BLUE STREAK ELECTRONICS

TECH BULLETIN

TO: ALL SALES FORCE **#:** BDTECB103

FROM: Dan Maslic

SUBJECT: General Motors - PROM/MEMCAL Identification Markings

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WHAT IS A PROM?

A PROM is a removable memory chip located within an ECM. PROM stands for **P**rogrammable **R**ead **O**nly **M**emory. This memory chip contains the vehicle characteristic information, as well as memory tables for such functions as spark timing, fuel control, emission control strategy, etc. The information contained within the PROM memory chip can be thought of as an instruction manual written for the ECM. Without the proper PROM chip, an ECM may not function as intended for a specific vehicle application. Also, if certain driveability concerns are traced back to the PROM, a new updated PROM may be released calling for the removal of the old PROM followed by the installation of the updated version.

PROM TERMINOLOGY

It is important to understand the terminology used when describing PROM chips. Three terms that often appear are “PROM”, “CALPAC”, and “MEMCAL”. A PROM, as mentioned above, is a memory chip that contains vehicle characteristic information and certain control strategy information. A CALPAC is a small resistor-pack chip that is used for “back-up”, or “limp” modes. The CALPAC is used by the ECM when it detects a sensor signal loss or sensor signal error. Under these conditions, the ECM uses the fixed value created by the CALPAC internal resistor as a default value for the specific sensor signal lost. This “substituted” signal allows the vehicle to operate in “back-up” or

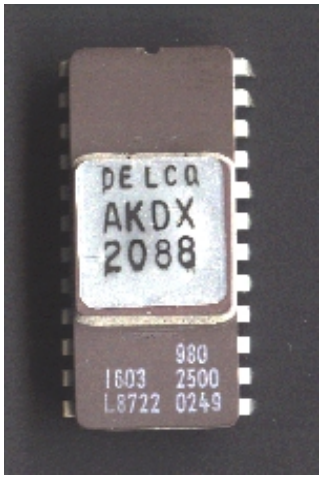
"limp" mode[1]. The term MEMCAL is typically reserved for a memory chip assembly consisting of a PROM and CALPAC chip(s), and possibly other memory chips or devices. Sometimes, certain instructional literature or documents may use the terms PROM and MEMCAL interchangeably. On vehicles equipped with a carburetor, the ECM will typically contain only a PROM. Most vehicles equipped with electronic fuel injection will use an ECM that contains both a PROM and a CALPAC, or a MEMCAL assembly.

PROM IDENTIFICATION

There are two ways of identifying a PROM. One way is by using a scan-tool to "read" the PROM scan-tool ID number. This is a four-digit number stored in the PROM, and can only be retrieved through electronic communication with the ECM. Another method that can be used to identify a PROM is to read the identification markings that are printed on the PROM, or on a label that is affixed to the PROM. The printed identification markings consist of two or three different label markings. The first label marking is known as a BROAD CAST CODE part identifier. The Broad Cast Code identifier is an alpha character code that may be 2 to 4 letters in length. The second label marking is known as an EXTERNAL ID number. The External ID number is a 4-digit identifier number used in conjunction with the Broad Cast Code to properly cross-reference the PROM to a G.M. Service Number through PROM cross-reference tables. The third label marking that may appear on the PROM is the full 8-digit service number. This marking may be in place of the 4-digit External ID number. On the following page are two examples of G.M.'s label marking formats, both the old style and the new.

[1] The engine speed (RPM) sensor signal cannot be substituted, defaulted, or reproduced by the CALPAC. If the engine speed sensor signal is lost or inoperative, the engine will not run.

Old Format



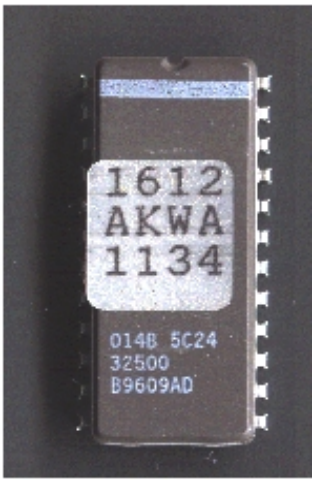
The 3 printed rows on the label of the PROM are identified as the following:

Top Marking: Manufacturer Identification

Middle Marking: Broad Cast Code Part Identification

Bottom Marking: External ID Number

New Format



The 3 printed rows on the label of the PROM are identified as the following:

