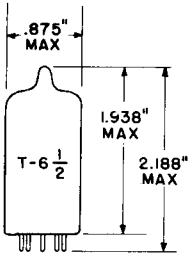
TUNG-SOL

DUPLEX-DIODE TRIODE

MINIATURE TYPE



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

COATED UNIPOTENTIAL CATHODE

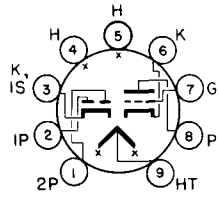
HEATER

SERIES	PARALLEL
6.3±0.6 VOLTS	3.15 VOLTS
300 MA.	600±40 MA.

AC OR DC

ANY MOUNTING POSITION

CONTROL OF HEATER WARM-UP TIME APPLIES ONLY TO PARALLEL CONNECTION.



BOTTOM VIEW
BASING DIAGRAM
JEDEC 9EN

THE 6CN7 IS A DUPLEX DIODE HIGH-MU TRIODE IN WHICH SEPARATE CATHODES ARE PROVIDED FOR THE DIODE AND TRIODE SECTIONS. IT IS INTENDED PRIMARILY FOR SERVICE AS A COMBINED HORIZONTAL PHASE DETECTOR AND REACTANCE TUBE IN TELEVISION RECEIVERS. THERMAL CHARACTERISTICS OF THE HEATER ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES WHICH ARE SIMILARLY CONTROLLED. EXCEPT FOR HEATER RATINGS, THE 6CN7 IS IDENTICAL TO THE 8CN7.

DIRECT INTERELELECTRODE CAPACITANCES

WITHOUT EXTERNAL SHIELD

TRIODE GRID TO PLATE	1.8	pf
TRIODE INPUT	1.5	pf
TRIODE OUTPUT	0.5	pf
GRID TO EACH DIODE PLATE	0.006	pf
DIODE #1 PLATE TO DIODE CATHODE AND HEATER	3.6	pf
DIODE #2 PLATE TO DIODE CATHODE AND HEATER	3.6	pf

RATINGS

INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM

MAXIMUM PLATE VOLTAGE	→ 330	VOLTS
MAXIMUM POSITIVE DC GRID VOLTAGE	0	VOLTS
MAXIMUM PLATE DISSIPATION	→ 1.1	WATTS
MAXIMUM HEATER-CATHODE VOLTAGE		
HEATER POSITIVE WITH RESPECT TO EITHER CATHODE		
DC COMPONENT	100	VOLTS
TOTAL DC AND PEAK	200	VOLTS
HEATER NEGATIVE WITH RESPECT TO EITHER CATHODE		
TOTAL DC AND PEAK	200	VOLTS
MAXIMUM DIODE CURRENT FOR CONTINUOUS OPERATION, (EACH DIODE)	→ 5.5	MA.
HEATER WARM-UP TIME*	11.0	SECONDS

*HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

→ INDICATES A CHANGE.

CONTINUED ON FOLLOWING PAGE

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CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

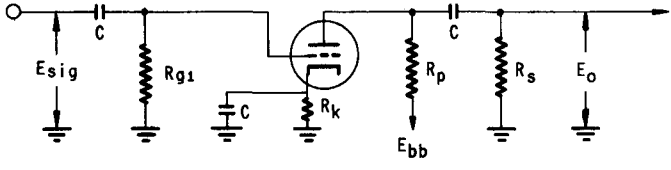
CLASS A_1 AMPLIFIER

PLATE VOLTAGE	100	250	VOLTS
GRID VOLTAGE	−1.0	−3.0	VOLTS
AMPLIFICATION FACTOR	70	70	
PLATE RESISTANCE (APPROX.)	54 000	58 000	OHMS
TRANSCONDUCTANCE	1 300	1 200	μMHOS
PLATE CURRENT	0.8	1.0	MA.
AVERAGE DIODE CURRENT (EACH DIODE) WITH 5.0 VOLTS DC APPLIED		20	MA.

