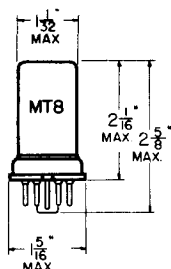


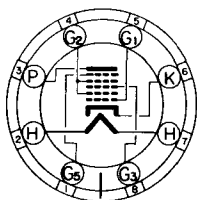
TUNG-SOL

HEPTODE

12SA7



METAL SHELL



BOTTOM VIEW

SMALL WAFER
8 PIN OCTAL BASE

COATED UNIPOTENTIAL CATHODE

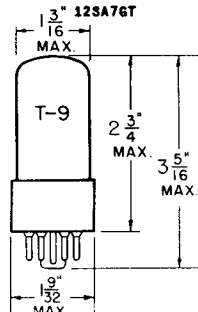
HEATER

12.6 VOLTS 150 MA.

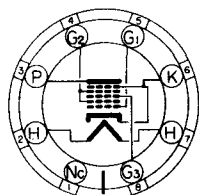
AC OR DC

ANY MOUNTING POSITION

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 $(H+K+G_4+G_{2\&4}+G_5+P)$	9.5 ^A	11 ^B	μmf
OSC. INPUT: G_1 TO $(H+K+G_{2\&4}+G_3+G_5+P)$	7 ^A	8 ^B	μmf
MIXER OUTPUT: P TO $(H+K+G_4+G_{2\&4}+G_3+G_5)$	12 ^A	11 ^B	μmf
GRID #3 TO PLATE: $(G_3$ TO P) MAX.	0.13 ^A	0.5 ^B	μmf
GRID #3 TO GRID #1: $(G_3$ TO G_1) MAX.	0.15 ^A	0.4 ^B	μmf
GRID #1 TO PLATE: $(G_1$ TO P) MAX.	0.06 ^A	0.2 ^B	μmf
GRID #1 TO ALL EXCEPT CATHODE: G_1 TO $(H+G_{2\&4}+G_3+S+G_5+P)$	4.4	—	μmf
GRID #1 TO ALL EXCEPT CATHODE & GRID #5: G_1 TO $(H+G_{2\&4}+G_3+P)$	—	5	μmf
GRID #1 TO CATHODE: $(G_1$ TO K)	2.6	—	μmf
GRID #1 TO CATHODE AND GRID #5: $(G_1$ TO K & $G_5)$	—	3	μmf
CATHODE TO ALL EXCEPT GRID #1: K TO $(H+G_{2\&4}+G_3+S+G_5+P)$	5	—	μmf
CATHODE AND GRID #5 TO ALL EXCEPT GRID #1: K & G_5 TO $(H+G_{2\&4}+G_3+P)$	—	14	μmf

^A WITH SHELL CONNECTED TO CATHODE.^B WITH EXTERNAL SHIELD CONNECTED TO CATHODE.

CONTINUED ON FOLLOWING PAGE

→ INDICATES A CHANGE OR ADDITION.

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

RATINGS

INTERPRETED ACCORDING TO RMA STANDARD MB-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.

^CFOR 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	μ MHOS
WITH $E_{g3} = -6$ VOLTS	---	---	310	325	μ MHOS
WITH $E_{g3} = -10$ VOLTS	---	---	75	80	μ MHOS
WITH $E_{g3} = -35$ VOLTS (APPROX.)	2	2	2	2	μ MHOS

^DHARTLEY OSCILLATOR CIRCUIT WITH A FEEDBACK OF APPROXIMATELY 2 VOLTS PEAK IN THE CATHODE CIRCUIT. VALUES ARE APPROXIMATE.

