TWIN DIODE—POWER TETRODE

9-PIN MINIATURE TYPE

For use in automobile radio receivers
operating directly from 6-cell storage-battery systems

GENERAL DATA

Electrical:
Heater, for Unipotential Cathode:
Voltage range (AC or DC) ............ 10 to 15.9 volts
This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.
Current (Approx.) at 12.6 volts ....... 0.4 amp
Direct Interelectrode Capacitances:
Tetrode Unit:
Grid No.2 to plate ..................... 13.8 µf
Grid No.2 to grid No.1, cathode, and heater .................. 12.7 µf
Plate to grid No.1, cathode, and heater .................. 2.2 µf
Diode Units:
Diode plate No.1 to cathode and heater .................. 0.5 µf
Diode plate No.2 to cathode and heater .................. 0.5 µf
Diode plate No.1 to diode plate No.2 ................. 0.1 µf
Tetrode grid No.2 to diode plate No.1 ................. 0.3 µf
Tetrode grid No.2 to diode plate No.2 ................. 0.3 µf

Characteristics, Class A1 Amplifier (Tetrode Unit):
Heater Voltage .................. 12.6 volts
Plate Voltage .................. 12.6 volts
Grid-No.2 Voltage:
Developed across a 2.2-megohm resistor. ............ -0.5 volt
Grid-No.1 Voltage .................. 12.6 volts
Plate Resistance (Approx.) ............... 500 ohms
Amplification Factor, Grid No.2 to Plate ............... 9.1
Transconductance, Grid No.2 to Plate ............... 19000 µhos
Plate Current .................. 35 ma
Grid-No.1 Current .................. 75 ma

Mechanical:
Operating Position: .................. Any
Maximum Overall Length ............... 2-5/8"
Maximum Seated Length ............... 2-3/8"
Length, Base Seat to Bulb Top (Excluding tip) ........ 2" ± 3/32"
Diameter: ........................... 0.750" to 0.875"
Dimensional Outline ............... See General Section
Bulb: .................. Small-Button Noval 9-Pin (JEDEC No.E9-1)
TWIN DIODE—POWER TETRODE

Basing Designation for BOTTOM VIEW. ............... 9JU

Pin 1—Plate of Diode
Unit No.2
Pin 2—No Connection
Pin 3—Grid No.1 of
Tetrode Unit
Pin 4—Heater
Pin 5—Heater

Pin 6—Plate of
Tetrode Unit
Pin 7—Grid No.2 of
Tetrode Unit
Pin 8—Cathode
Pin 9—Plate of Diode
Unit No.1

TETRODE UNIT — AUDIO DRIVER

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE .................. 16 max. volts
GRID-No.2 (CONTROL-GRID) VOLTAGE:
Negative-bias value ................ 16 max. volts
GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE . 16 max. volts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with
respect to cathode. ............... 16 max. volts
Heater positive with
respect to cathode. ............... 16 max. volts

Typical Operation:

Cathode Bias

Heater Voltage. .................. 12 volts
Plate Supply Voltage. ............. 11.2 volts
Plate Voltage .................. Obtained from indicated plate supply
through series 100-henry choke having
dc resistance of 150 ohms

Grid-No.2 Supply Voltage. ........ 0 volts
Grid-No.2 Resistor. .............. 1.8 megohms
Grid-No.1 Supply Voltage. ........ 11.2 volts
Cathode Resistor. ............... 18 ohms
Peak AF Grid-No.2 Supply Voltage
(Approx.):
From 3.3-megohm signal source ...... 4.25 volts
Zero-Signal Plate Current (Approx.) .... 20 ma
Indicated-Signal Plate Current. .... 7 ma
Grid-No.1 Current ................ 58 ma
Load Resistance ................ 1250 ohms
Total Harmonic Distortion at power
output of 2.5 mw. ............... 5 %
Indicated-Signal Power Output ....... 10 mw

Grid-No.2-Resistor Bias

Heater Voltage .................. 12.6 volts
Plate Voltage .................. 12.6 volts
Grid-No.2 Voltage:
Obtained by rectification through
a 2.2-megohm resistor .......... -2.5 volts
### TWIN DIODE—POWER TETRODE

**Peak AF Grid-No.2 Voltage (Approx.):**
- From 0.22-megohm signal source: 2.5 volts
- Grid-No.1 Voltage: 12.6 volts
- Zero-Signal Plate Current (Approx.): 35 ma
- Max.-Signal Plate Current: 11 ma
- Grid-No.1 Current: 80 ma
- Load Resistance: 700 ohms
- Total Harmonic Distortion: 10 %
- Max.-Signal Power Output: 45 mw

**Maximum Circuit Values:**
- Grid-No.2-Circuit Resistance: 10 max. megohms

**DIODE UNITS — Two**

**Values are for Each Unit**

**Maximum Ratings, Design-Maximum Values:**
- PLATE CURRENT: 5 max. ma
- PEAK HEATER—CATHODE VOLTAGE:
  - Heater negative with respect to cathode: 16 max. volts
  - Heater positive with respect to cathode: 16 max. volts

**Characteristics:**
- Heater Voltage: 12.6 volts
- Plate Current for plate volts = 10: 3 ma

*Without external shield.*
Average Characteristics
Tetrode Unit

$E_P = 12.6$ Volts
Plate Volts $= 12.6$
Grid-$N^2$ (Space-Charge-Grid) Volts $= 12.6$

Transconductance ($g_m$) - Micromhos

Plate (I_p) or Grid-$N^1$ (I_c) Milliamperes

Grid-$N^2$ Volts

0  10  20  30  40  50  60  70  80  90

0  10000  20000

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