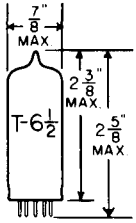
TUNG-SOL

DOUBLE TRIODE

MINIATURE TYPE



GLASS BULB

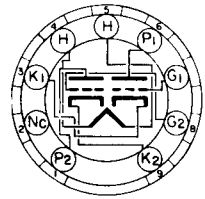
COATED UNIPOTENTIAL CATHODES

HEATER

8.4 VOLTS 0.45 AMP

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

SMALL BUTTON NOVAL
9 PIN BASE

9ES

THE 8CM7 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 450 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	μμf
GRID TO CATHODE AND HEATER	2	3.5	μμf
PLATE TO CATHODE AND HEATER	0.5	0.4	μμf

RATINGS[A]

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM[B]

	UNIT #1 VERTICAL DEFLECTION OSCILLATOR	UNIT #2 VERTICAL DEFLECTION AMPLIFIER	
HEATER VOLTAGE	8.4		VOLTS
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	500	500	VOLTS
MAXIMUM PEAK POSITIVE PULSE PLATE VOLTAGE (ABSOLUTE MAXIMUM)[D]	---	2 200[E]	VOLTS
MAXIMUM CATHODE CURRENT:			
PEAK	70	70	MA.
AVERAGE	15	20	MA.
MAXIMUM PLATE DISSIPATION	1.25	5.5	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.

[B] UNLESS OTHERWISE SPECIFIED.

[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.

[E] UNDER NO CIRCUMSTANCES SHOULD THIS ABSOLUTE VALUE BE EXCEEDED.

[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

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TUNG-SOL

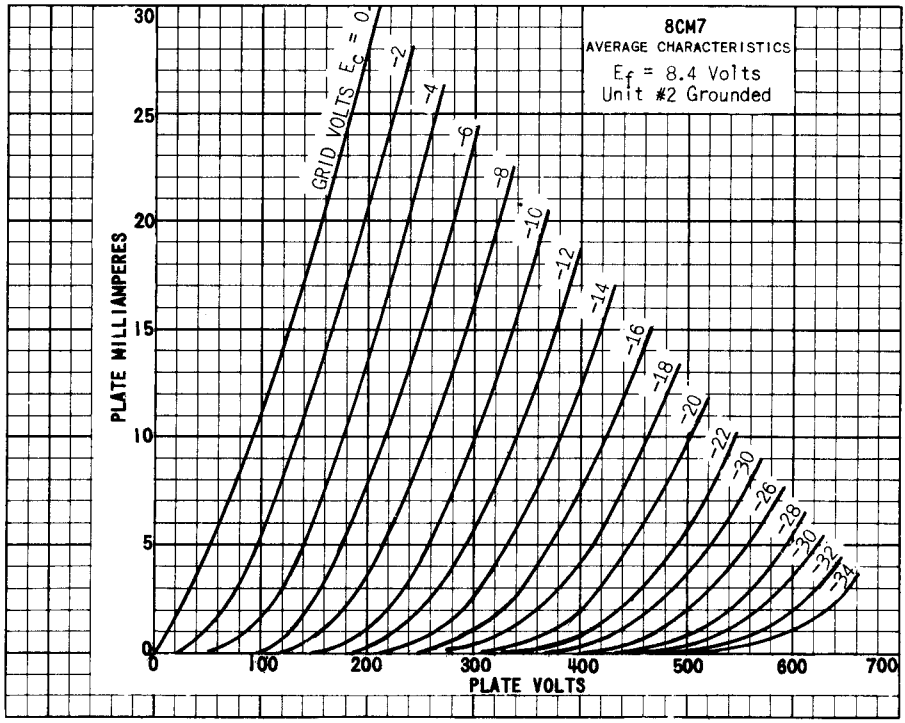
CONTINUED FROM PRECEDING PAGE

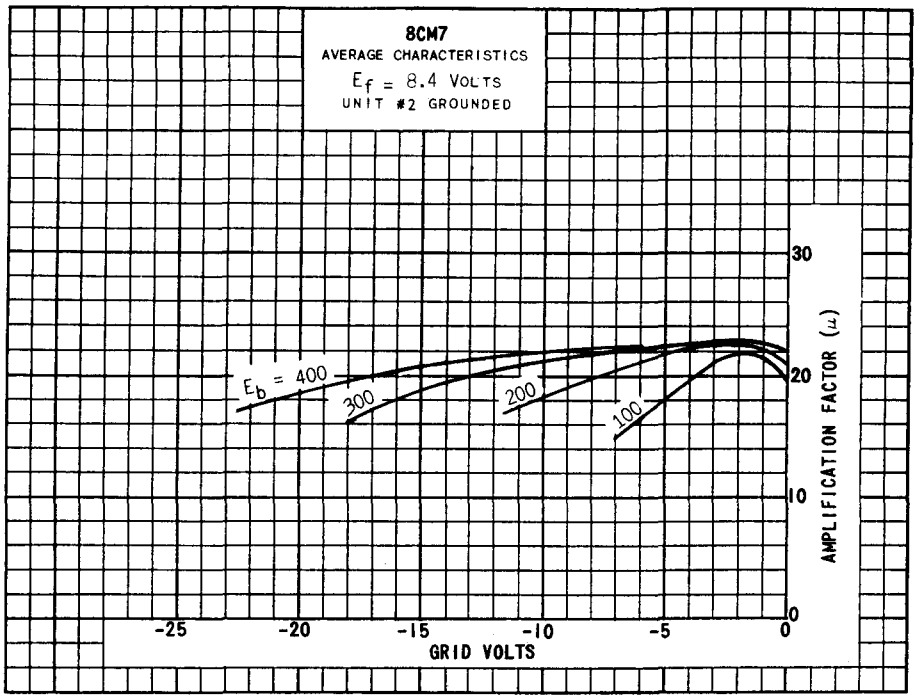
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

