



ELECTRONIC TUBE REFERENCE

6E12NV

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
TETRODE

Rugged Russian high-frequency tetrode for voltage and power amplification. Strengthened construction suits demanding RF equipment requiring greater mechanical reliability.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	6.3 V / 140 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Tetrode	
TRANSCONDUCTANCE	0.0095 S
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	110 V
MAXIMUM PLATE DISSIPATION	2.2 W
MAXIMUM SCREEN DISSIPATION	0.2 W
MAXIMUM CATHODE CURRENT	22 mA
<i>Representative section row from the complete filename-matched Russian datasheet content only; neighboring-tube fragments excluded.</i>	

6E12NV / 6Э12H-B — Ruggedized High-Frequency Metal-Ceramic Tetrode

A Soviet high-frequency voltage and power amplifier tetrode with extended vibration, shock, and elevated-temperature qualifications.

Overview

The **6E12NV**, designated **6Э12H-B** in the Russian reference, is a compact **metal-ceramic high-frequency tetrode** for voltage and power amplification. It is documented alongside the standard **6E12N / 6Э12H**, but has its own characteristic tolerances, vibration-noise limits, mechanical-shock ratings, and high-temperature service qualifications.

The source describes a tetrode with an anode, control grid, screen grid, and indirectly heated cathode. The published mass is approximately **4 g**. Its ruggedized characteristics make the -B version particularly noteworthy in applications where mechanical vibration, shock, and high ambient temperature must be considered.

Construction and Electrode Connections

The original Russian drawing identifies **A** as the anode, **C1** as the control grid, **C2** as the screen grid, **K** as the cathode, and **II** as the heater. It shows grouped terminal connections: **1, 2, 3** for the second grid, **4, 5, 6** for the first grid, **7, 8, 9** for the cathode, and **10 and 12** for the heater, with a separate upper anode connection.

This is the metal-ceramic tube's illustrated electrode arrangement, not a standard glass miniature nine-pin base.

Heater and Basic Electrical Characteristics

The principal test conditions are **6.3 V heater**, **120 V anode**, **50 V screen grid**, and **68 Ω cathode resistor**.

Characteristic	6E12NV
Heater current	140 ± 15 mA
Anode current	9.5 ± 2.5 mA
Screen-grid current	≤3.6 mA
Transconductance	11 mA/V (+2/-2.5)
Anode current at -6 V control-grid voltage	≤50 μA
First-grid reverse current at stated test condition	≤0.1 μA

The reverse-current test uses **-1.6 V first-grid voltage** and **0.5 kΩ first-grid resistance**. These are defined test conditions and should not be confused with the maximum grid-circuit resistance.

The nominal transconductance of **11 mA/V** indicates a high-slope receiving amplifier tetrode. The screen-grid current and cutoff-region anode-current figures are also part of the manufacturer's acceptance characteristics.

Interelectrode Capacitances

Capacitance	Published value
Input	$7 \pm 1 \text{ pF}$
Output	$1.5 \pm 0.4 \text{ pF}$
Feedthrough	$\leq 0.015 \text{ pF}$
Cathode to heater	$1.4 \pm 0.4 \text{ pF}$

The very small **feedthrough capacitance** is significant for high-frequency amplifier operation, since it limits direct input-to-output electrode coupling. The standard [6E12N](#) has a slightly different published limit of $\leq 0.017 \text{ pF}$.

Vibration-Induced Noise Qualification

The 6E12NV has a detailed manufacturer specification for noise voltage produced under **15 g vibration acceleration**. The source separates acceptance levels for 80% and 20% of tubes:

Vibration frequency	80% of tubes	20% of tubes
50 Hz	$\leq 30 \text{ mV}$	$\leq 50 \text{ mV}$
5-2,500 Hz	$\leq 130 \text{ mV}$	$\leq 250 \text{ mV}$
2,500-5,000 Hz	$\leq 250 \text{ mV}$	$\leq 400 \text{ mV}$

These figures describe vibration-induced output voltages under specified test conditions, not the tube's normal RF noise voltage.

Limiting Operating Conditions

Parameter	Limit
Heater voltage	5.7-7.0 V
Anode voltage	250 V
Anode voltage at cutoff	330 V
Screen-grid voltage	110 V
Screen-grid voltage at cutoff	330 V
Maximum negative control-grid voltage	55 V
Anode dissipation	2.2 W

Parameter	Limit
Screen-grid dissipation	0.2 W
Control-grid dissipation	0.2 W
Cathode current	20 mA
Cathode-to-heater voltage	100 V
First-grid circuit resistance	1 MΩ
Envelope temperature	250°C

The cutoff-condition voltages are separate from the normal conducting limits. The grid-dissipation and screen-dissipation limits must be considered independently of the anode rating.

Environmental Endurance

Condition	6E12NV qualification
Repeated-shock acceleration	150 g
Single-shock acceleration	1,000 g
Ambient temperature range	−60°C to +200°C
Minimum endurance at 200°C ambient	500 hours
Minimum endurance at normal ambient	1,000 hours

The -B variant's high-temperature and mechanical ratings are substantially more demanding than those printed for the standard [6E12N](#). Its endurance figures must nevertheless be interpreted under the stated conditions rather than assumed to represent unlimited life at all temperatures.

Characteristic Curves

The Russian reference provides **anode-current versus anode-voltage curves** for different control-grid biases, with **6.3 V heater** and **50 V screen-grid** conditions. It also provides a transfer curve at **120 V anode** and **50 V screen**.

The curves demonstrate how grid bias controls anode current and how the current varies with anode voltage over the documented operating range. They complement the tabulated transconductance and cutoff-current values.

Relationship to the Standard 6E12N

Both [6E12N](#) and **6E12NV** are described as high-frequency metal-ceramic tetrodes. Their nominal heater ratings, principal electrode arrangement, and many limiting values correspond. The **6E12NV**, however,

has separately specified transconductance tolerances, a slightly lower feedthrough-capacitance limit, more extensive vibration-noise testing, and enhanced shock and ambient-temperature ratings.

These are meaningful manufacturer differences and should be retained when choosing between the versions.

Technical Summary

The **6E12NV / 6Э12H-B** is a **6.3 V metal-ceramic high-frequency amplifier tetrode** drawing approximately **140 mA heater current**, with nominal **11 mA/V transconductance**, approximately **9.5 mA anode current** at the specified operating point, and **≤0.015 pF feedthrough capacitance**.

Its distinguishing properties are the **−60°C to +200°C ambient range**, **150 g repeated-shock**, **1,000 g single-shock**, and specified vibration-induced noise limits. It is a specialized ruggedized high-frequency voltage and power amplifier tube, not an ordinary audio output tetrode.

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 · Tetrode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage nominal	6.3 V	Published heater operating voltage
Heater current nominal	140 mA	Nominal or midpoint of published heater-current tolerance
Plate current	9.5 mA	Plate 120 V, screen 50 V
Screen current	3.6 mA	Maximum
Transconductance	9.5 mA/V	Published nominal
Service life	5000 h	Minimum

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance	7.1 pF	Published
Transfer capacitance	0.017 pF	Maximum

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage limit	250 V	Published
Screen voltage limit	110 V	Published
Plate dissipation	2.2 W	Published

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