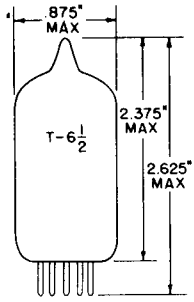
TUNG-SOL

DOUBLE TRIODE

MINIATURE TYPE

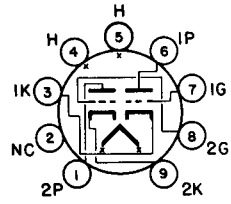


GLASS BULB
SMALL BUTTON NOVAL
9 PIN BASE E9-1
OUTLINE DRAWING
JEDEC 6-3

COATED UNIPOTENTIAL CATHODES

HEATER
6.3 VOLTS 600±40 MA.
AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW
BASING DIAGRAM
JEDEC 9ES

THE 6CM7 IS A MEDIUM-MU DOUBLE TRIODE OF THE 9 PIN MINIATURE TYPE CONTAINING TWO DISSIMILAR TRIODES IN ONE ENVELOPE. IT IS INTENDED FOR USE AS A VERTICAL DEFLECTION AMPLIFIER IN 600 MA. SERIES HEATER OPERATED 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.

DIRECT INTERELECTRODE CAPACITANCES – APPROX.

WITH NO EXTERNAL SHIELD

	UNIT #1 OSCILLATOR	UNIT #2 AMPLIFIER	
GRID TO PLATE	3.8	3	pf
GRID TO CATHODE AND HEATER	2	3.5	pf
PLATE TO CATHODE AND HEATER	0.5	0.4	pf

RATINGS[A]

INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM[B]

	UNIT #1 VERTICAL DEFLECTION OSCILLATOR		UNIT #2 VERTICAL DEFLECTION AMPLIFIER	
MAXIMUM PEAK HEATER-CATHODE VOLTAGE:				
HEATER NEGATIVE WITH RESPECT TO CATHODE		200		VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE		200[C]		VOLTS
MAXIMUM DC PLATE VOLTAGE	→ 550		550	VOLTS
MAXIMUM PEAK NEGATIVE-PULSE GRID VOLTAGE[D]	→ 220		220	VOLTS
MAXIMUM PEAK POSITIVE-PULSE PLATE VOLTAGE[D]			2200	VOLTS
MAXIMUM CATHODE CURRENT:				
PEAK	→ 77		77	MA.
AVERAGE	→ 17		22	MA.
MAXIMUM PLATE DISSIPATION	→ 1.45		6.0	WATTS
MAXIMUM GRID CIRCUIT RESISTANCE:				
CATHODE BIAS	2.2		2.5	MEGOHMS
FIXED BIAS	2.2		1.0	MEGOHMS
GRID RESISTOR BIAS	2.2		---	MEGOHMS
HEATER WARM-UP TIME (APPROX.)[F]		11.0		SECONDS

[A] FOR OPERATION IN A 525-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE CONCERNING TELEVISION BROADCAST STATIONS", FEDERAL COMMUNICATIONS COMMISSION.

[C] THE DC COMPONENT MUST NOT EXCEED 100 VOLTS.

[D] THIS RATING IS APPLICABLE WHERE THE DURATION OF THE VOLTAGE PULSE DOES NOT EXCEED 15% OF ONE VERTICAL SCANNING CYCLE. IN A 525-LINE, 30-FRAME SYSTEM 15% OF ONE VERTICAL SCANNING CYCLE IS 2.5 MILLISECONDS.

[F] 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.

