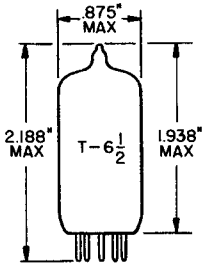
TUNG-SOL

TWIN TRIODE
MINIATURE TYPE

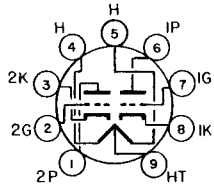
FOR
MOBILE COMMUNICATIONS
EQUIPMENT

COATED UNIPOTENTIAL CATHODE

ANY MOUNTING POSITION



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



BOTTOM VIEW
BASING DIAGRAM
JEDEC 9A

THE 6681 IS A HIGH-MU TWIN TRIODE IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS ESPECIALLY SUITED FOR USE IN RESISTANCE-COUPLED VOLTAGE AMPLIFIERS, PHASE INVERTERS, MULTIVIBRATORS, AND OTHER APPLICATIONS IN WHICH HIGH VOLTAGE GAIN IS DESIRED.
THE 6681 MAY BE OPERATED WITHOUT SERIOUS DEGRADATION UNDER NORMAL VARIATIONS IN SUPPLY VOLTAGE AS ENCOUNTERED WITH AUTOMOTIVE ELECTRICAL SYSTEMS. ALSO, THE TUBE WILL TOLERATE LARGE HEATER VOLTAGE VARIATIONS FOR SHORT PERIODS, BUT HIGHER EQUIPMENT RELIABILITY CAN BE ACHIEVED WITH IMPROVED SUPPLY-VOLTAGE REGULATION.
THE ELECTRICAL CHARACTERISTICS OF THE 6681 ARE EQUIVALENT TO THE 12AX7.

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD[A]	WITHOUT SHIELD	
GRID TO PLATE, EACH SECTION	1.7	1.7	pf
INPUT, EACH SECTION	1.8	1.6	pf
OUTPUT, SECTION 1	1.9	0.46	pf
OUTPUT, SECTION 2	1.9	0.34	pf

[A] WITH EXTERNAL SHIELD (RETMA 315) CONNECTED TO CATHODE OF SECTION UNDER TEST.

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.
HEATER SUPPLY LIMITS:			
VOLTAGE OPERATION	12.6±2.5	6.3±1.3	VOLTS
MAXIMUM HEATER CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE			VOLTS
TOTAL DC AND PEAK	200		VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE			
DC	100		VOLTS
TOTAL DC AND PEAK	200		VOLTS

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MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

EACH SECTION

PLATE VOLTAGE	330	VOLTS
POSITIVE DC GRID VOLTAGE	0	VOLTS
NEGATIVE DC GRID VOLTAGE	55	VOLTS
PLATE DISSIPATION	1.1	WATTS

TYPICAL OPERATING CHARACTERISTICS

CLASS A1 AMPLIFIER - EACH SECTION

PLATE VOLTAGE	100	250	VOLTS
GRID VOLTAGE	−1	−2	VOLTS
PLATE CURRENT	0.5	1.2	MA.
TRANSCONDUCTANCE	1250	1600	μMHOS
AMPLIFICATION FACTOR	100	100	
PLATE RESISTANCE, APPROX.	80,000	62,500	OHMS

CLASS A RESISTANCE - COUPLED AMPLIFIER

EACH SECTION

LOW IMPEDANCE DRIVE (APPROXIMATELY 200 OHMS)

R_L	R_{gf}	Ebb = 90 Volts			Ebb = 180 Volts			Ebb = 300 Volts		
		R_k	E_o	Gain	R_k	E_o	Gain	R_k	E_o	Gain
0.10	0.10	2500	4.3	32	1500	15	40	1100	33	43
0.10	0.24	2600	6.5	40	1500	22	49	1200	44	53
0.24	0.24	4400	6.3	45	2500	21	56	2000	44	60
0.24	0.51	4800	8.5	50	2800	27	62	2200	54	66
0.51	0.51	8500	7.3	50	4200	21	63	3500	45	69
0.51	1.0	10000	9.4	55	6500	28	66	4700	55	72

HIGH IMPEDANCE DRIVE (APPROXIMATELY 100K OHMS)

R_L	R_{gf}	Ebb = 90 Volts			Ebb = 180 Volts			Ebb = 300 Volts		
		R_k	E_o	Gain	R_k	E_o	Gain	R_k	E_o	Gain
0.10	0.10	3400	7.1	28	1900	18	34	1400	35	40
0.10	0.24	3700	9.4	37	2100	25	46	1600	47	50
0.24	0.24	6100	9.8	42	3500	25	53	2500	47	59
0.24	0.51	6800	12	47	3900	30	58	3000	58	63
0.51	0.51	11000	11	47	6200	27	60	4500	52	66
0.51	1.0	12000	14	50	6900	34	64	5300	64	69

