

3036D - LMT, Triode for UHF Oscillators



In the early '1930s the most advanced research investigated the generation of frequencies somewhere above 100 MHz, beyond the upper limit of normal triodes. There were essentially two roads: one was the magnetron, the second one was the use of a triode in an unconventional way. The oscillator, based upon the theory of velocity modulation in a triode developed by Barkhausen and Kurz at the Technische Hochschule in Dresden, proved to operate in the UHF region, even though the obtainable power was extremely limited. In this oscillator a triode is operated with positive grid and slightly negative anode. Electrons are attracted from the grid but most of them pass through the grid helix, toward the anode. Due to the negative anode bias, they are repelled and are accelerated back to the grid, then repelled from the cathode and accelerated back again toward the grid. They continue to go back and forth across the grid helix until one by one they impinge the grid wire. Their motion transfers energy to a tank circuit, usually a Lecher line, connected between the grid and the anode. Due to the very poor heat dissipation of the grid and even because of the low percentage of electrons hitting the grid at each transit, this oscillator could only generate very little power. Special designs appeared in some electron tubes, to improve efficiency and coupling to the external resonating line.

The 3036D was designed by the French LMT presumably around the late 1930s or in the 1940s, since it uses an octal base. Its design suggests that it was to be mounted in the middle of a Lecher line, its grid being connected in the middle of the top wire. The electrode assembly is very small, anode being about 1 cm long. Probably intended to be used well above 1 GHz.

