

A magnetron is used in sources of electromagnetic radiation M-type, in particular in magnetrons of decimeter, centimeter and millimeter wave range with quick readiness time and extend time of no-failure operation. The magnetron comprises an anode and a cold cathode, which has on a tube base elements of secondary emissive emitter in the form of cylindrical bushes and elements of a field emitter made of refractory metals foil with thickness of (1,0-150,0) mkm or heavily alloyed silicon with thickness of (10,0-150,0) mkm in the form of flat rings that made as an acute-angled projections of equal height along perimeter with L period and being turned to side of anode with $10 \text{ mkm} \leq L \leq 150 \text{ mkm}$, an angle is equal to $\alpha \leq 20^\circ$. In one embodiment flat rings are covered with ultra thin dielectric film. Working surface of cylindrical bushes of secondary-electron emitter is realized as a periodic system of angular projections having height $h_e \leq \frac{(0,1-0,2)(D_a - D_{se})}{2}$ and a vertex angle $90^\circ \leq \beta \leq 110^\circ$. The proposed magnetron provides increasing in reliability of the device, when generating short stable pulses of electromagnetic oscillation.