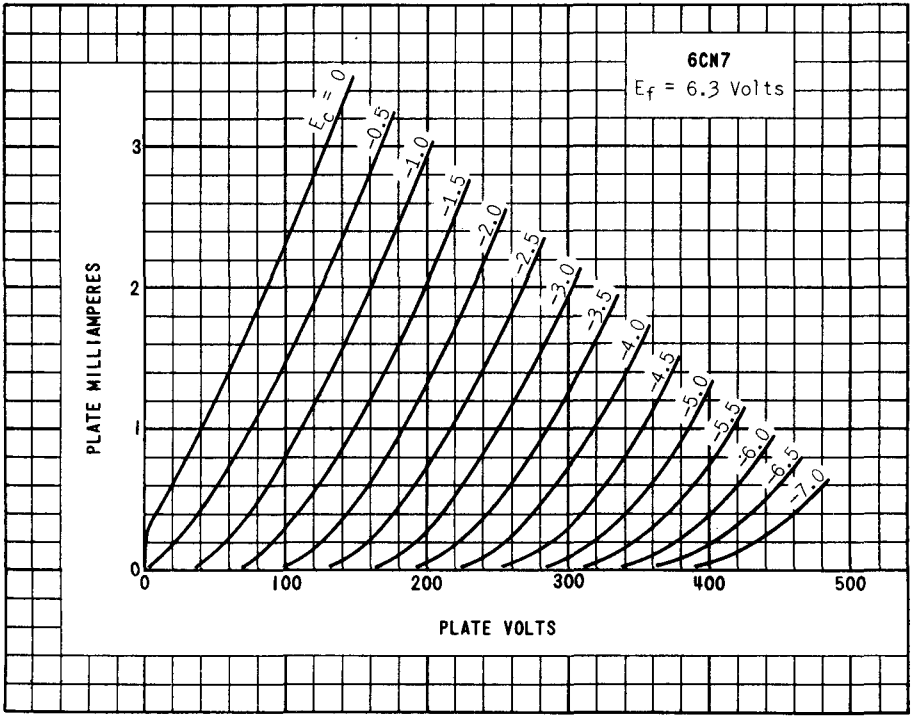
CLASS A RESISTANCE - COUPLED AMPLIFIER

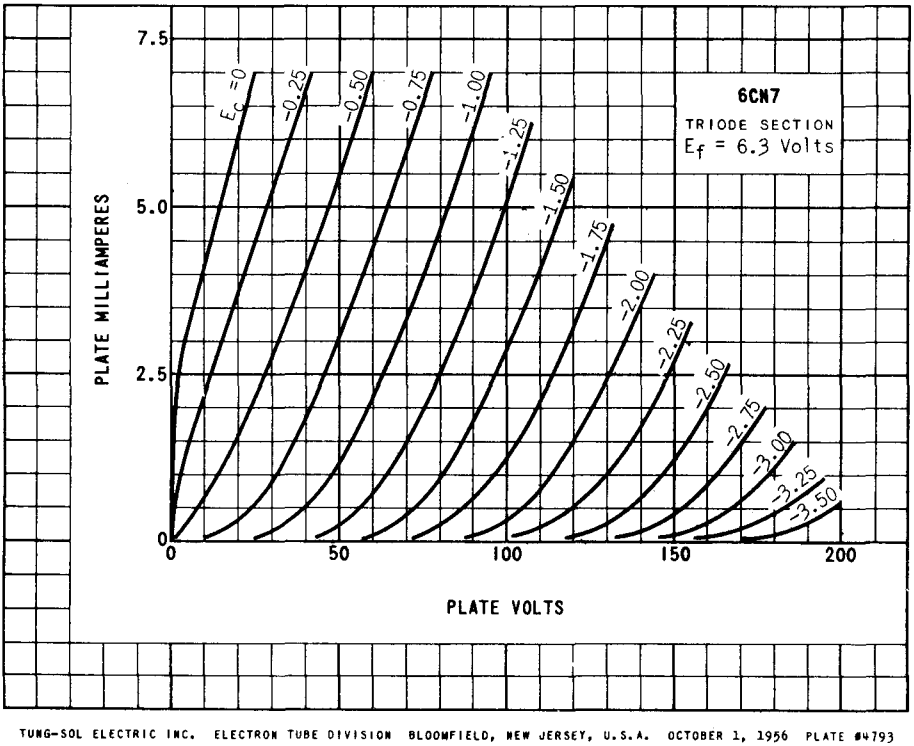
Rp Meg.	Rs Meg.	R_{g1} Meg.	Ebb = 90 Volts			Ebb = 180 Volts			Ebb = 300 Volts		
			Rk	Gain	Eo	Rk	Gain	Eo	Rk	Gain	Eo
0.10	0.10	0.10	5700	21	7.0	2400	29	18	1800	33	35
0.10	0.24	0.10	6100	26	9.0	2700	34	23	2000	38	42
0.24	0.24	0.10	9100	30	10	4300	40	24	3000	44	43
0.24	0.51	0.10	10000	34	13	4700	45	31	3300	49	52
0.51	0.51	0.10	15000	37	14	7500	47	28	5600	51	50
0.51	1.0	0.10	16000	40	16	8200	50	35	6200	55	60
0.24	0.24	10	0	31	5.0	0	44	19	0	48	40
0.24	0.51	10	0	37	7.0	0	49	25	0	52	52
0.51	0.51	10	0	39	7.5	0	51	22	0	54	44
0.51	1.0	10	0	42	10	0	54	28	0	58	56

