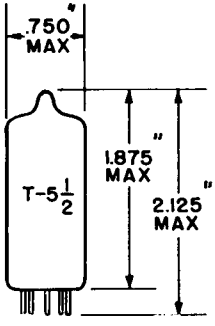
TUNG-SOL

HEPTODE

MINIATURE TYPE



GLASS BULB
MINIATURE BUTTON
7 PIN BASE E7-1
OUTLINE DRAWING
JEDEC 5-2

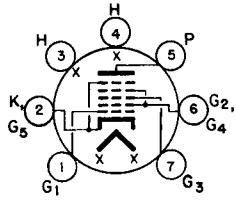
COATED UNIPOTENTIAL CATHODE

FOR

AUTOMATIVE RADIO

RECEIVER SERVICE

ANY MOUNTING POSITION



BOTTOM VIEW

BASING DIAGRAM
JEDEC 7CH

THE 12AD6 IS A PENTAGRID CONVERTER WITH A UNIPOTENTIAL CATHODE IN THE 7-PIN MINIATURE CONSTRUCTION. IT IS INTENDED AS A COMBINED OSCILLATOR AND MIXER IN SUPERHETERODYNE RECEIVERS WHERE THE HEATER, PLATE AND SCREEN GRID POTENTIALS ARE OBTAINED DIRECTLY FROM AN AUTOMOTIVE BATTERY.

→ DIRECT INTERELECTRODE CAPACITANCES

	WITH[A] SHIELD	WITHOUT SHIELD	
MIXER GRID TO PLATE: G3 TO P MAXIMUM	0.26	0.30	pf
MIXER GRID TO OSCILLATOR GRID: G3 TO G1 MAX.	0.15	0.15	pf
RF INPUT: G3 TO (H+K+G1+G2 &4+G5+P)	7.0	7.0	pf
OSCILLATOR INPUT: G1 TO (H+K+P+G3+G5)	3.2	3.2	pf
MIXER OUTPUT: P TO(H+K+G1 + G2 & 4 + G3+G5)	12	7.0	pf
OSCILLATOR OUTPUT: G2 & 4 TO (H+K+G3+P+G5)	11	11	pf
OSCILLATOR GRID TO OSCILLATOR PLATE: G1 TO G2 AND 4	2.2	2.2	pf

HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS	12.6 VOLTS	150	MA.
HEATER SUPPLY LIMITS: VOLTAGE OPERATION[B]		10.0 - 15.9	VOLTS
MAXIMUM HEATER CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE TOTAL DC AND PEAK		16	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE TOTAL DC AND PEAK		16	VOLTS

[A] EXTERNAL SHIELD #316 CONNECTED TO CATHODE.

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

PLATE VOLTAGE	→ 16	VOLTS
GRID #2 & #4 VOLTAGE	→ 16	VOLTS
GRID #2 & #4 SUPPLY VOLTAGE	→ 16	VOLTS
NEGATIVE DC GRID #3 VOLTAGE	→ 16	VOLTS
POSITIVE DC GRID #3 VOLTAGE	0	VOLTS
CATHODE CURRENT	20	MA.
GRID #3 CIRCUIT RESISTANCE	10	MEGOHMS

→ TYPICAL OPERATING CHARACTERISTICS

CONVERTER - SEPARATE EXCITATION

PLATE VOLTAGE	10.6	12.6	14.6	VOLTS
GRID #3 VOLTAGE	0	0	0	VOLTS
GRID #2 & #4 VOLTAGE	10.6	12.6	14.6	VOLTS
GRID #1 VOLTAGE PEAK TO PEAK	4.5	4.5	4.5	VOLTS
GRID #1 RESISTANCE	33000	33000	33000	OHMS
GRID #3 RESISTANCE	2.2	2.2	2.2	MEGOHMS
PLATE RESISTANCE (APPROX.)	0.50	0.40	0.20	MEGOHMS
GRID #1 CURRENT (APPROX.)		60		μA.
CONVERSION TRANSCONDUCTANCE		320		μMHOS
PLATE CURRENT		350		μA
CATHODE CURRENT		1600		μA
GRID #3 VOLTAGE FOR Gc =5μMHOS (APPROX.)		-3.0		VOLTS
GRID #3 VOLTAGE FOR Gc =0.5 μMHOS (APPROX.)		-4.0		VOLTS

