TUNG-SOL

TWIN TRIODE

MINIATURE TYPE

HIGH-MU TRIODES

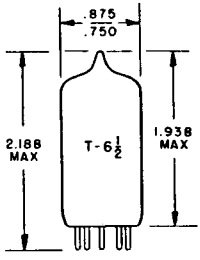
FOR

HIGH GAIN AUDIO AMPLIFIER SERVICE

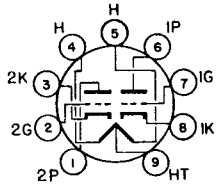
IN MILITARY APPLICATIONS

COATED UNIPOTENTIAL CATHODE

ANY MOUNTING POSITION



GLASS BULB
SMALL BUTTON
9 PIN NOVAL E9-1
OUTLINE DRAWING
JEDEC 6-2



BOTTOM VIEW
BASING DIAGRAM
JEDEC 9A

THE 12AX7WA CONTAINS TWO INDEPENDENT HIGH-MU TRIODES IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS ADAPTABLE TO APPLICATIONS WHERE HIGH VOLTAGE GAIN AND LOW HEATER POWER ARE THE IMPORTANT CONSIDERATION, SUCH AS VOLTAGE AMPLIFIER, PHASE INVERTERS OR MULTIVIBRATORS. THE CENTER TAPPED HEATER CONNECTION PERMITS OPERATION FROM EITHER A 6.3 VOLT OR 12.6 VOLT SUPPLY AND IN 300 MA. OR 150 MA. SERIES HEATER SERVICE.

DIRECT INTERELECTRODE CAPACITANCES

GRID TO PLATE: G TO P	1.7	pf
INPUT	1.8	pf
OUTPUT SECTION 1	0.46	pf
OUTPUT SECTION 2	0.34	pf

HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

SUPPLY CONNECTED TO PINS	4 AND 5	9 AND 4+5	
AVERAGE VALUES– VOLTAGE	12.6	6.3	VOLTS
– CURRENT	150	300	MA.
LIMITS OF APPLIED VOLTAGE	12.6 ± 1.2	6.3 ± 0.6	VOLTS

MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

VALUES ARE FOR EACH UNIT

PLATE VOLTAGE	330	VOLTS
PLATE DISSIPATION	1.0	WATT
GRID VOLTAGE		
NEGATIVE BIAS VALUE	-50	VOLTS
POSITIVE BIAS VALUE	0	VOLTS
BULB TEMPERATURE	+165	°C

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CHARACTERISTICS

CLASS A1 AMPLIFIER

PLATE VOLTAGE	250	VOLTS
GRID VOLTAGE	-2	VOLTS
PLATE CURRENT	1.2	MA.
AMPLIFICATION FACTOR	100	μ
TRANSCONDUCTANCE	1,650	μMHOS
PLATE RESISTANCE	62,500	OHMS

SPECIAL TESTS AND RATINGS

HEATER CYCLING RATING		
ALTITUDE	80,000	FEET
SHOCK		

RESISTANCE COUPLED AMPLIFIER

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

E_o IS MAXIMUM RMS VOLTAGE OUTPUT FOR FIVE PERCENT TOTAL HARMONIC DISTORTION.
GAIN MEASURED AT 2.0 VOLTS RMS OUTPUT.
FOR ZERO-BIAS DATA, GENERATOR IMPEDANCE IS NEGLIGIBLE.

