



ELECTRONIC TUBE REFERENCE

10GV8

Power - Pentode (NOT beam) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

PENTODE-TRIODE

Miniature triode-pentode for television sync-amplifier and video-output applications. It is electrically equivalent to related ECL85-family types except for heater rating, combining small-signal control and output functions.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9LY	BASE PINS	9
NOMINAL HEATER	11.6 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9LY - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	B	P – Plate (Anode)	CONNECTED
PIN2	B	G1 – Control Grid	CONNECTED
PIN3	B	K – Cathode	CONNECTED
PIN4	–	H – Heater	CONNECTED
PIN5	–	H – Heater	CONNECTED
PIN6	A	P – Plate (Anode)	CONNECTED
PIN7	A	G2 – Screen Grid	CONNECTED
PIN8	A	G3 – Suppressor Grid	CONNECTED
PIN8	A	K – Cathode	CONNECTED
PIN8	–	IS – Internal Screen	CONNECTED
PIN9	A	G1 – Control Grid	CONNECTED

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	7600 Ω
TRANSCONDUCTANCE	0.0065 S
AMPLIFICATION FACTOR	50
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	0.5 W
MAXIMUM CATHODE CURRENT	200 mA
<i>Published ratings and characteristics extracted from the approved RCA source. Pulse-only ratings remain parameter rows unless explicitly continuous.</i>	

SECTION2 Pentode	
PLATE RESISTANCE	25000 Ω
TRANSCONDUCTANCE	0.0075 S
AMPLIFICATION FACTOR	50
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	7 W
MAXIMUM SCREEN DISSIPATION	2 W
MAXIMUM CATHODE CURRENT	75 mA
<i>Published ratings and characteristics extracted from the approved RCA source. Pulse-only ratings remain parameter rows unless explicitly continuous.</i>	

10GV8 — High-Mu Triode-Power Pentode Vacuum Tube

An indirectly heated, multi-unit miniature valve combining a high-mu triode and a power pentode in a single envelope, designed for sync-amplifier and video-output applications in television receivers.

Overview

The **10GV8** (also designated as **10GV8/LCL85**) is a multi-unit miniature vacuum tube containing a high-mu triode and a power pentode within a single glass envelope. It is designed primarily for specialized television receiver applications, specifically serving as a sync-amplifier and video-output amplifier. The tube features a miniature 9-pin construction and requires a standard miniature 9-contact socket.

The 10GV8 belongs to a family of identical-structure tubes that share the same internal electrode configurations, physical dimensions, and electrical characteristics, differing only in their heater ratings

and heater-cathode voltage limits. This family includes the [6GV8/ECL85](#), [9GV8/XCL85](#), and [18GV8/PCL85](#).

Construction, Heater, and Basing

The 10GV8 is constructed in a miniature glass envelope utilizing the **6G** outline designation. It features separate, indirectly heated cathodes for the triode and pentode sections, allowing independent biasing and circuit configurations. The pentode section includes an internally connected suppressor grid (Grid No. 3) tied directly to its cathode.

Heater Specifications

The heater of the 10GV8 is designed for series or parallel AC/DC operation. The electrical specifications for the 10GV8 heater, compared alongside its sister designations, are detailed below:

Tube Designation	Heater Voltage (AC/DC)	Heater Current	Peak Heater-Cathode Voltage
6GV8/ECL85	6.3 V	0.9 A	\u00b1220 V max
9GV8/XCL85	9.5 V	0.6 A	\u00b1200 V max
10GV8/LCL85	11.6 V	0.45 A	\u00b1200 V max
18GV8/PCL85	18.0 V	0.3 A	\u00b1200 V max

Pinout and Basing Diagram

The tube utilizes the **9LY** basing arrangement, which provides independent connections for almost all electrodes, ensuring minimal interaction between the high-gain triode and the power pentode sections:

- **Pin 1:** Triode Plate (P_T)
- **Pin 2:** Triode Grid (G_T)
- **Pin 3:** Triode Cathode (K_T)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Pentode Cathode / Grid No. 3 (K_P , G_{3P})
- **Pin 7:** Pentode Grid No. 1 (G_{1P})
- **Pin 8:** Pentode Grid No. 2 / Screen Grid (G_{2P})
- **Pin 9:** Pentode Plate (P_P)

Absolute Maximum Ratings

The absolute maximum ratings define the limiting operating conditions beyond which the serviceability and safety of the tube may be severely impaired. The triode and pentode units have distinct power and voltage capabilities:

Parameter	Triode Unit	Pentode Unit
Plate Supply Voltage	550 V	550 V
Peak Plate Voltage	2000 V	2000 V*
DC Plate Voltage	250 V	250 V
Grid-No. 2 (Screen-Grid) Supply Voltage	550 V	550 V
Grid-No. 2 Voltage	250 V	250 V
Peak Cathode Current	200 mA	200 mA
Average Cathode Current	15 mA	75 mA
Plate Dissipation	0.5 W	7.0 W
Grid-No. 2 Input	2.0 W	2.0 W

* Maximum pulse duration of 5 percent of a cycle, with a absolute maximum limit of 1 millisecond.

