



ELECTRONIC TUBE REFERENCE

6S53N

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Superminiature metal-ceramic high-mu triode for common-grid decimeter-wave amplification and oscillation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 130 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
TRANSCONDUCTANCE	0.0085 S
AMPLIFICATION FACTOR	75
MAXIMUM PLATE VOLTAGE	120 V
MAXIMUM PLATE DISSIPATION	1.2 W
MAXIMUM GRID DISSIPATION	0.2 W
MAXIMUM CATHODE CURRENT	15 mA
MAXIMUM HEATER-CATHODE VOLTAGE	100 V
<i>6S53N only: gm ≥ 8.5 mA/V (stored lower bound); mu 75 ± 20. Plate voltage max 120 V operating, 330 V with tube cut off; heater 5.7–7.0 V; grid dissipation max 0.2 W, cathode current max 15 mA, heater-cathode voltage max 100 V. Source: 1981 Katsnelson and Larionov p.126.</i>	

6S53N / 6C53H — Superminiature Decimeter-

Wave Amplifier and Oscillator Triode

High-mu metal-ceramic triode for voltage amplification and oscillation in common-grid decimeter-wave circuits.

Overview

The **6S53N**, written **6C53H** in the Russian reference, is a **superminiature metal-ceramic triode** intended for **high-frequency voltage amplification and generation of oscillations in the decimeter wavelength range**, specifically in **common-grid circuits**. The document also specifies the **6S53NV** / **6C53H-B** ruggedized variant, with its own electrical tolerances and mechanical and thermal endurance limits.

The source lists an approximate mass of **3 g**. The common-grid application distinguishes the 6S53N from general-purpose audio receiving triodes and from other miniature triodes documented primarily for low-frequency amplification.

Construction and Principal Characteristics

The device contains an anode, control grid, and indirectly heated cathode in a metal-ceramic superminiature envelope. The original electrode drawing identifies the anode, grid, cathode, and heater; unlike the grouped connection diagrams for some related tubes, it does not supply a conventional numbered miniature-socket pinout.

The manufacturer's basic measurements use **6.3 V heater**, **120 V anode voltage**, and **68 Ω cathode resistor**.

Parameter	6S53N
Heater current	130 $\pm$ 30 mA
Anode current	9 $\pm$ 3 mA
Anode current at -5 V grid voltage	≤ 50 μA
Grid reverse current	≤ 0.1 μA
Cathode-to-heater leakage current	≤ 20 μA
Transconductance	≥ 8.5 mA/V
Amplification factor	75 $\pm$ 20
Input resistance at 60 MHz	≥ 10 kΩ
Vibration-induced noise voltage	≤ 40 mV

The high amplification factor and substantial transconductance support the documented high-frequency amplifier application. The 60 MHz input-resistance test is a specified measurement condition, not a

complete statement of the tube's operating frequency range.

Common-Grid Decimeter-Wave Applications

The manufacturer explicitly describes **voltage amplification and oscillation in the decimeter-wave band with a common-grid circuit**.

In a common-grid amplifier, the control grid serves as the common RF reference electrode, with signal input applied to the cathode circuit and output taken from the anode circuit. This configuration changes the input and feedback relationships compared with a grounded-cathode amplifier.

The datasheet does not prescribe a universal operating frequency, gain, or oscillator resonator. Those depend on the associated high-frequency circuit.

Interelectrode Capacitances

Capacitance	6S53N
Input	4.2 ± 1.3 pF
Output	1.5 ± 0.5 pF
Feedthrough	≤0.07 pF
Cathode-to-heater	2.5 ± 0.7 pF

The very small feedthrough capacitance is particularly relevant to high-frequency amplifier stability and input-output isolation.

Limiting Operating Conditions

Parameter	Limit
Heater voltage	5.7-7.0 V
Anode voltage	120 V
Anode voltage at cutoff	330 V
Maximum negative grid voltage	55 V
Maximum cathode-to-heater voltage	100 V
Cathode current	15 mA
Anode dissipation	1.2 W
Grid dissipation	0.2 W

Parameter	Limit
Grid-circuit resistance	1 MΩ
Envelope temperature	250°C

The cutoff-condition anode rating must not be interpreted as a 330 V continuous conducting rating.

Endurance and Environmental Conditions

The manufacturer specifies **at least 5,000 hours** operating life for the standard 6S53N, **2.5 g vibration acceleration** across **10-150 Hz**, **35 g repeated-shock acceleration**, and ambient operation from **−60°C to +125°C**.

The separately documented [6S53NV](#) version has a wider vibration range, greater mechanical endurance, and higher maximum ambient temperature.

