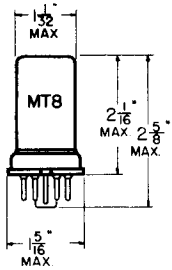
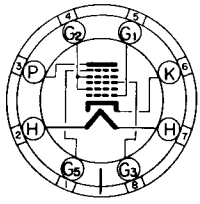
TUNG-SOL

HEPTODE

12SA7



METAL SHELL



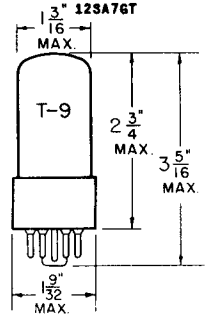
BOTTOM VIEW
SMALL WAFER
8 PIN OCTAL BASE

COATED UNIPOTENTIAL CATHODE

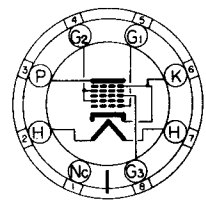
HEATER
12.6 VOLTS 150 MA.
AC OR DC

ANY MOUNTING POSITION

1 3/16" 12SA7GT



GLASS BULB



BOTTOM VIEW
INTERMEDIATE SHELL
8 PIN OCTAL BASE

THE 12SA7 AND 12SA7GT ARE PENTAGRID CONVERTERS DESIGNED TO MINIMIZE FREQUENCY DRIFT. THEY ARE INTENDED FOR SERVICE AS COMBINED OSCILLATORS AND MIXERS IN AC, STORAGE BATTERY, AND AC/DC OPERATED SUPERHETERODYNES.

DIRECT INTERELECTRODE CAPACITANCES

	12SA7	12SA7GT	
RF INPUT: G_3 TO (H+K+G_1+$G_{2\&4}$+G_5+P)	9.5[A]	11[B]	μμf
OSC. INPUT: G_1 TO (H+K+$G_{2\&4}$+G_3+G_5+P)	7[A]	8[B]	μμf
MIXER OUTPUT: P TO (H+K+G_1+$G_{2\&4}$+G_3+G_5)	12[A]	11[B]	μμf
GRID #3 TO PLATE: (G_3 TO P) MAX.	0.13[A]	0.5[B]	μμf
GRID #3 TO GRID #1: (G_3 TO G_1) MAX.	0.15[A]	0.4[B]	μμf
GRID #1 TO PLATE: (G_1 TO P) MAX.	0.06[A]	0.2[B]	μμf
GRID #1 TO ALL EXCEPT CATHODE: G_1 TO (H+$G_{2\&4}$+G_3+S&G_5+P)	4.4	—	μμf
GRID #1 TO ALL EXCEPT CATHODE & GRID #5: G_1 TO (H+$G_{2\&4}$+G_3+P)	—	5	μμf
GRID #1 TO CATHODE: (G_1 TO K)	2.6	—	μμf
GRID #1 TO CATHODE AND GRID #5: (G_1 TO K & G_5)	—	3	μμf
CATHODE TO ALL EXCEPT GRID #1: K TO (H+$G_{2\&4}$+G_3+S&G_5+P)	5	—	μμf
CATHODE AND GRID #5 TO ALL EXCEPT GRID #1: K & G_5 TO (H+$G_{2\&4}$+G_3+P)	—	14	μμf

[A] WITH SHELL CONNECTED TO CATHODE.

[B] WITH EXTERNAL SHIELD CONNECTED TO CATHODE.

CONTINUED ON FOLLOWING PAGE

→ INDICATES A CHANGE OR ADDITION.

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PLATE 1879
SEPT. 2 1947

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

RATINGS

INTERPRETED ACCORDING TO RMA STANDARD M8-210

MAXIMUM HEATER VOLTAGE	12.6	VOLTS
→ MAXIMUM HEATER–CATHODE VOLTAGE	90	VOLTS
MAXIMUM PLATE VOLTAGE	300	VOLTS
MAXIMUM GRIDS #2 & #4 VOLTAGE	100	VOLTS
MAXIMUM GRIDS #2 & #4 SUPPLY VOLTAGE	300	VOLTS
MINIMUM GRID #3 VOLTAGE[C]	0	VOLTS
MAXIMUM PLATE DISSIPATION	1.0	WATT
MAXIMUM GRIDS #2 & #4 DISSIPATION	1.0	WATT
MAXIMUM CATHODE CURRENT	14	MA.

[C] FOR SELF-EXCITED OSCILLATOR.

