

FIGURE 13-1 A typical engine coolant temperature (ECT) sensor. ECT sensors are located near the thermostat housing on most engines.

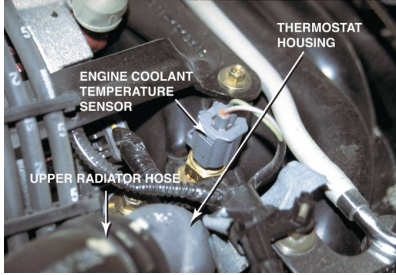


FIGURE 13-2 A typical ECT sensor temperature versus voltage curve.

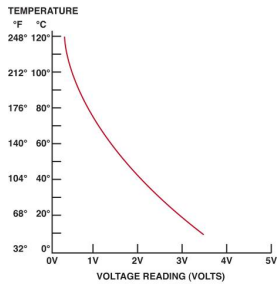


FIGURE 13-3 A typical two-step ECT circuit showing that when the coolant temperature is low, the PCM applies a 5-volt reference voltage to the ECT sensor through a higher resistance compared to when the temperature is higher.

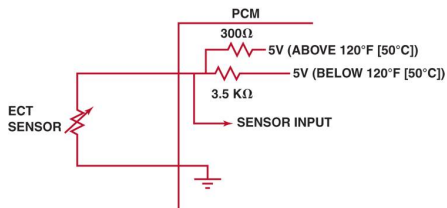


FIGURE 13-4 The transition between steps usually occurs at a temperature that would not interfere with cold engine starts or the cooling fan operation. In this example, the transition occurs when the sensor voltage is about 1 volt and rises to about 3.6 volts.

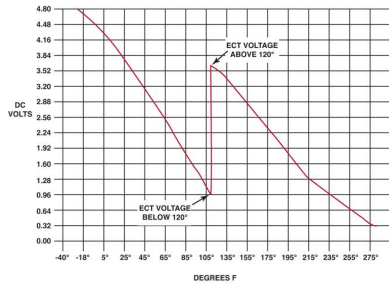


FIGURE 13-5 Measuring the resistance of the ECT sensor. The resistance measurement can then be compared with specifications. (Courtesy of Fluke Corporation)

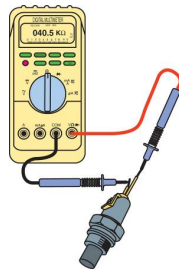


FIGURE 13-6 When the voltage drop reaches approximately 1.20 volts, the PCM turns on a transistor. The transistor connects a 1-kΩ resistor in parallel with the 10-kΩ resistor. Total circuit resistance now drops to around 909 ohms. This function allows the PCM to have full binary control at cold temperatures up to approximately 122°F, and a second full binary control at temperatures greater than 122°F.

