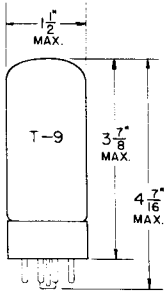
TUNG-SOL

PENTODE

MINIATURE TYPE



GLASS BULB

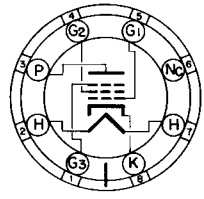
COATED UNIPOTENTIAL CATHODE

HEATER

6.3 VOLTS 1.5 AMPS.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW
8 PIN OCTAL

8ET

THE 6CA7 IS A POWER PENTODE OF THE GLASS OCTAL TYPE. THIS TUBE IS SUITABLE FOR ALL APPLICATIONS WHICH REQUIRE PEAK POWERS OF UP TO 11 WATTS FROM A SINGLE TUBE OR UP TO 100 WATTS FROM TWO TUBES IN THE NORMAL PUSH-PULL ARRANGEMENT. IT IS EQUALLY SUITABLE FOR DOMESTIC AMPLIFIERS AND PUBLIC ADDRESS EQUIPMENT.

DIRECT INTERELECTRODE CAPACITANCES

GRID #1 TO ALL OTHER ELEMENTS EXCEPT PLATE	15.5	μμf
PLATE TO ALL OTHER ELEMENTS EXCEPT GRID #1	7.2	μμf
PLATE TO GRID #1 (MAX.)	1.0	μμf
GRID #1 TO HEATER (MAX.)	1.0	μμf
HEATER TO CATHODE	11	μμf

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

HEATER VOLTAGE	6.3	VOLTS
MAXIMUM PLATE VOLTAGE	800	VOLTS
MAXIMUM PLATE VOLTAGE WITHOUT PLATE CURRENT	2000	VOLTS
MAXIMUM PLATE DISSIPATION	25	WATTS
MAXIMUM PLATE DISSIPATION WITHOUT INPUT SIGNAL	27.5	WATTS
MAXIMUM GRID #2 VOLTAGE	425	VOLTS
MAXIMUM GRID #2 VOLTAGE WITHOUT PLATE CURRENT	800	VOLTS
MAXIMUM GRID #2 DISSIPATION	8	WATTS
CATHODE CURRENT	150	MAMPS
MAXIMUM GRID CURRENT STARTING POINT. GRID #1 VOLTAGE WHEN GRID #1 CURRENT IS 0.3μAMP	-1.3	VOLTS
MAXIMUM GRID #1 CIRCUIT RESISTANCE (CLASS A & AB)	0.7	MEGOHM
MAXIMUM GRID #1 CIRCUIT RESISTANCE (CLASS B)	0.5	MEGOHM
MAXIMUM EXTERNAL RESISTANCE BETWEEN HEATER AND CATHODE	20000	OHMS
MAXIMUM VOLTAGE BETWEEN HEATER AND CATHODE	100	VOLTS

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A - ONE TUBE

HEATER VOLTAGE		6.3		VOLTS
HEATER CURRENT		1.5		AMPS.
SUPPLY VOLTAGE		265	265	VOLTS
PLATE VOLTAGE		250	250	VOLTS
GRID #2 SERIES RESISTOR		2000	0	OHMS
GRID #3 VOLTAGE		0	0	VOLT
GRID #1 BIAS		−14.5	−13.5	VOLTS
PLATE CURRENT		70	100	MAMPS
GRID #2 CURRENT		10	15	MAMPS
TRANSCONDUCTANCE		9000	11000	μMHOS
AMPLIFICATION FACTOR OF GRID #2 WITH RESPECT TO GRID #1		11	11	
PLATE RESISTANCE		18000	15000	OHMS
PLATE LOAD RESISTANCE		3000	2000	OHMS
INPUT VOLTAGE (RMS)		9.3	8.7	VOLTS
MAX. SIGNAL POWER OUTPUT		8	11	WATTS
TOTAL HARMONIC DISTORTION		10	10	PERCENTS
INPUT VOLTAGE FOR POWER OUTPUT OF 50	MWATTS (RMS)	0.65	0.5	VOLT

CLASS B - TWO TUBES

SUPPLY VOLTAGE 425 VOLTS

COMMON GRID #2 RESISTOR		1000		OHMS
GRID #1 BIAS		−38		VOLTS
GRID #3 VOLTAGE		0		VOLT
INPUT BOLTAGE (RMS)	0	27	27	VOLTS
LOAD RESISTANCE, PLATE TO PLATE	−	3400	4000	OHMS
SUPPLY VOLTAGE	425	425	400	VOLTS
PLATE VOLTAGE	420	400	375	VOLTS
PLATE CURRENT	2X30	2X120	2X100	MAMPS
GRID #2 CURRENT	2X4.4	2X25	2X25	MAMPS
MAX. SIGNAL POWER OUTPUT	0	55	45	WATTS
TOTAL HARMONIC DISTORTION	−	5	6	PERCENTS

CLASS B - TWO TUBES

SUPPLY BOLTAGE 375 VOLTS

COMMON GRID #2 RESISTOR		470		OHMS
GRID #1 BIAS		−32		VOLTS
GRID #3 VOLTAGE		0		VOLT
INPUT VOLTAGE (RMS)	0	22.7	22.7	VOLTS
LOAD RESISTANCE, PLATE TO PLATE	−	2800	3800	OHMS
SUPPLY VOLTAGE	375	375	350	VOLTS
PLATE VOLTAGE	370	350	325	VOLTS
PLATE CURRENT	2X35	2X120	2X93	MAMPS
GRID #2 CURRENT	2X4.7	2X25	2X25	MAMPS
MAX. SIGNAL POWER OUTPUT	0	44	36	WATTS
TOTAL HARMOINIC DISTORTION	−	5	6	PERCENTS

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

(CONT'D.)