OSCILLATOR TRANSCONDUCTANCE

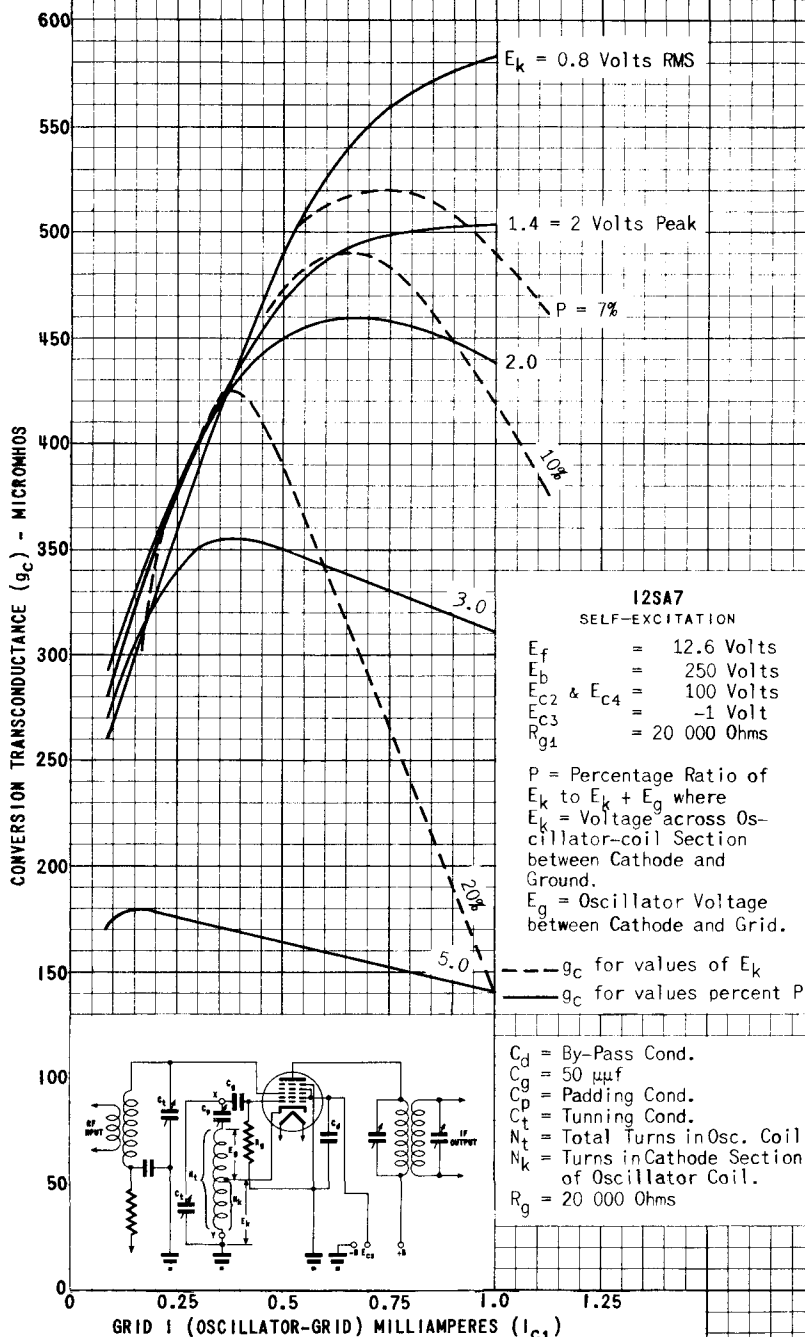
NOT OSCILLATING

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	μ MHOS

SIMILAR TYPE REFERENCE: Ratings and Characteristics somewhat similar to 14Q7.

→ INDICATES A CHANGE OR ADDITION.

 PLATE
1880
SEPT. 2
1947



12SA7, 12SA7GT

12SA7

E_f = 12.6 Volts
 E_b = 250 Volts
 $E_{c2} \text{ \& } E_{c4}$ = 100 Volts
 R_{g1} = 20 000 Ohms

Oscillator Voltage Ad-
 justed to give Grid #1
 Current of 0.5 MA.

