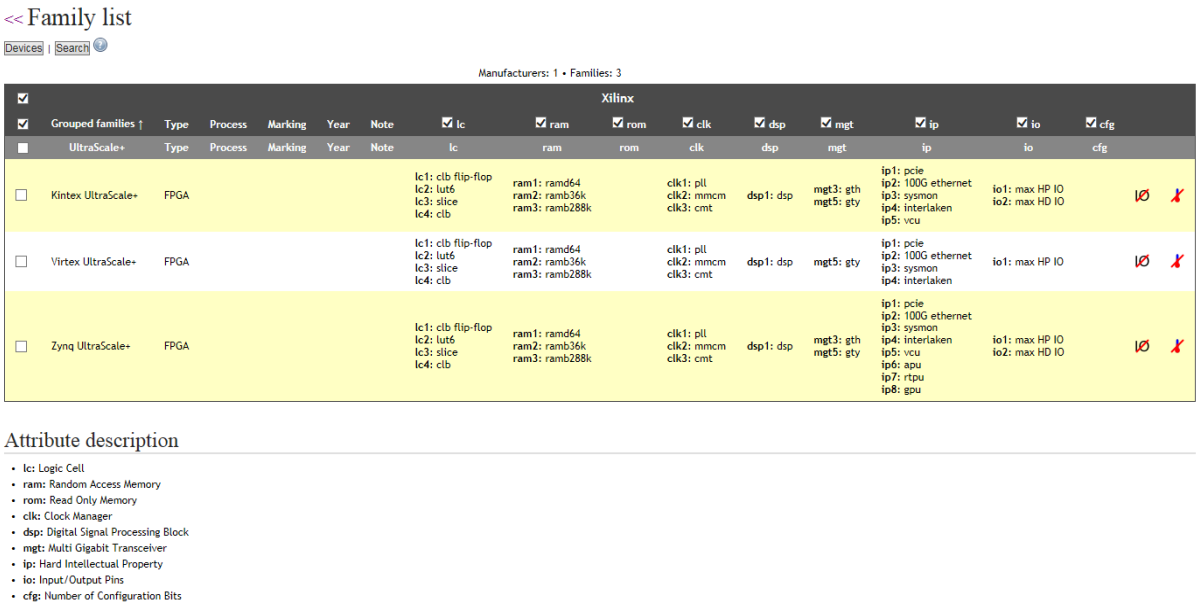


Illustration 4: Family list table

In the **Family list** table you can choose which devices and what attributes you would like to track. Select the desired family/families and select the desired attributes (mark/unmark the check box beside the attribute) and click ***Devices*** button, see Illustration 4. ***Devices*** button will display a list all devices for selected family/families and family attributes, see Illustration 5.

As you can see from the illustration 4, in this part of the database you have also an opportunity to search through the families that you have previously selected. The search engine is the same as it is presented in the Illustration 2 with the difference that you can search only through the selected families. If you would like to start the search engine, just press ***Search*** button.