CLASS B - TWO TUBES

SUPPLY VOLTAGE 500/400 VOLTS

COMMON GRID #2 RESISTOR		750		OHMS
GRID #1 BIAS		-36		VOLTS
GRID #3 VOLTAGE		0		VOLT
INPUT VOLTAGE (RMS)	0	25.8	25.8	VOLTS
LOAD RESISTANCE, PLATE TO PLATE	-	4000	5000	OHMS
PLATE SUPPLY VOLTAGE	500	500	475	VOLTS
PLATE VOLTAGE	495	475	450	VOLTS
GRID #2 SUPPLY VOLTAGE	400	400	375	VOLTS
PLATE CURRENT	2X30	2X125	2X102	MAMPS
GRID #2 CURRENT	2X4	2X25	2X25	MAMPS
MAX. SIGNAL POWER OUTPUT	0	70	58	WATTS
TOTAL HARMONIC DISTORTION	-	5	6	PERCENTS

CLASS B - TWO TUBES

SUPPLY VOLTAGE 800/400 VOLTS

COMMON GRID #2 RESISTOR		750		OHMS
GRID #1 BIAS		-39		VOLTS
GRID #3 VOLTAGE		0		VOLT
INPUT VOLTAGE (RMS)	0	23.4	23.4	VOLTS
LOAD RESISTANCE, PLATE TO PLATE	-	11000	11000	OHMS
PLATE SUPPLY VOLTAGE	800	800	750	VOLTS
PLATE VOLTAGE	795	775	725	VOLTS
GRID #2 SUPPLY VOLTAGE	400	400	375	VOLTS
PLATE CURRENT	2X25	2X91	2X84	MAMPS
GRID #2 CURRENT	2X3	2X19	2X19	MAMPS
MAX. SIGNAL POWER OUTPUT	0	100	90	WATTS
TOTAL HARMONIC DISTORTION	-	5	6	PERCENTS

CLASS AB - TWO TUBES

SUPPLY VOLTAGE 375 VOLTS

LOAD RESISTANCE, PLATE TO PLATE		3400	OHMS
COMMON GRID #2 RESISTOR		470	OHMS
CATHODE RESISTOR		130	OHMS
GRID #3 VOLTAGE		0	VOLT
INPUT VOLTAGE (RMS)	0	21	VOLTS
SUPPLY VOLTAGE	375	375	VOLTS
PLATE VOLTAGE +VOLTAGE ACROSS CATHODE RESISTOR	355	350	VOLTS
PLATE CURRENT	2X75	2X95	MAMPS
GRID #2 CURRENT	2X11.5	2X22.5	MAMPS
MAX. SIGNAL POWER OUTPUT	0	35	WATTS
TOTAL HARMONIC DISTORTION	-	5	PERCENTS

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

(CONT'D.)

