# 12DS7

# TWIN DIODE—POWER TETRODE

9-PIN MINIATURE TYPE

*For use in automobile radio receivers operating directly from 12-volt storage batteries*

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathode:
Voltage range . . . . . 10 to 15.9 . . . . . dc 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 | 12.5 | μμf |
| Grid No.2 to cathode, grid No.1, and heater | 13 | μμf |
| Plate to cathode, grid No.1, and heater | 2 | μμf |
| *Diode Units:* | | |
| Diode plate No.1 to cathode and heater | 0.5 | μμf |
| Diode plate No.2 to cathode and heater | 0.5 | μμf |
| Diode plate No.1 to diode plate No.2 | 0.1 | μμf |
| Tetrode grid No.2 to diode plate No.1 | 0.15 max. | μμf |
| Tetrode grid No.2 to diode plate No.2 | 0.15 max. | μμf |

### Characteristics, Class $A_1$ Amplifier (Tetrode Unit):

| | | |
|---|---|---|
| Heater Voltage | 12.6 | volts |
| Plate Voltage | 12.6 | volts |
| Grid-No.2 (Control-Grid) Voltage: | | |
| Developed across a 2.2-megohm resistor | -0.5 | volt |
| Grid-No.1 (Space-Charge-Grid) Voltage | 12.6 | volts |
| Plate Resistance (Approx.) | 480 | ohms |
| Amplification Factor, Grid No.2 to Plate | 7.2 | |
| Transconductance, Grid No.2 to Plate | 15000 | μmhos |
| Plate Current | 40 | 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 . . . . . T6-1/2

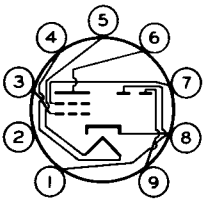
°: See next page.

# 12DS7

# TWIN DIODE—POWER TETRODE

Base. . . . . .Small-Button Noval 9-Pin (JETEC No.E9-1)
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-Center Values Except as Noted:*

| | | | |
|---|---|---|---|
| PLATE VOLTAGE | 16 | max. | volts |
| GRID-No.2 (CONTROL-GRID) VOLTAGE: | | | |
| Negative-bias value | -16 | max. | volts |
| GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE | | | |
| (Absolute maximum) | 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 | 12.6 | volts |
| Plate-Supply Voltage | 12.6 | volts |
| Plate Voltage | Obtained from indicated plate supply through series 100-henry choke having dc resistance of 150 ohms | |
| Grid-No.1 Supply Voltage | 12.6 | volts |
| Grid-No.2 Supply Voltage | 0 | volts |
| Grid-No.2 Resistor | 1.8 | megohms |
| Cathode Resistor | 18 | ohms |
| Peak AF Grid-No.2 Supply Voltage (Approx.): | | |
| From 3.3-megohm signal source | 2.85 | volts |
| Zero-Signal Plate Current (Approx.) | 23 | ma |
| Max.-Signal Plate Current | 13 | ma |
| Grid-No.1 Current | 77 | ma |
| Load Resistance | 1250 | ohms |
| Total Harmonic Distortion | 8 | % |
| Max.-Signal Power Output | 10 | mw |

*Grid-No.2-Resistor Bias*

| | | |
|---|---|---|
| Heater Voltage | 12.6 | volts |
| Plate Voltage | 12.6 | volts |
| Grid-No.1 Voltage | 12.6 | volts |

o,■: See next page.

# 12DS7

# TWIN DIODE—POWER TETRODE

| | | |
|---|---|---|
| Grid-No.2 Voltage: | | |
| Obtained by rectification through a 2.2-megohm resistor. . . . . | −2 | volts |
| Peak AF Grid-No.2 Voltage (Approx.): | | |
| From 0.1-megohm signal source. . . . . | 2.5 | volts |
| Zero-Signal Plate Current (Approx.). . . . | 40 | ma |
| Max.-Signal Plate Current. . . . . | 8 | ma |
| Grid-No.1 Current. . . . . | 75 | ma |
| Load Resistance. . . . . | 800 | ohms |
| Total Harmonic Distortion. . . . . | 10 | % |
| Max.-Signal Power Output . . . . . | 40 | mw |

**Maximum Circuit Values:**

| | | |
|---|---|---|
| Grid-No.2-Circuit Resistance . . . . . | 10 max. | megohms |

## DIODE UNITS — Two

*Values are for Each Unit*

**Maximum Ratings,** *Design-Center 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 |

ó Without external shield.