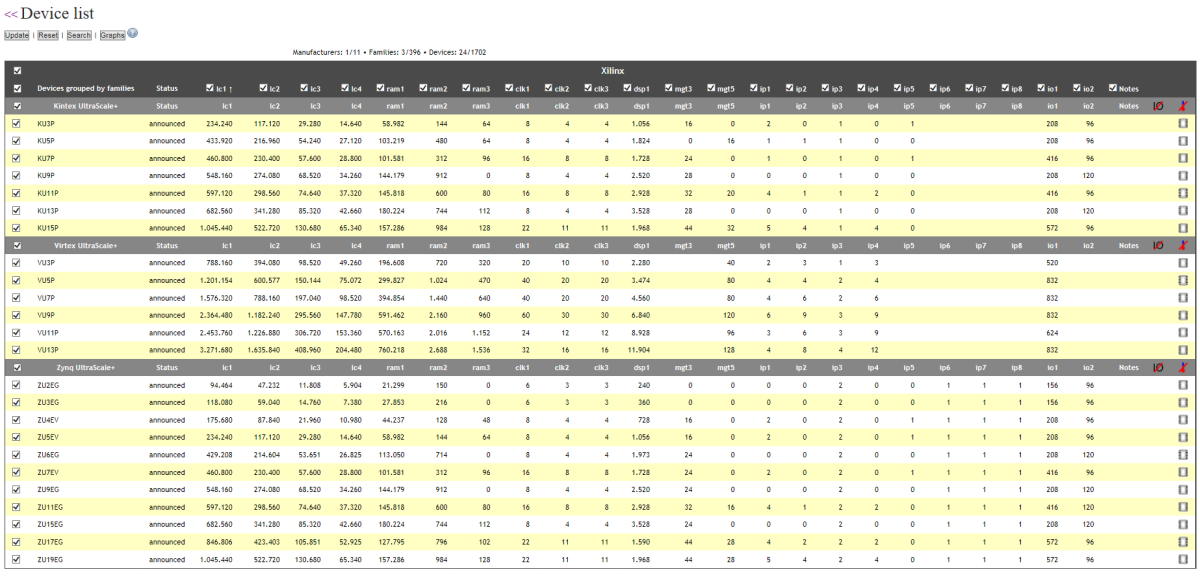
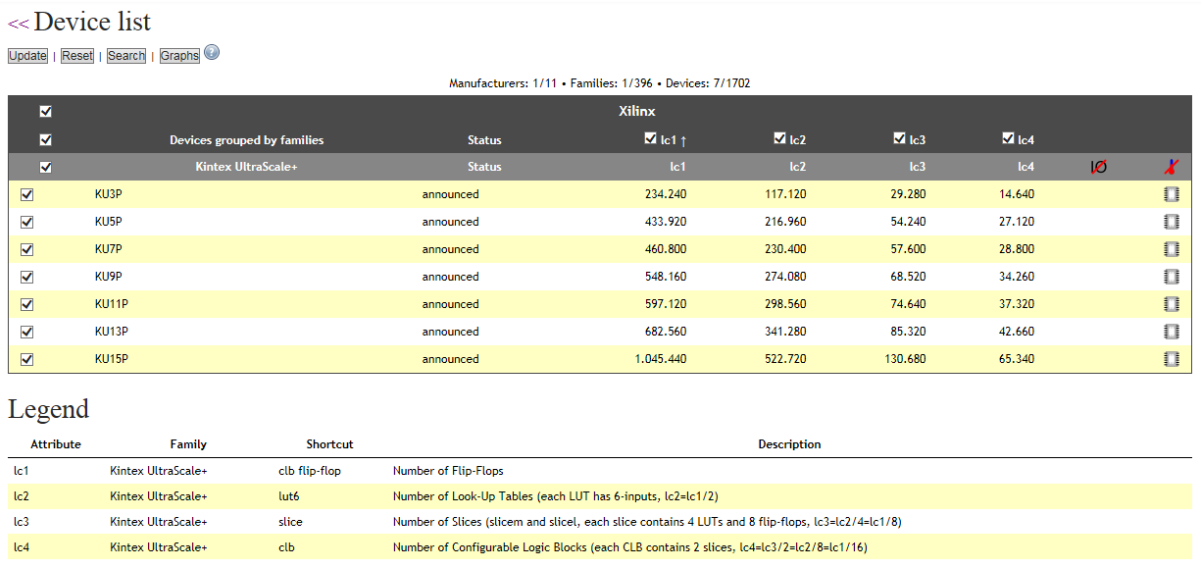


Illustration 5: Device list table with selected attributes

The **Device list** table is the deepest level of the database. Here you will have a lot of possibilities to change the view perspective of the data that you have previously selected. As we already said, **Device list** is a list of all devices for selected family/families and device attributes, so you can play with the attributes and devices.

In the **Device list** you can change family/device/attribute view by marking/unmarking desired check boxes and pressing ***Update*** button. ***Update*** button will display only selected families/devices/attributes, see Illustration 6.



<< Device list

Update | Reset | Search | Graphs

Manufacturers: 1/11 • Families: 1/396 • Devices: 7/1702

			Xilinx				
	Devices grouped by families	Status	lc1 ↑	lc2	lc3	lc4	
	Kintex UltraScale+	Status	lc1	lc2	lc3	lc4	IO
	KU3P	announced	234.240	117.120	29.280	14.640	
	KU5P	announced	433.920	216.960	54.240	27.120	
	KU7P	announced	460.800	230.400	57.600	28.800	
	KU9P	announced	548.160	274.080	68.520	34.260	
	KU11P	announced	597.120	298.560	74.640	37.320	
	KU13P	announced	682.560	341.280	85.320	42.660	
	KU15P	announced	1.045.440	522.720	130.680	65.340	

Legend

Attribute	Family	Shortcut	Description
lc1	Kintex UltraScale+	clb flip-flop	Number of Flip-Flops
lc2	Kintex UltraScale+	lut6	Number of Look-Up Tables (each LUT has 6-inputs, lc2=lc1/2)
lc3	Kintex UltraScale+	slice	Number of Slices (slicem and slicel, each slice contains 4 LUTs and 8 flip-flops, lc3=lc2/4=lc1/8)
lc4	Kintex UltraScale+	clb	Number of Configurable Logic Blocks (each CLB contains 2 slices, lc4=lc3/2=lc2/8=lc1/16)

Illustration 6: Device list – Updated view

If you would like to turn back on the previous Device list view, just press the ***Reset*** button. ***Reset*** button will show all families/devices/attributes from the first Device list table.

In this part of database you have also an opportunity to search through the families that you have previously selected. The search engine is the same as it is presented in the Illustration 2 with the difference that you can search only through the last selected family/families. If you would like to start the search engine, just press ***Search*** button.

