ELECTRONICS

11BQ11

COMPACTRON DISSIMILAR DOUBLE PENTODE

DESCRIPTION AND RATING

The 11BQ11 is a compactron containing a remote-cutoff pentode (Section 1) and a sharp-cutoff pentode (Section 2). It is intended primarily for use in the intermediate-frequency amplifier stages of television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC* . . . . 11.2 Volts
Heater Current$ . . . . 0.45±0.03 Amperes
Heater Warm-up Time, average$. . . 11 Seconds

Direct Interelectrode Capacitances&

Section 1

Grid-Number 1 to Plate:
(1g1 to 1p). . . . . . . . . 0.022 pf
Input: 1g1 to (1k + 1g2 +
1g3 + h + l.s.) . . . . . . . 10 pf
Output: 1p to (1k + 1g2 +
1g3 + h + l.s.) . . . . . . . 2.8 pf

Section 2

Grid-Number 1 to Plate:
(2g1 to 2p). . . . . . . . . 0.024 pf
Input: 2g1 to (2k + 2g2 +
2g3 + 1g3 + h + l.s.) . . . . . 11 pf
Output: 2p to (2k + 2g2 +
2g3 + 1g3 + h + l.s.) . . . . . 2.8 pf

Coupling

Plate to Plate: (1p to 2p),
maximum . . . . . . . . . 0.015 pf
Grid-Number 1, Section 1, to
Plate, Section 2: (1g1 to
2p), maximum . . . . . . . . . . . 0.002 pf
Grid-Number 1, Section 2, to
Plate, Section 1: (2g1 to
1p), maximum . . . . . . . . . . . 0.008 pf
Grid-Number 1, Section 1, to
Grid-Number 1, Section 2:
(1g1 to 2g1), maximum . . . . . . . . . . . 0.002 pf

MECHANICAL

Operating Position - Any
Envelope - T-9, Glass
Base - E12-70, Button 12-Pin
Outline Drawing - EIA 9-58
Maximum Diameter . . . . . . 1.188 Inches
Minimum Diameter . . . . . . 1.062 Inches
Maximum Over-all Length . . . 2.375 Inches
Minimum Seated Height . . . . 2.000 Inches
Minimum Seated Height . . . . 1.750 Inches

PHYSICAL DIMENSIONS

TERMINAL CONNECTIONS

Pin 1 - Heater
Pin 2 - Plate (Section 2)
Pin 3 - Grid Number 2 (Screen)
Pin 4 - Grid Number 3 (Suppressor)
Pin 5 - Grid Number 1 (Section 2)
Pin 6 - Cathode (Section 2)
Pin 7 - Grid Number 3 (Suppressor)
Pin 8 - Plate (Section 1)
Pin 9 - Grid Number 2 (Screen)
Pin 10 - Grid Number 1 (Section 1)
Pin 11 - Cathode (Section 1)
Pin 12 - Heater

BASING DIAGRAM

EIA 12DM

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.
MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

SECTION 1

Plate Voltage .............................................. 330 Volts
Suppressor Voltage ......................................... 0 Volts
Screen-Supply Voltage ..................................... 330 Volts
Screen Voltage - See Screen Rating Chart .................. 0 Volts
Positive DC Grid-Number 1 Voltage ......................... 3.1 Watts
Plate Dissipation ........................................... 0.65 Watts
Screen Dissipation .......................................... 0.65 Watts
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 ...................................... 200 Volts
Grid-Number 1 Circuit Resistance
  With Cathode Bias ........................................ 1.0 Megohms

SECTION 2

Plate Voltage .............................................. 330 Volts
Suppressor Voltage ......................................... 0 Volts
Screen-Supply Voltage ..................................... 330 Volts
Screen Voltage - See Screen Rating Chart .................. 0 Volts
Positive DC Grid-Number 1 Voltage ......................... 3.1 Watts
Plate Dissipation ........................................... 0.65 Watts
Screen Dissipation .......................................... 0.65 Watts
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 ...................................... 200 Volts
Grid-Number 1 Circuit Resistance
  With Cathode Bias ........................................ 0.25 Megohms

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogy electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogy tube under the worst probable operating conditions with respect to supply voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

SECTION 1

Plate Voltage .............................................. 125 Volts
Suppressor, Connected to Cathode at Socket .................
Screen Voltage ............................................... 125 Volts
Cathode-Bias Resistor ..................................... 56 Ohms
Plate Resistance, approximate ............................... 0.2 Megohms
Transconductance ........................................... 10500 Micromhos
Plate Current ............................................... 11 Milliamperes
Screen Current .............................................. 3.5 Milliamperes
Grid-Number 1 Voltage, approximate ........................
Gm = 50 Micromhos ........................................... -15 Volts
SECTION 2

Plate Voltage
Suppressor, Connected to Cathode at Socket
Screen Voltage
Cathode-Bias Resistor
Plate Resistance, approximate
Transconductance
Plate Current
Screen Current
Grid-Number 1 Voltage, approximate

\[ I_b = 20 \text{ Microamperes} \]  

125 Volts  
125 Volts  
125 Volts  
56 Ohms  
0.2 Megohms  
13000 Micromhos  
11 Milliamperes  
3.8 Milliamperes  
-3 Volts

NOTES

* Heater voltage for a bogey tube at \( I_f = 0.45 \) amperes.

‡ The equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.

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

¶ With external shield (EIA 309) connected to cathode of section under test.
AVERAGE TRANSFER CHARACTERISTICS

SECTION 1

$E_1 = \text{RATED VALUE}$
$E_b = 125 \text{ VOLTS}$
$E_c3 = 0 \text{ VOLTS}$

SCREEN CURRENT IN MILLIAMPERES

GRID-NUMBER 1 VOLTAGE IN VOLTS

FEBRUARY 8, 1965

K-55611-TD243-3

AVERAGE TRANSFER CHARACTERISTICS

SECTION 1

$E_1 = \text{RATED VALUE}$
$E_b = 125 \text{ VOLTS}$
$E_c3 = 0 \text{ VOLTS}$

TRANSCONDUCTANCE IN MICROMOS

GRID-NUMBER 1 VOLTAGE IN VOLTS

FEBRUARY 8, 1965

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