

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA
4 SECTIONS
CONSTRUCTION

19V8

Voltage - Triode (with diode, heptode or hexode) electronic tube

DIODE-DIODE-DIODE-TRIODE

Triple-diode high-mu triode combining multiple detector, discriminator, or control-voltage functions with audio-frequency voltage amplification, particularly for AM/FM radio and television receiving equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9AH	BASE PINS	9
NOMINAL HEATER	18.9 V / 150 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9AH - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – 1P	A	P – Plate (Anode)	CONNECTED
PIN2 – 1P1	A	P – Plate (Anode)	CONNECTED
PIN3 – 1K	A	K – Cathode	CONNECTED
PIN4 – H	–	H – Heater	CONNECTED
PIN5 – H	–	H – Heater	CONNECTED
PIN6 – 1G1	A	G1 – Control Grid	CONNECTED
PIN7 – 2P	B	P – Plate (Anode)	CONNECTED
PIN8 – 2K	B	K – Cathode	CONNECTED
PIN9 – 1P2	A	P – Plate (Anode)	CONNECTED

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	58000 Ω
TRANSCONDUCTANCE	0.0012 S
AMPLIFICATION FACTOR	70
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	1 W
<i>Promoted from printed maximum-rating/characteristic columns; additional published values retained in TUBE_SECTION_PARAMETER.</i>	

SECTION2 Diode	
<i>No fixed ratings recorded.</i>	
<i>Promoted from printed maximum-rating/characteristic columns; additional published values retained in TUBE_SECTION_PARAMETER. The chart identifies repeated detector-diode section(s) but does not publish separate diode electrical ratings on this row.</i>	

SECTION3 Diode	
<i>No fixed ratings recorded.</i>	
<i>Added approved missing physical diode section row for triple-diode triode structure.</i>	

SECTION4 Diode	
<i>No fixed ratings recorded.</i>	
<i>Added approved missing physical diode section row for triple-diode triode structure.</i>	

19V8 — Triple-Diode Triode Vacuum Tube

The **19V8** is a multi-unit miniature vacuum tube containing three diodes and a high-mu triode within a single T-6 1/2 glass envelope. It is designed primarily for use in AM/FM receivers where circuit switching must be minimized, and in balanced low-impedance detector circuits. The tube features a 9-pin miniature button base (9AH) and can be mounted in any position.

The 19V8 is closely related to the [6V8](#), sharing similar internal structures but operating with a different heater rating.

Construction and Internal Structure

The 19V8 incorporates four distinct electrical sections sharing a common physical envelope:

- **Two High-Perveance Diodes** (designated Diode #1 and Diode #2).

- **One Medium-Perveance Diode** (designated Diode #3).
- **One High-Mu Triode.**

The tube uses a coated unipotential cathode structure. To facilitate balanced low-impedance detector circuits, Diode #1 is constructed with its own independent cathode. The remaining sections—the high-mu triode, Diode #2, and Diode #3—all share a single common cathode.

Heater Ratings

The heater is designed for series or parallel operation in receiving equipment.

Parameter	Value
Heater Voltage (AC or DC)	18.9 V
Heater Current	150 mA (0.15 A)
Heating Method	Indirect

Pinout and Base Connections

The 19V8 utilizes a 9-pin miniature button base (9AH). Published technical documentation contains two conflicting pinout configurations for this base. Both configurations are detailed below:

Configuration A

- **Pin 1:** Triode Plate (Pt)
- **Pin 2:** Triode Grid (G)
- **Pin 3:** Common Cathode (K for Triode, Diode #2, and Diode #3)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Diode #2 Plate (P2)
- **Pin 7:** Diode #3 Plate (P3)
- **Pin 8:** Diode #1 Cathode (K - independent)
- **Pin 9:** Diode #1 Plate (P1)

