

12AX7

TWIN TRIODE

DESCRIPTION AND RATING

The 12AX7 is a miniature high-mu twin triode each section of which has an individual cathode connection. The 12AX7 is especially suited for use in resistance-coupled voltage amplifiers, phase inverters, multivibrators, and numerous industrial-control circuits where high voltage gain is desired. A center-tapped heater permits operation of the tube from either a 6.3-volt or a 12.6-volt heater supply.

GENERAL

Cathode—Coated Unipotential

	Series	Parallel
Heater Voltage, AC or DC	12.6	6.3 Volts
Heater Current	0.15	0.3 Amperes
Envelope—T-6½, Glass		
Base—E9-1, Small Button 9-Pin		
Mounting Position—Any		

Direct Interelectrode Capacitances

	With Shield*	Without Shield
Grid to Plate, Each Section	1.7	1.7 $\mu\mu\text{f}$
Input, Each Section	1.8	1.6 $\mu\mu\text{f}$
Output, Section 1	1.9	0.46 $\mu\mu\text{f}$
Output, Section 2	1.9	0.34 $\mu\mu\text{f}$

MAXIMUM RATINGS

DESIGN-CENTER VALUES, EACH SECTION

Plate Voltage	300 Volts
Positive DC Grid Voltage	0 Volts
Negative DC Grid Voltage	50 Volts
Plate Dissipation	1.0 Watts
Heater-Cathode Voltage	
Heater Positive with Respect to Cathode	180 Volts
Heater Negative with Respect to Cathode	180 Volts

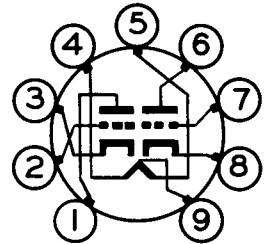
CHARACTERISTICS AND TYPICAL OPERATION

CLASS A₁ AMPLIFIER, EACH SECTION

Plate Voltage	100	250 Volts
Grid Voltage	-1	-2 Volts
Amplification Factor	100	100
Plate Resistance, approximate	80000	62500 Ohms
Transconductance	1250	1600 Micromhos
Plate Current	0.5	1.2 Milliampers

* With external shield (RETMA 315) connected to cathode of section under test.

BASING DIAGRAM

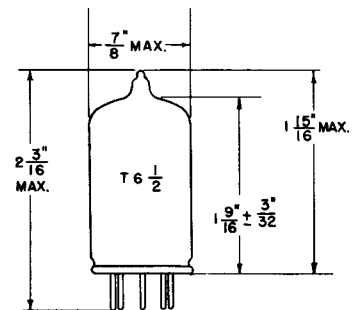


RETMA 9A
BOTTOM VIEW

TERMINAL CONNECTIONS

- Pin 1—Plate (Section 2)
- Pin 2—Grid (Section 2)
- Pin 3—Cathode (Section 2)
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Plate (Section 1)
- Pin 7—Grid (Section 1)
- Pin 8—Cathode (Section 1)
- Pin 9—Heater Center-Tap

PHYSICAL DIMENSIONS

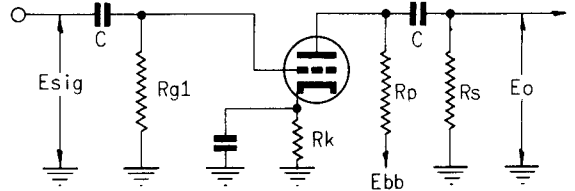


RETMA 6-2

CLASS A RESISTANCE-COUPLED AMPLIFIER

EACH SECTION

R _p Meg.	R _s Meg.	R _{g1} Meg.	E _{bb} = 90 Volts			E _{bb} = 180 Volts			E _{bb} = 300 Volts		
			R _k	Gain	E _o	R _k	Gain	E _o	R _k	Gain	E _o
0.10	0.10	0.1	1700	31	5.0	1000	40	15	760	43	30
0.10	0.24	0.1	2000	38	6.9	1100	46	20	900	50	40
0.24	0.24	0.1	3500	43	6.5	2000	54	18	1600	58	37
0.24	0.51	0.1	3900	49	8.6	2300	59	24	1800	64	47
0.51	0.51	0.1	7100	50	7.4	4300	62	19	3100	66	39
0.51	1.0	0.1	7800	53	9.1	4800	64	24	3600	69	46
0.24	0.24	10	0	37	3.9	0	53	15	0	62	32
0.24	0.51	10	0	44	5.4	0	60	19	0	67	41
0.51	0.51	10	0	44	5.0	0	61	17	0	69	35
0.51	1.0	10	0	49	6.4	0	66	21	0	71	41