This peak value must be measured using a recurrent waveform method to ensure that the average and plate dissipation ratings of the tube are not exceeded.

Maximum pulse duration of 200 microseconds. If a larger flyback pulse is required in the circuit, this peak limit must be reduced to 100 mA with a maximum pulse duration of 400 microseconds.

Electrical Characteristics and Operating Points

The 10GV8 offers distinct electrical profiles for its triode and pentode sections under Class A amplifier conditions. The pentode section is characterized at both standard DC operating points and high-current pulsed points.

Triode Unit Characteristics

At a typical operating point, the triode unit exhibits high voltage amplification capabilities:

- **Plate Voltage:** 100 V
- **Grid-No. 1 Voltage:** -0.8 V
- **Amplification Factor (μ):** 50
- **Plate Resistance (Approx.):** 7,600 Ω
- **Transconductance (g_m):** 6,500 μmhos
- **Plate Current:** 5 mA

Pentode Unit Characteristics

The pentode unit is characterized under three distinct operating conditions. The first two represent low-voltage, high-current peak states measured via recurrent waveforms, while the third represents a standard Class A operating point:

Parameter	Pulsed Point A	Pulsed Point B	Class A Standard
Plate Voltage	50 V	65 V	170 V
Grid-No. 2 Voltage	170 V	210 V	170 V
Grid-No. 1 Voltage	-1 V	-1 V	-15 V
Mu-Factor (Grid No. 1 to Grid No. 2)	μ 2014	μ 2014	7
Plate Resistance (Approx.)	Ω 2014	Ω 2014	25,000 Ω
Transconductance (g_m)	μ 2014	μ 2014	7,500 μ 3bcmhos
Plate Current	200 mA	240 mA	41 mA
Grid-No. 2 Current	40 mA	50 mA	2.7 mA

Circuit Design and Maximum Values

To prevent thermal runaway and maintain bias stability, specific limits are placed on the control grid (Grid-No. 1) circuit resistance. These values depend on the chosen biasing method:

- **Triode Unit Grid-No. 1 Circuit Resistance:**
 - Fixed-bias operation: 1.0 M Ω max
 - Cathode-bias operation: 3.3 M Ω max
- **Pentode Unit Grid-No. 1 Circuit Resistance:**
 - Fixed-bias operation: 1.0 M Ω max
 - Cathode-bias operation: 2.2 M Ω max

Technical Summary

The **10GV8** is a highly specialized **high-mu triode-power pentode** designed for television receiver circuitry. Operating with an **11.6 V / 0.45 A** heater, it provides a compact, single-envelope solution for sync-amplifier and video-output stages. The triode section delivers a high amplification factor of **50** with a transconductance of **6,500 μ 3bcmhos**, while the robust pentode section is capable of handling up to **7 W** of plate dissipation and peak plate pulses up to **2,000 V**. By adhering to the specified grid resistance limits and pulse duty-cycle restrictions, designers can reliably utilize the 10GV8 in demanding television deflection and signal-processing environments.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1975 RCA RC30

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

1975 RCA RC30

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage (ac/de)	18 volts	Published value from supplied target entry
Heater Current	0.3 ampere	Published value from supplied target entry
IMate Supply Voltage	550 volts	Published value from supplied target entry
Peak Plate Voltage	2000 volts	Published value from supplied target entry
DC Plate Voltage	250 volts	Published value from supplied target entry
Grid-No	550 volts	Published value from supplied target entry
Grid-No	250 volts	Published value from supplied target entry
Peak Cathode Current"	200 mA	Published value from supplied target entry
Average Cathode Current	75 mA	Published value from supplied target entry
Plate Dissipation	7 watts	Published value from supplied target entry
Plate Voltage	170 volts	Published value from supplied target entry
Grid-No	170 volts	Published value from supplied target entry
Grid-No	-15 volts	Published value from supplied target entry
Amplification Factor	50	Published value from supplied target entry
Plate Resistance (Appro*.)	-25000 ohms	Published value from supplied target entry
Plate Current	41 mA	Published value from supplied target entry
Grid-No	2.7 mA	Published value from supplied target entry
Grid-No	1	Published value from supplied target entry

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Voltage ±	200	Published value from supplied target entry

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