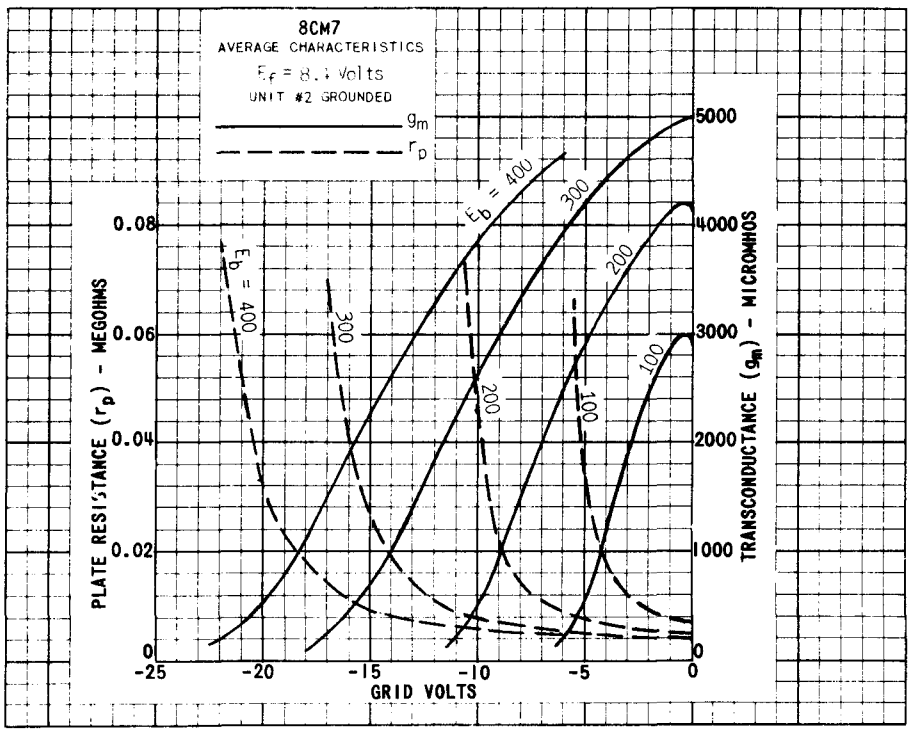
CLASS A_1 AMPLIFIER

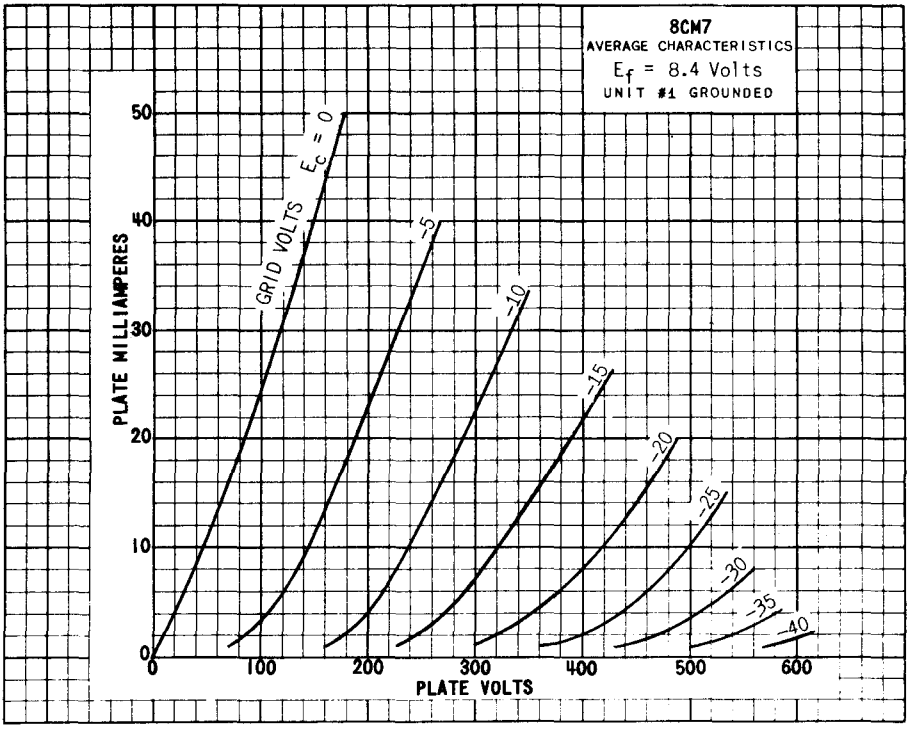
	UNIT #1 OSCILLATOR	UNIT #2 AMPLIFIER	
HEATER VOLTAGE	8.4		VOLTS
HEATER CURRENT	0.45		AMP.
PLATE VOLTAGE	200	250	VOLTS
GRID VOLTAGE	−7	−18	VOLTS
AMPLIFICATION FACTOR	21	18	
PLATE RESISTANCE (APPROX.)	10 500	4 100	OHMS
TRANSCONDUCTANCE	2 000	4 400	μMHOS
PLATE CURRENT	5	20	MA.
PLATE CURRENT FOR GRID VOLTAGE OF −10 VOLTS	1	---	MA.
GRID VOLTAGE (APPROX.) FOR I_b = 10 μA.	14	---	VOLTS

