

**Issue #290: September 2014****PROJECT FILES**

All of project files for this issue are available at:

[ftp://ftp.circuitcellar.com/pub/Circuit\\_Cellar/2014/290/](ftp://ftp.circuitcellar.com/pub/Circuit_Cellar/2014/290/)

**ARTICLE MATERIALS****Jeff Bachiochi, "IR Remotes (Part 2): IR Transmissions Explained"****Sources**

- DatPlot, AeroPerf (Michael Vogt) | [www.datplot.com](http://www.datplot.com)
- PIC18F2320 Microcontroller, Microchip Technology, Inc. | [www.microchip.com](http://www.microchip.com)
- SFH4547 IR Emitter, OSRAM Opto Semiconductors | [www.osram-os.com](http://www.osram-os.com)
- TSOP322xx and TSMP6000TR IR Receiver modules, Vishay Intertechnology, Inc. | [www.vishay.com](http://www.vishay.com)

**Ed Nisley, "Improved Arduino PWM MOSFET Gate Drive"****Resources**

- E. Nisley, "Arduino PWM vs MOSFET Transductance" Circuit Cellar 284, 2014.
- ———, "Low-Loss Hall-Effect Current Sensing," Circuit Cellar 280, 2013.
- ———, Softsolder.com, "Hall-Effect Current Control PCB: First Light," <http://softsolder.com>.
- ———, Softsolder.com, "Hall-Effect Current Control PCB: Voltage Variations," <http://softsolder.com>.

**Sources**

- MAX4544 SOT23-6 Package, Maxim Integrated | [www.maximintegrated.com](http://www.maximintegrated.com)
- AM503 AC/DC current probe amplifier, Tektronix, Inc. | [www.tek.com](http://www.tek.com)

**George Novacek, "The Humble Resistor (Part 2): Variable Resistors"****Resources**

- Analog Devices, "AD5227: 64-Position Digital Up/Down Control Potentiometer," [www.analog.com/en/digital-to-analog-converters/digital-potentiometers/ad5227/products/product.html](http://www.analog.com/en/digital-to-analog-converters/digital-potentiometers/ad5227/products/product.html).
- Intersil, "Digital Potentiometers(DCPs)," [www.intersil.com/en/products/data-converters/digital-potentiometers-dcps-.html](http://www.intersil.com/en/products/data-converters/digital-potentiometers-dcps-.html).

- Maxim Integrated Products, "10-Bit, Dual, Nonvolatile, Linear-Taper Digital Potentiometers," 19-3562, 2006, <http://datasheets.maximintegrated.com/en/ds/MAX5494-MAX5499.pdf>.
- TT Electronics, "Ultra-High Value Precision Resistors," [www.welwyn-tt.com/pdf/datasheet/3810.PDF](http://www.welwyn-tt.com/pdf/datasheet/3810.PDF).
- Vishay, "Metal Film Resistors, Military/Established Reliability, MIL-PRF-39017 Qualified, Type RLR," 31023, 2013, [www.vishay.com/docs/31023/erl.pdf](http://www.vishay.com/docs/31023/erl.pdf).

### **Ayşe Coskun, "Pooling Microarchitectural Resources: Towards Flexible Heterogeneity"**

#### **References**

- [1] J. Meng, T. Zhang, and A. K. Coskun, "Dynamic Cache Pooling for Improving Energy Efficiency in 3D Stacked Multicore Processors," In Proceedings of the IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC), 2013.
- [2] H. Homayoun, H. V. Kontorinis, A. Shayan, T.-W. Lin and D. M. Tullsen. "Dynamically Heterogeneous Cores Through 3D Resource Pooling," In Proceedings of IEEE 18th International Symposium on High Performance Computer Architecture (HPCA), 2012.

### **Evan Chen, Zequn Huang, Geo Xu, "Microcontroller-Based Stabilization Platform"**

#### **Resources**

- S. Colton, "The Balance Filter," 2007, <http://bit.ly/1jLr9OZ>.
- B. Land, "A Preemptive Kernel for Atmel Mega1284 Microcontrollers," Cornell University, 2013, <http://people.ece.cornell.edu/land/courses/ece4760/TinyRealTime/index.html>.
- ———, "ECE 4760: Laboratory 4—Tachometer and Motor Controller," Cornell University, 2013, <http://people.ece.cornell.edu/land/courses/ece4760/labs/f2013/lab4.html>.
- LetsMakeRobots.com, "Kalman filter vs Complementary Filter," 2011, <http://letsmakerobots.com/node/29121>.
- SparkFun, "Triple Axis Accelerometer Breakout – ADXL345," 2013, <https://www.sparkfun.com/products/9836>.
- ———, "Triple-Axis Digital-Output Gyroscope—ITG-3200," <https://www.sparkfun.com/products/9793>.

#### **Sources**

- ADXL345 Accelerometer, Analog Devices, Inc. | [www.analog.com](http://www.analog.com)
- ATmega1284p Microcontroller, Atmel Corp. | [www.atmel.com](http://www.atmel.com)
- ITG-3200 Triple-Axis Digital-Output Gyroscope and Servo – Generic High Torque (Standard Size), SparkFun (distributor) | <https://www.sparkfun.com/products/9793>

**Steven Liu and Albert Ruskey, "Engineer a Force-Sensing System: Sensor-to-User Data Acquisition Made Simple"****Sources**

- Altium Designer software, Altium | [www.altium.com](http://www.altium.com)
- PIC18F1330 Microcontroller, Microchip Technology, Inc. | [www.microchip.com](http://www.microchip.com)
- SPBT2632C2A Bluetooth Module and STM32F4 Discovery Board, STMicroelectronics | [www.st.com](http://www.st.com)
- CEA-13-240UZ-120 120-Ω Strain gauge, Vishay/Micro-Measurements | [www.vishaypg.com/micro-measurements/](http://www.vishaypg.com/micro-measurements/)

**Mitch Matteau, "DIY RGB Game Design: An Upgrade for a Classic Platform"****References**

- [1] D. Lau, "In-Circuit Programming of FLASH Memory via the Universal Serial Bus for the MC68HC908JB16," AN2399, Freescale Semiconductor, 2003.
- [2] Wikipedia, "Tic-Tac-Toe," <http://en.wikipedia.org/wiki/Tic-tac-toe>.

**Resource**

- B. Bawer and W. J. Hawkins, "Electronic Tick-Tack-Toe in a Cigarette Box," Popular Science, December 1970.

**Sources**

- HC908JB16 Microcontroller, Freescale Semiconductor, Inc. | [www.freescale.com](http://www.freescale.com)
- DS2408 1-Wire Switch, Maxim Integrated | [www.maximintegrated.com](http://www.maximintegrated.com)