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

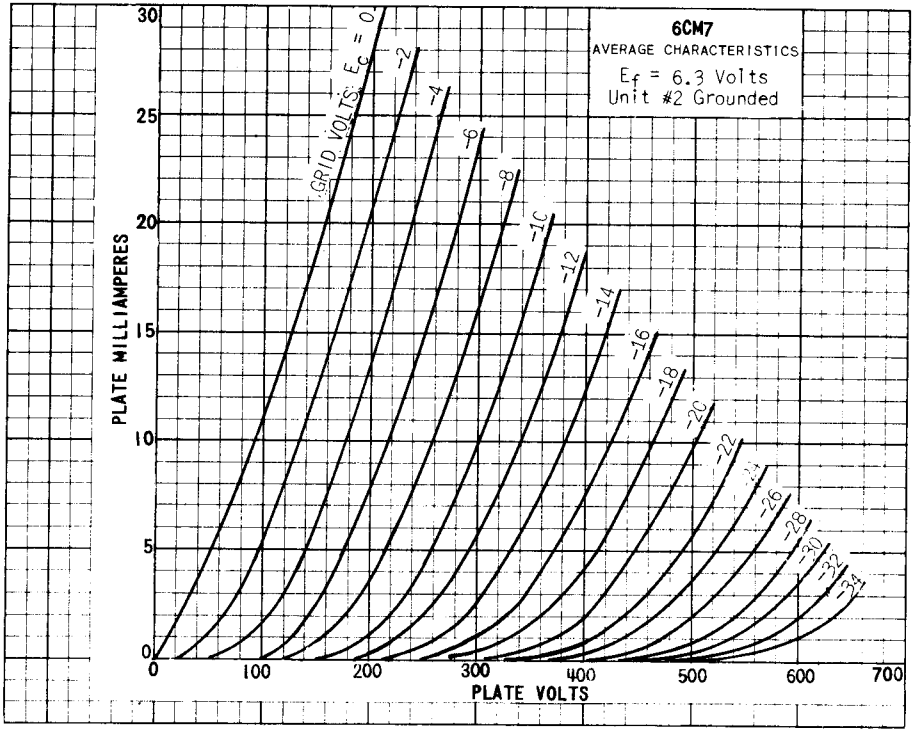
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

