



ELECTRONIC TUBE REFERENCE

12DV7

Voltage - Triode (under 100V) electronic tube

CONSOLIDATED TECHNICAL DATA

3 SECTIONS

CONSTRUCTION

DIODE-DIODE-TRIODE

Double-diode triode for second-detector and audio-amplifier service in automobile radios. The diodes recover and rectify receiver signals while the triode operates directly from the vehicle's low-voltage supply.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	12.6 V / 150 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Diode

No fixed ratings recorded.

SECTION2 Triode

PLATE RESISTANCE	19000 Ω
TRANSCONDUCTANCE	0.00075 S
MAXIMUM PLATE VOLTAGE	16 V

SECTION3 Diode

No fixed ratings recorded.

Added approved missing physical diode section row.

12DV7 — Double Diode Triode Vacuum Tube

The **12DV7** is a miniature double diode, medium-mu triode vacuum tube designed primarily for use in automotive applications. It is specifically engineered to function as a combined second detector and audio amplifier in circuits where both the heater and plate voltages are obtained directly from a nominal 12-volt automotive storage battery. By operating at low plate voltages directly from the battery, the 12DV7 eliminates the need for high-voltage power supplies in mobile receiver designs.

Mechanical Design and Pinout

The 12DV7 is constructed in a miniature glass envelope (T-6 1/2 bulb) with a miniature button 9-pin base. The physical outline is designated as 6-2, and the tube utilizes the **9JY** basing arrangement. It features a coated unipotential cathode and can be mounted in any position.

The 9JY pin connections, viewed from the bottom of the base, are as follows:

- **Pin 1:** Diode Plate No. 2 ([D2](#))
- **Pin 2:** Diode Plate No. 1 ([D1](#))
- **Pin 3:** Diode Cathode / Internal Shield (DK / IS)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Triode Plate (P)
- **Pin 7:** Triode Grid (G)
- **Pin 8:** Triode Cathode (K)
- **Pin 9:** Heater Tap / Center (Hc)

Heater Characteristics and Automotive Operation

The heater is designed to operate from a nominal 12.6-volt supply, drawing 0.15 amperes (150 mA) of current under standard conditions. Because the tube is intended for direct connection to automotive electrical systems, the heater is specifically designed to operate reliably over a wide voltage range of **10.0 to 15.9 volts**. This wide operating range accommodates the voltage fluctuations commonly encountered in automotive battery and charging systems, with the tube's maximum ratings incorporating an adequate safety factor to withstand these variations.

Electrical Characteristics and Class A1 Operation

The triode section of the 12DV7 is characterized as a medium-mu amplifier. Under typical Class A1 operating conditions, the triode operates with the plate voltage supplied directly from the 12.6-volt source. Instead of an external bias supply, the grid bias is established via contact potential across a high-value grid resistor.

The typical operating parameters for the triode section are:

- **Heater Voltage:** 12.6 V

- **Plate Voltage:** 12.6 V
- **Grid Resistor:** 2.2 MΩ
- **Plate Current:** 400 μA
- **Transconductance:** 750 μmhos
- **Amplification Factor (μ):** 14
- **Plate Resistance:** 19,000 Ω
- **Grid Voltage for $I_b = 10 \mu\text{A}$ (approximate cutoff):** -2 V

For the diode sections, the average diode current is **1.3 mA** per diode when a test voltage of 10 volts is applied.

Design Maximum Ratings

The 12DV7 is rated under the design-maximum system. These ratings are limiting values of operating and environmental conditions that must not be exceeded under the worst probable conditions in a bogey device.

Parameter	Rating
Maximum Plate Voltage	16 V
Maximum Cathode Current	20 mA
Maximum Grid Circuit Resistance	10 MΩ
Maximum Average Diode Current (each diode)	1.0 mA
Maximum Heater-Cathode Voltage (Heater negative with respect to cathode)	16 V
Maximum Heater-Cathode Voltage (Heater positive with respect to cathode)	16 V

Interelectrode Capacitances

The direct interelectrode capacitances of the 12DV7 are measured without an external shield. The typical values are:

- **Grid to Plate:** 1.6 μF
- **Input (Grid to Heater and Triode Cathode):** 1.3 μF
- **Output (Plate to Heater and Triode Cathode):** 0.38 μF
- **Diode Plate No. 1 to Grid (Maximum):** 0.005 μF
- **Diode Plate No. 2 to Grid (Maximum):** 0.005 μF
- **Diode Plate No. 1 to Diode Plate No. 2 (Maximum):** 0.17 μF

These low capacitances, particularly the extremely low coupling between the diode plates and the triode grid, help prevent unwanted RF or IF signal leakage into the audio amplifier section when the tube is

used as a combined detector and first audio stage.

Technical Summary

The **12DV7** is a specialized **9-pin miniature double diode, medium-mu triode** designed for low-voltage automotive applications. Operating directly from a nominal 12.6 V battery supply for both its heater and plate, it provides a compact, single-tube solution for second detector and audio preamplifier stages in car radios. With a heater designed to withstand supply variations from 10.0 V to 15.9 V, a triode amplification factor of 14, and a maximum plate voltage rating of 16 V, the 12DV7 represents a highly optimized design for the hybrid vacuum-tube/transistor automotive receivers of its era.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	12.6 V	AutomotiveBatteryService
Service	Second-detector audio amplifier	—

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker