Electronic TUBES

6CN7—8CN7

DUPLEX-DIODE TRIODE

DESCRIPTION AND RATING

The 6CN7 is a duplex-diode high-mu triode in which separate cathodes are provided for the diode and triode sections. The triode section of the 6CN7 is electrically identical to the triode section of the 6T8. The tube is primarily intended for service as a combined horizontal phase detector and reactance tube in television receivers. The triode section may also be used in a variety of other applications, such as in sync-separator, sync-amplifier, or audio-amplifier circuits.

Except for heater ratings, the 8CN7 is identical to the 6CN7. Both of the tubes incorporate a controlled heater-warm-up characteristic which makes them especially suited for use in television receivers that employ series-connected heaters.

GENERAL

ELECTRICAL	6CN7 Series	6CN7 Parallel	8CN7 Series	8CN7 Parallel	
Cathode—Coated Unipotential					
Heater Voltage, AC or DC	6.3	3.15	8.4	4.2	Volts
Heater Current	0.3	0.6	0.225	0.45	Amperes
Heater Warm-up Time*	..	11	...	11	Seconds

Direct Interelectrode Capacitances†		
Triode Grid to Plate	1.8	μμf
Triode Input	1.5	μμf
Triode Output	0.5	μμf
Grid to Each Diode Plate	0.006	μμf
Diode-Number 1 Plate to Diode Cathode and Heater	3.6	μμf
Diode-Number 2 Plate to Diode Cathode and Heater	3.6	μμf

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button, 9-Pin

MAXIMUM RATINGS

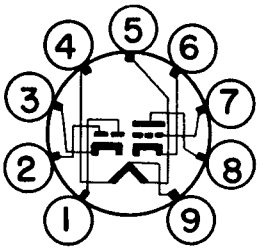
DESIGN-CENTER VALUES

Plate Voltage	300 Volts
Positive DC Grid Voltage	0 Volts
Plate Dissipation	1.0 Watts
Heater-Cathode Voltage	
Heater Positive with Respect to Cathode	
DC Component	100 Volts
Total DC and Peak	200 Volts
Heater Negative with Respect to Cathode	
Total DC and Peak	200 Volts
Diode Current for Continuous Operation, Each Diode	5.0 Milliamperes

GENERAL ELECTRIC

Supersedes ET-T908, dated 3-55

BASING DIAGRAM

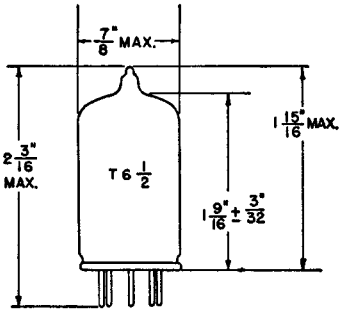


RETMA 9EN

TERMINAL CONNECTIONS

Pin 1—Diode Number 2 Plate
Pin 2—Diode Number 1 Plate
Pin 3—Diode Cathode and Internal Shield
Pin 4—Heater
Pin 5—Heater
Pin 6—Triode Cathode
Pin 7—Triode Grid
Pin 8—Triode Plate
Pin 9—Heater Center-Tap

PHYSICAL DIMENSIONS



RETMA 6-2

CHARACTERISTICS AND TYPICAL OPERATIONS

CLASS A_1 AMPLIFIER

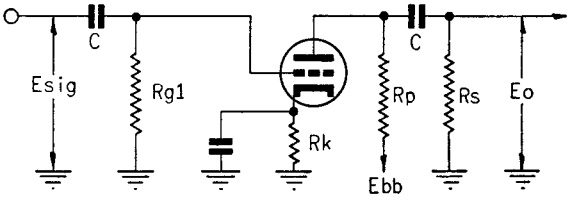
Plate Voltage	100	250 Volts
Grid Voltage	−1.0	−3.0 Volts
Amplification Factor	70	70
Plate Resistance, approximate	54000	58000 Ohms
Transconductance	1300	1200 Micromhos
Plate Current	0.8	1.0 Milliamperes
Average Diode Current, Each Diode with 5.0 Volts DC Applied		20 Milliamperes