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CONVERTER SERVICE

	SELF EXCITATION[D]		SEPARATE EXCITATION		
→ HEATER VOLTAGE	12.6	12.6	12.6	12.6	VOLTS
HEATER CURRENT	150	150	150	150	MA.
PLATE VOLTAGE	100	250	100	250	VOLTS
GRIDS #2 &4 VOLTAGE	100	100	100	100	VOLTS
GRID #3 VOLTAGE	0	0	−2	−2	VOLTS
GRID #1 RESISTOR	20 000	20 000	20 000	20 000	OHMS
PLATE CURRENT	3.3	3.5	3.3	3.5	MA.
GRIDS #2 &#4 CURRENT	8.5	8.5	8.5	8.5	MA.
GRID #1 CURRENT	0.5	0.5	0.5	0.5	MA.
TOTAL CATHODE CURRENT	12.3	12.5	12.3	12.5	MA.
PLATE RESISTANCE (APPROX.)	0.5	1.0	0.5	1.0	MEGOHM
CONVERSION TRANSCONDUCTANCE:					
WITH E_{g3}=−2 VOLTS	425	450	425	450	µMHOS
WITH E_{g3}=−6 VOLTS	---	---	310	325	µMHOS
WITH E_{g3}=−10 VOLTS	---	---	75	80	µMHOS
WITH E_{g3}=−35 VOLTS (APPROX.)	2	2	2	2	µMHOS

[D] HARTLEY OSCILLATOR CIRCUIT WITH A FEEDBACK OF APPROXIMATELY 2 VOLTS PEAK IN THE CATHODE CIRCUIT. VALUES ARE APPROXIMATE.