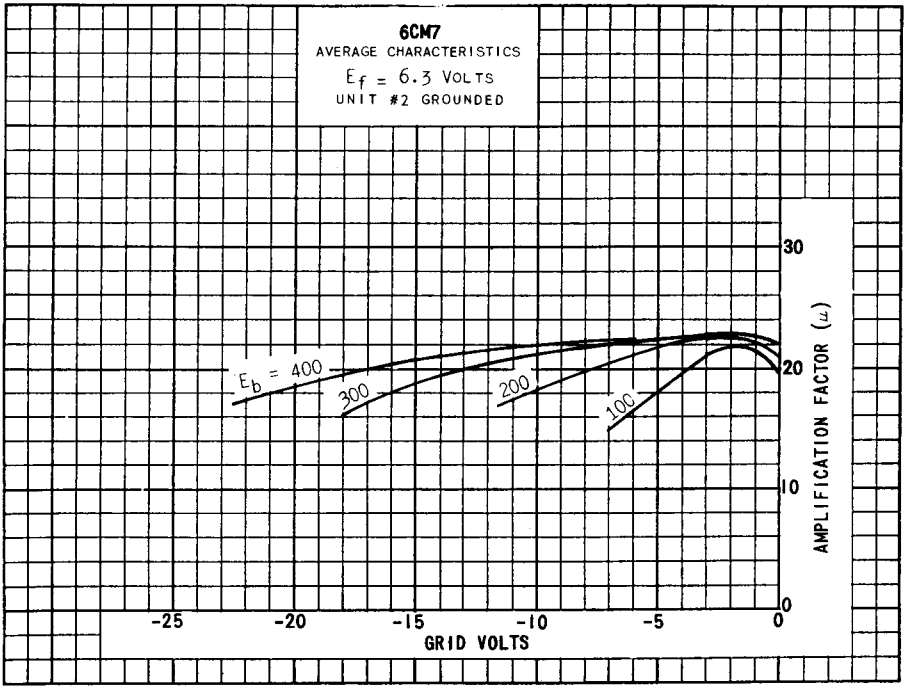
CLASS A_1 AMPLIFIER

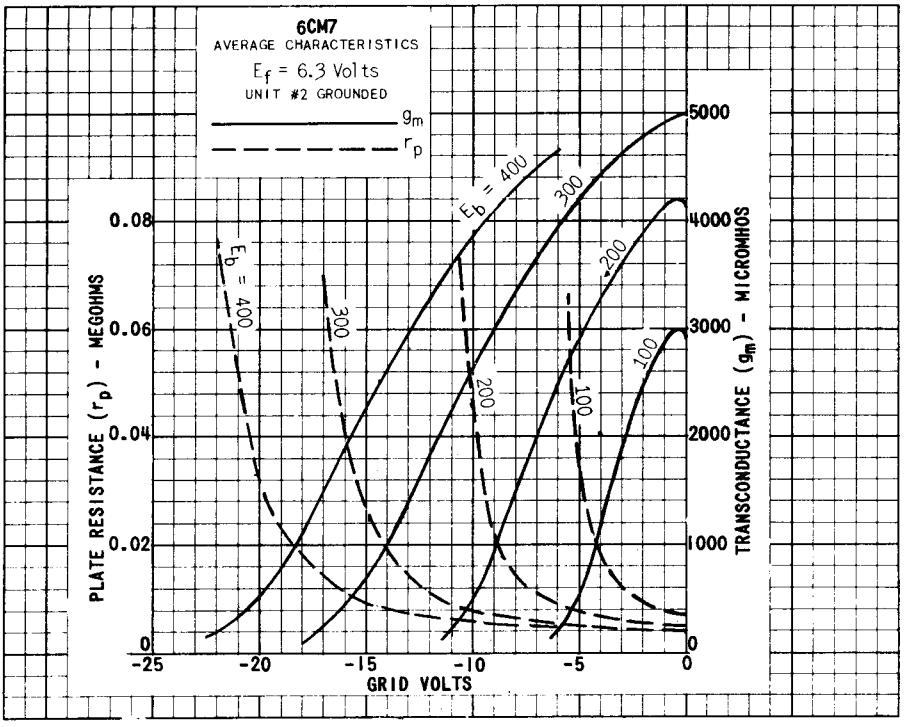
	UNIT #1 OSCILLATOR	UNIT #2 AMPLIFIER	
PLATE VOLTAGE	200	250	VOLTS
GRID VOLTAGE	−7	−8	VOLTS
AMPLIFICATION FACTOR	21	18	
PLATE RESISTANCE (APPROX.)	10 500	4 100	OHMS
TRANSCONDUCTANCE	2 000	4 400	μMHOS
PLATE CURRENT†	5	20	MA.
PLATE CURRENT FOR GRID VOLTAGE OF −10 VOLTS	1	---	MA.
GRID VOLTAGE (APPROX.) FOR I_b = 10 μA.	14	---	VOLTS

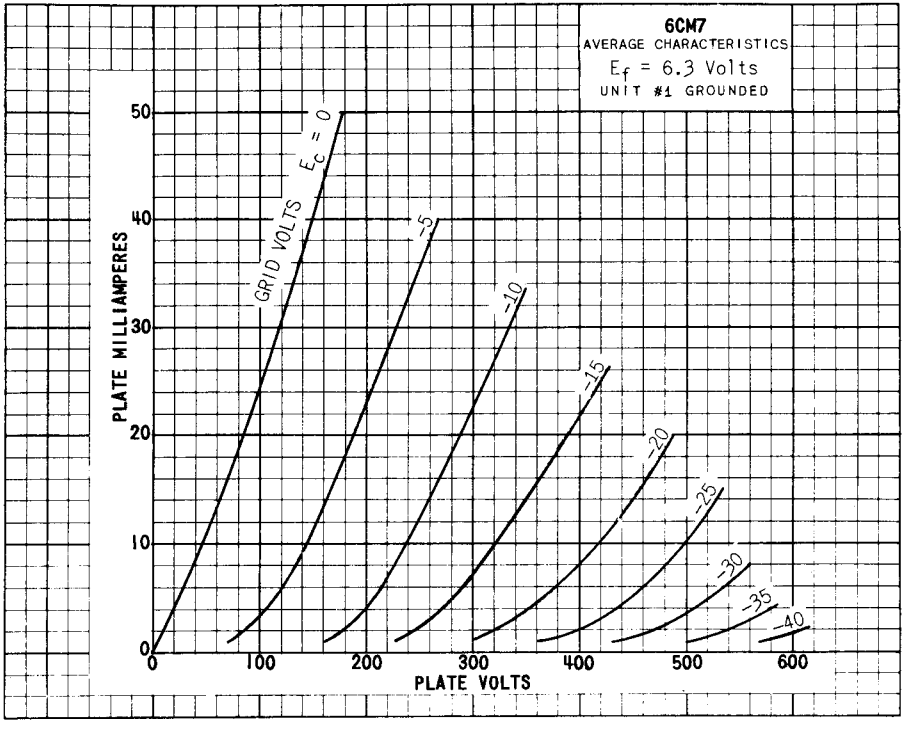
SIMILAR TYPE REFERENCE: Except for heater ratings, the 6CM7 is identical to the 8CM7.