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

CLASS A RESISTANCE-COUPLED AMPLIFIER

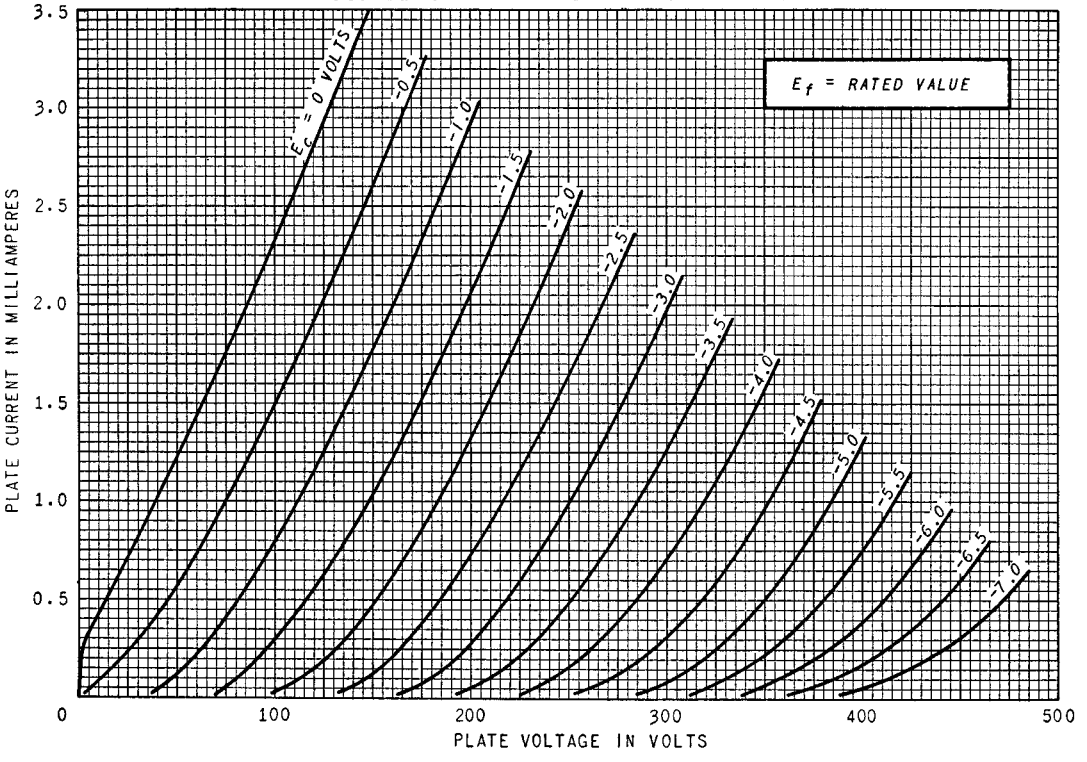
R_p	R_s	R_{g1}	Ebb = 90 Volts			Ebb = 180 Volts			Ebb = 300 Volts		
Meg.	Meg.	Meg.	Rk	Gain	Eo	Rk	Gain	Eo	Rk	Gain	Eo
0.10	0.10	0.10	5700	21	7.0	2400	29	18	1800	33	35
0.10	0.24	0.10	6100	26	9.0	2700	34	23	2000	38	42
0.24	0.24	0.10	9100	30	10	4300	40	24	3000	44	43
0.24	0.51	0.10	10000	34	13	4700	45	31	3300	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



Note: Coupling capacitors (C) should be selected to give desired frequency response. Rk should be adequately by-passed.