TUNG-SOL

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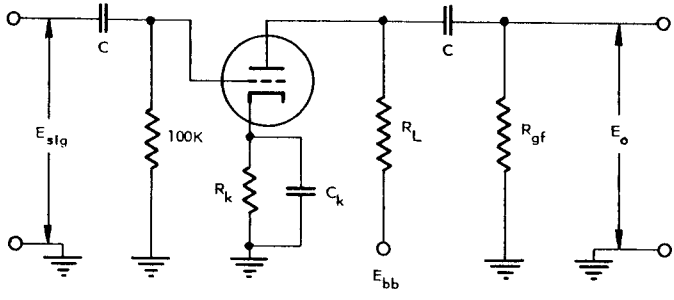
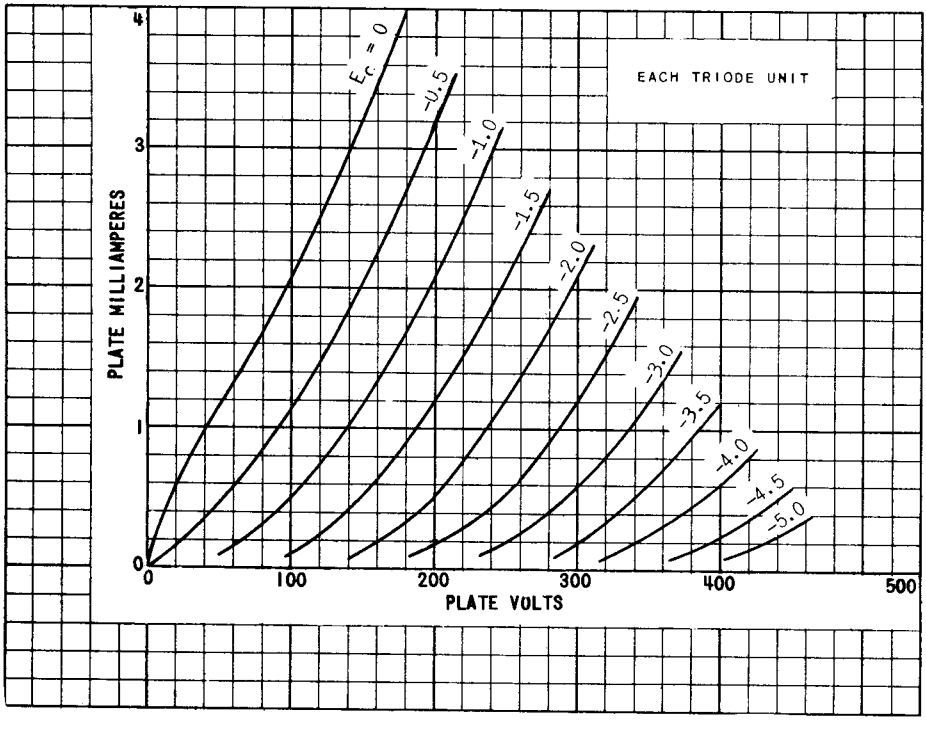


COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE. R_k SHOULD BE ADEQUATELY BY-PASSED.



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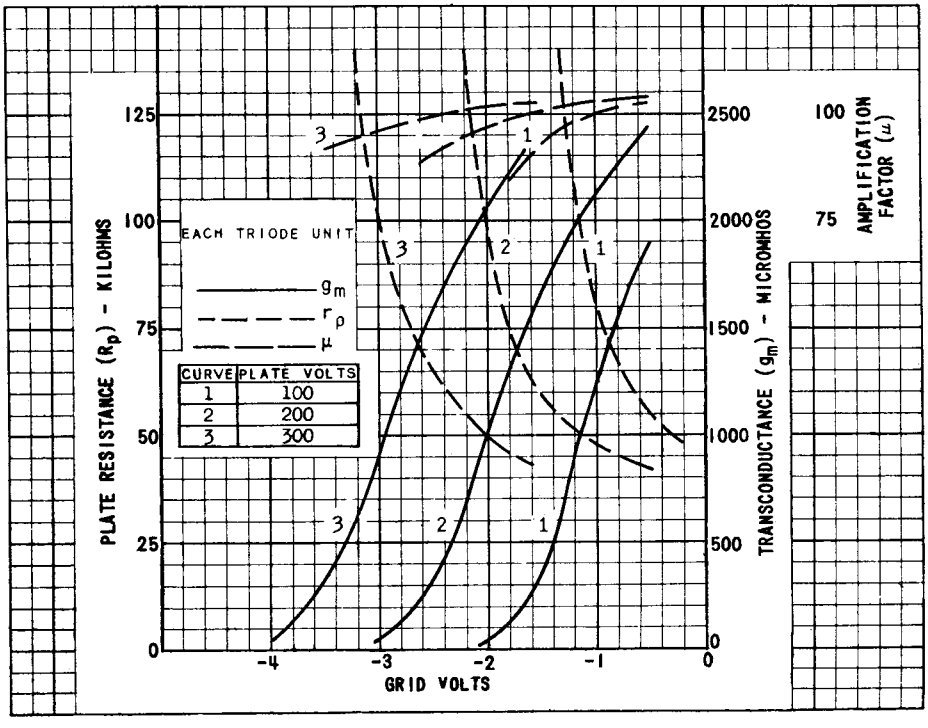
12AX7WA


EACH TRIODE UNIT
g_m
r_p
μ
CURVE | PLATE VOLTS
1 | 100
2 | 200
3 | 300
PLATE RESISTANCE (R_p) - KILOHMS
TRANSCONDUCTANCE (g_m) - MICROMHOS
AMPLIFICATION FACTOR (μ)
GRID VOLTS
125
100
75
50
25
0
2500
2000
1500
1000
500
0
100
75
-4
-3
-2
-1
0