

# 12AD6

## Pentagrid Converter

### 7-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating  
Directly from 6-Cell Storage Batteries

#### GENERAL DATA

#### Electrical:

Heater, for Unipotential Cathode:

Voltage range (DC) . . . . . 10 to 15.9 volts

*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 . . . . . 0.15 amp ←

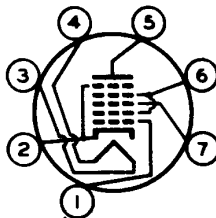
Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield<sup>a</sup></i>	
Grid No.3 to all other electrodes (RF input) . . . . .	7	7	$\mu\mu\text{f}$
Plate to all other electrodes (Mixer output) . . . . .	7	12	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.5, plate, grid No.3, and heater (Oscillator input) . . . . .	3.2	3.2	$\mu\mu\text{f}$
Grid No.3 to plate. . . . .	0.3 max.	0.26 max.	$\mu\mu\text{f}$
Grid No.3 to grid No.1. . . . .	0.15 max.	0.15 max.	$\mu\mu\text{f}$
Grid No.1 to grid No.2 & grid No.4 . . . . .	2.2	2.2	$\mu\mu\text{f}$
Grid No.2 & grid No.4 to all other electrodes except grid No.1 (Oscillator output). . . . .	11	11	$\mu\mu\text{f}$

#### Mechanical:

- Operating Position. . . . . Any
- Maximum Overall Length. . . . . 2-1/8"
- Maximum Seated Length . . . . . 1-7/8"
- Length, Base Seat to Bulb Top (Excluding tip). . . . . 1-1/2"  $\pm$  3/32"
- Diameter. . . . . 0.650" to 0.750"
- Dimensional Outline . . . . . See *General Section*
- Bulb. . . . . T5-1/2
- Base. . . . . Small-Button Miniature 7-Pin (JEDEC No.E7-1)
- Basing Designation for BOTTOM VIEW. . . . . 7CH

- Pin 1 - Grid No.1
- Pin 2 - Cathode, Grid No.5
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Plate
- Pin 6 - Grid No.2, Grid No.4
- Pin 7 - Grid No.3

← Indicates a change.



RADIO CORPORATION OF AMERICA  
Electron Tube Division  
Harrison, N. J.

DATA  
1-62

# 12AD6

## CONVERTER

### Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. . . . .	16 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative-bias value. . . . .	16 max.	volts
Positive-bias value. . . . .	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRID) SUPPLY VOLTAGE.	16 max.	volts
GRIDS-No.2 & No.4 VOLTAGE. . . . .	16 max.	volts
TOTAL CATHODE CURRENT. . . . .	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. . .	16 max.	volts
Heater positive with respect to cathode. . .	16 max.	volts

### Typical Operation and Characteristics:

With separate excitation<sup>b</sup> and with heater voltage of 12.6 volts

Plate Voltage. . . . .	10.6	12.6	14.6	volts
Grids-No.2 & No.4 Voltage. . . .	10.6	12.6	14.6	volts
Grid-No.3 Supply Voltage . . . . .	0	0	0	volts
Grid-No.3 Resistor . . . . .	2.2	2.2	2.2	megohms
Peak-to-Peak Grid-No.1 (Oscillator-Grid) Voltage: . . . .	4.5	4.5	4.5	volts
Grid-No.1 Resistor . . . . .	33000	33000	33000	ohms
Plate Resistance (Approx.) . . . .	0.5	0.4	0.2	megohm
Conversion Transconductance. . . .	-	320	-	μmhos
Grid-No.3 Voltage (Approx.) for conversion transconductance (μmhos) =				
5. . . . .	-	-3	-	volts
0.5. . . . .	-	-4	-	volts
Plate Current. . . . .	-	0.35	-	ma
Grid-No.1 Current. . . . .	-	0.06	-	ma
Total Cathode Current. . . . .	-	1.6	-	ma

### Oscillator Characteristics (Not Oscillating):

With grids No.2 & No.4 connected to plate  
and with heater voltage of 12.6 volts

Plate and Grids-No.2 & No.4 Voltage. . . . .	12.6	volts
Grid-No.3 Voltage. . . . .	0	volts
Grid-No.1 Voltage. . . . .	0	volts
Amplification Factor between grid No.1 and grids No.2 & No.4 connected to plate . . . .	9.4	
Transconductance between grid No.1 and grids No.2 & No.4 connected to plate . . . .	3600	μmhos
Cathode Current. . . . .	4.5	ma
Grid-No.1 Voltage (Approx.) for plate $\mu_a = 10$ .	-3.7	volts

### Maximum Circuit Values:

Grid-No.3-Circuit Resistance . . . . .	10 max.	megohms
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<sup>a</sup> With external shield JEDEC No.316 connected to cathode & grid No.5.

<sup>b</sup> The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

→ Indicates a change.