Comparison with 6S53NV

The [6S53NV](#) is the ruggedized member of the same family. It has **130 ± 20 mA** heater current, **9 ± 2.5 mA** anode current, **12 ± 2.5 mA/V** transconductance, **80 ± 20** amplification factor, and a **≤0.05 pF** feedthrough-capacitance limit.

Its environmental qualifications extend to **20 g vibration** over **5-5,000 Hz**, **150 g repeated shock**, **1,000 g single shock**, and **−60°C to +200°C** ambient operation. Its stated minimum service life is **2,000 hours**, rather than the standard version's 5,000 hours.

Technical Summary

The **6S53N / 6C53H** is a **6.3 V superminiature metal-ceramic high-mu triode** intended for **common-grid decimeter-wave voltage amplification and oscillation**. Its typical anode current is approximately **9 mA**, amplification factor **75 ± 20**, and transconductance at least **8.5 mA/V**.

The common-grid application, very small feedthrough capacitance, and high-frequency characteristics distinguish it from general-purpose receiving triodes.

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 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published electrical parameter	68 Ω	при ив=6,3 В, иа=120 В, Кк=68 Ом
Published electrical parameter	—50 μA	Anode current at grid voltage −5 V: ≤50 μA; 6S53N, source p.126.
Published electrical parameter	5.7 V	То же при (,=5,7 В, мА/В
Resistance	10— kΩ	Input resistance at f=60 MHz: ≥10 kΩ; 6S53N, source p.126.
Published electrical parameter	—40 mV	Vibration noise voltage with Ra=2 kΩ: ≤40 mV; 6S53N, source p.126.
Plate voltage	120 V	Напряжение анода . . й 120В
Published electrical parameter	330 V	Maximum anode voltage with tube cut off: 330 V (not normal operating plate voltage); 6S53N, source p.126.
Published electrical parameter	55 V	Напряжение сетки отрицательное . 55 В
Published electrical parameter	100 V	Напряжение между катодом и подогревателем 100 В
Published electrical parameter	15 mA	Ток' катода й й 15 мА
Dissipation / power	1.2 W	Maximum anode (plate) dissipation: 1.2 W; 6S53N, source p.126.
Dissipation / power	0.2 W	Maximum grid dissipation: 0.2 W; 6S53N, source p.126.
Resistance	1 MΩ	Сопротивление в цепи сетки . й 1 МОм
Published electrical parameter	6.3 V	Nominal heater voltage 6.3 V, 6S53N source p.126; corrected OCR extraction.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published electrical parameter	180 Ω	при (0H=6,3 В, (,= 110 В, 0с=--7 В, К=180 Ом
Published electrical parameter	100–160 mA	Heater current: Nominal heater 6.3 V; 130 $\pm$ 30 mA. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	6–12 mA	Anode current: Ua=120 V, heater=6.3 V, Rk=68 Ω ; 9 $\pm$ 3 mA. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	—0.1 μA	Reverse grid current: Maximum reverse grid current. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	—20 μA	Cathode-to-heater leakage current: Maximum leakage current. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	8.5— mA/V	Transconductance: Minimum gm at specified conditions. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	55–95	Amplification factor: μ =75 $\pm$ 20. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	2.9–5.5 pF	Input capacitance: Input capacitance 4.2 $\pm$ 1.3 pF. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	1–2 pF	Output capacitance: Output capacitance 1.5 $\pm$ 0.5 pF. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	—0.07 pF	Feedthrough capacitance: Maximum feedthrough capacitance. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	1.8–3.2 pF	Cathode-heater capacitance: Cathode-heater capacitance 2.5 $\pm$ 0.7 pF. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	5.7–7 V	Heater voltage permitted range 5.7 to 7.0 V, 6S53N, page 126.
Published electrical parameter	—1 MΩ	Grid circuit resistance: Maximum grid circuit resistance. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	5000— h	Service life: Minimum operating life. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	—250 $^{\circ}$C	Maximum envelope temperature: Maximum envelope temperature. 6S53N, Katsnelson & Larionov 1981 p.126–127.
Published electrical parameter	—2.5 g	Vibration acceleration: 10–150 Hz. 6S53N, Katsnelson & Larionov 1981 p.126–127.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published electrical parameter	—35 g	Repeated shock acceleration: Repeated mechanical shock. 6S53N, Katsnelson & Larionov 1981 p.126-127.
Published electrical parameter	-60— °C	Ambient minimum: Operating ambient minimum. 6S53N, Katsnelson & Larionov 1981 p.126-127.
Published electrical parameter	—125 °C	Ambient maximum: Operating ambient maximum. 6S53N, Katsnelson & Larionov 1981 p.126-127.

TUBE TINKER

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