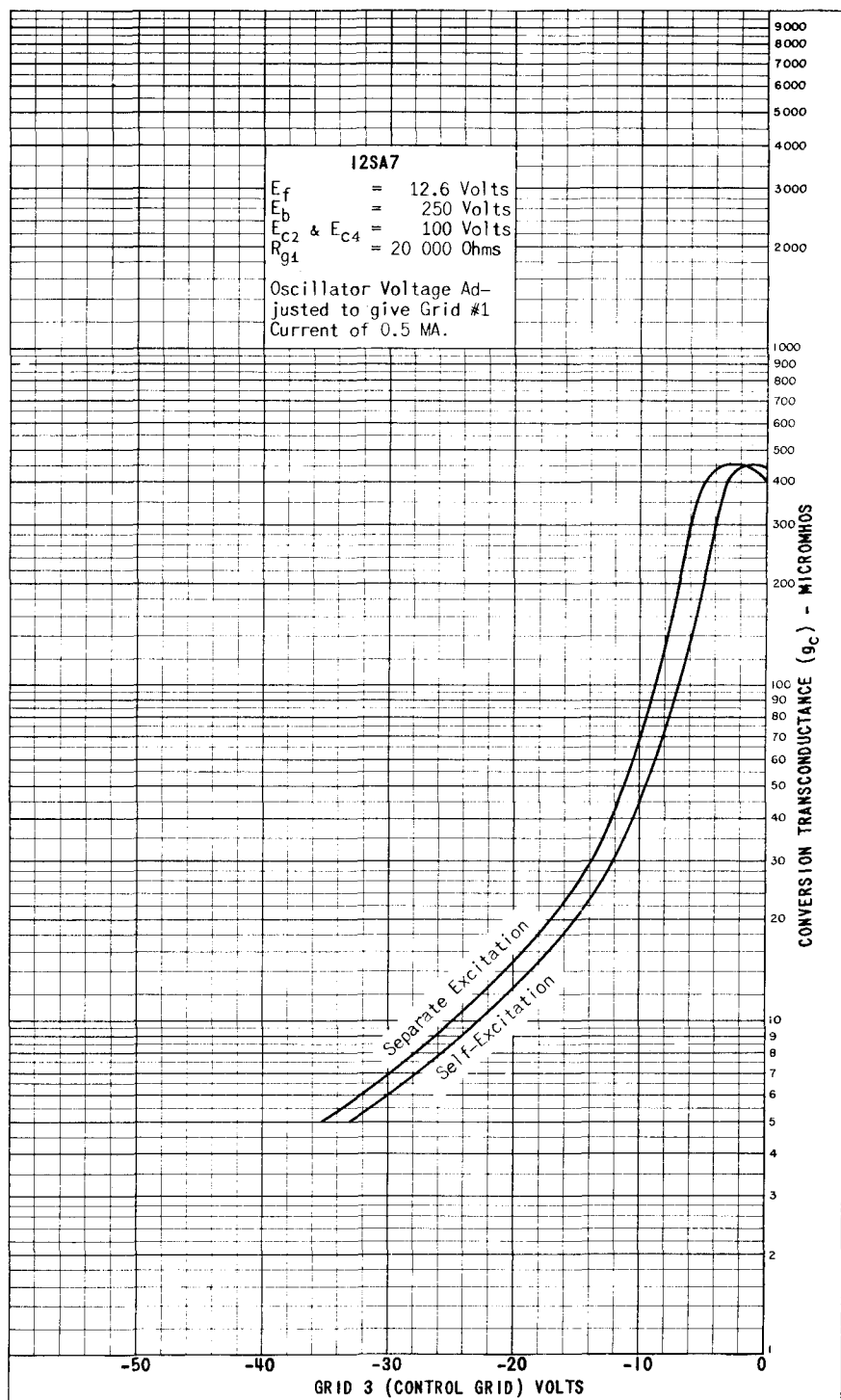


PLATE
 1882
 SEPT. 2
 1947

