

## 1968

### **CMOS general-purpose logic ICs appear (RCA, U.S.A.)**

#### **~ Integrated Circuit ~**

In 1963, F. M. Wanlass of Fairchild announced the basic concept of complementary MOS (CMOS), foreseeing that standby power was small and it was suitable for high integration. This was realized in the world of general-purpose logic.

At that time TI's TTL 7400 series was the de facto standard for digital ICs, but because they used bipolar transistors, the current consumption was large. In response, RCA in the US released CMOS general purpose logic IC 4000 series in 1968. But the 4000 series were incompatible with the TTL 7400 series. The pin arrangements were also different in a simple inverter, OR, AND gate circuits. The 4000 series featured low power consumption as the feature of CMOS, and the power supply voltage range was wide as 3-18 V, but the speed was 1 MHz, which was low compared to 10 MHz of TTL. Also, it was weak against electrostatic surge because of the insulating gate of CMOS.

Since many boards had been designed for TTL standard logic ICs and they were inexpensive due to high volume production, the application of early CMOS standard logic ICs was limited to those for low power consumption and wide power supply voltage range.

However, the 74HC series (which stood for High speed CMOS compatible with the 74 series) which were compatible with TTL in the pin arrangements finally appeared, and furthermore 74HCT (High Speed CMOS TTL compatible) and 74ACT with compatible input signal condition which could be directly connected to TTL appeared. As a result, CMOS standard logics quickly became popular, and due to the lowering of price, they came to be used more than TTL standard logic ICs.

Compatible products of 4000 series were released from many companies as well. The 4000 series were used for a long time in applications such as satellites.

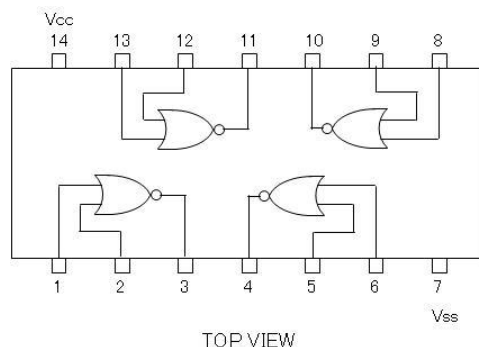


Fig. Pin configuration of 4001  
(Quad 2-Input NOR Gate)