ELECTRONIC TUBE REFERENCE

10TC9

Specialized - Switching Tube electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
THYRATRON

Cold-cathode gas switching tube for telephone and remote-control circuits on DC supplies. Its heaterless discharge provides reliable relay-like electronic control.

General characteristics

BASE DESIGNATION	_	**BASE PINS**	_
NOMINAL HEATER	_ / _	**PARALLEL HEATER**	_ / _
HEATING	Indirect; cold cathode	**SERIES OPERATION**	Not specified
CATHODE ARRANGEMENT	Separate cathodes	**SECTION CONSTRUCTION**	Similar

Section ratings

SECTION1 Thyratron

No fixed ratings recorded.

Published ratings and characteristics promoted from the approved TESLA source.

10TC9 — Cold-Cathode Switching Discharge Tube

The **10TC9** is a cold-cathode switching discharge tube (spínací výbojka) manufactured by TESLA. It is designed specifically for switching applications in telephone equipment and remote control devices. The device operates on direct current (DC) power.

Construction and Physical Design

The 10TC9 features an all-glass subminiature construction (celoskleněné subminiaturní) designed for compact electronic assemblies. It is equipped with four flexible clad-wire leads (vývody z plášťového drátu) rather than a traditional pinned base.

The tube utilizes a cold oxide cathode (katoda kysličníková, studená) and incorporates a single auxiliary discharge path (pomocná dráha) to facilitate triggering. To assist in circuit assembly and correct wiring, the leads are color-coded with painted markers:

- **Cathode leads:** Marked with yellow dots (žlutými body).
- **Auxiliary path lead:** Marked with a red dot (červeným bodem).

Physical Dimensions and Weight

- **Maximum Diameter:** 16.5 mm
- **Maximum Body Length:** 30 mm
- **Tip Length:** 8 mm
- **Minimum Lead Length:** 70 mm
- **Maximum Weight:** 5.5 g

Wiring and Lead Configuration

The 10TC9 uses a special base configuration consisting of four free leads (speciální se čtyřmi volnými vývody). The electrode connections, as viewed from the bottom of the tube, are arranged as follows:

- **Cathode (k):** Two separate leads positioned on the left and right sides of the envelope profile.
- **Auxiliary Path / Trigger (g):** Positioned at the top of the lead layout.
- **Anode (a):** Positioned in the center of the lead layout.

This configuration provides a symmetrical cathode arrangement with a central anode and a top-positioned trigger electrode.

Electrical and Operating Characteristics

The electrical operation of the 10TC9 is defined by the ignition and maintaining voltages of its main and auxiliary discharge paths. Under typical operating conditions, the tube exhibits the following parameters:

- **Main Path Ignition Voltage (U_{cz}):** 205 V. This is the minimum voltage required to initiate a discharge between the cathode and the main anode when the auxiliary path is not active.
- **Main Path Discharge Voltage ($U_{a\ \mathrm{arc}}$):** 70 V. This is the maintaining or arc voltage across the main path once conduction has been established, specified at a nominal main path current (I_a) of 4 mA.
- **Auxiliary Path Ignition Voltage (U_{gz}):** 89 V. This is the voltage required to initiate a discharge in the auxiliary (trigger) gap to transition the tube into conduction.

Operating Limits

To ensure reliable operation and prevent damage to the cold-cathode structure, the 10TC9 must be operated within its specified minimum and maximum limits (mezní hodnoty):

- **Main Path Current (I_a):**

    - **Minimum:** 4 mA. A minimum current is required to maintain a stable discharge arc across the main path.
    - **Maximum:** 8 mA. Exceeding this limit can cause excessive cathode sputtering or thermal damage.
- **Auxiliary Path Current for Direct Triggering (I_g):**
    - **Maximum:** 30 µA. This limit restricts the current flowing through the trigger circuit during direct initiation.

Technical Summary

The **10TC9** is a specialized subminiature cold-cathode switching discharge tube manufactured by TESLA, designed for DC-operated switching roles in telephony and remote control systems. It features an all-glass envelope with four flexible clad-wire leads, a cold oxide cathode, and a single auxiliary trigger path. Key parameters include a main path ignition voltage of 205 V, a maintaining voltage of 70 V (at 4 mA), and an auxiliary path ignition voltage of 89 V. Safe operation requires maintaining the main path current between 4 mA and 8 mA, while limiting the auxiliary trigger current to a maximum of 30 µA.

SOURCE OPERATING CONDITIONS

195X Tesla

SOURCE PDF

Published test conditions and operating points. Values on this page are preserved as reported by this source.

195X TESLA

Section 1 · Thyratron

CHARACTERISTIC		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
MainPathStrikingVoltage	**205 V**	—
ArcVoltage	**70 V**	At 4 mA

Tube Tinker

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