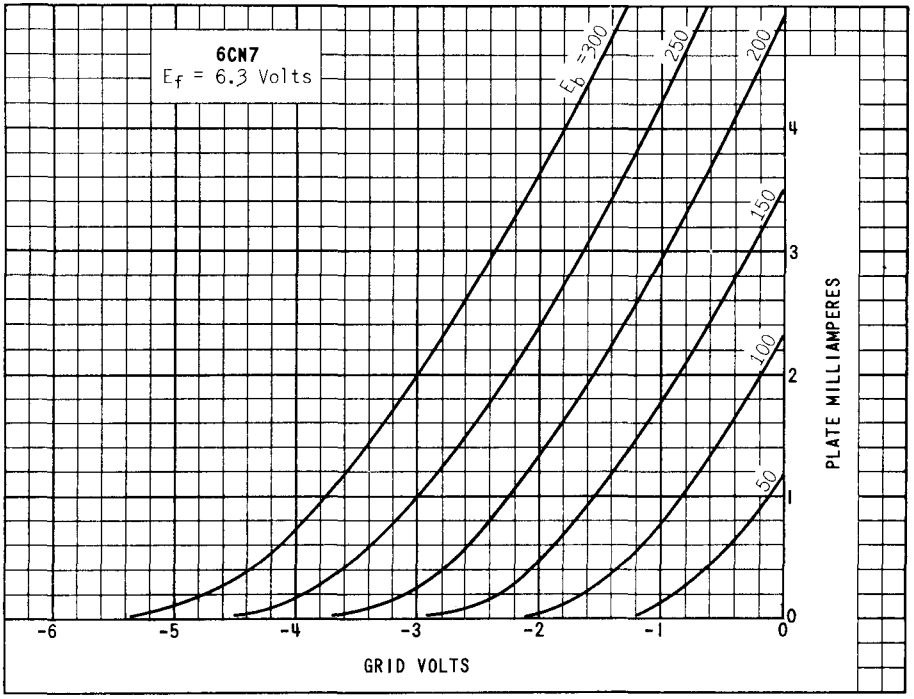
Eo IS MAXIMUM RMS VOLTAGE OUTPUT FOR FIVE PERCENT TOTAL HARMONIC DISTORTION.
GAIN MEASURED AT 2.0 VOLTS RMS OUTPUT.
FOR ZERO-BIAS DATA, GENERATOR IMPEDANCE IS NEGLIGIBLE.

