

**TRANSISTOR MUSEUM™**  
**Historic Transistor Photo Gallery**  
**U.S. Army Signal Corps Transistors from the 1950s/60s**



Transistor Size (1/2" OD X 1/4"H)  
No Date Code Stamp



Cardboard Pack of 20 2N625 transistors, as provided to the Signal Corps in support of a FY-56 development contract.

**SYLVANIA 2N625**

**TYPE**

Germanium NPN Alloy Transistor

**USAGE**

0.5 Amp Switch  
Computer Core Driver

**LISTING DATES**

Sig C: FY 1956  
JEDEC Registration: 1958

**CASE STYLES**

Standard TO-8  
Black Metal

**AVAILABILITY**

Rare (Limited Production)

**HISTORIC NOTES**

Sylvania was the first major commercial supplier of germanium semiconductors, with the introduction of the classic 1N34 diode in 1946. Early Sylvania transistor work began in the late 1940s, and the well known 2N35 NPN germanium triode made its appearance in 1953. Building on this germanium expertise, Sylvania established an active transistor research and development program, and one result was the 2N625. This device was developed in the mid 1950s with support from the Signal Corps, with the primary goal of providing higher speed, higher current devices for use as computer memory core drivers. Sylvania also worked under contract with the Signal Corps at this same time to develop the MOBIDIC (Mobile Digital Computer). It is likely that the 2N625 was employed in some versions of MOBIDIC. The performance characteristics of the 2N625 transistor were very quickly eclipsed by newer technologies, such as silicon mesa and planar. This historic transistor probably was not sold commercially, and it was produced in very limited quantities to fulfill Sig C contract requirements.

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| Company           | Device Designation | Material | Polarity     | Application        | Power Dissipation                 | Frequency Response                    | Fabrication Technique |
|-------------------|--------------------|----------|--------------|--------------------|-----------------------------------|---------------------------------------|-----------------------|
| SYLVANIA ELECTRIC | 2N1001             | Ge       | <i>p-n-p</i> | medium power audio | 7.5 watts @ 25°C case temperature | 0.5 Mc $f_{\alpha}$                   | A                     |
|                   | 2N1002             | Ge       | <i>n-p-n</i> | medium power audio | 3.75 watts @ 25°C ambient temp.   | 0.5 Mc $f_{\alpha}$                   | A                     |
|                   | 2N624              | Ge       | <i>p-n-p</i> | 12.5 Mc-20-db a    | 100 mw @ 25°C ambient temp.       |                                       | D                     |
|                   | 2N625              | Ge       | <i>n-p-n</i> | 0.5 a switch       | 1.25 watts @ 25°C case temp.      | $t_r + t_a + t_f = 1.5 \mu\text{sec}$ | A                     |
|                   | Device 13          | Si       | <i>p-n-p</i> | medium power audio | 2 watts @ 25°C case temp.         |                                       | DEC                   |
|                   | Device 13          | Si       | <i>n-p-n</i> | medium power audio | 2 watts @ 25°C case temp.         |                                       | DEC                   |

*Materials*  
 Legend: Ge—germanium  
           Si—silicon

*Fabrication Technique*  
 A—Alloy  
 DEC—Diffused Emitter Collector  
 D—Drift

The FY-56 Sig C PEM program lists six devices from Sylvania, as shown above. Interestingly, four of the devices are germanium, and these have been assigned JEDEC "2N" numbers - the two silicon devices are identified by the Sig C "device 13" specification, with one n-p-n and one p-n-p. 1956 was very early in the timeline of silicon device development, so the two "device 13" transistors would likely have been quite an engineering challenge for Sylvania. Note also that three of the transistors, including the 2N625, were of alloy design, which was one of the first transistor types developed, as early as 1951.


engineering data service

**ADVANCE DATA SYLVANIA 2N625**

**Description:** The Sylvania Type 2N625 is an hermetically sealed NPN germanium alloy transistor. Its new package design features improved thermal characteristics in a switching transistor.

Intended primarily for core driving applications, this transistor has improved voltage and switching time characteristics.

The 1958 JEDEC listing for the Sylvania 2N625 included a four page Advance Data sheet (section shown above), with a description of the device and specific performance graphs. This transistor addressed a real need in the computer industry of the mid to late 1950s, which was a device capable of driving magnetic core memory cells - this required a medium to high power device that could pass considerable current with a short switching time. The higher current capability also resulted in greater heat buildup, so the unique thick metal TO-8 case was used to aid in thermal dissipation. Development work on the 2N625 is described by C. Huang and C.M. Chang of Sylvania Electric Products, Woburn Mass, in the April 1957 Transactions on Electron Devices.