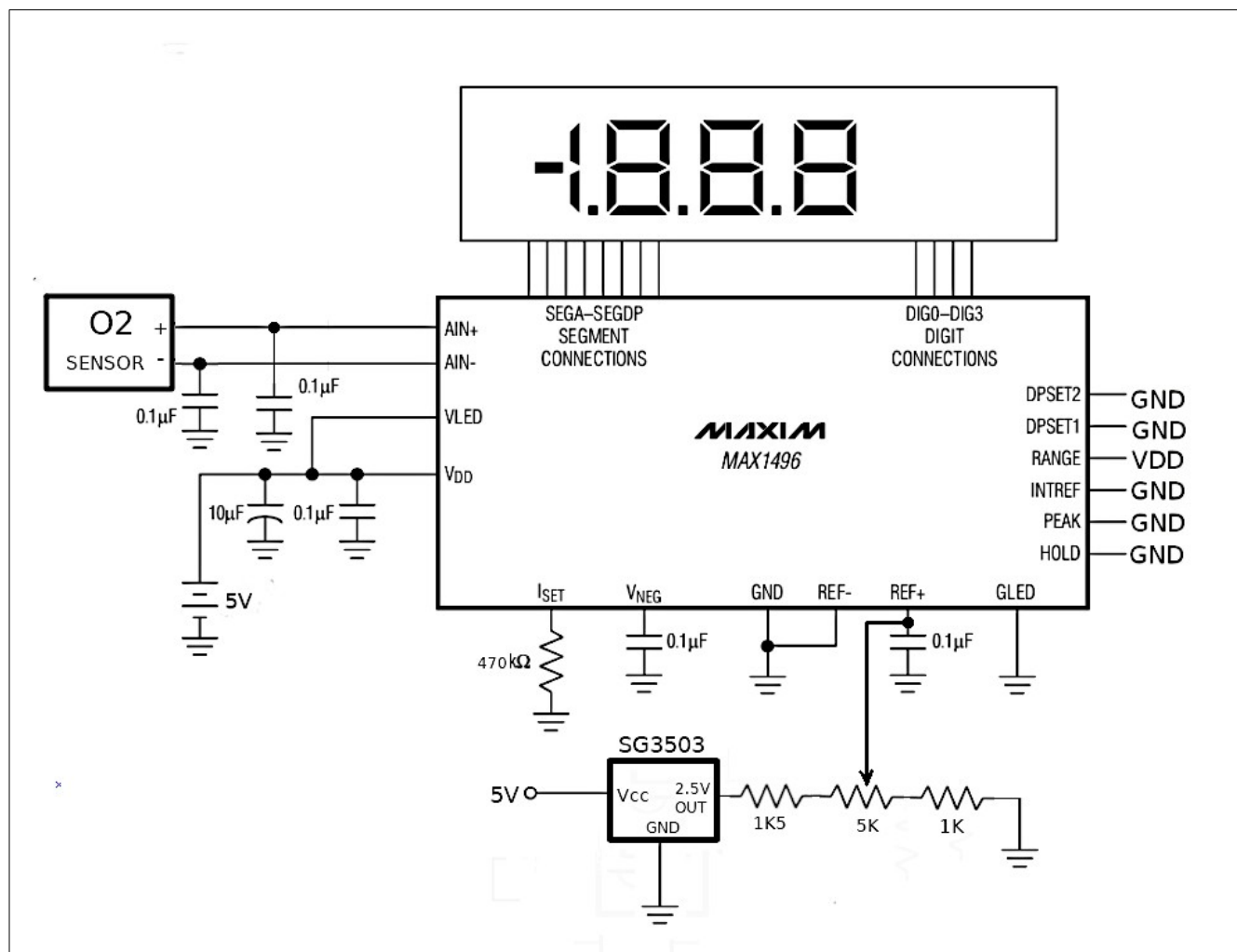


OXYGEN ANALYZER SJK - V2

SCHEMATIC



PRINTED CIRCUIT BOARD DETAILS

Single sided PCB, Dimensions 6" x 2"

PCB layout file: [o2analyzer_sjk_pcb.pdf](#)

Component assembly file: [o2analyzer_sjk_assmbly.pdf](#)

The PCB layout image is mirrored for toner transfer method (scale 1:1).