IN TRIODE CONNECTION

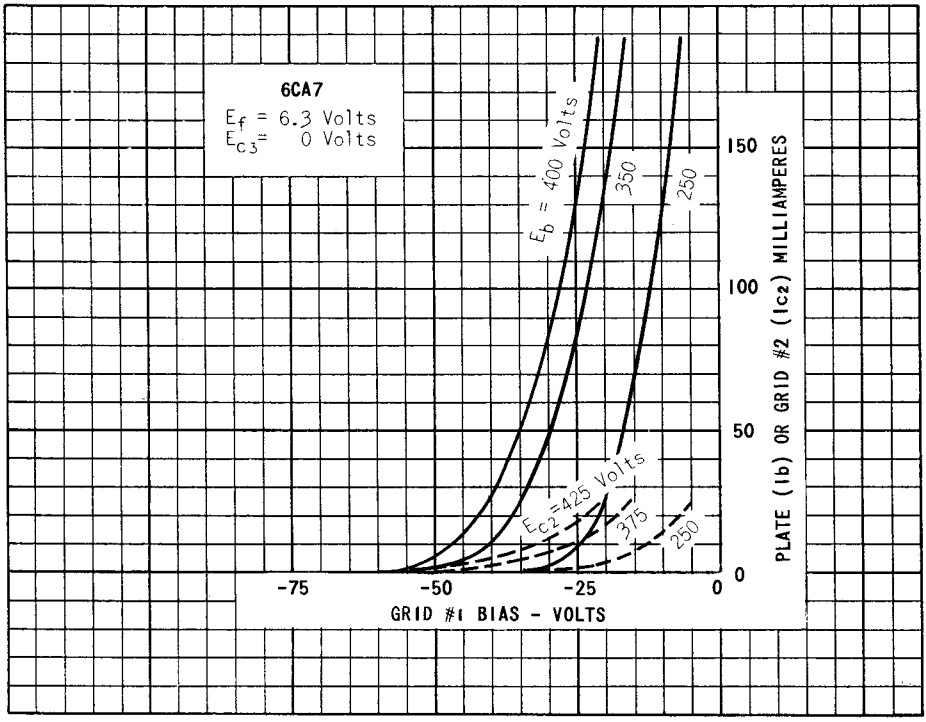
(GRID #2 CONNECTED TO PLATE)
CLASS A, ONE TUBE, SUPPLY VOLTAGE 375 VOLTS

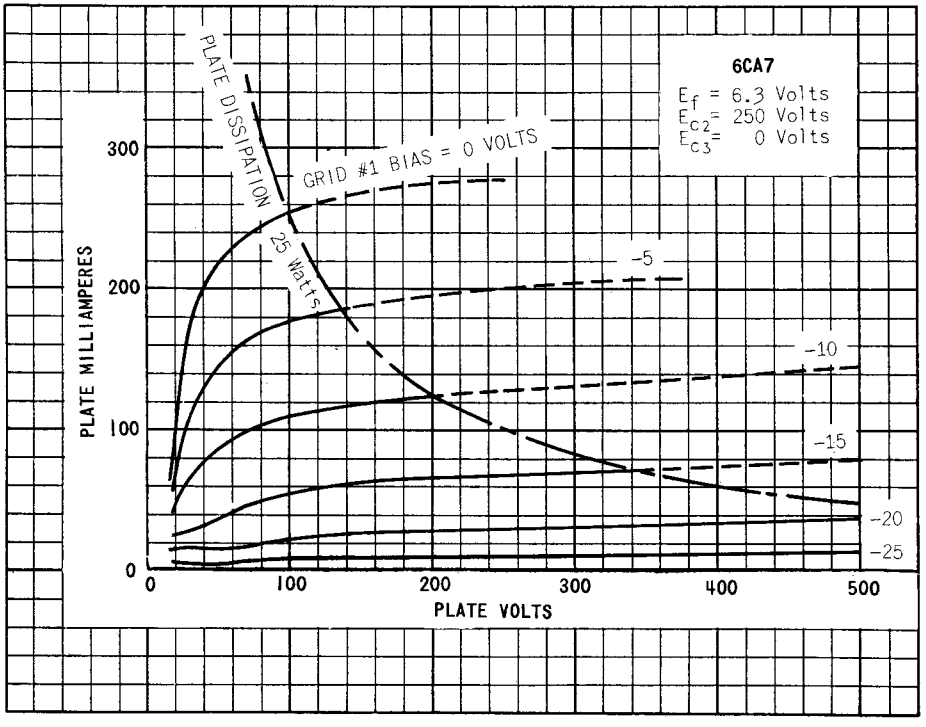
SUPPLY VOLTAGE	375	VOLTS
GRID #3 VOLTAGE	0	VOLT
CATHODE RESISTOR	370	OHMS
LOAD RESISTANCE	3000	OHMS
INPUT VOLTAGE (RMS)	18.9	VOLTS
PLATE CURRENT	70	MAMPS
MAX. SIGNAL POWER OUTPUT	6	WATTS
TOTAL HARMONIC DISTORTION	8	PERCENTS
INPUT VOLTAGE FOR POWER OUTPUT OF 50 MILLIWATTS (RMS)	1.7	VOLTS