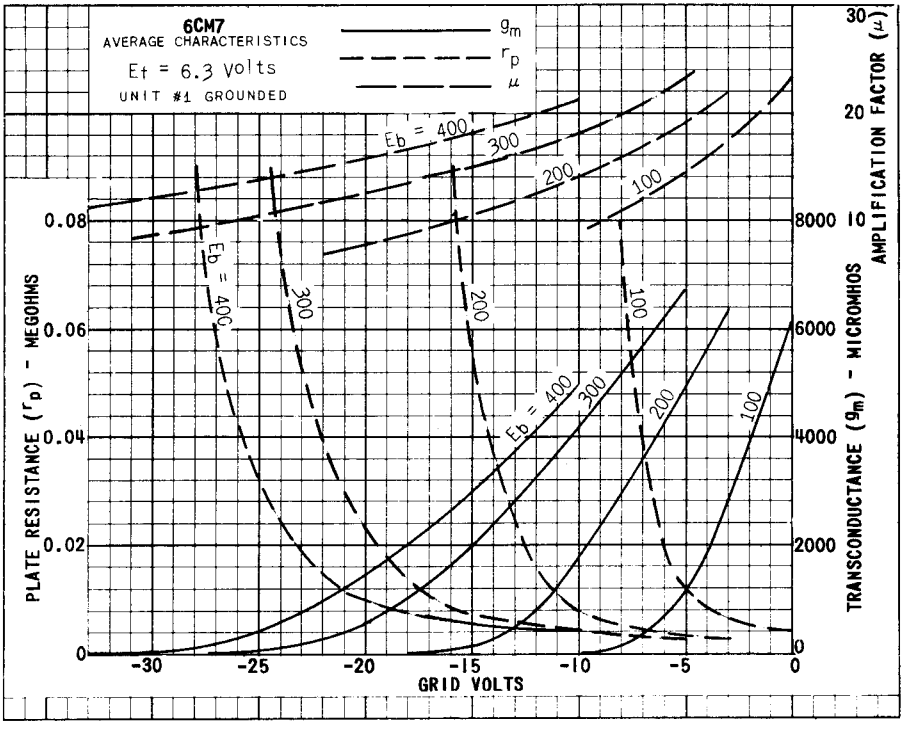
→ INDICATES A CHANGE.




6CM7
AVERAGE CHARACTERISTICS
E_f = 6.3 VOLTS
UNIT #2 GROUNDED
E_b = 400
300
200
100
AMPLIFICATION FACTOR (μ)
30
20
10
0
-25
-20
-15
-10
-5
0
GRID VOLTS


6CM7
AVERAGE CHARACTERISTICS
E_f = 6.3 Volts
UNIT #2 GROUNDED
g_m
r_p
E_b = 400
300
200
100
PLATE RESISTANCE (r_p) - MEGOHMS
0.08
0.06
0.04
0.02
0
TRANSCONDUCTANCE (g_m) - MICROMHOS
5000
4000
3000
2000
1000
0
-25
-20
-15
-10
-5
0
GRID VOLTS


6CM7
AVERAGE CHARACTERISTICS
Ef = 6.3 Volts
UNIT #1 GROUNDED
PLATE MILLIAMPERES
PLATE VOLTS
GRID VOLTS
Ec = 0
-5
-10
-15
-20
-25
-30
-35
-40
0
10
20
30
40
50
100
200
300
400
500
600


6CM7
AVERAGE CHARACTERISTICS
Et = 6.3 Volts
UNIT #1 GROUNDED
gm
rp
μ
Eb = 400
300
200
100
PLATE RESISTANCE (rp) - MEGOHMS
TRANSCONDUCTANCE (gm) - MICROMHOS
AMPLIFICATION FACTOR (μ)
GRID VOLTS
0.08
0.06
0.04
0.02
0
8000
6000
4000
2000
30
20
10
-30
-25
-20
-15
-10
-5