The circuit is designed for use with the Figaro KE-25 oxygen sensor.

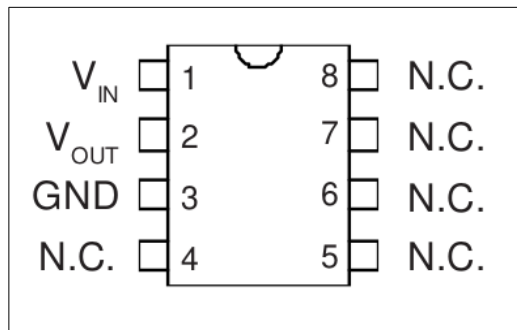
The Seven segment LED display modules are common cathode type with pinout as shown below.

COMPONENT LIST

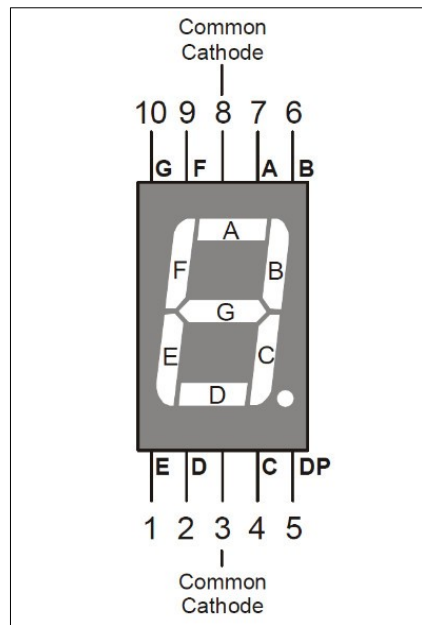
ICs	MAX1496EPI (28 pin DIP) SG3503M (2.5 Volt reference, 8 pin DIP)
D0-D3	Common Cathode Seven Segment LED Display (10 pin DIP)
C1	10 Mfd electrolytic
C2 – C6	0.1 Mfd/100V metal film
R1	470K (Display brightness, minimum value 24K)
R2	1.5K
R3	1 K
VR1	5K trimpot (Slope adj)
Connectors	Screw type board-mounted connectors, pitch 0.2"
SENSOR	KE-25 Oxygen sensor (Figaro)

PINOUTS (TOP VIEW)

SG3503 (8PIN DIP)



Common Cathode 7 segment LED display (10pinDIP)



NOTES

The circuit is designed specifically for the KE-25 sensor which does not require zero offset (specified offset is $<0.5\text{mV}$). This is a fuel cell type sensor with output voltage proportionate to the O_2 concentration. Other fuel-cell type O_2 sensors may work, but we have not tested.

The external reference IC used is SG3503 (2.5Volts).

The LED displays are 7-segment common cathode with pinout as shown.

Maximum supply voltage is 5.25 volts. Do not exceed.

The orifice of the KE-25 sensor has to face downward in use. It must not be pressurised.

SETTING UP AND CALIBRATING

1. Before connecting the sensor, apply 5V to the power terminals, short the sensor input terminals and check that the display reads "0.0"
2. Connect the sensor (red wire to + terminal)
3. Quick calibration: with atmospheric air, adjust the SLOPE trimpot to read "20.9"
4. For better calibration:
 - a) Switch on the circuit and wait for 5 minutes to stabilise.
 - b) Pass High Purity Oxygen (certified 99.9% pure) on to the sensor orifice (DO NOT PRESSURISE THE SENSOR, just allow the gas to flow in and out) and adjust the SLOPE trimpot to get a stable reading of "99.9" on the display.
 - c) Pass pure Nitrogen on to the sensor orifice and check that the reading is close to zero (below 0.9). The calibration is complete.

