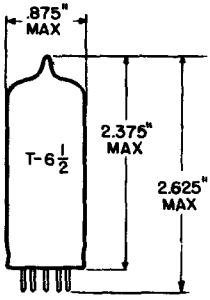
TUNG-SOL

BEAM PENTODE

MINIATURE TYPE



GLASS BULB

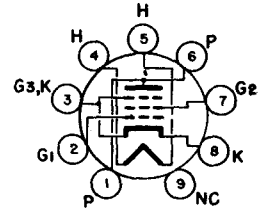
MINIATURE
9 PIN BASE E9-1
OUTLINE DRAWING
JEDEC 6-3

COATED UNIPOTENTIAL CATHODE

FOR MOBILE AND

AIRCRAFT APPLICATIONS

ANY MOUNTING POSITION



BOTTOM VIEW

BASING DIAGRAM
JEDEC 9CE

THE 6216 IS A BEAM PENTODE POWER AMPLIFIER IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS EXTREMELY RESISTANT TO THE VIBRATIONS ENCOUNTERED IN PRESENT HIGH-SPEED MILITARY AIRCRAFT.

THE 6216 MAY BE USED IN CLASS A, CLASS B, AND CLASS C AMPLIFIER APPLICATIONS, AS A PASSING TUBE IN ELECTRONIC VOLTAGE-REGULATED POWER SUPPLIES, IN WIDE BAND VIDEO AMPLIFIERS, AND IN PASSIVE SWITCHING APPLICATIONS.

DIRECT INTERELECTRODE CAPACITANCES

WITHOUT SHIELD

GRID TO PLATE: (G1 TO P), MAX.	0.370	pf
INPUT: G1 TO (H+K+G2+G3+B.P.+B.S.+I.S.)	12.3	pf
OUTPUT: P TO (H+K+G2+G3+B.P.+B.S.+I.S.)	6.7	pf

HEATER CHARACTERISTICS AND RATINGS

DESIGN CENTER VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS:		
VOLTAGE	6.3	VOLTS
CURRENT	1200	MA.
MAXIMUM HEATER-CATHODE VOLTAGE	150	VOLTS

MAXIMUM RATINGS

DESIGN CENTER VALUES - SEE EIA STANDARD RS-239

PLATE VOLTAGE	300	VOLTS
GRID #2 VOLTAGE	200	VOLTS
POSITIVE DC GRID #1 VOLTAGE	0	VOLTS
PLATE DISSIPATION	10	WATTS

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MAXIMUM RATINGS - CONT'D.

DESIGN CENTER VALUES - SEE EIA STANDARD RS-239

GRID #2 DISSIPATION	1.0	WATTS
CATHODE CURRENT	110	MA.
BULB TEMPERATURE AT ANY POINT	210	°C
GRID #1 CIRCUIT RESISTANCE (FIXED BIAS)	0.1	MEGOHM
GRID #1 CIRCUIT RESISTANCE (SELF BIAS)	0.5	MEGOHM

AVERAGE CHARACTERISTICS

FILTER REACTOR

PLATE VOLTAGE	100	VOLTS
GRID #2 VOLTAGE	100	VOLTS
GRID #1 VOLTAGE	-3	VOLTS
GRID #1 RESISTOR	0.1	MEGOHM
PLATE RESISTANCE (APPROX.)	18 500	OHMS
TRANSCONDUCTANCE	12 800	μMHOS
PLATE CURRENT	72	MA.
GRID #2 CURRENT	3	MA.
GRID #1 VOLTAGE (APPROX.) FOR Ib = 50 μA	-25	VOLTS

TYPICAL OPERATION

FILTER REATOR (SEE CIRCUIT)

DC PLATE SUPPLY VOLTAGE (INPUT TO FILTER)	400	VOLTS
DC PLATE VOLTAGE (PLATE TO CATHODE)	60	VOLTS
DC GRID #2 VOLTAGE	100	VOLTS
DC GRID #1 VOLTAGE	-1	VOLTS
DC OUTPUT VOLTAGE (OUTPUT FROM FILTER)	335	VOLTS
DC CATHODE CURRENT	110	MA DC
RMS RIPPLE VOLTAGE (IN OUTPUT)(NOTE 1)	210	MV.

CLASS A AUDIO AMPLIFIER

PLATE VOLTAGE	200	VOLTS
GRID #2 (SCREEN) VOLTAGE	100	VOLTS
GRID #1 (CONTROL GRID) VOLTAGE	-6	VOLTS
PEAK AF GRID #1 VOLTAGE	6	VOLTS
ZERO SIGNAL PLATE CURRENT	47	MA.
MAX. SIGNAL PLATE CURRENT	51	MA.
ZERO SIGNAL GRID #2 CURRENT	2.0	MA.
MAX. SIGNAL GRID #2 CURRENT	4.0	MA.
PLATE RESISTANCE	38 800	OHMS
TRANSCONDUCTANCE	8 800	μMHOS
LOAD RESISTANCE	4 500	OHMS
TOTAL HARMONIC	10	PERCENT
MAX. SIGNAL POWER OUTPUT	3.8	WATTS

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TYPICAL OPERATION - CONT'D.