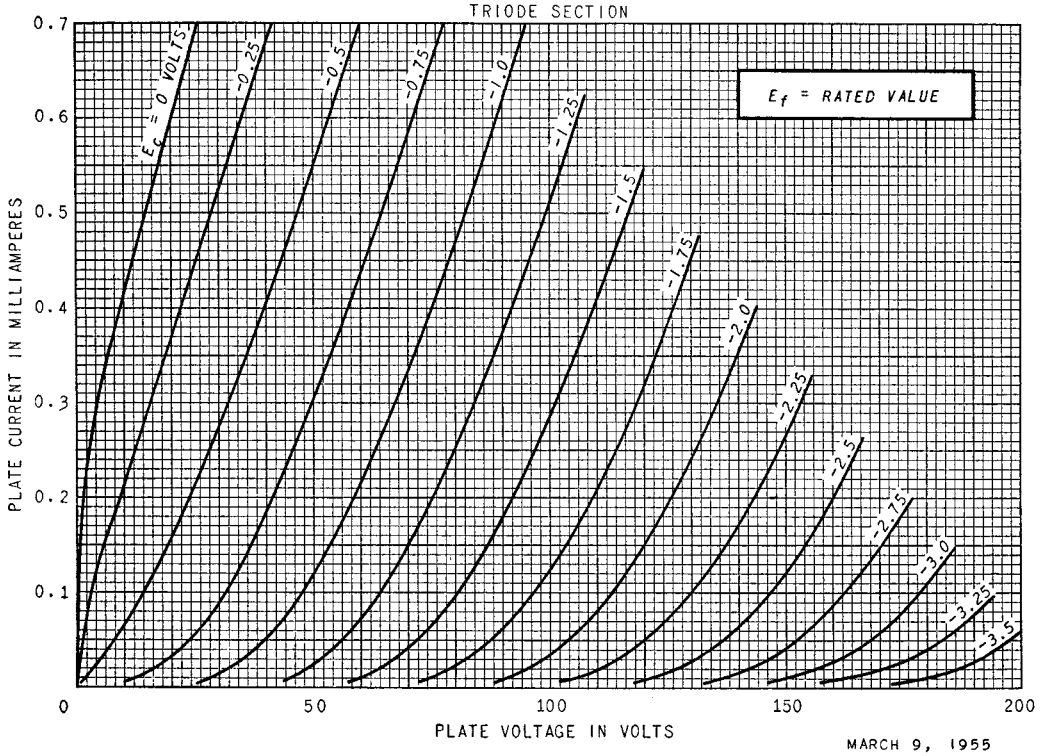
Notes: 1. Eo is maximum RMS voltage output for five percent (5%) total harmonic distortion. 2. Gain measured at 2.0 volts RMS output. 3. For zero-bias data, generator impedance is negligible.

AVERAGE PLATE CHARACTERISTICS



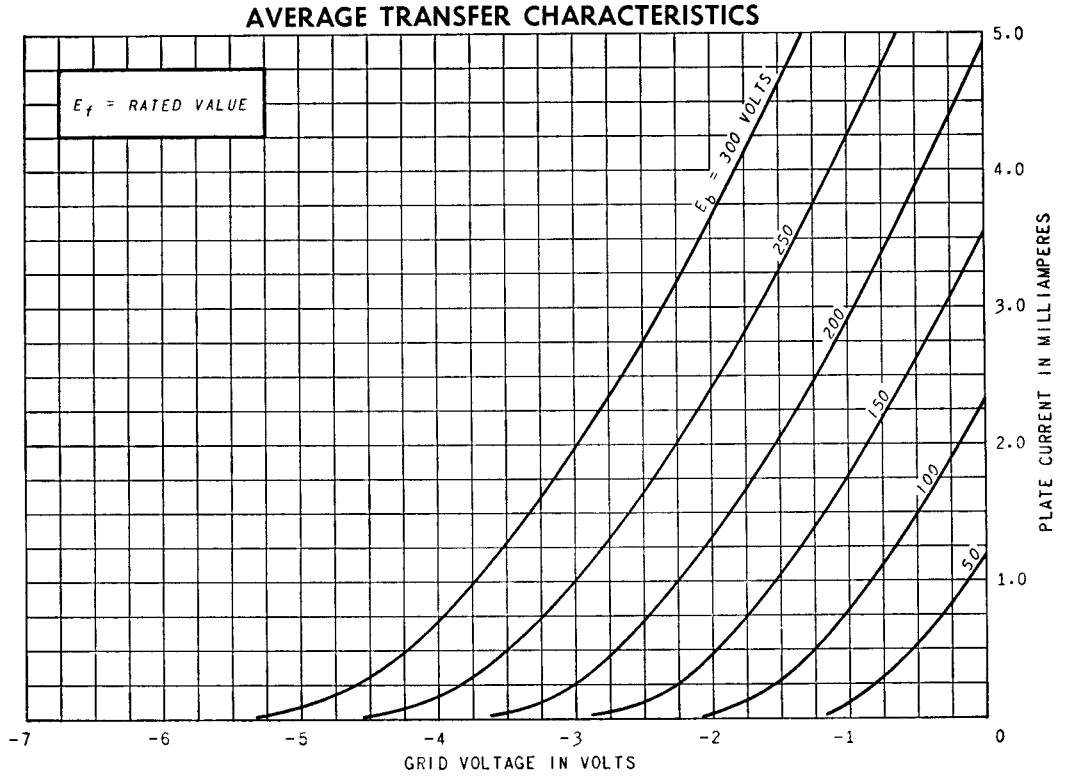
AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION