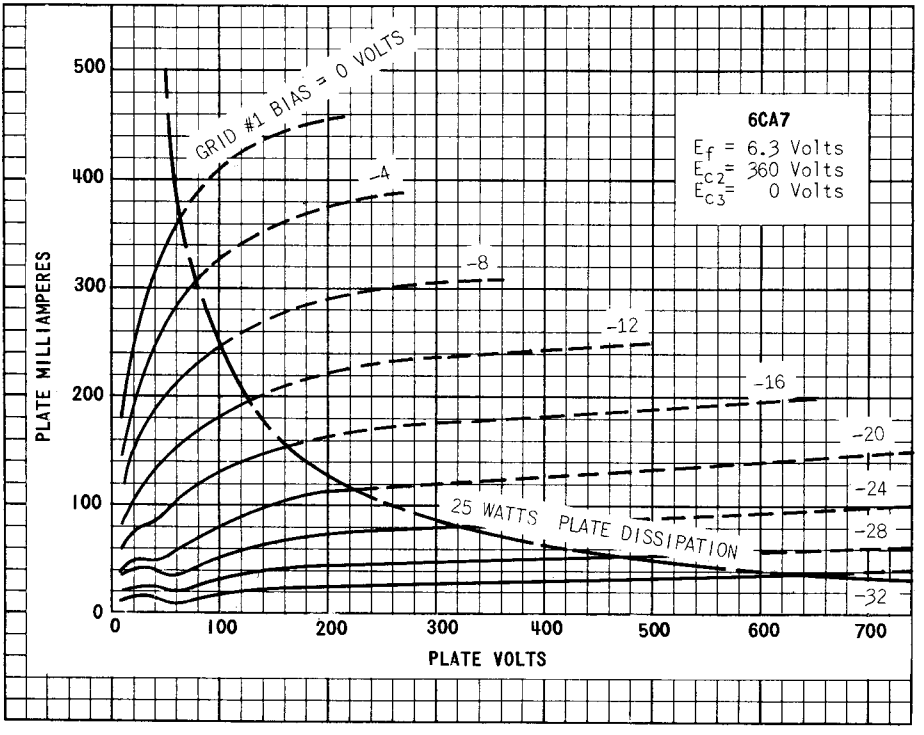
IN TRIODE CONNECTION

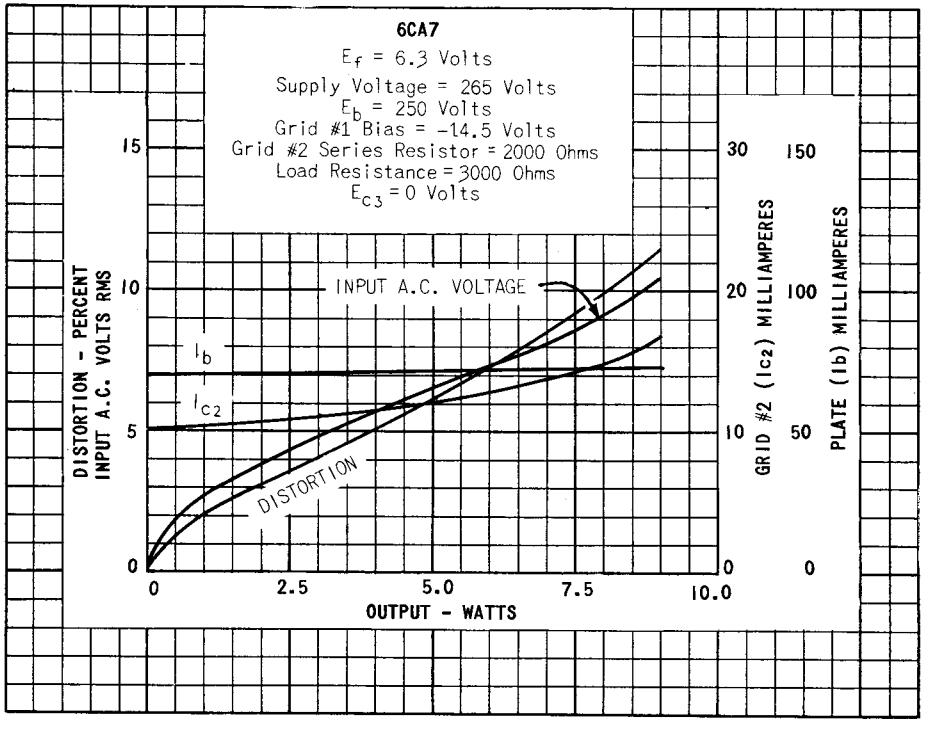
(GRID #2 CONNECTED TO PLATE)
CLASS AB, TWO TUBES, SUPPLY VOLTAGE 400 VOLTS

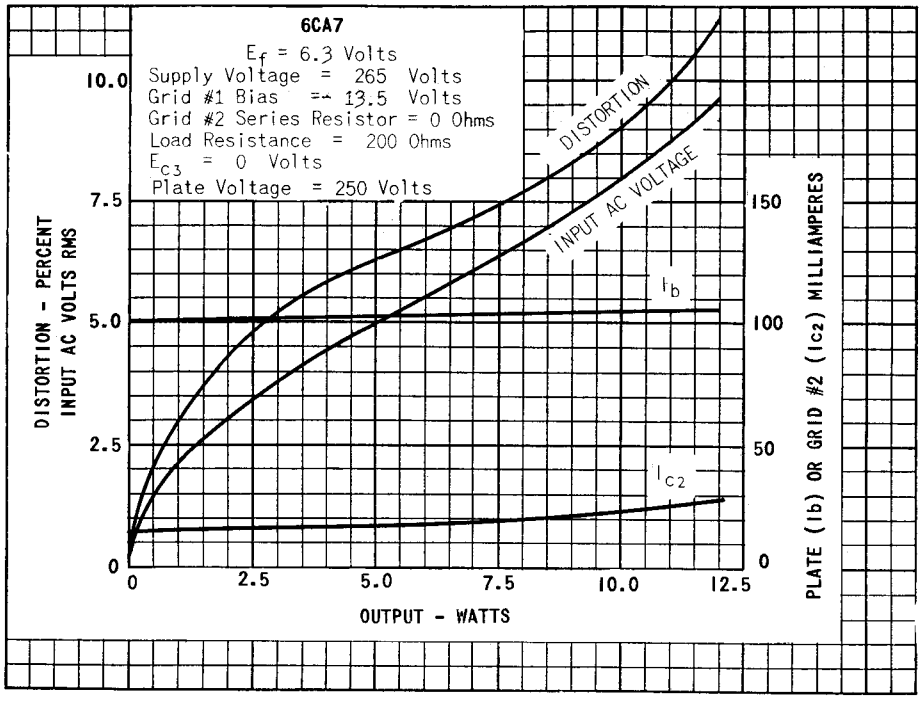
SUPPLY VOLTAGE	400		VOLTS
GRID #3 VOLTAGE	0		VOLT
CATHODE RESISTOR	220		OHMS
LOAD RESISTANCE, PLATE TO PLATE	5000		OHMS
INPUT VOLTAGE (RMS)	0	22	VOLTS
PLATE CURRENT	2X65	2X71	MAMPS
MAX. SIGNAL POWER OUTPUT	0	16.5	WATTS
TOTAL HARMONIC DISTORTION	–	3	PERCENTS

