

# Component Manufacturers and Vendors

**Manufacturers and vendors are different, and understanding the difference is important.**

A bill of materials for an electronic assembly specifies the parts that are to be used on the assembly, including any allowable substitutions.

The engineer who designed the unit studied the manufacturer's datasheet for each part and determined it to be suitable. The engineering bill of materials thus calls up the parts by manufacturer and manufacturer's part number.

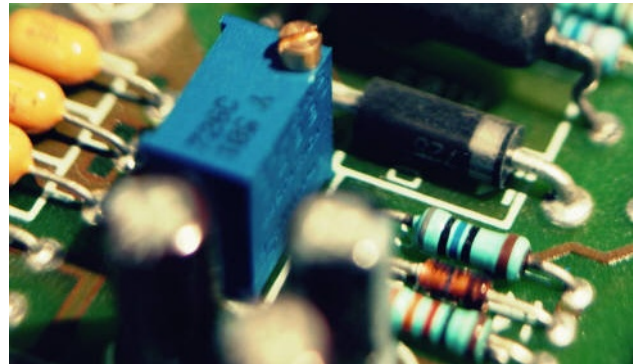
When the product is manufactured it does not matter which distributor or dealer the parts are purchased from, so long as they are the actual parts called up on the BOM.

## MANUFACTURERS

The manufacturer of a part is mostly obvious. For a Philips 74HC04N integrated circuit the manufacturer is Philips; for a Fairchild MMBT3904 transistor the manufacturer is Fairchild.

For other parts the manufacturer is less clear. For example, small generic electromechanical parts such as switches and connectors may be physically manufactured in no-name offshore factories for an OEM who sells them under a global brand.

For the purpose of the engineering BOM the manufacturer is what is sometimes referred to as the "design authority". This is the company that controls the specifications for the part and publishes the datasheet. In the example, the manufacturer listed on the engineering BOM is the OEM.



## VENDORS

Unless you are buying in large volumes you probably do not buy direct from the manufacturer. Instead, parts are bought from vendors. Vendors may be broad-line (catalog) distributors, specialised distributors, non-franchised dealers, or even surplus dealers.

## PURCHASING

Purchasing systems naturally deal in terms of vendors and vendor's stock number. When the engineering BOM is entered into the purchasing system the manufacturer and manufacturer's part number can sometimes get lost, replaced with the name of a distributor and their stock code.

If possible it is best to choose a purchasing system that supports the separate concepts of manufacturers and vendors, and allows both to be separately entered.

***"The manufacturer publishes the datasheet"***

If this is not possible it may be necessary to enter only vendor and stock number information into the purchasing system, in order to have purchase orders correctly generated. In this case it is wise to be cautious of catalog distributors who have stock numbers that do not refer exclusively to a single manufacturer. You may determine that ordering a particular stock number results in delivery of a Philips 74HC04N today, but beware that you might get a Fairchild MM74HC04N tomorrow. If at all possible the manufacturer and manufacturer's part number, as listed on the engineering BOM, should appear somewhere in the purchasing system (and hence also on purchase orders), perhaps in the description field.

## REAL-WORLD EXAMPLE

A company designed and produced digital logic boards for use in a communications system. The board included some "jelly-bean" CMOS logic chips. When the circuit was designed the engineers obtained the datasheets for all the devices and performed a thorough timing analysis to confirm that the design would function correctly across temperature extremes, with all the alternate parts specified, and with worst-case parts.

When the engineering BOM was entered into the purchasing system, vendors' stock numbers were entered rather than manufacturers' part numbers for some parts. However, on the first production runs the parts that were purchased were as specified on the engineering BOM, and the boards worked fine.

After a few years one vendor found a "better" source of "jelly-bean" logic chips and began supplying them under the same stock number. Boards built with these parts passed factory test and were shipped, but began causing problems in the field some months later. After a lengthy investigation it turned out that the substituted part had a slightly different propagation delay than the originally-specified component.

## CONCLUSION

Maintaining a clear distinction between manufacturers and vendors is important. It is manufacturers who publish component specifications in datasheets, and hence it is manufacturers' part numbers that must be called up on engineering BOMs. Ensuring that this information is not lost in the translation to purchasing systems can prevent costly purchasing mistakes, and can also reduce the work required when alternative vendors must be sought.

## ABOUT THE AUTHOR



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