The Device list view perspective have also one interesting feature, ***Graphs***, that makes a visualization of the selected families/devices/attributes. Each device represents a coordinate with attributes as their values. For example, if we press ***Graphs*** button on the Device list that is presented on the Illustration 6 the engine will create a following graphs:

- Graph 1: x-axis: lc1 | y-axis lc2, see Illustration 7

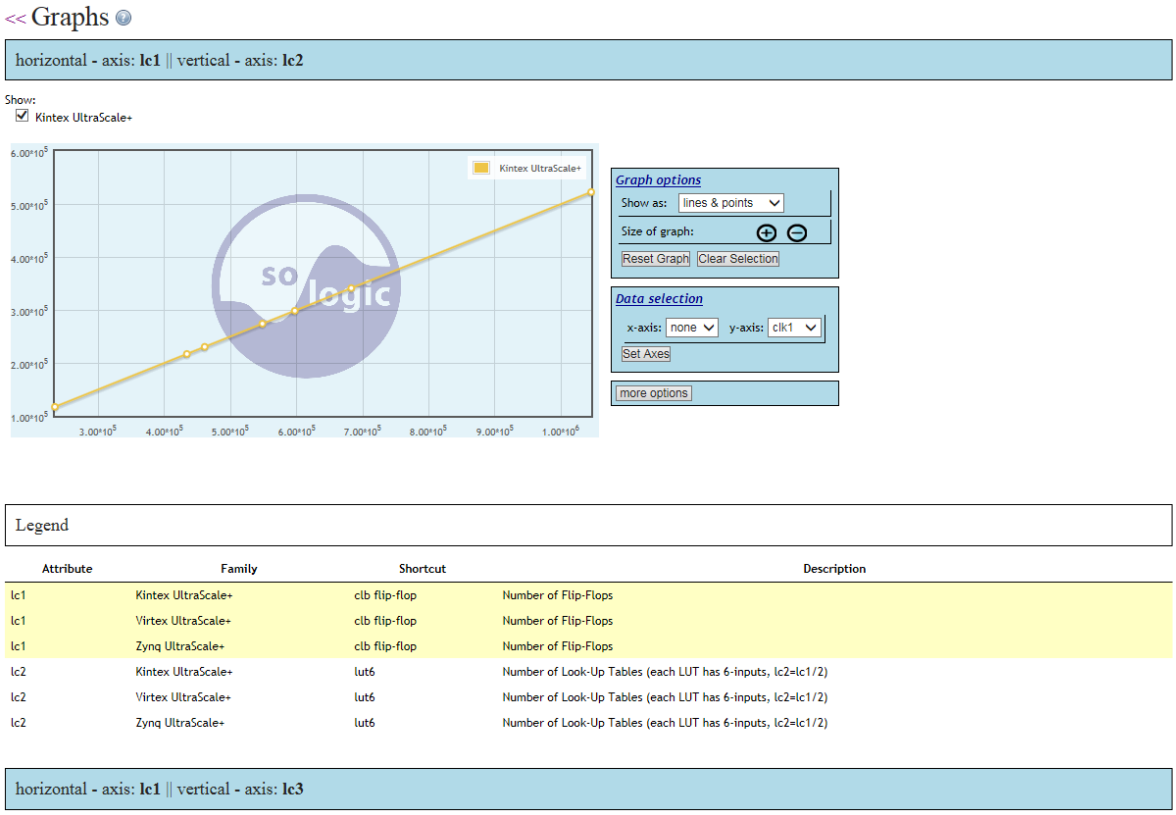


Illustration 7: Graph 1

- Graph 2: x-axis: lc1 | y-axis lc3
- Graph 3: x-axis: lc1 | y-axis lc4

At the graphs selection, each axis can be set to any attribute, as well as many other options are available there. For more information click help icon at the top of the Graphs web page, see Illustration 8.

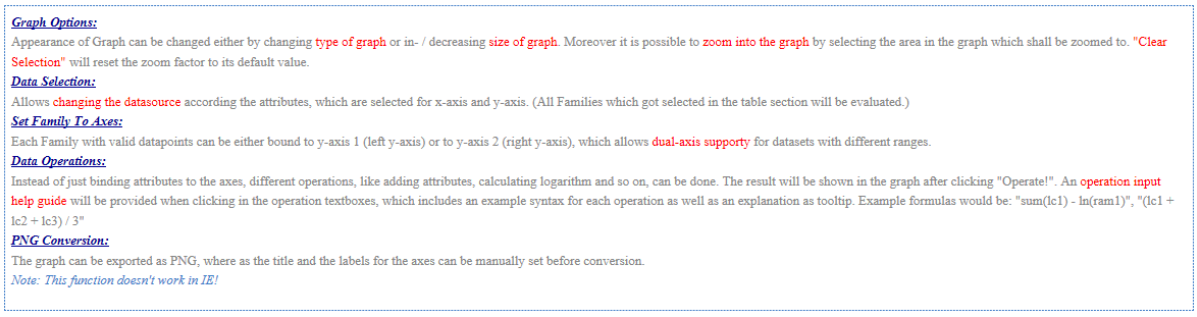


Illustration 8: Graphs help