TUNG-SOL

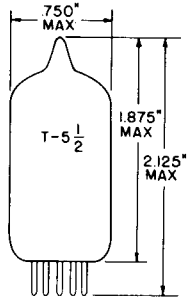
PENTODE

MINIATURE TYPE

COATED UNIPOTENTIAL CATHODE

HIGH FREQUENCY INTERMEDIATE AND RF AMPLIFIER

ANY MOUNTING POSITION

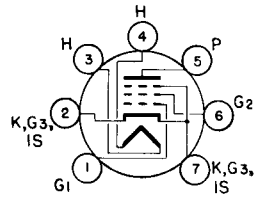


GLASS BULB

MINIATURE BUTTON 7 PIN BASE E7-1

OUTLINE DRAWING

JEDEC 5-2



BOTTOM VIEW

BASING DIAGRAM

BASING DIAGRAM

JEDEC 7BD

THE 3BC5 IS A HIGH TRANSCONDUCTANCE PENTODE VOLTAGE AMPLIFIER IN THE 7 PIN MINIATURE CONSTRUCTION. IT IS DESIGNED FOR USE IN 600 MA. SERIES HEATER OPERATED RECEIVERS. IT IS USEFUL AS AN RF AMPLIFIER UP TO ABOUT 400 MC. AND AS A HIGH-FREQUENCY INTERMEDIATE AMPLIFIER. THERMAL CHARACTERISTICS OF THE HEATER ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES WHICH ARE SIMILARLY CONTROLLED.

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD [A]	WITHOUT SHIELD	
PENTODE CONNECTION:			
GRID TO PLATE: (G1 TO P) MAX.	0.020	0.030	pf
INPUT: G1 TO (H+K+G2+G3 & I.S.)	6.6	6.5	pf
OUTPUT: P TO (H+K+G2+G3& I.S.)	3.1	1.8	pf
TRIODE CONNECTION: (G2 TIED TO PLATE)			
GRID TO PLATE: G1 TO (P+G2)	2.5	2.5	pf
INPUT: G1 TO (H+K+G3 & I.S.)	4.0	3.9	pf
OUTPUT: (P+G2) TO (H+K+G3 & I.S.)	4.3	3.0	pf

A EXTERNAL SHIELD #316 CONNECTED TO PIN #7.

HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS	3.15 VOLTS	600	MA.
HEATER WARM-UP TIME*		11	SECONDS
HEATER SUPPLY LIMITS:			
CURRENT OPERATION		600 ± 40	MA.
MAXIMUM HEATER-CATHODE VOLTAGE;			
HEATER NEGATIVE WITH RESPECT TO CATHODE		200	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE		200 [B]	VOLTS

B DC COMPONENT MUST NOT EXCEED 100 VOLTS.

→ INDICATES A CHANGE.

CONTINUED ON FOLLOWING PAGE

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TUNG-SOL

CONTINUED FROM PRECEDING PAGE

→ MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

	TRIODE [C]	PENTODE	
PLATE VOLTAGE	330	330	VOLTS
GRID #2 VOLTAGE	PLATE	SEE RATING CHART	
GRID #2 SUPPLY VOLTAGE	PLATE [C]	330	VOLTS
PLATE DISSIPATION	2.9	2.3	WATTS
GRID #1 VOLTAGE (POSITIVE BIAS VALUE)	0	0	VOLT
GRID #2 DISSIPATION			
FOR VOLTAGES UP TO 165 V.	---	0.55	WATTS
FOR VOLTAGES BETWEEN 165 & 330 V.	---	SEE RATING CHART	

