

# Transistor Museum™ Store

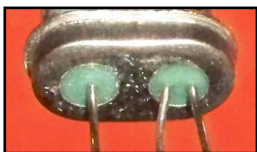
## Historic Semiconductor Fact Sheet

### IBM Germanium PNP Alloy Junction Transistor



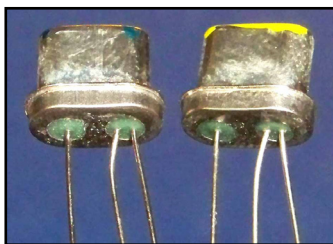
Storage/Display envelope provided with your transistor.

Historical Background: IBM established an aggressive transistor development program in the early 1950s and continued with a substantial engineering and production effort throughout the decade. By the mid 1960s, IBM had exited the transistor manufacturing business, and relied on key suppliers such as Motorola and Texas Instruments. During the decade from approximately 1952 to 1962, IBM developed and manufactured a variety of germanium transistor types for use in their commercial computers. Primary types of computer transistors produced by IBM during this timeframe included alloy junction and graded base/drift, and both NPN and PNP configurations were made. The 1950s IBM transistor program also included major efforts to mechanize the production of transistors. Automated production of alloy junction transistors began in the mid 1950s. [For a detailed discussion of the IBM transistor program, please see this excellent reference: C.J. Bashe, L.R. Johnson, J.H. Palmer, and E.W. Pugh, "IBM's Early Computers", 1986, The MIT Press, Cambridge, Ma.] IBM germanium transistors represent a unique and important milestone in computer and transistor history.



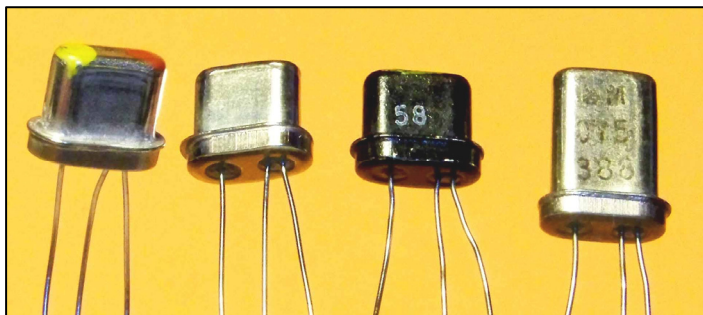
**C B E**

**Lead Configuration  
Bottom View  
IBM Germanium  
Transistor**



Your historic 1950s IBM germanium transistor will be the type shown above.

By the mid 1960s, IBM no longer manufactured germanium transistors; for example the IBM 1960s SMS computer module shown below contains transistors only from Motorola and Texas Instruments. It is interesting to note that many, but not all, 1950s IBM transistors used a unique and "non-standard" pinout/lead placement. You can see on the units at left that the Base and Emitter leads exit through one hole in the bottom of the case header and the Collector exits through another hole. This case shape was not registered with JEDEC and was used only by IBM in the 1950s. Beginning around 1960, IBM adopted industry registered case styles for most devices.



Shown above are examples of germanium transistor types manufactured by IBM in the 1950s. IBM identified the model numbers of their transistors with a two or three digit code. At far right above is a type 075, with a date code of 388 (1958, week 38). The black unit is a type 58, with no date code. Both types (58 and 075) are NPN alloy junction devices. The two units above left are from an experimental 1959 lot of alloy junction transistors produced to evaluate new production and test equipment. Many of these units have hand-painted color codes (see yellow/red dots on the leftmost transistor), which were likely used to track performance characteristics. These are PNP alloy junction types and have similar characteristics to IBM types 25 and 33, which are general purpose PNP alloy junction transistors.

