



ELECTRONIC TUBE REFERENCE

19HS6

Voltage - Pentode Sharp Cutoff (single) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

PENTODE

Sharp-cutoff high-transconductance pentode for RF and IF voltage amplification, using an 18.9 V heater for series-string equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	18.9 V / 300 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Pentode	
PLATE RESISTANCE	350000 Ω
TRANSCONDUCTANCE	0.009 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	150 V
MAXIMUM PLATE DISSIPATION	3 W
MAXIMUM SCREEN DISSIPATION	0.75 W
MAXIMUM CATHODE CURRENT	25 mA
6HS6 sharp-cutoff electrical system.	

19HS6 — Sharp-Cutoff Pentode

The **19HS6** is a sharp-cutoff pentode of the 7-pin miniature type. It is designed primarily for use as an intermediate-frequency (IF) amplifier in electronic equipment. Electrically, the 19HS6 is identical to the 6HS6 except for its heater characteristics and associated ratings.

Heater Characteristics and Ratings

The 19HS6 features a heater designed for series-string or specific voltage-source operation, with a controlled warm-up time.

- **Heater Voltage (AC or DC):** 18.9 V (at 0.150 A)
- **Heater Current:** 0.150 ± 0.010 A (150 mA)
- **Average Warm-up Time:** 17 seconds

Heater-Cathode Voltage Limits

To ensure reliable operation and prevent insulation breakdown, the voltage between the heater and the cathode must be maintained within the following absolute limits:

- **Heater Negative with Respect to Cathode:** 200 V maximum (Total DC and Peak)
- **Heater Positive with Respect to Cathode (DC):** 100 V maximum
- **Heater Positive with Respect to Cathode (Total DC and Peak):** 200 V maximum

Mechanical Specifications and Basing

The tube is constructed in a compact glass envelope with a standard miniature base configuration.

- **Envelope Type:** Miniature T-5½
- **Base:** Button 7-Pin, E7-1
- **Basing Diagram:** 7BK
- **Outline Designation:** 5-2
- **Maximum Diameter:** 0.750 inches
- **Maximum Seated Height:** 1.875 inches
- **Maximum Overall Height:** 2.125 inches

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the 19HS6 are measured without an external shield (unshielded):

Connection	Capacitance
Grid No. 1 to Plate (Max.)	0.006 pF
Grid No. 1 to Cathode, Grid No. 3, Internal Shield, Grid No. 2, and Heater	8.8 pF
Plate to Cathode, Grid No. 3, Internal Shield, Grid No. 2, and Heater	5.2 pF

Maximum Ratings (Design Maximum Rating System)

The following maximum ratings are established under the Design Maximum Rating System for Class A1 amplifier service. Operating the tube beyond these limits may impair performance or cause permanent damage.

- **Plate Supply Voltage (Max.):** 300 V
- **Grid No. 3 (Suppressor Grid):** Must be connected to the cathode at the socket.
- **Grid No. 2 (Screen Grid) Supply Voltage (Max.):** 300 V
- **Grid No. 2 Voltage:** Refer to standard rating charts for specific voltage limits.
- **Grid No. 1 (Control Grid) Positive Bias Voltage (Max.):** 0 V
- **Grid No. 1 (Control Grid) Negative Bias Voltage (Max.):** 50 V
- **Plate Dissipation (Max.):** 3 W
- **Grid No. 2 Input (Max., for Grid No. 2 voltages up to 150 V):** 1 W
- **Grid No. 2 Input (for Grid No. 2 voltages between 150 V and 300 V):** Refer to standard rating charts.
- **Maximum Grid No. 1 Circuit Resistance (Fixed Bias):** 0.5 M Ω
- **Maximum Grid No. 1 Circuit Resistance (Cathode Bias):** 1 M Ω

Typical Operation and Characteristics

The 19HS6 can be operated under different Class A1 amplifier conditions depending on the application requirements. The following typical operating points illustrate its performance:

Parameter	Condition 1	Condition 2
Plate Supply Voltage	75 V	150 V
Grid No. 3 (Suppressor Grid)	Connected to cathode	Connected to cathode
Grid No. 2 Supply Voltage	75 V	75 V
Grid No. 1 Supply Voltage	0 V	0 V
Cathode Bias Resistor	68 Ω	68 Ω
Amplification Factor	50	—
Plate Resistance (Approx.)	—	0.5 M Ω
Transconductance	—	9500 μ mos
Plate Current	—	8.8 mA
Grid No. 2 Current	—	2.8 mA

Under Condition 2, the control grid (Grid No. 1) voltage required to reduce the plate current to approximately 20 μ A is -4 V.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

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Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	18.9 V	—
Heater current	300 mA	—
Heater warm-up time	11 s	ControlledWarmup
Plate voltage	150 V	ClassA
Screen voltage	100 V	ClassA
Plate current	10 mA	ClassA
Screen current	3 mA	ClassA
Maximum plate voltage	300 V	—
Maximum screen voltage	150 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	350000 ohm	ClassA
Transconductance	9000 uS	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	0.01 pF	—

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