

Pentode Unit as Class A<sub>1</sub> Amplifier

CHARACTERISTICS

Plate Voltage	150	volts
Grid-No.3 (Suppressor-Grid) Voltage	0	volts
Grid-No.2 Voltage	100	volts
Cathode-Bias Resistor	560	ohms
Plate Resistance (Approx.)	0.15	megohm
Transconductance, Grid No.1	1000	$\mu$ mhos
Transconductance, Grid No.3	400	$\mu$ mhos
Plate Current	1.3	mA
Grid-No.2 Current	2	mA
Grid-No.1 Voltage (Approx.) for plate current of 10 $\mu$ A	-4.5	volts
Grid-No.3 Voltage (Approx.) for plate current of 10 $\mu$ A	-4.5	volts

Pentode Unit as FM Detector

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	330	volts
Grid-No.3 Voltage	28	volts
Grid-No.2 Supply Voltage	330	volts
Grid-No.2 Voltage	See curve page 300	
Grid-No.1 Voltage, Positive-bias value	0	volts
Plate Dissipation	1.7	watts
Grid-No.2 Input	1.1	watts

Refer to type 6AF3.

**12AF3**  
**12AF3/12BR3/**  
**12RK19**

Refer to chart at end of section.

**12AF6**

Refer to chart at end of section.

**12AH7GT**

Refer to chart at end of section.

**12AJ6**

Refer to type 6AL5.

**12AL5**

Refer to chart at end of section.

**12AL8**

Refer to type 6AL11.

**12AL11**

Refer to type 6AQ5A.

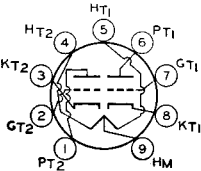
**12AQ5**

Refer to type 6AT6.

**12AT6**

For replacement use type 12AT7/ECC81.

**12AT7**



HIGH-MU TWIN TRIODE

**12AT7/**  
**ECC81**

Miniature types used as push-pull cathode-drive amplifiers or frequency converters in the FM and television broadcast bands. Outlines section, 6B; require miniature 9-contact socket. Each triode unit is independent of the other except for the common heater. For typical operation as a resistance-coupled amplifier, refer to Resistance-Coupled Amplifier section.

Heater Arrangement:	Series	Parallel	
Heater Voltage (ac/dc)	12.6	6.3	volts
Heater Current	0.15	0.3	ampere
Peak Heater-Cathode Voltage		$\pm 90$ max	volts

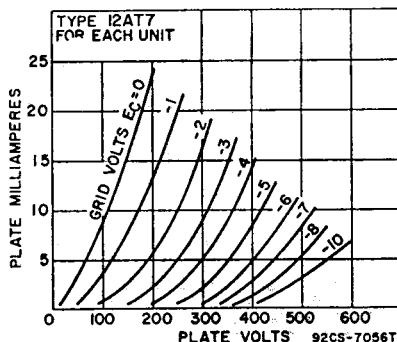
## Direct Interelectrode Capacitances:

Grid-Drive Operation:		
Grid to Plate (Each unit)	1.5	pF
Grid to Cathode and Heater (Each unit)	2.2	pF
Plate to Cathode and Heater:		
Unit No.1	0.5	pF
Unit No.2	0.4	pF
Cathode-Drive Operation:		
Cathode to Plate (Each unit)	0.2	pF
Cathode to Grid and Heater (Each unit)	4.6	pF
Plate to Grid and Heater (Each unit)	1.8	pF
Heater to Cathode (Each Unit)	2.4	pF

Class A<sub>1</sub> Amplifier (Each Unit)

## MAXIMUM AND MINIMUM RATINGS (Design-Center Values)

Plate Voltage	300	volts
Grid Voltage, Negative-bias value	50	volts
Plate Dissipation	2.5	watts



## CHARACTERISTICS

Plate Supply Voltage	100	250	volts
Cathode-Bias Resistor	270	200	ohms
Amplification Factor	60	60	
Plate Resistance (Approx.)	15000	10900	ohms
Transconductance	4000	5500	$\mu$ mhos
Grid Voltage (Approx.) for plate current of 10 $\mu$ A	-5	-12	volts
Plate Current	3.7	10	mA

12AT7WA

Refer to chart at end of section.

12AT7WB

Refer to chart at end of section.

12AU6

Refer to type 6AU6A.

12AU7

Refer to chart at end of section.

For replacement use type 12AU7A/ECC82.

12AU7A

For replacement use type 12AU7A/ECC82.

12AU7A/  
ECC82

7AU7, 9AU7

## MEDIUM-MU TWIN TRIODE

Miniature types used as phase inverters or push-pull amplifiers in ac/dc radio equipment and as multivibrators or oscillators in industrial control devices. Also used as combined vertical oscillators and vertical-deflection amplifiers, and as horizontal-deflection oscillators, in color and black-and-white television receivers. Outlines section, 6B; require miniature 9-contact socket. Each triode unit is independent of the other except for the common heater. For typical opera-