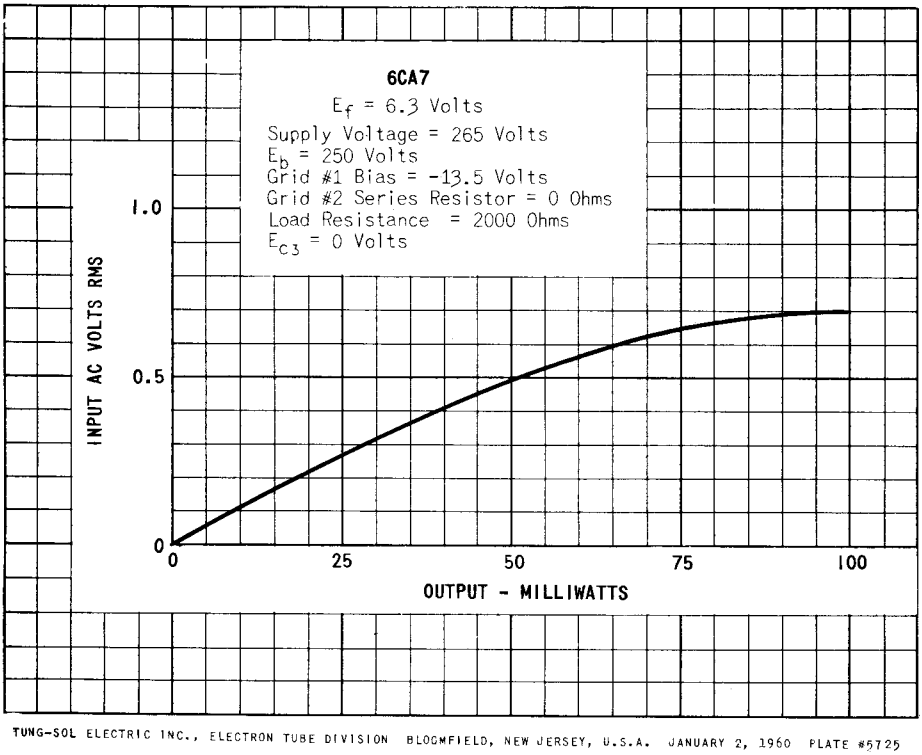


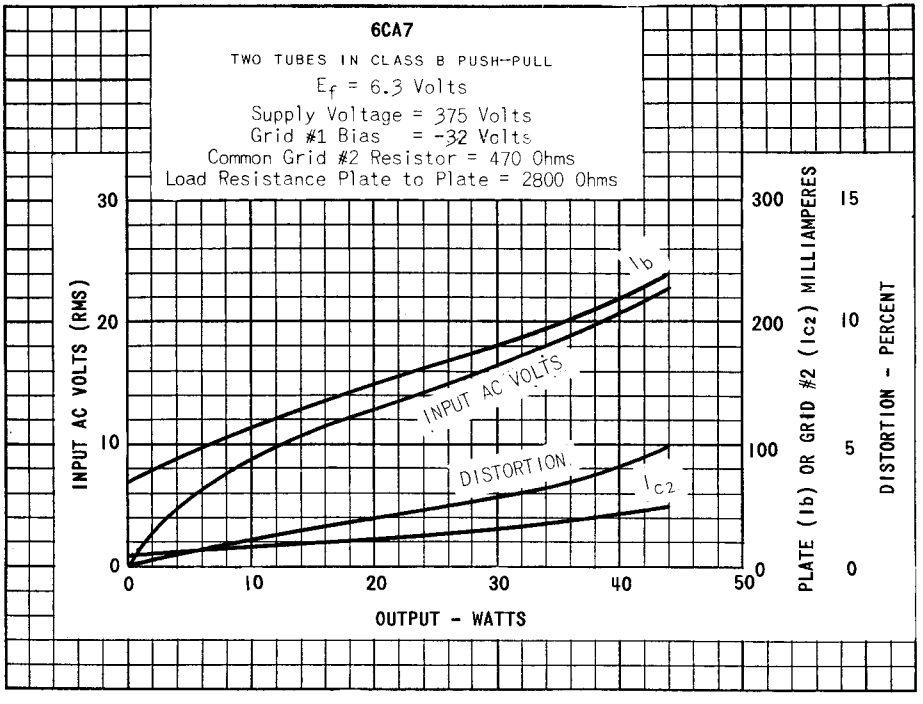


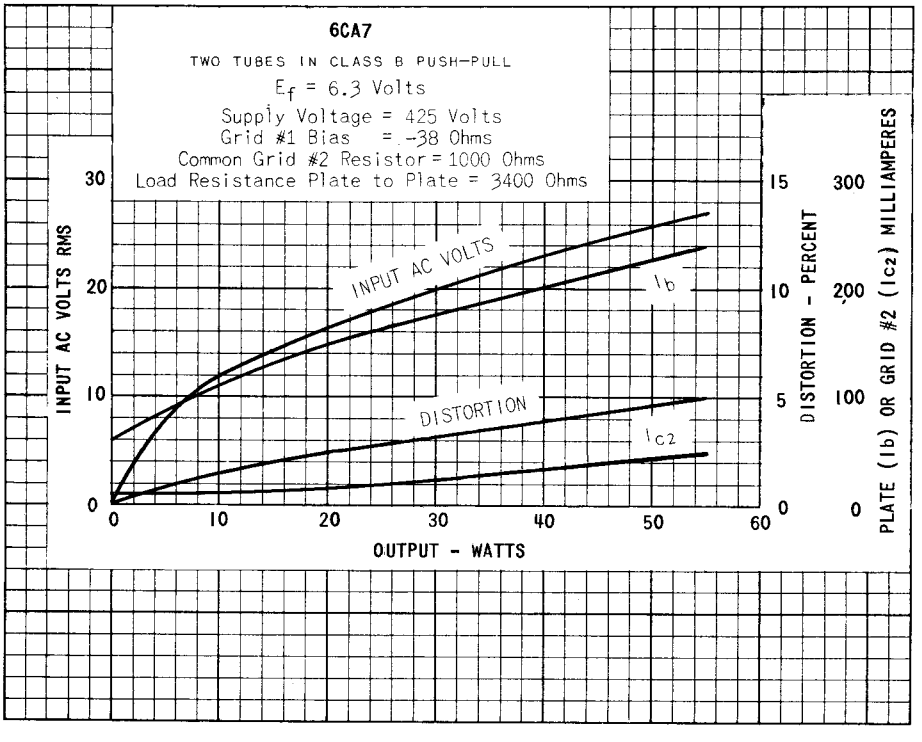

6CA7
E_f = 6.3 Volts
E_{c2} = 360 Volts
E_{c3} = 0 Volts
GRID #1 BIAS = 0 VOLTS
-4
-8
-12
-16
-20
-24
-28
-32
25 WATTS PLATE DISSIPATION
PLATE MILLIAMPERES
PLATE VOLTS
0
100
200
300
400
500
600
700

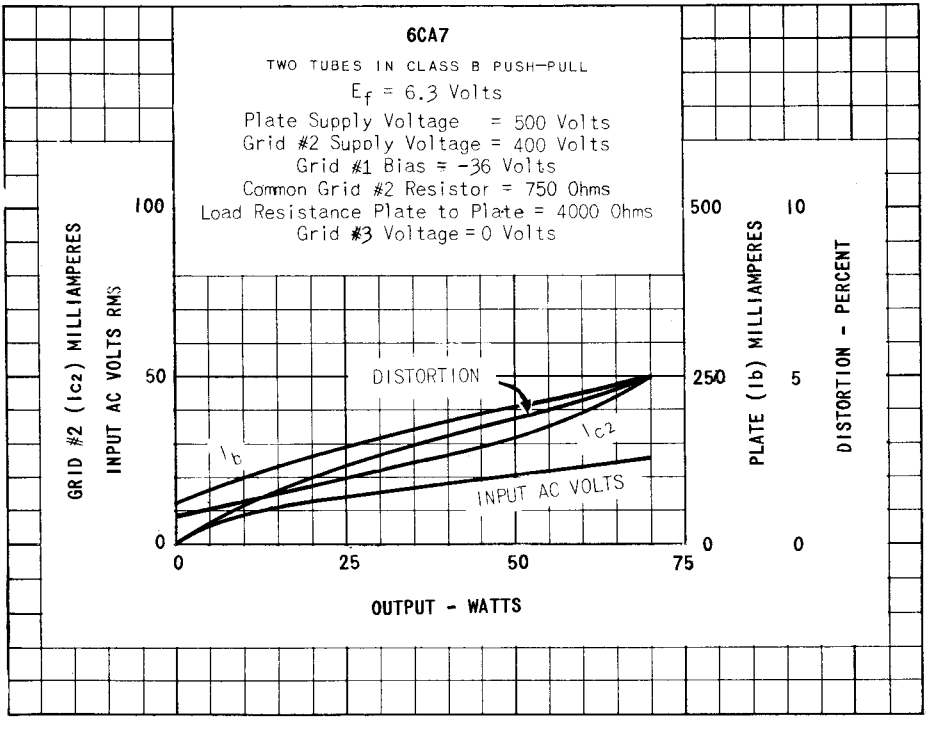

6CA7
E_f = 6.3 Volts
Supply Voltage = 265 Volts
E_b = 250 Volts
Grid #1 Bias = -14.5 Volts
Grid #2 Series Resistor = 2000 Ohms
Load Resistance = 3000 Ohms
E_{c3} = 0 Volts
INPUT A.C. VOLTAGE
I_b
I_{c2}
DISTORTION
DISTORTION - PERCENT
INPUT A.C. VOLTS RMS
GRID #2 (I_{c2}) MILLIAMPERES
PLATE (I_b) MILLIAMPERES
OUTPUT - WATTS
0
2.5
5.0
7.5
10.0
15
30
150
20
100
10
50