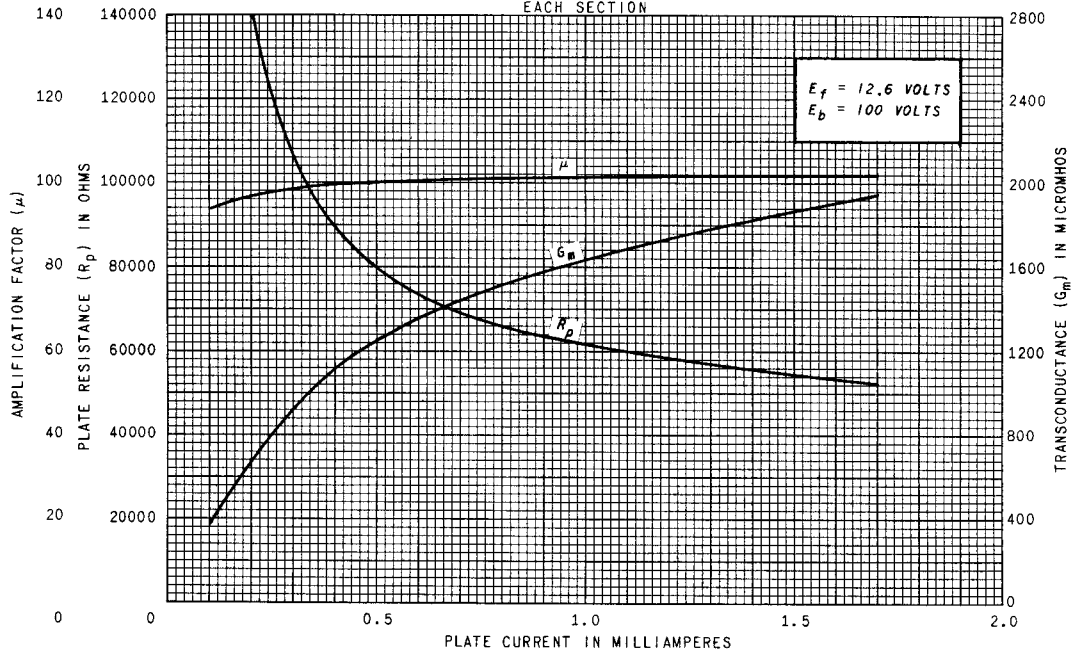


Note: Coupling capacitors (C) should be selected to give desired frequency response. R_k should be adequately by-passed.

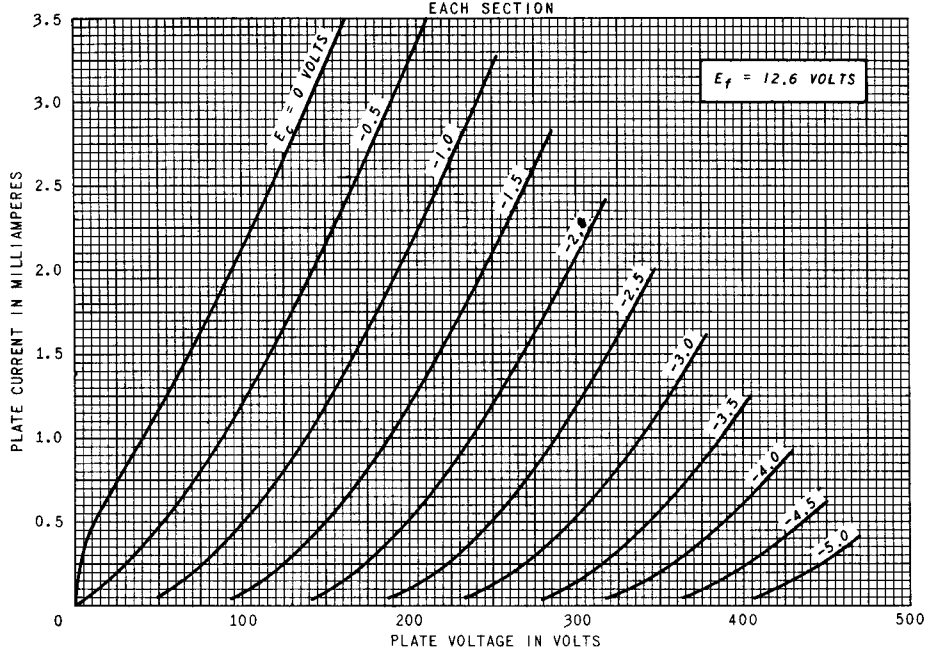
Notes: 1. E_o is maximum RMS voltage output for five percent (5%) total harmonic distortion. 2. Gain measured at 2.0 volts RMS output. 3. For zero-bias data, generator impedance is negligible.

AVERAGE CHARACTERISTICS

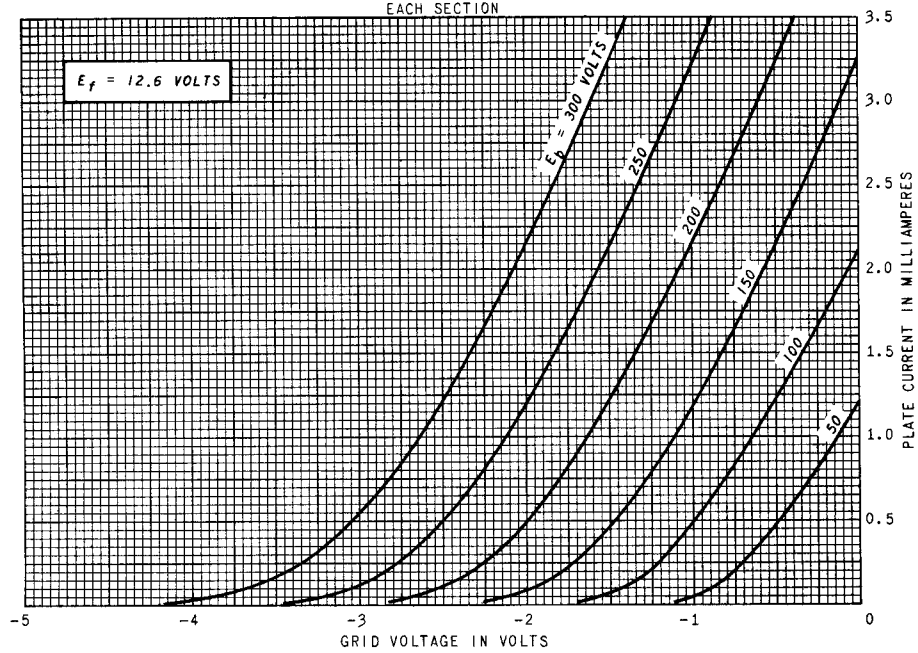
EACH SECTION



AVERAGE PLATE CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS



AVERAGE CHARACTERISTICS
 EACH SECTION

