



ELECTRONIC TUBE REFERENCE

17JK8

Voltage - Dual Triode (dissimilar) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

TRIODE-TRIODE

Dissimilar twin triode for FM tuners, combining a frame-grid RF-amplifier section with a second triode intended for oscillator-mixer service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	16.8 V / 150 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	8000 Ω
TRANSCONDUCTANCE	0.0068 S
AMPLIFICATION FACTOR	55
MAXIMUM PLATE VOLTAGE	165 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	22 mA
<i>Published maximum ratings and characteristics promoted semantically from the approved source.</i>	

SECTION2 Triode	
PLATE RESISTANCE	5400 Ω
TRANSCONDUCTANCE	0.013 S
AMPLIFICATION FACTOR	70
MAXIMUM PLATE VOLTAGE	200 V
MAXIMUM PLATE DISSIPATION	2 W
MAXIMUM CATHODE CURRENT	22 mA
Published maximum ratings and characteristics promoted semantically from the approved source.	

17JK8 — Double Dissimilar Triode

An indirectly heated, double dissimilar triode in a miniature envelope, designed for radio frequency (RF) amplification, oscillation, and mixer applications.

Overview

The **17JK8** is a multi-section vacuum tube containing two distinct, electrically independent triode systems with different characteristics within a single envelope. One section is optimized for oscillator service, while the other is designed for RF amplification. This dissimilar dual-triode configuration allows a single tube to perform multiple stages of a receiver front-end, such as RF amplification and frequency mixing or oscillation, reducing space and component count.

Mechanical Design and Heater Characteristics

The 17JK8 is constructed in a miniature **T-6 1/2** glass envelope with a **9-pin button base** (designation **E9-1**). It utilizes the **9AJ** basing arrangement and conforms to the **6-2** physical outline. The physical dimensions of the device are as follows:

- **Maximum Diameter:** 0.875 in
- **Maximum Seated Height:** 1.937 in
- **Maximum Overall Height:** 2.187 in

The tube features an indirectly heated cathode system designed for series-string operation with a controlled warm-up time. The heater and heater-to-cathode insulation ratings are:

Parameter	Value
Heater Voltage	16.8 V
Heater Current	150 mA
Calculated Heater Power	2.52 W

Parameter	Value
Heater Warm-up Time	17 s
Maximum Heater-Cathode Voltage (Total DC & Peak)	100 V

The maximum heater-cathode voltage limit of 100 V applies with the heater either negative or positive with respect to the cathode.

Interelectrode Capacitances

To prevent unwanted coupling and feedback between the two dissimilar triode sections, the 17JK8 is designed with low internal capacitances. The direct interelectrode capacitances, measured with an external shield, are:

Capacitance Parameter	Section 1 (Oscillator)	Section 2 (RF Amp)
Grid to Plate (C_{gp})	1.4 pF	0.60 pF
Input (g to $h + k + IS + E.S.$)	3.0 pF	5.0 pF
Output (p to $h + k + IS + E.S.$)	1.0 pF	4.0 pF
Heater to Cathode (C_{hk})	2.8 pF	2.8 pF

The isolation between the active elements of each section is highly controlled, with the maximum grid-to-grid capacitance rated at **0.003 pF** and the maximum plate-to-plate capacitance rated at **0.009 pF**.

Design Maximum Ratings

The two triode sections of the 17JK8 have independent maximum ratings tailored to their specific roles. Operating the tube within these limits is necessary to prevent premature degradation.

Rating Parameter	Section 1 (Oscillator)	Section 2 (RF Amp)
Maximum Plate Voltage	165 V	200 V
Maximum Plate Dissipation	1.0 W	2.0 W
Maximum DC Cathode Current	22 mA	22 mA
Maximum Negative Grid Voltage	50 V	50 V
Maximum Grid Circuit Resistance (Self Bias)	1.0 MΩ	1.0 MΩ

Typical Operating Characteristics

Under Class A1 amplifier conditions, the two sections exhibit distinct electrical characteristics. Section 1 provides a moderate amplification factor and transconductance suitable for stable oscillation, while Section 2 features high transconductance and lower plate resistance for effective RF amplification.

Section 1 (Oscillator)

At a typical operating point, Section 1 exhibits the following characteristics:

- **Plate Voltage:** 100 V
- **Grid Voltage:** -1.0 V
- **Plate Current:** 5.3 mA
- **Transconductance:** 6,800 μmhos
- **Amplification Factor:** 55
- **Plate Resistance (Approximate):** 8,000 Ω
- **Grid Voltage for $I_b = 20 \mu\text{A}$ (Approximate):** -4.4 V

The relationship between the parameters can be verified by calculation: $\mu \approx g_m \times r_p = 0.0068 \text{ S} \times 8,000 \Omega = 54.4$ This closely matches the nominal amplification factor of 55.

Section 2 (RF Amplifier)

At a typical operating point, Section 2 exhibits the following characteristics:

- **Plate Voltage:** 135 V
- **Grid Voltage:** -1.2 V
- **Plate Current:** 10 mA
- **Transconductance:** 13,000 μmhos
- **Amplification Factor:** 70
- **Plate Resistance (Approximate):** 5,400 Ω
- **Grid Voltage for $G_m = 1,500 \mu\text{mhos}$ (Approximate):** -2.8 V
- **Grid Voltage for $G_m = 150 \mu\text{mhos}$ (Approximate):** -5.5 V

Calculating the relationship for Section 2: $\mu \approx g_m \times r_p = 0.013 \text{ S} \times 5,400 \Omega = 70.2$ This aligns with the nominal amplification factor of 70. The grid voltage values required to reduce transconductance to 1,500 μmhos and 150 μmhos demonstrate the gain-control characteristics of the RF amplifier section.

Technical Summary

The **17JK8** is a specialized **double dissimilar triode** housed in a **T-6 1/2 miniature 9-pin** envelope. Featuring a **16.8 V, 150 mA** heater with a controlled **17-second warm-up time**, it is well-suited for series-string receiver designs. Its internal structure is divided into two specialized sections: **Section 1**, optimized for oscillator service with an amplification factor of 55 and a transconductance of 6,800 μmhos ; and **Section 2**, optimized for RF amplification with a high transconductance of 13,000 μmhos and an

amplification factor of 70. With low inter-section capacitance and robust design maximum ratings, the 17JK8 provides a compact and efficient solution for RF front-end, oscillator, and mixer stages.

SOURCE OPERATING CONDITIONS

1950 Sylvania

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

1950 SYLVANIA

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance	8000 ohm	—
Transconductance	6800 μ S	—
Amplification Factor	55	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	165 V	—
Maximum Plate Dissipation	1 W	—
Maximum Cathode Current	22 mA	—
Plate Voltage	100 V	Oscillator section

1950 SYLVANIA

Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance	5400 ohm	—
Transconductance	13000 μ S	—
Amplification Factor	70	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	200 V	—
Maximum Plate Dissipation	2 W	—
Maximum Cathode Current	22 mA	—
Plate Voltage	135 V	RF amplifier section

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current	10 mA	RF amplifier section