

ELECTRONIC TUBE REFERENCE

11E13

Power - Tetrode (NOT beam) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

TETRODE-TETRODE

Indirectly heated double high-frequency tetrode, internally neutralized for push-pull amplification to approximately 225 MHz. Two tetrode sections provide balanced RF power amplification in one envelope.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	12.6 V / 420 mA	PARALLEL HEATER	6.3 V / 830 mA
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Common cathode	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Tetrode	
TRANSCONDUCTANCE	0.0033 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	200 V
MAXIMUM PLATE DISSIPATION	5 W
MAXIMUM SCREEN DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	225 mA
Representative section for repeated identical sections.	

SECTION2 Tetrode	
TRANSCONDUCTANCE	0.0033 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	200 V
MAXIMUM PLATE DISSIPATION	5 W
MAXIMUM SCREEN DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	225 mA
Identical second physical section; duplicated from representative section per physical-section-row policy.	

11E13 — High-Frequency Double Tetrode

The **11E13** is an indirectly heated, miniature-based high-frequency (H.F.) double tetrode. It is internally neutralised and specifically designed for use as a push-pull amplifier at frequencies up to 225 Mc/s.

Construction, Heater, and Physical Specifications

The 11E13 is constructed with a miniature glass envelope and utilizes a standard Noval (B9A) base. The physical dimensions of the device are specified as follows:

- **Maximum Overall Length:** 78.5 mm
- **Maximum Seated Height:** 71.5 mm
- **Maximum Diameter:** 22.2 mm

Heater Characteristics

The tube features a center-tapped heater design, allowing for operation from either a 6.3 V or 12.6 V power source. The electrical requirements for the heater are:

- **Parallel Connection (6.3 V nominal):** Heater voltage (V_h) of 6.3 V with a heater current (I_h) of 0.83 A.
- **Series Connection (12.6 V nominal):** Heater voltage (V_h) of 12.6 V with a heater current (I_h) of 0.42 A.

Mounting Position

The mounting position of the 11E13 is unrestricted. However, when the tube is mounted horizontally, pins 2 and 7 must be aligned in the same vertical plane.

Base Connections

The Noval (B9A) base pinout, viewed from the free end of the pins, is configured as follows:

- **Pin 1:** Control Grid, Section 1 ($g1'$)

- **Pin 2:** Cathode, Shield (k, s)
- **Pin 3:** Control Grid, Section 2 ($g1''$)
- **Pin 4:** Heater (h)
- **Pin 5:** Heater (h)
- **Pin 6:** Anode, Section 1 (a')
- **Pin 7:** Screen Grid ($[g2](/tubes/G2)'$, $[g2](/tubes/G2)''$)
- **Pin 8:** Anode, Section 2 (a'')
- **Pin 9:** Heater Centre Tap (h_{ct})

The two tetrode sections share a common cathode and internal shield connected to Pin 2, and a common screen grid connected to Pin 7.

Electrical Characteristics and Capacitances

The typical electrical characteristics for each individual tetrode section, measured at an anode current (I_a) of 30 mA, are:

- **Mutual Conductance (g_m):** 3.3 mA/V
- **Inner Amplification Factor (μ_{g1-g2}):** 7.5

Inter-Electrode Capacitances

The 11E13 is internally neutralised for push-pull operation, which significantly reduces the feedback capacitance between the anode and the control grid. The capacitances are defined as:

Parameter	Measurement Condition	Value
Anode to Control Grid 1 (C_{a-g1})	Each section (internally neutralised)	< 0.1 pF
Grid 1 to All other electrodes (C_{g1-all})	Each section	6.2 pF
Anode to All other electrodes (C_{a-all})	Each section	2.6 pF
Input Capacitance (C_{in})	Two sections in push-pull	5.0 pF
Output Capacitance (C_{out})	Two sections in push-pull	1.5 pF

Absolute Maximum Ratings

All limiting values are specified under the Absolute Rating System, not Design Centres. The maximum operating frequency (f_{max}) is **225 Mc/s**. The maximum permissible temperature of the hottest part of the bulb is **225 °C**, and the maximum permissible temperature of the base pins is **120 °C**. The maximum heater-to-cathode voltage ($V_{h-k(max)}$) is **100 V** across all operating modes.

