

## **GreenArrays and SchmartBoard Make the GA144 Chip Accessible to Experimenters**

M. Simon



GreenArrays, the makers of the [GA144 chip](#) [1], announces an OEM partnership with [Schmart Board](#) [2] that will allow hobbyists and experimenters to get in on the fun provided by playing around with a chip with 144 cores that can do around 90 billion instructions per second at a total power of under one watt (typical) while running at full clip and which only uses about 14 microwatts when everything is idle. The cores do their work at 1.5 nanoseconds per instruction when operating and automatically idle when their work is done. Wake up is also automatic which means power management is automatic. There is no need to turn off clock domains because the chips are not clocked. This is so important I'm going to repeat it: power management is automatic. The cores respond to inputs, deliver outputs, and go to sleep if they have nothing further to do for the time being. Let me add that there is some pin leakage to add to your power budget. The leakage runs to 3.5 nA per pin when the pins are at Vdd or Vss. The leakage can go as high as 120 uA for pins that are floating or are at some intermediate voltage (like when a pin is used for an analog function [A to D]).

GreenArrays suggest that the experimenter use the Schmart Board [202-0048-01](#) [3] for their chip. Schmart Board [has a YouTube video](#) [4] that instructs the experimenter on how to solder a .5 mm pitch QFN chip to their board. GreenArrays also has an [application note \[pdf\]](#) [5] that goes through the soldering procedure with pictures and text that explains how to do it in more detail. It also explains how to hook up the chip to the external world. There is also a [Breadboarding on a Budget](#) [6] page at GreenArrays that has more help and links to other pages. And don't forget the [Documentation and Software](#) [7] page which can help you plan your project. The page gives you access to development software and a chip simulator which is fully functional and downloadable **free of charge**.

However, you must be extremely careful to avoid errors when soldering as it is not impossible (in fact it is likely) to overheat the plastic and end up with a useless mess. Do it right the first time. Or the second or third if you are ham handed. I found it amazing that a 13 year old and a 15 year old (mentioned in the pdf) could do it right the first time after getting instructed on the methods to be used. If you do make an error GreenArrays suggests that you finish soldering the chip for

## **GreenArrays and SchmartBoard Make the GA144 Chip Accessible to Experimenters**

Published on Electronic Component News (<http://www.ecnmag.com>)

---

practice so you will have a better hand for your next try.

The chip is extremely quiet and can run up to 80 nodes with no decoupling capacitors. This is not recommended AT ALL and was done merely to show how quiet the chip is.

There is much more at the www sites noted above and you should read it all. Have fun! And get those bits banging.

### **Source URL (retrieved on 08/27/2014 - 7:20pm):**

[http://www.ecnmag.com/blogs/2011/09/greenarrays-and-schmartboard-make-ga144-chip-accessible-experimenters?qt-video\\_of\\_the\\_day=0](http://www.ecnmag.com/blogs/2011/09/greenarrays-and-schmartboard-make-ga144-chip-accessible-experimenters?qt-video_of_the_day=0)

### **Links:**

[1] <http://www.greenarraychips.com/>

[2] <http://www.schmartboard.com/>

[3] [http://www.schmartboard.com/index.asp?page=products\\_csp&id=490](http://www.schmartboard.com/index.asp?page=products_csp&id=490)

[4] [http://www.youtube.com/watch?v=qaMPp\\_5tXSY&feature=related](http://www.youtube.com/watch?v=qaMPp_5tXSY&feature=related)

[5] <http://www.greenarraychips.com/home/documents/greg/AN005-110926-SCHMART.pdf>

[6] <http://www.greenarraychips.com/home/documents/budget.html>

[7] <http://www.greenarraychips.com/home/documents/index.html>