1. E_o IS MAXIMUM RMS VOLTAGE OUTPUT FOR APPROXIMATELY 5% TOTAL HARMONIC DISTORTION.

2. GAIN IS MEASURED FOR AN OUTPUT VOLTAGE OF TWO VOLTS RMS.

3. R_k IS IN OHMS; R_L AND R_{gf} ARE IN MEGOHMS.

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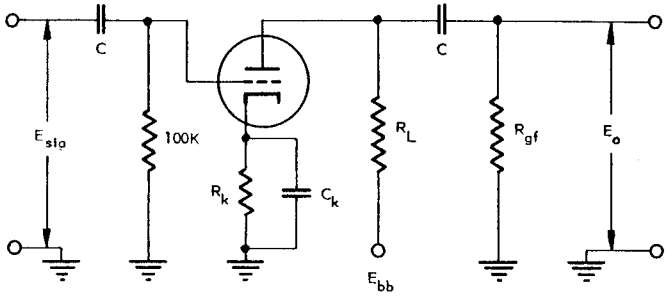
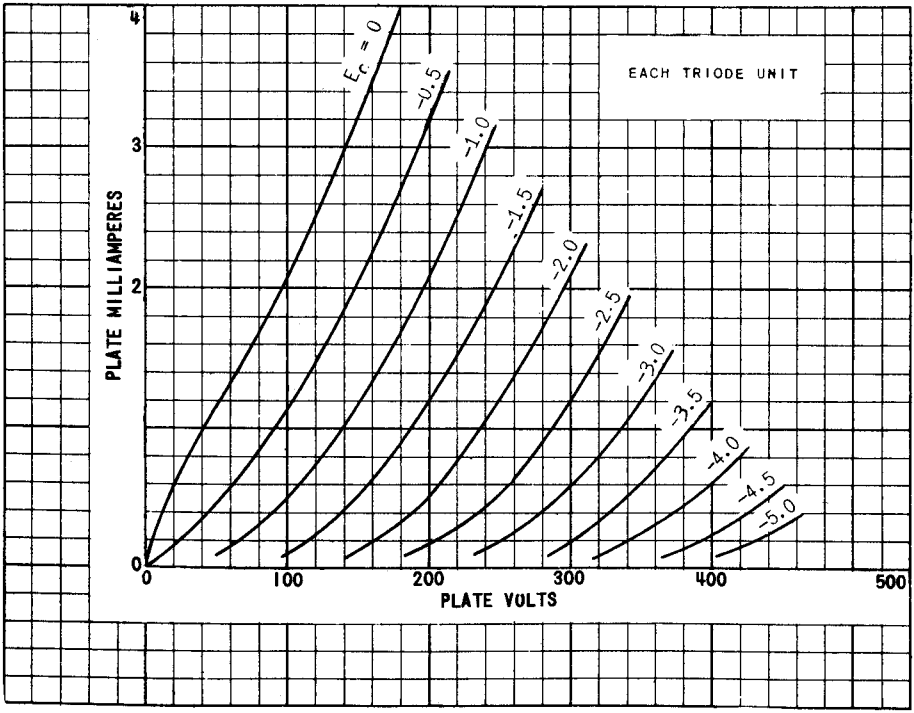


COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE. R_k SHOULD BE ADEQUATELY BY-PASSED.

SPECIAL TESTS AND RATINGS

HEATER-CYCLING LIFE TEST



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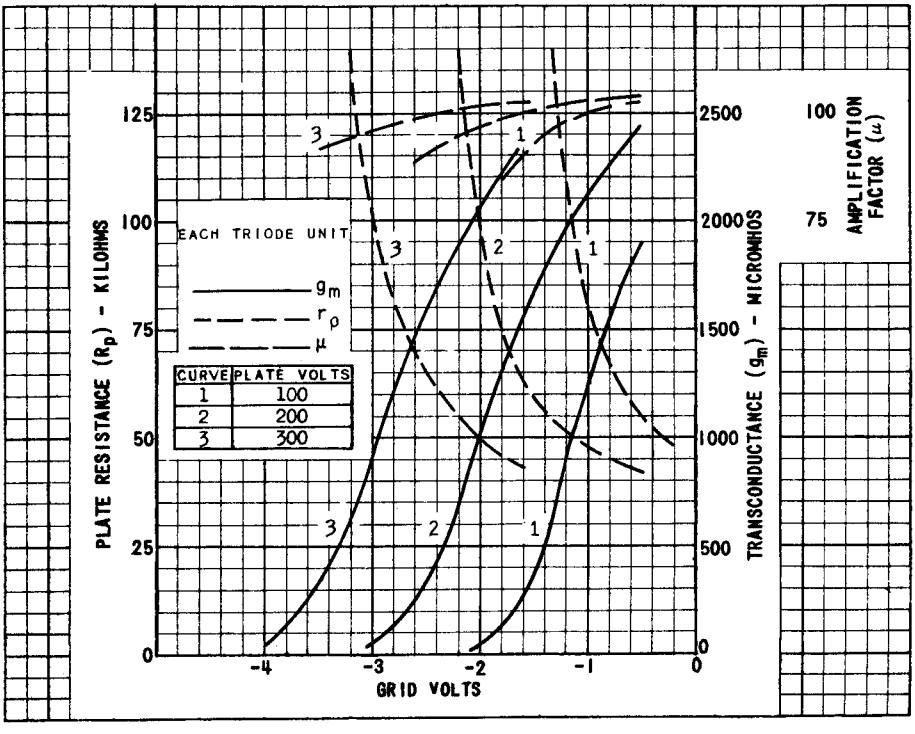
EACH TRIODE UNIT
g_m
r_p
μ
CURVE PLATE VOLTS
1 100
2 200
3 300
PLATE RESISTANCE (R_p) - KILOHMS
TRANSCONDUCTANCE (g_m) - MICROMHOS
AMPLIFICATION FACTOR (μ)
GRID VOLTS
125
100
75
50
25
0
2500
2000
1500
1000
500
0
100
75
-4
-3
-2
-1
0