The absolute maximum ratings vary depending on the specific class of service:

Class "C" R.F. Amplifier (C.W. Telegraphy or F.M. Telephony)

For continuous wave (c.w.) telegraphy or frequency modulated (f.m.) telephony applications, the absolute maximum ratings per section (unless otherwise noted) are:

- **Maximum Anode Voltage ($V_{a(max)}$):** 300 V
- **Maximum Screen Grid Voltage ($V_{[g2]}(/tubes/G2)(max)$):** 200 V
- **Maximum Negative Control Grid Voltage ($V_{g1(max)}$):** -150 V
- **Maximum Anode Dissipation ($P_{a(max)}$):** 5.0 W
- **Maximum Screen Grid Dissipation ($P_{[g2]}(/tubes/G2)(max)$):** 1.0 W
- **Maximum Control Grid Dissipation ($P_{g1(max)}$):** 0.2 W
- **Maximum Peak Cathode Current ($i_{k(pk)max}$):** 225 mA
- **Maximum Mean Cathode Current ($I_{k(av)max}$):** 50 mA
- **Maximum Mean Control Grid Current ($I_{g1(av)max}$):** 3.0 mA

Class "C" R.F. Amplifier with Anode and Screen Grid Modulation

Under carrier conditions for use with a modulation factor of 1, the absolute maximum ratings per section (unless otherwise noted) are:

- **Maximum Anode Voltage ($V_{a(max)}$):** 250 V
- **Maximum Screen Grid Voltage ($V_{[g2]}(/tubes/G2)(max)$):** 200 V
- **Maximum Negative Control Grid Voltage ($V_{g1(max)}$):** -150 V
- **Maximum Anode Dissipation ($P_{a(max)}$):** 3.3 W
- **Maximum Screen Grid Dissipation ($P_{[g2]}(/tubes/G2)(max)$):** 0.65 W
- **Maximum Control Grid Dissipation ($P_{g1(max)}$):** 0.2 W
- **Maximum Peak Cathode Current ($i_{k(pk)max}$):** 180 mA
- **Maximum Mean Cathode Current ($I_{k(av)max}$):** 40 mA
- **Maximum Mean Control Grid Current ($I_{g1(av)max}$):** 3.0 mA

Frequency Trebler Service

When operated as a frequency trebler, the absolute maximum ratings per section (unless otherwise noted) are:

- **Maximum Anode Voltage ($V_{a(max)}$):** 300 V
- **Maximum Screen Grid Voltage ($V_{[g2]}(/tubes/G2)(max)$):** 200 V
- **Maximum Negative Control Grid Voltage ($V_{g1(max)}$):** -150 V
- **Maximum Anode Dissipation ($P_{a(max)}$):** 5.0 W

- **Maximum Screen Grid Dissipation ($P_{[g2]}(/tubes/G2)(max)$):** 1.0 W
- **Maximum Control Grid Dissipation ($P_{g1}(max)$):** 0.2 W
- **Maximum Peak Cathode Current ($i_{k(pk)}max$):** 225 mA
- **Maximum Mean Cathode Current ($I_{k(av)}max$):** 35 mA
- **Maximum Mean Control Grid Current ($I_{g1(av)}max$):** 2.0 mA

Technical Summary

The **11E13** is a high-frequency double tetrode designed for push-pull RF amplification and frequency multiplication up to 225 Mc/s. Featuring internal neutralisation, a flexible 6.3 V / 12.6 V heater, and a compact Noval (B9A) base, it provides up to 5.0 W of anode dissipation per section in Class C telegraphy or frequency trebler service. Its shared cathode/shield and screen grid connections simplify push-pull circuit layouts while maintaining low feedback capacitance.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 AEI Industrial Valves

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

1961 AEI INDUSTRIAL VALVES

Section 1 · Tetrode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum operating frequency	225 MHz	—
Maximum mean cathode current	50 mA	ClassC
Maximum heater-cathode voltage	100 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Inner amplification factor	7.5	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Associated Electrical Industries

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

1961 ASSOCIATED ELECTRICAL INDUSTRIES

Section 1 · Tetrode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum operating frequency	225 MHz	—
Maximum mean cathode current	50 mA	ClassC
Maximum heater-cathode voltage	100 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Inner amplification factor	7.5	—

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