



ELECTRONIC TUBE REFERENCE

6D24N

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
DIODE

Metal-ceramic Russian high-frequency diode designed for precision detection of RF and microwave voltage in measuring detector inputs and coaxial adapters.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	4
NOMINAL HEATER	6.3 V / 100 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Diode	
MAXIMUM CATHODE CURRENT	0.7 mA
PEAK INVERSE VOLTAGE	1000 V
MAXIMUM HEATER-CATHODE VOLTAGE	50 V
<i>Representative section row from the complete filename-matched Russian datasheet content only; neighboring-tube fragments excluded.</i>	

6D24N / 6Д24Н — Precision High-Frequency Detector Diode

A Soviet high-frequency vacuum diode intended for precision RF and microwave voltage detection in measuring detectors and coaxial probe assemblies.

Overview

The **6D24N**, designated **6Д24Н** in the original Russian technical documentation, is a **high-frequency diode** intended for the **precision detection of high-frequency (HF/RF) and super-high-frequency (SHF/microwave) voltages**. Its specified applications are **measuring input detectors** and **coaxial transitions or probes of vacuum-tube voltmeters**.

Unlike a rectifier designed for substantial DC power delivery, the 6D24N is characterized as a **precision measurement detector**. The published data emphasize small interelectrode capacitance, controlled detected output voltage, low noise, stability, and performance in a defined amplitude-detector circuit.

The original Russian reference describes a **metal-ceramic envelope with rigid leads** and gives a tube mass of approximately **2.5 g**.

Construction and Electrical Function

The 6D24N contains a diode anode and a heated cathode, with heater connections brought out separately. The manufacturer drawing labels the **anode (A)**, **cathode (K)**, and **heater leads (1 and 2)**.

The metal-ceramic construction and rigid connections are consistent with its stated role in compact measurement probes. The manufacturer's specified wave-resonance and capacitance values are especially relevant to RF and microwave detection, where physical electrode structure and stray capacitance affect the measurement system.

Heater and Basic Parameters

The Russian source gives the following principal parameters at a **6.3 V heater supply**:

Parameter	Published value
Heater voltage, nominal test condition	6.3 V
Heater current	100 ± 20 mA
Anode current at 1 V anode voltage	At least 0.2 mA
Reverse current	No more than 0.1 µA
Input resistance	At least 100 kΩ
Wavelength of self-resonance	Less than 5 cm
Detected output voltage in amplitude-detector circuit	230 ± 50 mV
Noise voltage	No more than 1 mV

These are published test and performance characteristics, not interchangeable maximum ratings. In particular, the **230 ± 50 mV** output applies to the specified amplitude-detector measurement circuit and should not be interpreted as an inherent fixed diode voltage drop.

Precision Detection and Measurement Stability

The manufacturer specifies an **output-voltage change within $\pm 1\%$** as an evaluation criterion for the amplitude-detector arrangement. This highlights the 6D24N's intended role in measurement equipment where repeatability and stability matter alongside rectification.

The input resistance of at least **100 k Ω** and the small capacitance values are important when connecting the detector to a high-frequency measurement circuit. The detector must sense the applied RF voltage while minimizing unwanted loading of the signal source.

The listed self-resonance wavelength of less than **5 cm** is a high-frequency construction characteristic, not a complete guaranteed usable-frequency range for every detector assembly. The practical response depends on the probe, coaxial transition, matching, and surrounding measurement circuit.

Interelectrode Capacitances

Capacitance	Maximum
Anode to cathode	0.8 pF
Cathode to heater	3 pF

The small anode-to-cathode capacitance is particularly relevant to RF and microwave detector performance. At high frequency, even fractions of a picofarad can influence impedance and signal loading.

Service Life and Environmental Requirements

The Russian reference specifies a minimum operating life of **1,500 hours**.

It also lists resistance to external mechanical and environmental effects:

Environmental condition	Published value
Vibration acceleration	6 g
Repeated-shock acceleration	150 g
Single-shock acceleration	500 g
Sustained acceleration	100 g
Ambient operating temperature	-60°C to $+85^{\circ}\text{C}$

These figures characterize the manufacturer's specified operating and endurance conditions and should not be confused with ordinary electronic performance parameters.

Limiting Operating Conditions

Limiting parameter	Published value
Heater voltage range	6.0-6.6 V
Maximum reverse anode voltage	1,000 V
Maximum cathode-to-heater voltage	50 V
Maximum cathode current	0.7 mA

The relatively small maximum cathode current confirms that this device is intended for signal detection and measurement rather than high-current power rectification.

Technical Summary

The **6D24N / 6Д24Н** is a **metal-ceramic, indirectly heated precision high-frequency detector diode** for **RF and microwave voltage measurement**, including **coaxial probes and vacuum-tube voltmeters**. It operates from a **6.3 V heater**, draws approximately **100 mA**, and is characterized by **≤0.8 pF anode-to-cathode capacitance**, **≥100 kΩ input resistance**, low noise, and specified detector-output stability.

Its compact construction, **2.5 g mass**, **1,500-hour minimum service life**, and defined mechanical and temperature endurance make it a specialized measurement diode rather than a general-purpose power rectifier.

The technical values above are translated and synthesized from the Russian-language manufacturer reference page.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1981 Russian Tubes Katsnelson and Larionov

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

1981 RUSSIAN TUBES KATSNELSON AND LARIONOV

Section 1 · Diode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage nominal	6.3 V	Published heater operating voltage
Heater current nominal	100 mA	Nominal or midpoint of published heater-current tolerance
Plate current at 1 V	0.2— mA	Anode current at anode voltage 1 V: ≥ 0.2 mA; 1981 source p.53.
Reverse current	—0.1 μ A	Reverse current ≤ 0.1 μ A; 1981 source p.53.
Input resistance	100— k Ω	Input resistance ≥ 100 k Ω ; 1981 source p.53.
Resonant wavelength	—5 cm	Resonant wavelength ≤ 5 cm; 1981 source p.53.
Published electrical parameter	80–120 mA	Heater current; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	180–280 mV	Output voltage amplitude detector; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—1 mV	Microphonic voltage; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—0.8 pF	Anode cathode capacitance; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—3 pF	Cathode heater capacitance; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	1500— h	Service life; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	6–6.6 V	Heater voltage permitted range; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—1000 V	Max reverse anode voltage; 6D24N, 1981 Russian Tubes page 53.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published electrical parameter	—50 V	Max heater cathode voltage; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—0.7 mA	Max cathode current; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	-60— °C	Ambient minimum; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—85 °C	Ambient maximum; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—6 g	Vibration acceleration; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—150 g	Repeated shock; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—500 g	Single shock; 6D24N, 1981 Russian Tubes page 53.
Published electrical parameter	—100 g	Steady acceleration; 6D24N, 1981 Russian Tubes page 53.

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