# Documentación OBD

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| --- | --- | --- |
| PIDs Probados | Descripcion | Resultado |
| 01 62 | Actual engine - percent torque | NO DATA |
| 01 5A | Relative accelerator pedal position | NO DATA |
| 01 5E | Engine fuel rate | NO DATA |
| 01 46 | Ambient air temperature | NO DATA |
| 01 05 | Engine coolant temperature | NO DATA |
| 01 0A | Fuel pressure | NO DATA |
| 01 08 | Short term fuel % trim—Bank 2 | SIN PROBAR |
| 01 11 | Throttle position | OK |
| 01 13 | Oxygen sensors present | SIN PROBAR |
| 01 14 | Bank 1, Sensor 1: Oxygen sensor voltage, Short term fuel trim | SIN PROBAR |
| 01 15 | Bank 1, Sensor 2: Oxygen sensor voltage, Short term fuel trim | SIN PROBAR |
| 01 16 | Bank 1, Sensor 3: Oxygen sensor voltage, Short term fuel trim | SIN PROBAR |
| 01 17 | Bank 1, Sensor 4: Oxygen sensor voltage, Short term fuel trim | SIN PROBAR |
| 01 1C | OBD standards |  |
| 01 1D | Oxygen sensors present |  |
| 01 1E | Auxiliary input status |  |
| 01 1F | Run time since engine start |  |
| 01 20 |  |  |
| 01 21 |  |  |
| 01 23 |  |  |
| 01 24 |  |  |
| 01 25 |  |  |
| 01 2C |  |  |

Obtener consumo de gasolina:

*... For the record, the first "one-line" MPG formula above, taken from my Circuit Cellar article, is off by 100! The "4.54" should in fact be "454". The correct formula is:  
  
MPG = (14.7 \* 6.17 \* 454 \* VSS \* 0.621371) / (3600 \* MAF / 100)  
MPG = 710.7 \* VSS / MAF*

*l/100km=3.021497399\*Vss/maf  
  
Note that OBD-II VSS reading is in kilometers/hour and MAF reading is grams/sec times 100.  
  
This formula works very well in a modern automobile because the engine computer spends almost 100% of its time managing the fuel-air-ratio to 14.7, which it can do very well because of the "closed loop" feedback from the O2 sensor(s).  
  
In fact, the accuracy of this method has been proven in literally tens of thousands of gasoline-powered vehicles. Accuracy within a few percent is typical, often limited by the accuracy of the vehicle speed reading (i.e., VSS).  
  
As for other ways of doing this, especially if you don't have a MAF sensor, by knowing the displacement of the engine, and after a simple "calibration" using fuel tank "fill-up" data to find the only unknown, namely the "volumetric efficiency" (VE) of the engine, MAF can be calculated from RPM, MAP and IAT. With VE, one can use the following formulas to calculate a synthetic "mass air-flow" (MAF) in grams per second, all without a MAF sensor, using the "Ideal Gas Law", as follows:  
  
IMAP = RPM \* MAP / IAT  
MAF = (IMAP/120)\*(VE/100)\*(ED)\*(MM)/(R)  
  
where manifold absolute pressure (MAP) is in kPa, intake air temp (IAT) is in degrees Kelvin, R is 8.314 J/°K/mole and the average molecular mass of air (MM) is 28.97 g/mole. Note that, in the above formula, the volumetric efficiency of the (4-cycle!) engine is measured in percent and the engine displacement (ED) is in liters.  
  
The VE of my 1999 7.4L Chevy Suburban is about 65%. Smaller, higher performance engines can have VE's of 85% or higher.*