



# Garage

Tech Bits with Tim Stock

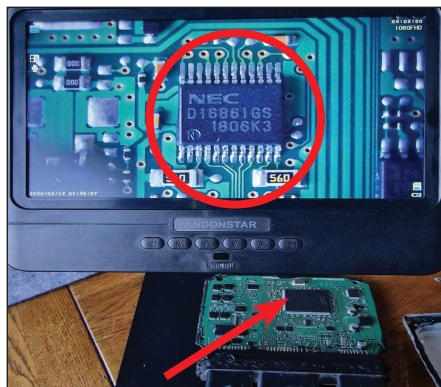
## Technical **AUTOBIZ** Helpline

Call to join  
01-905-9500



**Tim Stock**

## Is it better to replace or repair electronics?



**The failed IC, at arrow) can be seen (enlarged) in a magnifying viewing screen**

Recently, we have come across many cases where technicians are having to decide whether the vehicle repair is economical. The high costs of electronic components, and in some cases the parts are on a long back order, or maybe not even available at all.

### Case study 1

**A 2008 Nissan Qashqai 1.6 litre 16V cut out when navigating a high curb.**

The first workshop found the engine ground lead had snapped and the starter motor would not turn. This was replaced and the starter motor returned to normal operation. But the engine still refused to start.

Investigation into the non-start situation proved no spark was present at all ignition coils. Without any testing, they replaced all the coils

and sparkplugs. This did not solve the issue. Showing a lack of diagnostic skills, they passed the vehicle onto a specialist for repair.

No fault codes were present with no ignition primary processing, all inputs were scoped and proved to be present. Injector processing was present and fuel pump control was operational. Live serial data showed no issues.

With some research into the ECM model, we determined that the Ignition Driver Integrated Circuit (IC) had failed. This is a small chip within the ECM. A 24-pin integrated circuit was readily available online, and it was ordered. With the skills to remove and replace the IC on it's own, the ECM was returned to normal function at a fraction of the cost of a new ECM from Nissan.

This type of repair has become more common, since the training courses for EEPROM and soldering skills have become available. These skills open a new revenue source for workshops.

### Case study 2

**A 2009 Ford Focus 1.6 litre had a misfire present on cylinders 2 and 3. The fault**

code in the PCM was P2303: Coil B primary circuit low voltage.

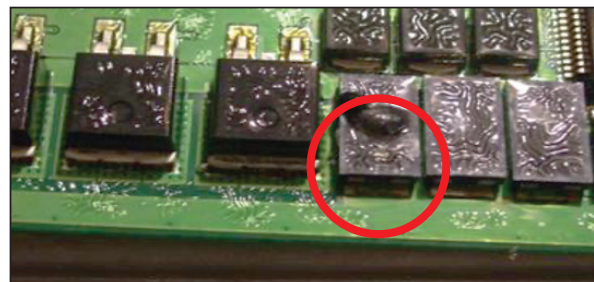
This Ford uses a distributorless ignition system. The coils for cylinders 1 and 4 are one primary circuit, and coils 2 and 3 are on another primary circuit, so the ignition coil was considered to be the fault. Replacing the coil did not rectify the issue.

These PCMs are known to fail on the ignition coil driver stage, and the repair is a simple one. Once the PCM is opened, the coil transistors sit in one corner of the circuit board. An inexpensive tool from Peak Electronic Design will accurately determine a failed driver. And at a cost of around €5 for the component, the PCM can be back and working in a short repair time.

This can only increase the customer confidence in the workshop's ability to keep costs down, and get vehicles back on the road more quickly.



**This tool will identify failed electronics**



**This failed transistor was easy to spot**