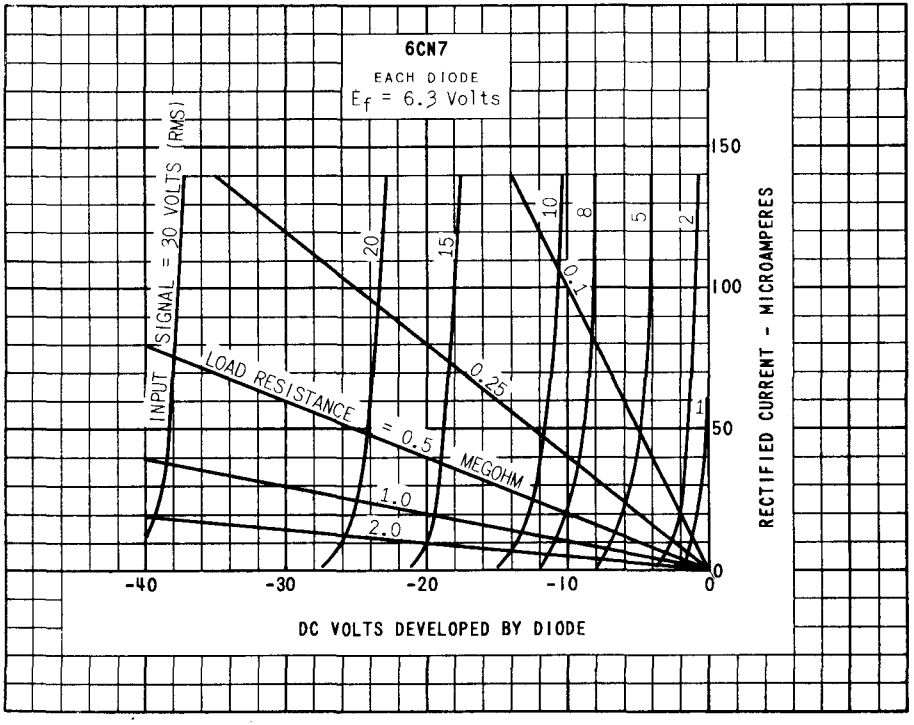


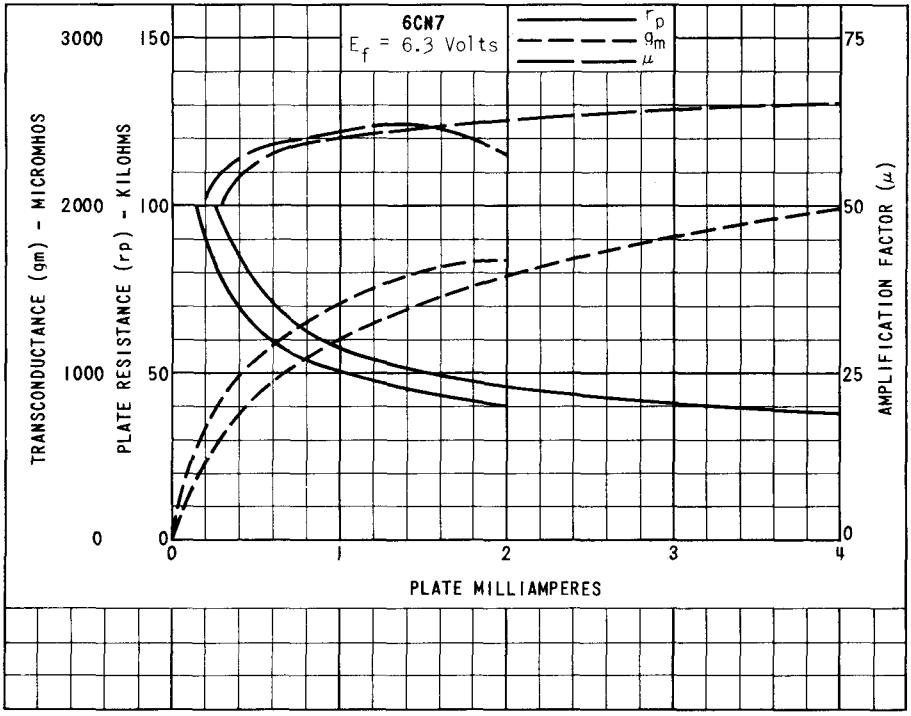
NOTE: COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE. Rk SHOULD BE ADEQUATELY BY-PASSED.


6CN7
E_f = 6.3 Volts
E_c = 0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
-5.5
-6.0
-6.5
-7.0
PLATE MILLIAMPERES
0
1
2
3
0
100
200
300
400
500
PLATE VOLTS


6CN7
TRIODE SECTION
E_f = 6.3 Volts
E_c =0
-0.25
-0.50
-0.75
-1.00
-1.25
-1.50
-1.75
-2.00
-2.25
-2.50
-2.75
-3.00
-3.25
-3.50
PLATE MILLIAMPERES
0
2.5
5.0
7.5
0
50
100
150
200
PLATE VOLTS


6CN7
E_f = 6.3 Volts
E_b =300
250
200
150
100
50
PLATE MILLIAMPERES
0
1
2
3
4
-6
-5
-4
-3
-2
-1
0
GRID VOLTS


6CN7
EACH DIODE
E_f = 6.3 Volts
INPUT SIGNAL = 30 VOLTS (RMS)
LOAD RESISTANCE
= 0.5 MEGOHM
1.0
2.0
0.25
20
15
10
8
5
2
1
0.1
RECTIFIED CURRENT - MICROAMPERES
150
100
50
0
-40
-30
-20
-10
0
DC VOLTS DEVELOPED BY DIODE



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