→ OSCILLATOR TRANSCONDUCTANCE

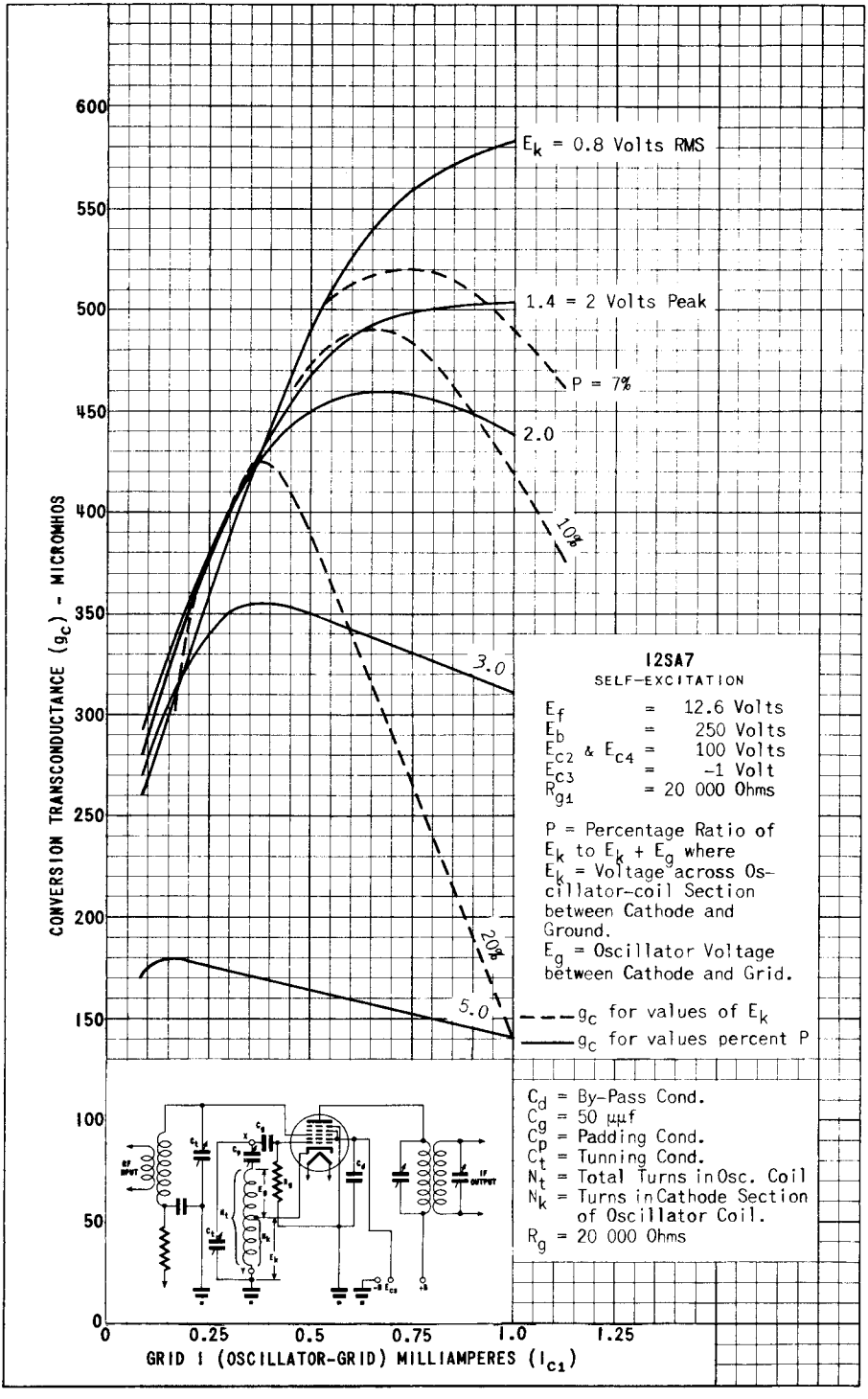
NOT OSCILLATING

GRID #3 VOLTAGE	0	VOLTS
GRID #1 VOLTAGE	0	VOLTS
GRIDS #2 & 4 CONNECTED TO PLATE	100	VOLTS
TRANSCONDUCTANCE BETWEEN GRID #1 AND GRIDS #2 & 4 CONNECTED TO PLATE	4 500	µMHOS

SIMILIAR TYPE REFERENCE: Ratings and Characteristics somewhat similiar to 14Q7.

PLATE 1880
SEPT. 2 1947

→ INDICATES A CHANGE OR ADDITION.



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12SA7, 12SA7GT

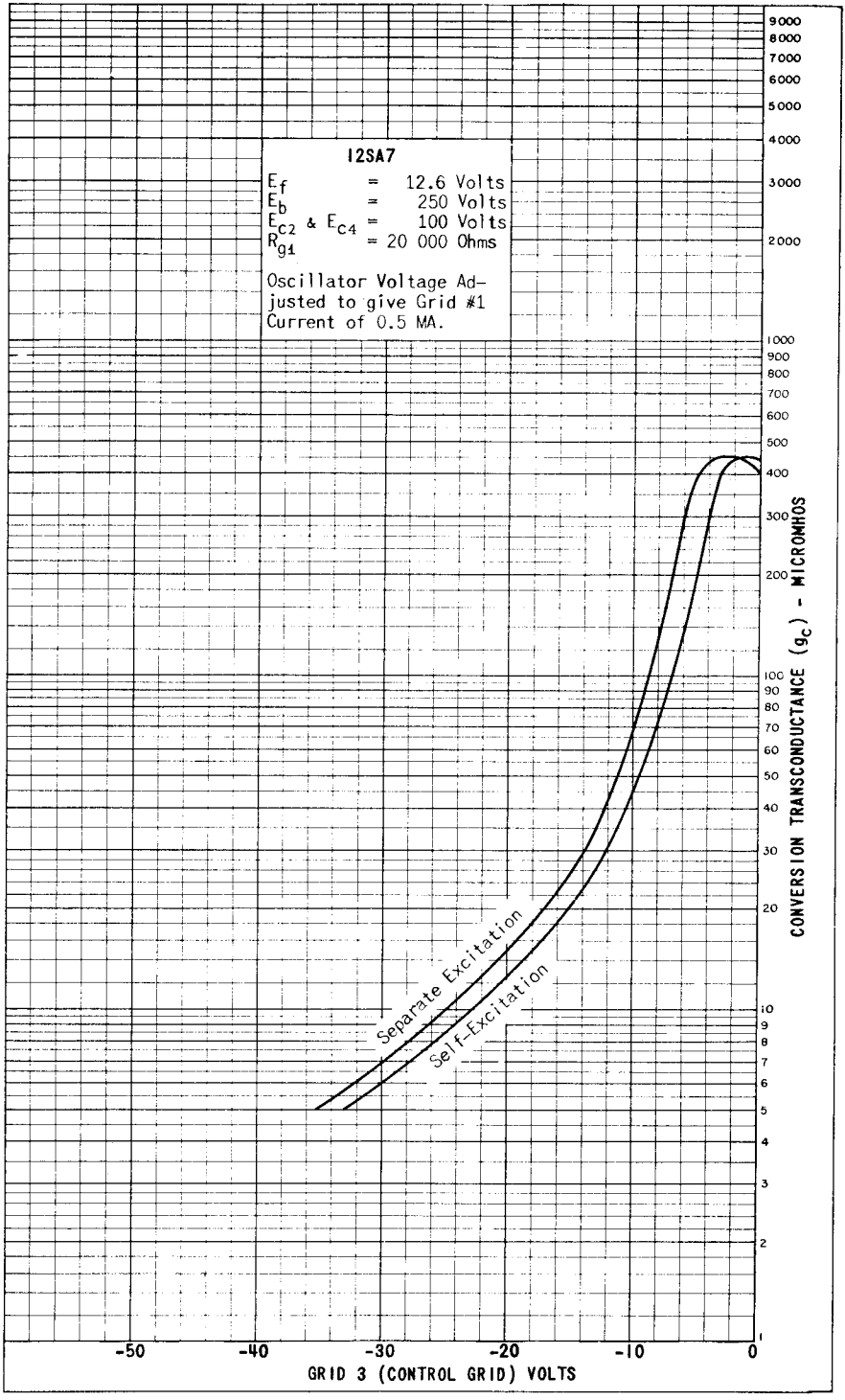
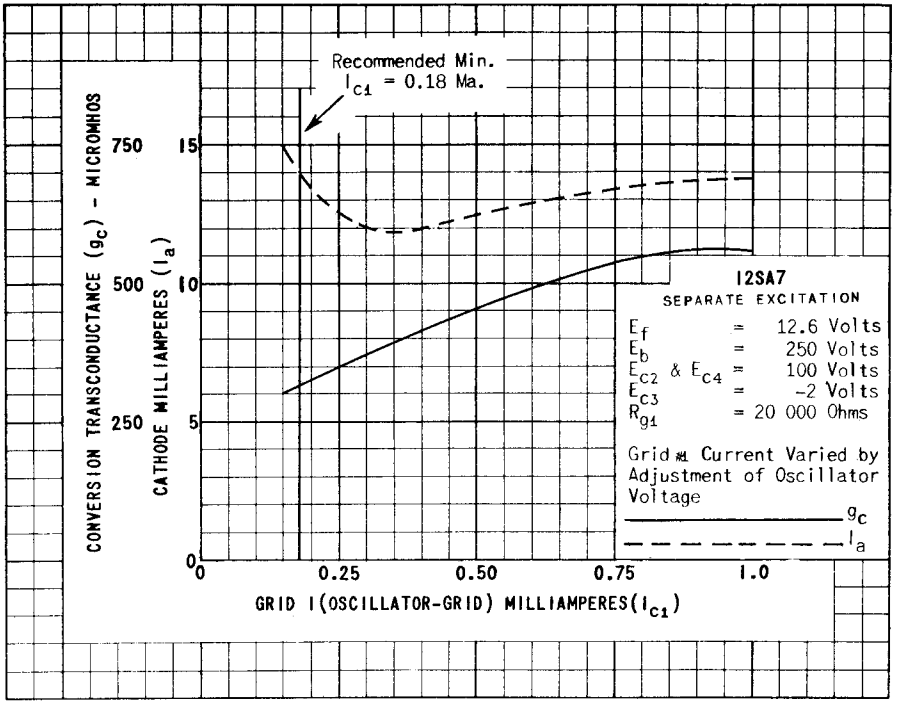