→ TYPICAL OPERATING CHARACTERISTICS

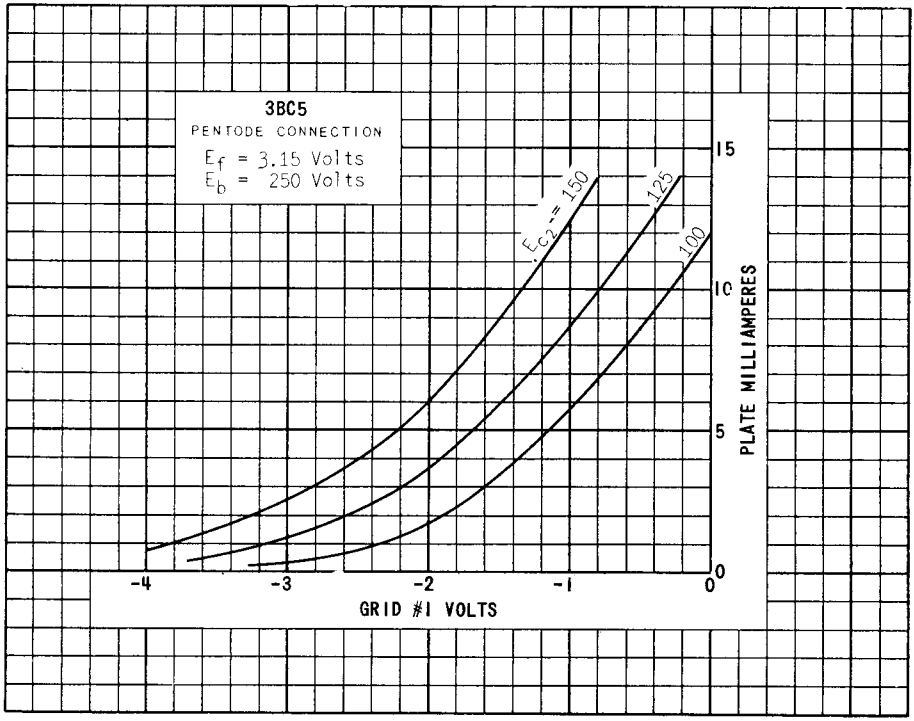
CLASS A_1 AMPLIFIER

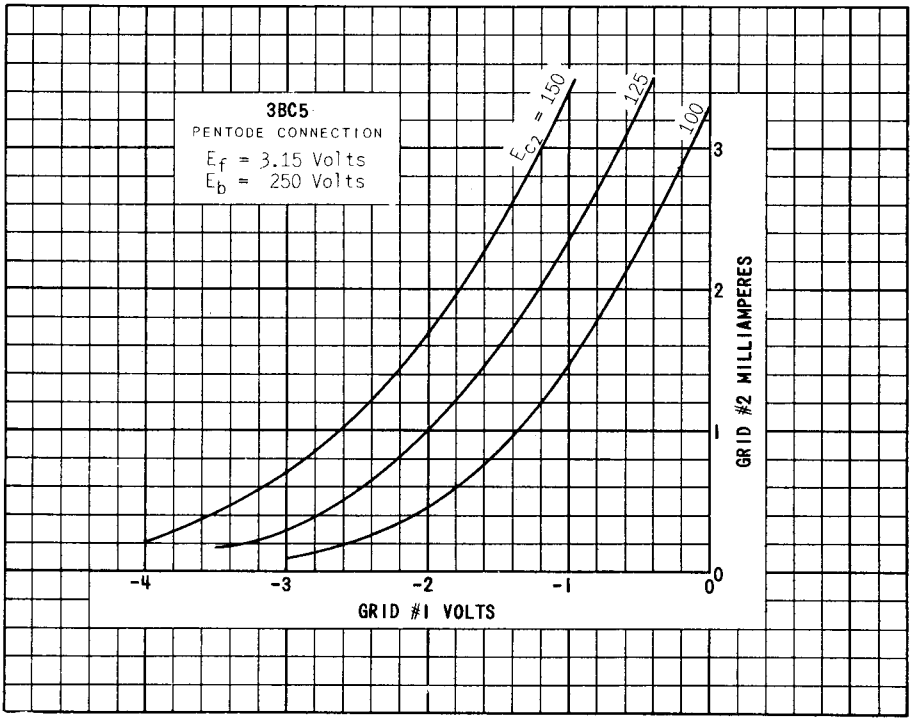
	TRIODE [C]		PENTODE			
PLATE VOLTAGE	250	180	100	125	250	VOLTS
GRID #2 VOLTAGE			100	125	150	VOLTS
CATHODE RESISTOR	820	330	180	100	180	OHMS
TRANSCONDUCTANCE	4400	6000	4900	6100	5700	μMHOS
PLATE RESISTANCE (APPROXIMATELY)	0.009	0.006	0.6	0.5	0.8	MEGOHM
AMPLIFICATION FACTOR	40	42	---	---	---	
PLATE CURRENT	6.0	8.0	4.7	8.0	7.5	MA.
GRID #2 CURRENT	---	---	1.4	2.4	2.1	MA.
GRID #1 VOLTAGE (APPROX.) FOR Ib = 10 μA.	---	---	-5	-6	-8	VOLTS

[C] G2 TIED TO PLATE.

→ INDICATES A CHANGE.

*HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.