Configuration B

- **Pin 1:** Diode #1 Plate (P1)
- **Pin 2:** Diode #2 Plate (P2)
- **Pin 3:** Diode #3 Plate (P3)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Common Cathode (K for Triode, Diode #2, and Diode #3)
- **Pin 7:** Triode Grid (G)

- **Pin 8:** Diode #1 Cathode (K - independent)
- **Pin 9:** Triode Plate (T)

Electrical Characteristics and Operating Points

The triode section of the 19V8 is a high-mu voltage amplifier. Typical Class A1 operating conditions are documented at two distinct plate voltages:

Parameter	Condition A	Condition B	Unit
Plate Voltage	100	250	V
Grid Voltage	-1	-3	V
Plate Current	0.8	1.0	mA
Plate Resistance (Approx.)	54,000	58,000	Ω
Transconductance	1,300	1,200	μmhos
Amplification Factor (μ)	70	70	

Diode and Leakage Characteristics

The diode sections exhibit distinct perveance and current-carrying capabilities:

- **Diode #2 and Diode #3 (High-Perveance / Medium-Perveance):**
 - With 5 V DC applied, the average current for Diode #2 or Diode #3 is **40 mA**.
 - The maximum ratio of current between these two diodes (I_{D3}/I_{D2})(/tubes/D2) or I_{D2} (/tubes/D2)/ I_{D3}) under a 5 V applied potential is **1.5**.
 - Under zero applied voltage, the maximum current through a 40,000 Ω resistor is **24 μA** .
- **Diode #1 (High-Perveance, Independent Cathode):**
 - With 10 V DC applied, the average current for Diode #1 is **2 mA**.
- **Heater-to-Cathode Leakage:**
 - With ± 100 V applied between the heater and all cathodes, the maximum leakage current is **5 μA** .

Interelectrode Capacitances

Direct interelectrode capacitances, measured without an external shield, are as follows:

- **Diode #1 Plate to Triode Grid (1P to G):** 0.1 μF (Max)
- **Diode #2 Plate to Triode Grid (2P to G):** 0.2 μF (Max)
- **Diode #3 Plate to Triode Grid (3P to G):** 0.02 μF (Max)
- **Diode #1 Plate to All other electrodes:** 1.3 μF

- **Diode #2 Plate to All other electrodes:** 5.3 μF
- **Diode #3 Plate to All other electrodes:** 5.3 μF

Maximum Ratings

The absolute maximum ratings are established under the RMA Standard M8-210:

- **Maximum Plate Voltage:** 300 V
- **Maximum Heater-Cathode Voltage:** 200 V
- **Maximum Positive DC Grid Voltage:** 0 V
- **Maximum Plate Dissipation:** 1 W
- **Maximum Continuous Diode #2 and Diode #3 Current:** 10 mA
- **Maximum Continuous Diode #1 Current:** 1 mA

Technical Summary

The **19V8** is a versatile, multi-unit miniature tube containing a high-mu triode and three diodes (two high-perveance, one medium-perveance) in a T-6 1/2 envelope. Operating with an 18.9 V, 150 mA heater, it is optimized for AM/FM receiver applications. The inclusion of an independent cathode for one of the high-perveance diodes makes it highly suitable for balanced low-impedance detector circuits, while the high-mu triode (with an amplification factor of 70) serves as an effective voltage amplifier.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

195X General Electric Essential Characteristics

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

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA
Control-grid voltage	-3 V	ClassA
Plate current	1 mA	ClassA
Plate voltage	100 V	ClassA
Control-grid voltage	-1 V	ClassA
Plate current	0.8 mA	ClassA

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	58000 Ω	250VPlate
Transconductance	1200 μS	250VPlate
Amplification factor	70	250VPlate
Plate resistance	54000 Ω	100VPlate
Transconductance	1300 μS	100VPlate
Amplification factor	70	100VPlate

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA
Diode continuous current	10 mA	Diode2Or3

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diode 1 to grid	0.1 pF	—

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