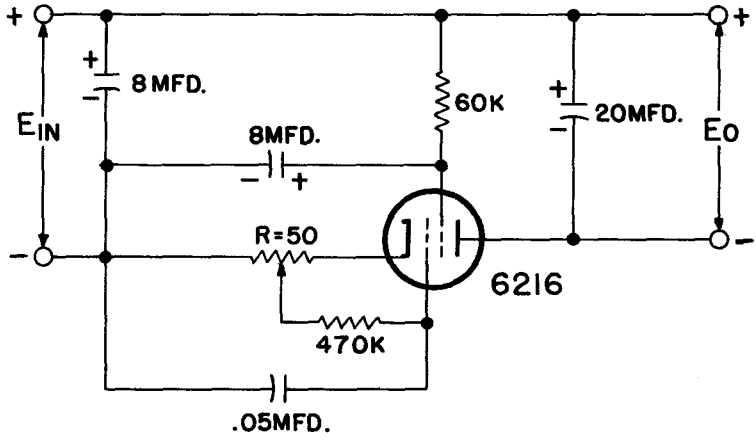
CLASS C OSCILLATOR-AMPLIFIER - 50 MC

DC PLATE VOLTAGE	300	VOLTS
DC GRID #2 VOLTAGE	150	VOLTS
DC GRID #1 VOLTAGE[A]	-50	VOLTS
	22 000	OHMS
PEAK RF GRID #1 VOLTAGE	65	VOLTS
DC PLATE CURRENT	63	MA.
DC GRID #2 CURRENT	8.0	MA.
DC GRID #1 CURRENT	2.0	MA.
GRID #1 DRIVING POWER (APPROX.)	0.3	WATTS
USEFUL POWER OUTPUT	8.8	WATTS

[A]OBTAINED FROM FIXED SOURCE OF GRID RESISTOR OF VALUE SHOWN.

NOTE

[1]WHEN THE 6216 IS USED IN THE CIRCUIT SHOWN BELOW, THE PETENTIOMETER R SHOULD BE ADJUSTED FOR MINIMUM AC OUTPUT VOLTAGE ACROSS THE E_o TERMINALS. THE CURVE SHOWN IN THE APPENDIX REPRESENTS ADJUSTMENT FOR MINIMUM AC OUTPUT VOLTAGE AT 100 MA DC LOAD CURRENT.