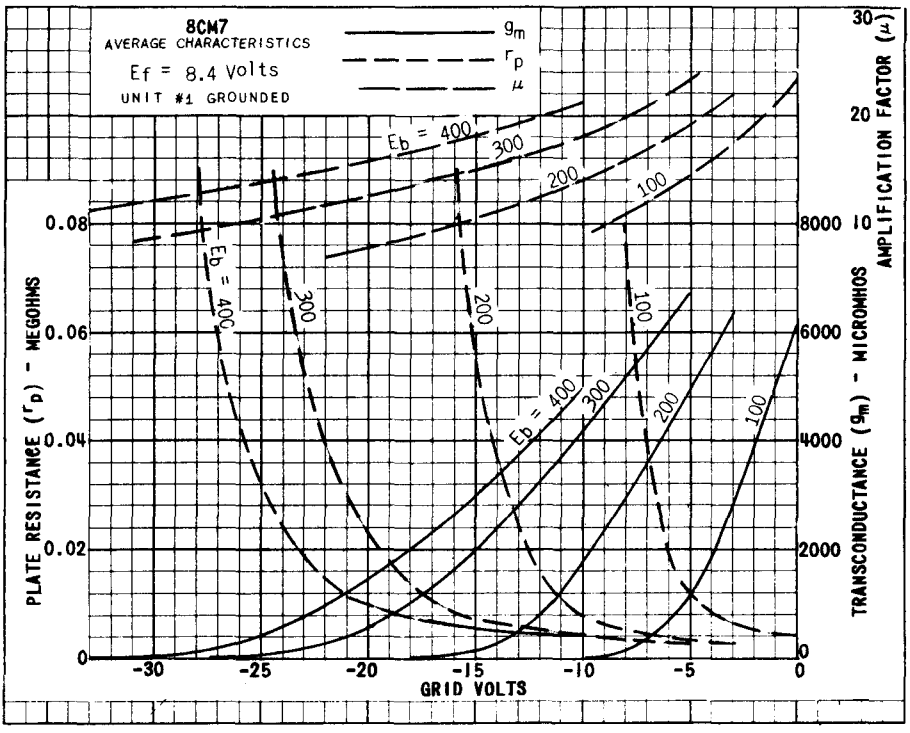
SIMILAR TYPE REFERENCE: Except for heater ratings, the 8CM7 is identical to the 6CM7.




8CM7
AVERAGE CHARACTERISTICS
Ef = 8.4 VOLTS
UNIT #2 GROUNDED
Eb = 400
300
200
100
30
20
10
0
AMPLIFICATION FACTOR (μ)
-25
-20
-15
-10
-5
0
GRID VOLTS


8CM7
AVERAGE CHARACTERISTICS
Ef = 8.4 Volts
UNIT #2 GROUNDED
gm
rp
Eb = 400
300
200
100
0.08
0.06
0.04
0.02
0
PLATE RESISTANCE (rp) - MEGOHMS
5000
4000
3000
2000
1000
0
TRANSCONDUCTANCE (gm) - MICROMHOS
-25
-20
-15
-10
-5
0
GRID VOLTS


8CM7
AVERAGE CHARACTERISTICS
Ef = 8.4 Volts
UNIT #1 GROUNDED
GRID VOLTS Ec = 0
-5
-10
-15
-20
-25
-30
-35
-40
PLATE MILLIAMPERES
0
10
20
30
40
50
0
100
200
300
400
500
600
PLATE VOLTS


8CM7
AVERAGE CHARACTERISTICS
Ef = 8.4 Volts
UNIT #1 GROUNDED
gm
rp
μ
Eb = 400
300
200
100
PLATE RESISTANCE (rp) - MEGOHMS
0
0.02
0.04
0.06
0.08
TRANSCONDUCTANCE (gm) - MICROMHOS
0
2000
4000
6000
8000
AMPLIFICATION FACTOR (μ)
10
20
30
-30
-25
-20
-15
-10
-5
0
GRID VOLTS