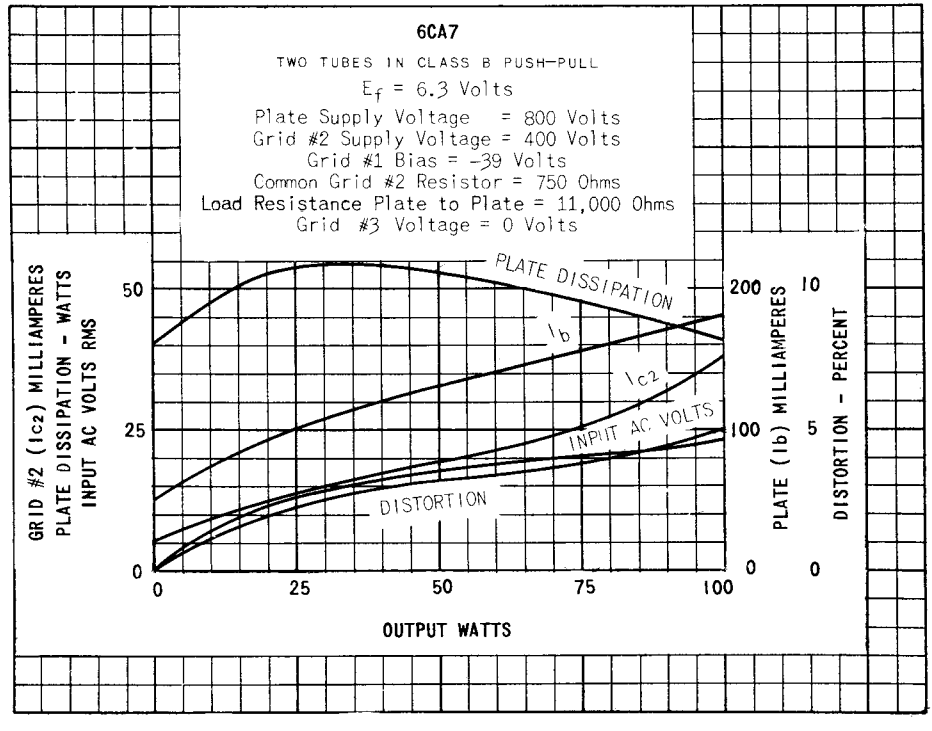


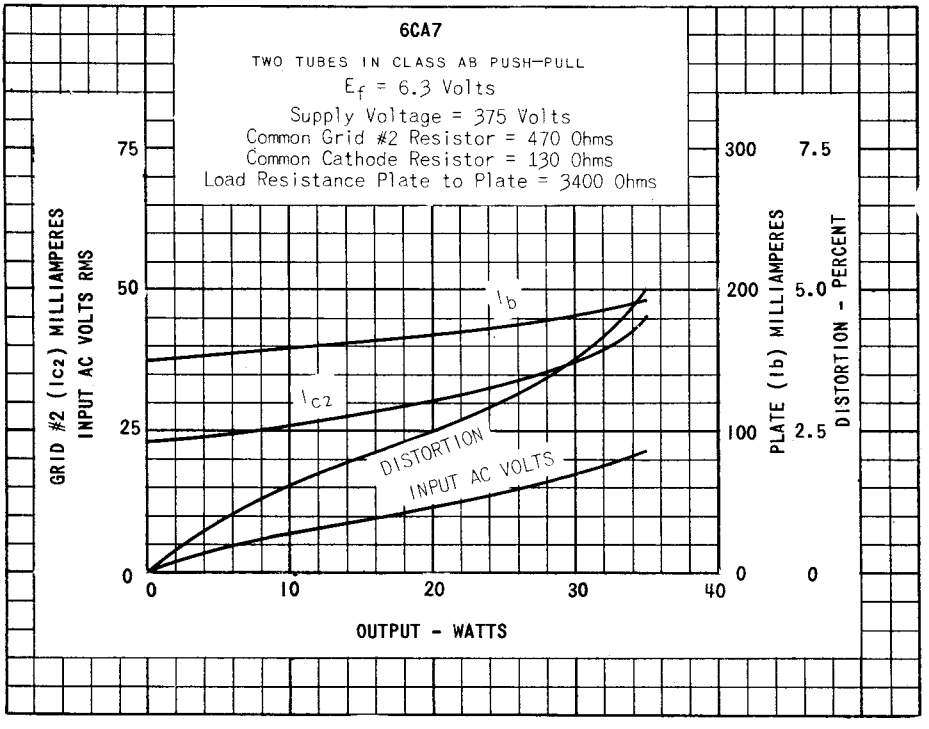


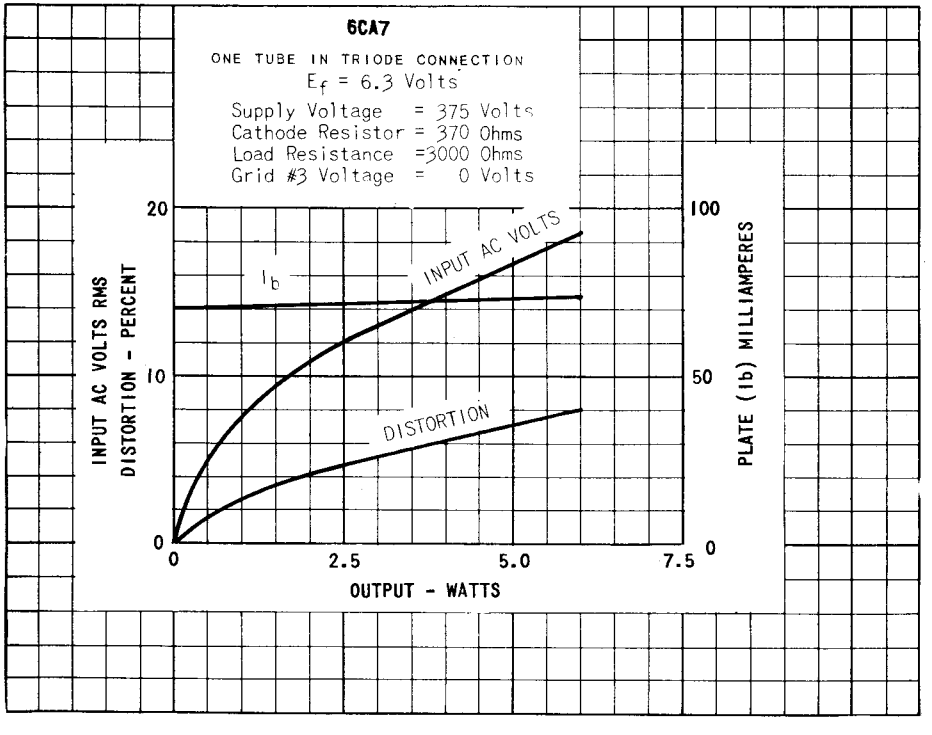

6CA7
TWO TUBES IN CLASS B PUSH-PULL
E_f = 6.3 Volts
Supply Voltage = 375 Volts
Grid #1 Bias = -32 Volts
Common Grid #2 Resistor = 470 Ohms
Load Resistance Plate to Plate = 2800 Ohms
INPUT AC VOLTS (RMS)
PLATE (I_b) OR GRID #2 (I_{c2}) MILLIAMPERES
DISTORTION - PERCENT
INPUT AC VOLTS
DISTORTION
I_b
I_{c2}
OUTPUT - WATTS

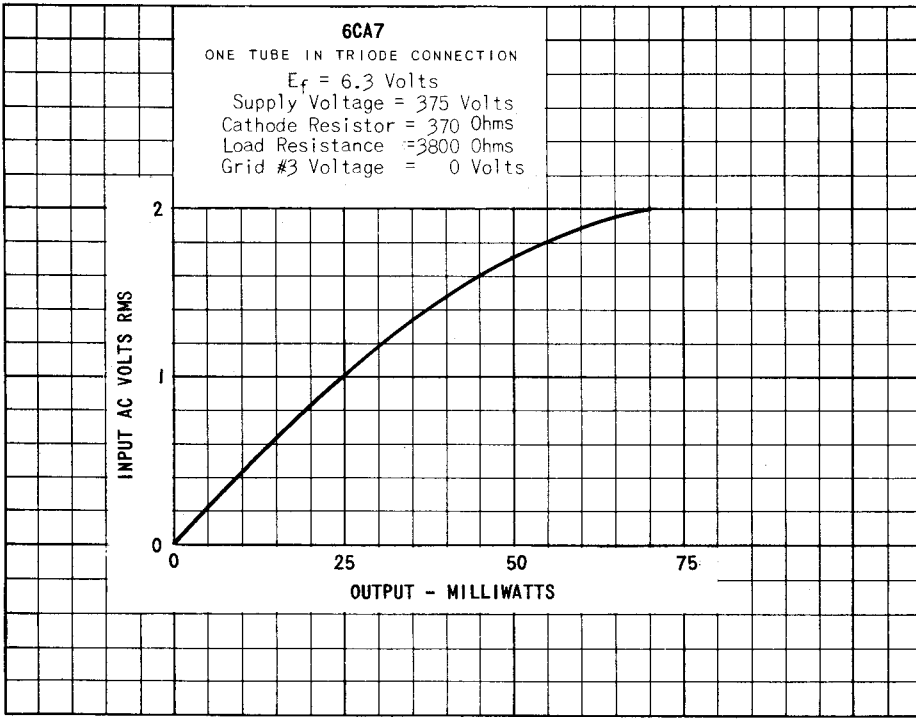

6CA7
TWO TUBES IN CLASS B PUSH-PULL
E_f = 6.3 Volts
Supply Voltage = 425 Volts
Grid #1 Bias = -38 Ohms
Common Grid #2 Resistor = 1000 Ohms
Load Resistance Plate to Plate = 3400 Ohms
INPUT AC VOLTS RMS
DISTORTION - PERCENT
PLATE (I_b) OR GRID #2 (I_{c2}) MILLIAMPERES
INPUT AC VOLTS
DISTORTION
I_b
I_{c2}
OUTPUT - WATTS






6CA7