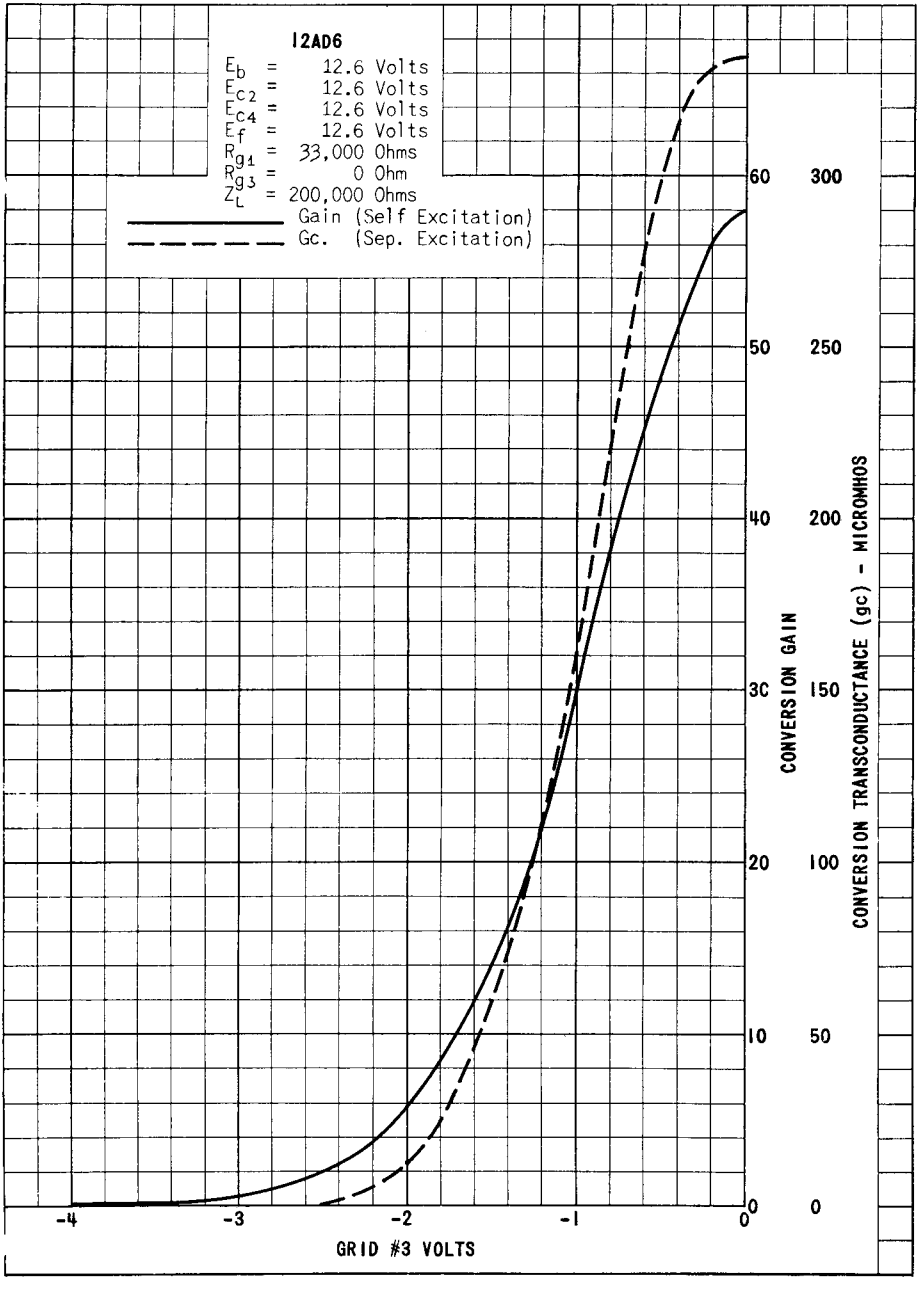
→ OSCILLATOR CHARACTERISTICS - NOT OSCILLATING

GRID #3 VOLTAGE	0	VOLTS
GRID #1 VOLTAGE (OSCILLATOR GRID)	0	VOLTS
GRID #2 & #4 CONNECTED TO PLATE	12.6	VOLTS
TRANSCONDUCTANCE BETWEEN GRID #1, #2 & #4 CONNECTED TO PLATE	3600	μMHOS
AMPLIFICATION FACTOR BETWEEN GRID #1, #2 AND 4 CONNECTED TO PLATE	9.4	
CATHODE CURRENT	4.5	MA.
GRID #1 VOLTAGE (APPROX.) FOR Ib = 10 μA.	-3.7	VOLTS

A
EXTERNAL SHIELD #316 CONNECTED TO CATHODE.

B
THE EQUIPMENT DESIGNER SHALL SO DESIGN THE EQUIPMENT THAT THE FILAMENT VOLTAGE IS CENTERED AT THE SPECIFIED BOGEY VALUE. FILAMENT SUPPLY VARIATIONS SHALL BE RESTRICTED TO MAINTAIN FILAMENT VOLTAGE WITHIN THE SPECIFIED TOLERANCE. FOR LONGEST LIFE IT IS RECOMMENDED THAT THE HEATER BE OPERATED WITHIN THE RANGE OF 11 TO 14 VOLTS.

→ INDICATES A CHANGE.


12AD6
E_b = 12.6 Volts
E_{c2} = 12.6 Volts
E_{c4} = 12.6 Volts
E_f = 12.6 Volts
R_{g1} = 33,000 Ohms
R_{g3} = 0 Ohm
Z_L = 200,000 Ohms
Gain (Self Excitation)
Gc. (Sep. Excitation)
CONVERSION GAIN
CONVERSION TRANSCONDUCTANCE (gc) - MICROMHOS
GRID #3 VOLTS
-4
-3
-2
-1
0
60
50
40
30
20
10
300
250
200
150
100
50