The 12R5 is a miniature beam pentode primarily designed for use as a pentode-connected vertical-deflection amplifier in television receivers. The tube features high zero-bias plate current at relatively low plate and screen voltages. In addition, a controlled heater warm-up characteristic makes it especially suited for use in television receivers with series-connected heaters.

**GENERAL**

**ELECTRICAL**
- Cathode—Coated Unipotential
- Heater Voltage, AC or DC: 12.6 Volts
- Heater Current: 0.6 Amperes
- Heater Warm-up Time*: 11 Seconds
- Direct Interelectrode Capacitances†
  - Grid-Number 1 to Plate: 0.55 μF
  - Input: 13 μF
  - Output: 9.0 μF

**MECHANICAL**
- Mounting Position—Any
- Envelope—T-5½, Glass
- Base—E7-1, Miniature Button 7-Pin

**MAXIMUM RATINGS**

**VERTICAL-DEFLECTION AMPLIFIER SERVICE†**
**DESIGN-CENTER VALUES UNLESS OTHERWISE INDICATED**

- DC Plate Voltage: 150 Volts
- Peak Pulse Plate Voltage: 1500 Volts
- Screen Voltage: 150 Volts
- Peak Negative Grid-Number 1 Voltage: 150 Volts
- Plate Dissipation: 4.5 Watts
- Screen Dissipation: 1.0 Watts
- DC Cathode Current: 0.45 Milliamperes
- Peak Cathode Current: 1.55 Milliamperes
- Heater-Cathode Voltage
  - Heater Positive with Respect to Cathode
    - DC Component: 100 Volts
    - Total DC and Peak: 200 Volts
  - Heater Negative with Respect to Cathode
    - Total DC and Peak: 300 Volts
- Grid-Number 1 Circuit Resistance
  - With Cathode Bias: 2.2 Megohms

**PHYSICAL DIMENSIONS**

[Diagram of tube dimensions]
CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Plate Voltage ........................................ 45  110 Volts
Suppressor, Connected to Cathode at Socket
Screen Voltage ........................................ 110  110 Volts
Grid-Number 1 Voltage ................................ 0†  –8.5 Volts
Plate Resistance, approximate ...................... 13000 Ohms
Transconductance ................................... 7000 Micromhos
Plate Current ......................................... 120  40 Milliamperes
Screen Current ........................................ 17  3.3 Milliamperes
Grid-Number 1 Voltage, approximate

\[ I_b = 0.5 \text{ Milliamperes} \] .......................... –22 Volts

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

‡ For operation in 525-line, 30-frame television system as described in “Standards of Good Engineering Practice Concerning Television Broadcast Stations,” Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

Δ In stages operating with grid-leak bias, an adequate cathode bias-resistor or other suitable means is required to protect the tube in the absence of excitation.

¶ Applied for short interval (2 seconds maximum) so as not to damage tube.