PLATE
1882
SEPT. 2
1947



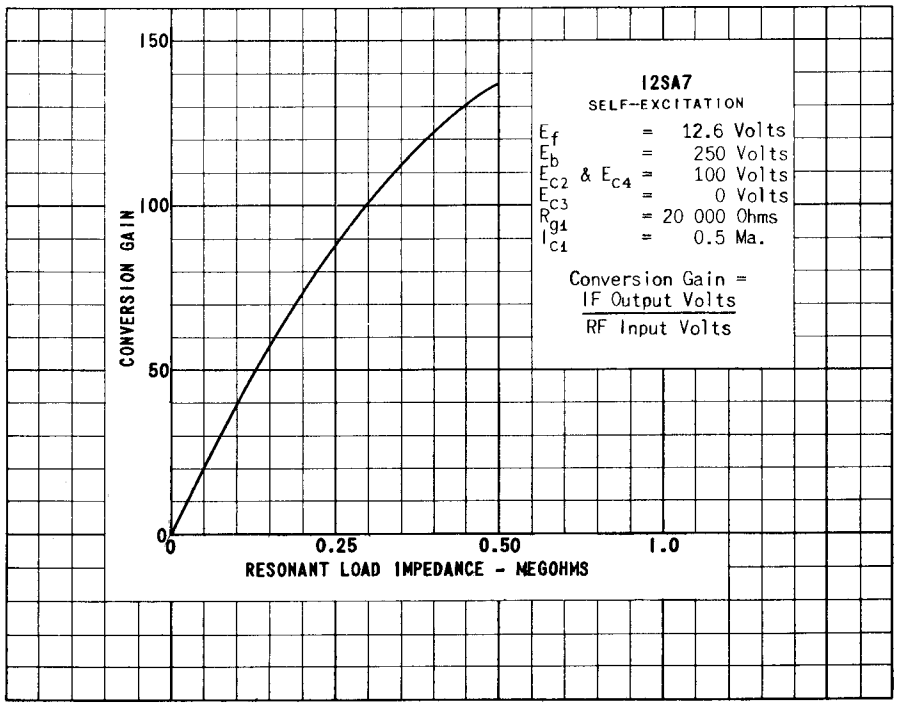


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PLATE
1883
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1947