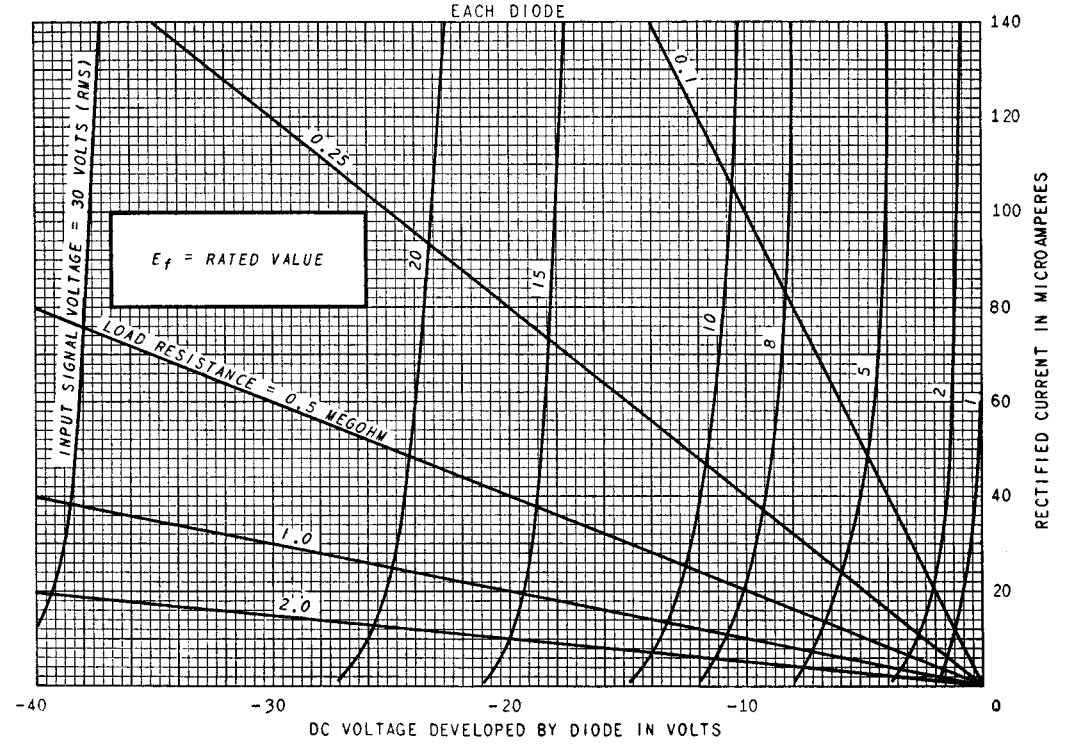


MARCH 9, 1955

AVERAGE TRANSFER CHARACTERISTICS



OPERATION CHARACTERISTICS



AVERAGE CHARACTERISTICS