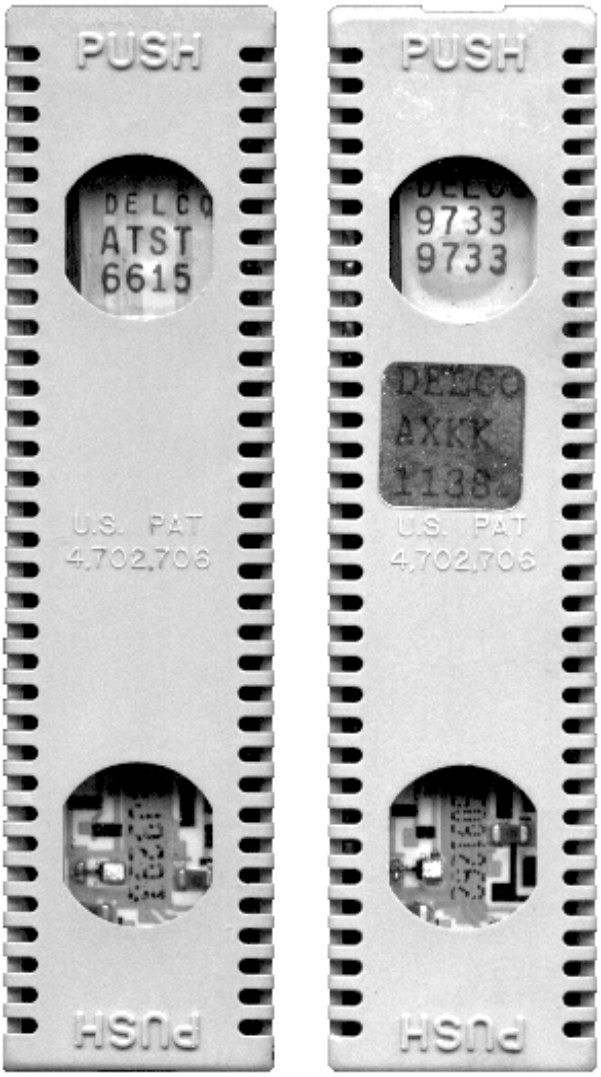
Top Marking: First 4 digits of 8-digit part number.

Middle Marking: Broad Cast Code Part Identification.

Bottom Marking: Last 4 digits of 8-digit part number.

On the following page, examples of label marking formats are presented as applied to MEMCALS.

MEMCAL Label Markings

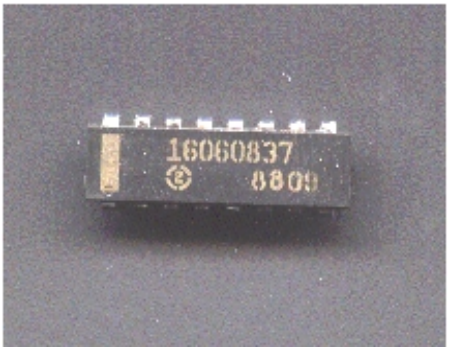


Note: The markings on the left MEMCAL are printed on a label that is affixed to the PROM inside the MEMCAL assembly.
The markings on the right MEMCAL assembly are printed on a label that is affixed to the MEMCAL assembly housing.

The label marking formats are the same for both PROMS and MEMCAL assemblies.

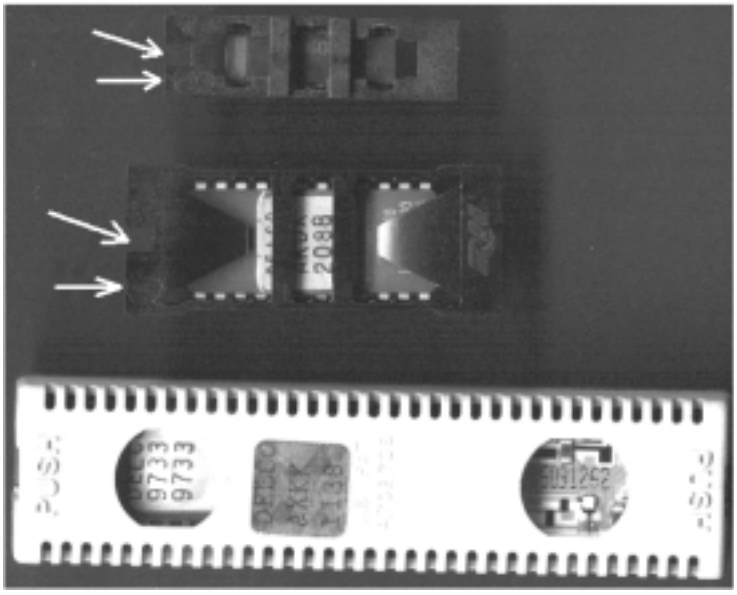
On the following page is an example of the label marking format used on a CALPAC chip.

CALPAC Label Markings



The CALPAC marking used for identification is the 8-digit part number printed on the CALPAC body.

All of the PROMS in the above illustrations (with the exception of the MEMCALS) are shown as they would appear when removed from their respective carriers. Below is an illustration of the PROMS placed side-by-side and installed within their respective carriers. The illustration is approximate to life-size. Note: The white arrows indicate the carrier locator notches and indicators (the marked circles). These are used to prevent improper PROM orientation during installation.



When ordering a PROM, remember to record all numbers found on the PROM label marking to assure proper PROM identification.