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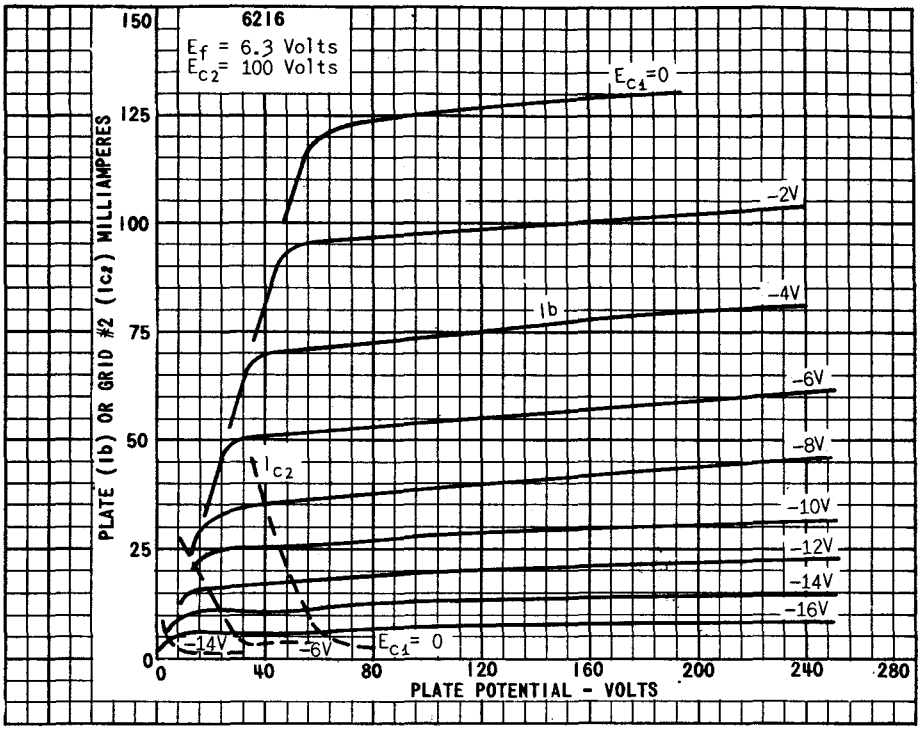
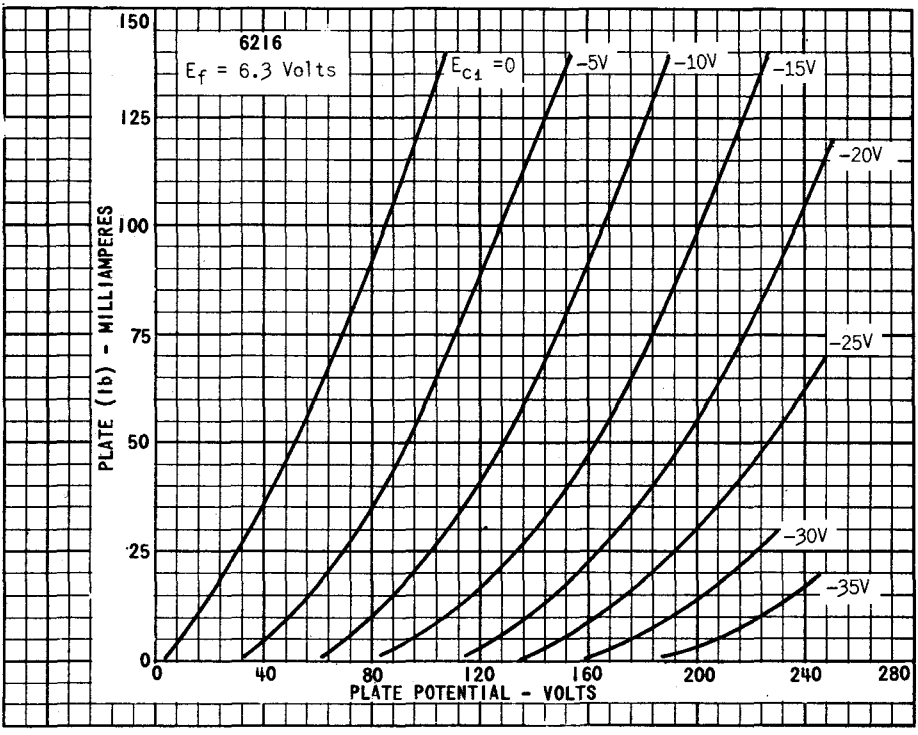
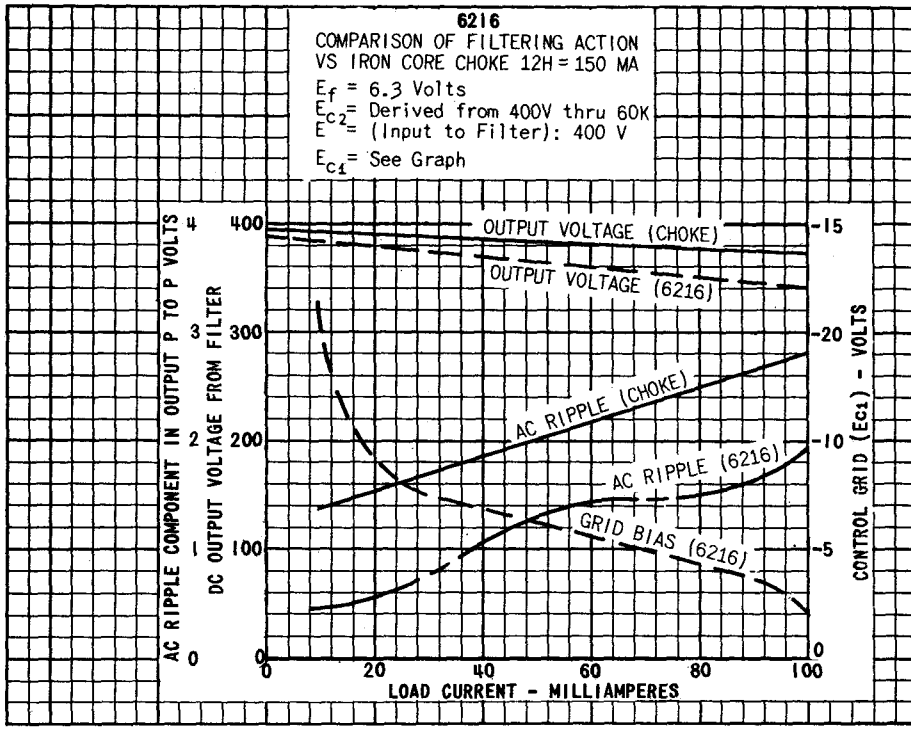

6216
Ef = 6.3 Volts
Ec2 = 100 Volts
Ec1=0
-2V
-4V
Ib
-6V
-8V
Ic2
-10V
-12V
-14V
-16V
-14V
-6V
Ec1 = 0
PLATE (Ib) OR GRID #2 (Ic2) MILLIAMPERES
PLATE POTENTIAL - VOLTS
0
25
50
75
100
125
150
0
40
80
120
160
200
240
280


6216
Ef = 6.3 Volts
Ec1 =0
-5V
-10V
-15V
-20V
-25V
-30V
-35V
PLATE (Ib) - MILLIAMPERES
PLATE POTENTIAL - VOLTS
0
25
50
75
100
125
150
0
40
80
120
160
200
240
280



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