TWO TUBES IN CLASS AB PUSH-PULL
E_f = 6.3 Volts
Supply Voltage = 375 Volts
Common Grid #2 Resistor = 470 Ohms
Common Cathode Resistor = 130 Ohms
Load Resistance Plate to Plate = 3400 Ohms
GRID #2 (I_{c2}) MILLIAMPERES
INPUT AC VOLTS RMS
PLATE (I_b) MILLIAMPERES
DISTORTION - PERCENT
I_b
I_{c2}
DISTORTION
INPUT AC VOLTS
OUTPUT - WATTS


6CA7
ONE TUBE IN TRIODE CONNECTION
E_f = 6.3 Volts
Supply Voltage = 375 Volts
Cathode Resistor = 370 Ohms
Load Resistance =3000 Ohms
Grid #3 Voltage = 0 Volts
INPUT AC VOLTS RMS
DISTORTION - PERCENT
PLATE (I_b) MILLIAMPERES
I_b
INPUT AC VOLTS
DISTORTION
OUTPUT - WATTS


6CA7
ONE TUBE IN TRIODE CONNECTION
E_f = 6.3 Volts
Supply Voltage = 375 Volts
Cathode Resistor = 370 Ohms
Load Resistance = 3800 Ohms
Grid #3 Voltage = 0 Volts
INPUT AC VOLTS RMS
2
1
0
0
25
50
75
OUTPUT - MILLIWATTS