



ELECTRONIC TUBE REFERENCE

12DM7

Voltage - Dual Triode (similar) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

TRIODE-TRIODE

High-mu twin triode designed for low-level high-fidelity audio amplification, with manufacturer operating data emphasizing resistance-coupled Class-A service and favorable signal-to-noise performance.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	12.6 V / 130 mA	PARALLEL HEATER	6.3 V / 260 mA
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	62500 Ω
TRANSCONDUCTANCE	0.0016 S
AMPLIFICATION FACTOR	100
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	1 W
Representative row for identical repeated diode/triode sections.	

SECTION2 Triode	
PLATE RESISTANCE	62500 Ω
TRANSCONDUCTANCE	0.0016 S
AMPLIFICATION FACTOR	100
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	1 W
Physical triode row restored under current one-row-per-physical-section policy.	

12DM7 — Low-Hum High-Mu Duotriode

The **12DM7** is a miniature, low-hum, high-mu duotriode vacuum tube designed for voltage amplification in low-level stages of high-fidelity amplifiers and other audio equipment. It contains two independent triode sections within a single glass envelope, sharing a common heater with a center tap that allows for either series or parallel heater operation. With an amplification factor of 100, the 12DM7 is optimized for high-gain applications where minimizing hum and noise is critical.

Physical Construction and Pinout

The 12DM7 is constructed in a T-6 1/2 miniature glass bulb. It features a standard 9-pin miniature base (designated as base 9A). The tube has a maximum overall height of 2 3/16 inches, a maximum seated height of 1 15/16 inches, and a maximum diameter of 7/8 inches. It is designed to be operated in any mounting position.

The 9A base pinout configuration provides independent connections for the electrodes of both triode sections, alongside a center-tapped heater:

Pin Number	Electrode Connection
1	Plate (Section 2)
2	Control Grid (Section 2)
3	Cathode (Section 2)
4	Heater
5	Heater
6	Plate (Section 1)
7	Control Grid (Section 1)
8	Cathode (Section 1)
9	Heater Tap

This layout allows the two triode sections to be biased and operated independently, provided that heater-to-cathode voltage limits are respected.

Heater Specifications

The heater of the 12DM7 is designed for versatility, supporting both series and parallel wiring configurations using AC or DC power. The center tap connected to Pin 9 allows the heater filaments to be operated at either a nominal 12.6 V or 6.3 V.

Heater Configuration	Voltage (AC or DC)	Current
Series	12.6 V	0.13 A
Parallel	6.3 V	0.26 A

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the two sections are highly symmetrical, with minor variations in output capacitance. These values are measured without an external shield:

Capacitance Parameter	Section 1	Section 2
Grid to Plate (G to P)	1.7 μF	1.7 μF
Input (G to K+H)	1.6 μF	1.6 μF
Output (P to K+H)	0.46 μF	0.34 μF

Electrical Characteristics and Typical Operating Points

Under Class A amplifier service, the 12DM7 exhibits high voltage gain (amplification factor of 100) and relatively high plate resistance. The typical operating parameters for each independent triode section are documented at two distinct plate voltage points:

Parameter	Operating Point I	Operating Point II
Plate Voltage	100 V	250 V
Control Grid Voltage	-1 V	-2 V
Plate Resistance (Approx.)	80 k Ω	62.5 k Ω
Transconductance	1250 μmhos	1600 μmhos
Amplification Factor	100	100
Plate Current	0.5 mA	1.2 mA

Low-Noise Performance

The 12DM7 is specifically engineered for low-hum and low-noise performance in audio applications. When operated in a resistance-coupled (R-C) amplifier stage with a gain of 63 dB, the signal-to-noise ratio is specified as 57 dB down. This makes the tube highly effective for processing low-level audio signals without introducing objectionable hum.

Design Maximum Ratings

The ratings for the 12DM7 are established under the Design Maximum System. These limits must not be exceeded under the worst-case operating conditions to ensure reliable operation and longevity of the tube. The ratings apply to each individual triode section:

Rating Parameter	Limit Value	Unit
Maximum Plate Voltage	330	Volts
Maximum Negative Control Grid Voltage (-DC)	50	Volts
Maximum Positive Control Grid Voltage (+DC)	0	Volts
Maximum Plate Dissipation	1.1	Watts
Maximum Peak Heater-Cathode Voltage (Heater Negative to Cathode)	180	Volts
Maximum Peak Heater-Cathode Voltage (Heater Positive to Cathode)	180	Volts

Technical Summary

The **12DM7** is a high-mu, low-hum duotriode housed in a 9-pin miniature T-6 1/2 glass envelope. Featuring a center-tapped heater that supports 12.6 V series (0.13 A) or 6.3 V parallel (0.26 A) operation, it provides two independent, high-gain triode sections. Each section delivers an amplification factor of 100, with transconductance ranging from 1250 to 1600 μ mhos and plate resistance between 62.5 k Ω and 80 k Ω depending on the operating point. With a design-maximum plate voltage rating of 330 V and a plate dissipation limit of 1.1 W per section, the 12DM7 is highly optimized for low-level, low-noise preamplification in high-fidelity audio systems.



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 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PlateResistanceAtLowerCurrent	80000 ohm	—
TransconductanceAtLowerCurrent	1250 uS	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Service	Low-level high-fidelity audio amplifier	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 2 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance at 100 V	80000 ohm	ClassA
Transconductance at 100 V	1250 μS	ClassA
Plate current at 100 V	0.5 mA	ClassA
Signal-to-noise ratio in 63 dB F-C amplifier	57 dB down	AudioService

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA
Grid voltage	-2 V	ClassA
Plate current	1.2 mA	ClassA