

## MiCs Quick Start Evaluation Board

**Instant testing – Just add power**

**Test 5 different MiCs devices**

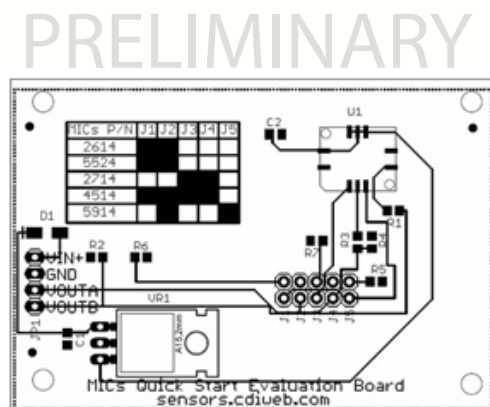
**Complete Circuit on PCB for each Sensor**

**7 to 20 V Input Supply Voltage**

## Overview

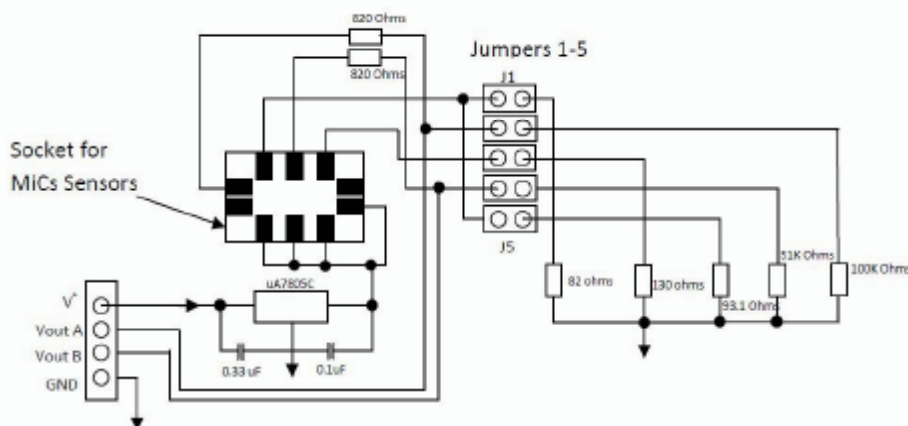
While the MiCs SMD parts are difficult to test and require a 5 V power supply for correct operation, the Quick Start Demo board allows the user to be testing the SGX SMD metal oxide gas sensors within minutes after opening the box. The MiCs quick start board can use any input power supply from 7V to 15 V. One of five different sensors can be placed into the universal onboard IC socket, and by installing the correct jumper the circuit is configured for immediate testing of the sensor.

The MiCs quick Demo board can individually test the following MiCs sensors: [MiCs-2614](#) (Ozone), [MiCs-5524](#) (CO), [MiCs-2714](#) (NO<sub>2</sub>), [MiCs-4514](#) (Dual sensor, CO and NO) and the MiCs- 5914 (NH<sub>3</sub>) just by installing the correct jumpers as shown on the PCB. (4 Jumpers are included in each kit).



## Circuit Overview

The circuit for each sensor is exactly the circuit shown on the individual datasheet for the parts, and the jumpers will allow for the correct resistors configuration required. While the input voltage is 7 to 20V, the board uses a regulator (LM7805T) to reduce the voltage to the MiCs device to 5V. After this, the jumpers determine the circuit used to correct supply the heater and load resistance for each device. The complete circuit of the Quick Start Demo board is shown in Figure I.

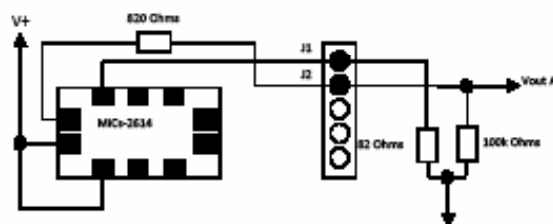


**Figure I**

The individual circuits for each of the metal oxide sensors are very simply and straight forward. Please note that the TI regulator was left out of the circuit diagrams below for simplicity only, so will the input supply voltage can be 7V to 25V, V+ for the individual circuits is 5V.

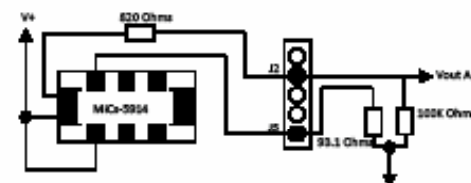
### **MiCs-2614 and the MiCs-5524**

To test the MiCs-2614 (Ozone sensor) or the MiCs-5524 (Carbon Monoxide) only Jumper 1 and 2 should be installed. With these jumpers in place the circuit is:



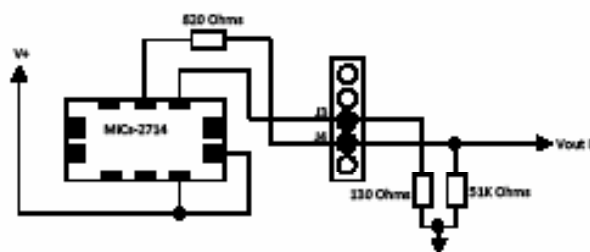
### **MiCs-5914**

To test the MiCs-5914 (Ammonia sensor) only Jumper 2 and 5 should be installed. With these jumpers in place the circuit is:



### **MiCs-2714**

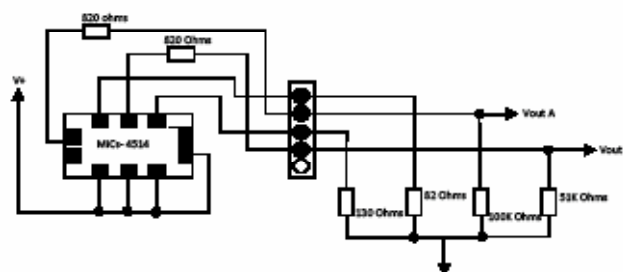
To test the MiCs-2714 (Nitrogen Dioxide sensor) only Jumper 3 and 4 should be installed. With these jumpers in place the circuit is:



### **MiCs-4514**

To test the dual MiCs-4514 (Carbon Monoxide and Nitrogen Dioxide sensor) only Jumper 1, 2, 3 and 4 should be installed. With these jumpers in place the circuit is:

In the configuration, the CO sensor is on Vout A, and the NO2 output is on Vout B.



### **Conclusion:**

The quick start demo board will allow the quick testing of the MiCs sensors, and overcomes the common drawback of working with surface mount devices. However, please make sure to the MiCs-AN2 Q and A, as this will answer many of the most common questions asked, notable:

- 1) The MiCs sensors are not generally used as an exact measurand device. That is, you will not be able to measure to an exact ppm or ppb level, but rather they are best used a low/med/high indication of a gas presence.
- 2) The MiCs devices work best in a constant airflow application. These devices are not made to sit in the corner of a room and monitor air. The best situation would be to have the sensor sit in the air duct and air input or output.
- 3) While the MiCs sensor are advertised to monitor one gas, the sensors are all cross sensitive to other gases. Testing in a given application is highly recommended.
- 4) Pulsing power to the sensor is not recommended. In general, the sensors have long warm up time to function properly. AN2 will guide you through other questions as well. However, while there are a few quirks when using the MiCs device, over 20 Million sensors are used annually for IAQ applications. Good Luck with yours!