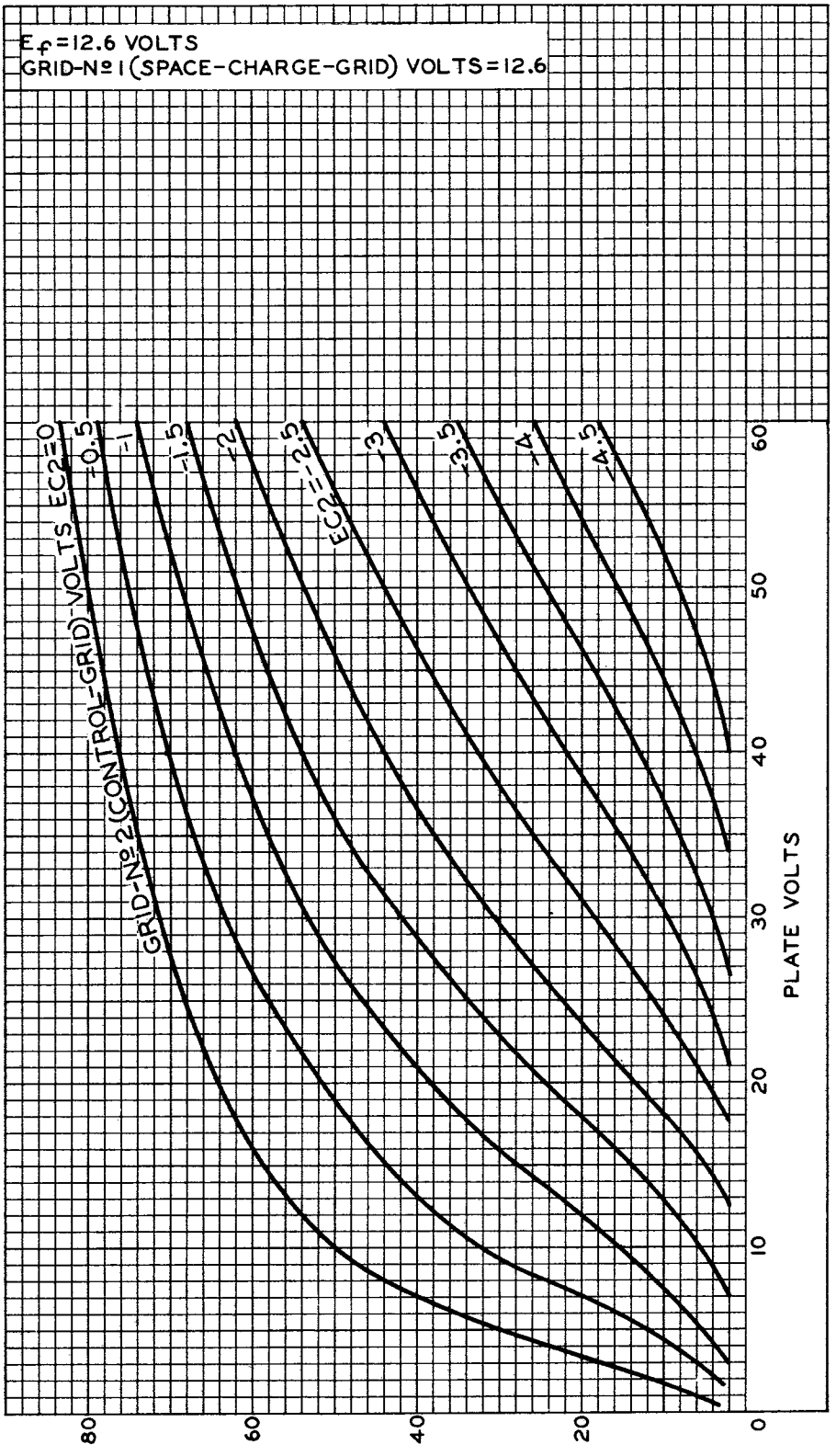
■ Under no circumstances should this absolute value be exceeded.

12DS7

12DS7

# AVERAGE PLATE CHARACTERISTICS

## TETRODE UNIT





ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9670

RCA

# 12DS7

## AVERAGE CHARACTERISTICS
### TETRODE UNIT