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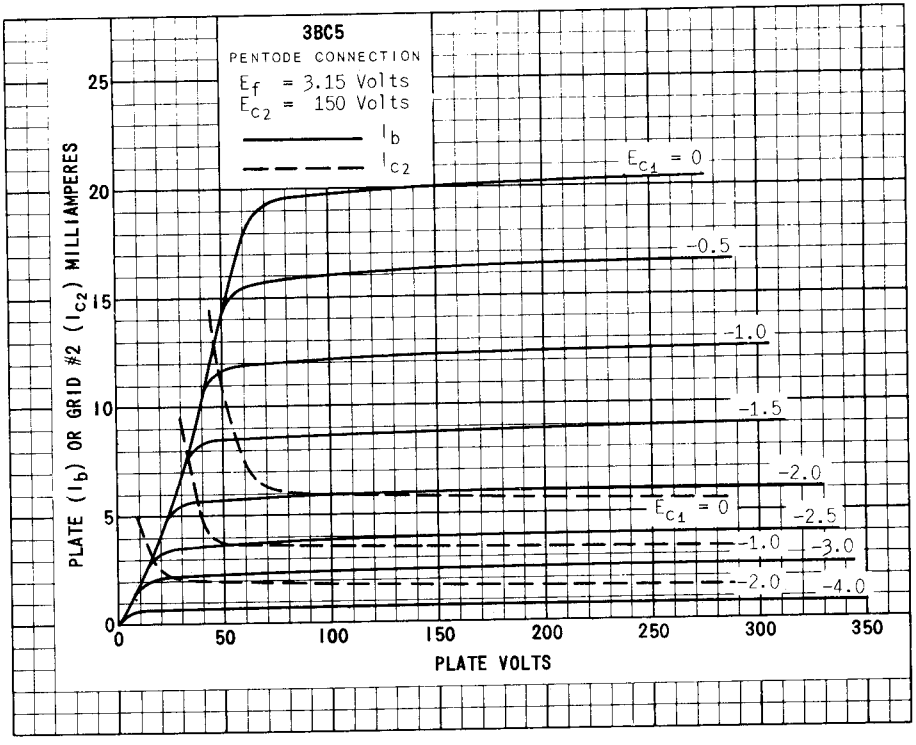
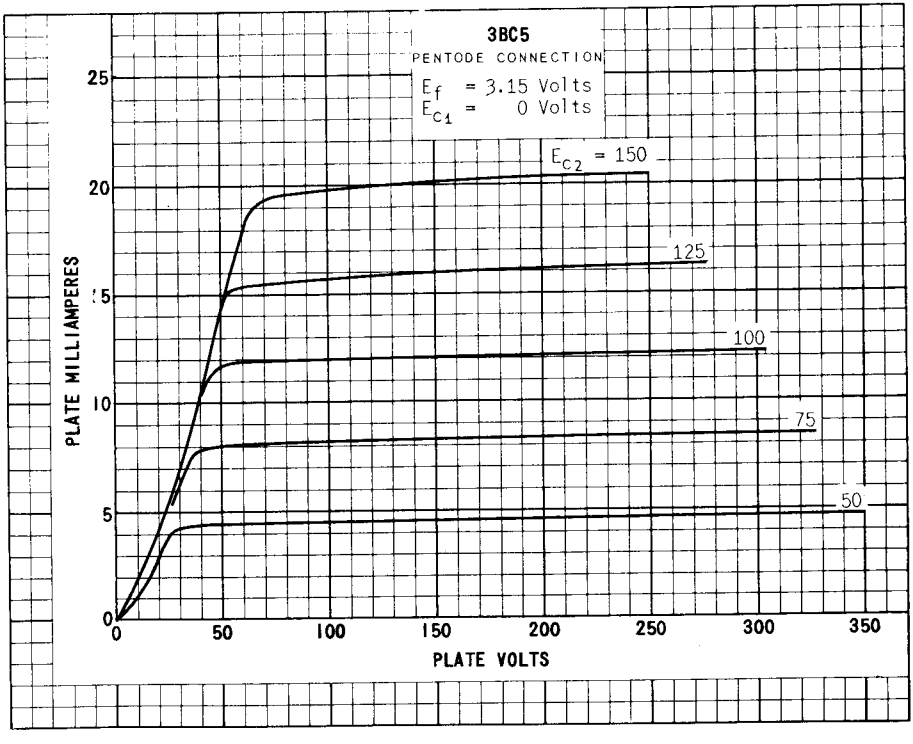
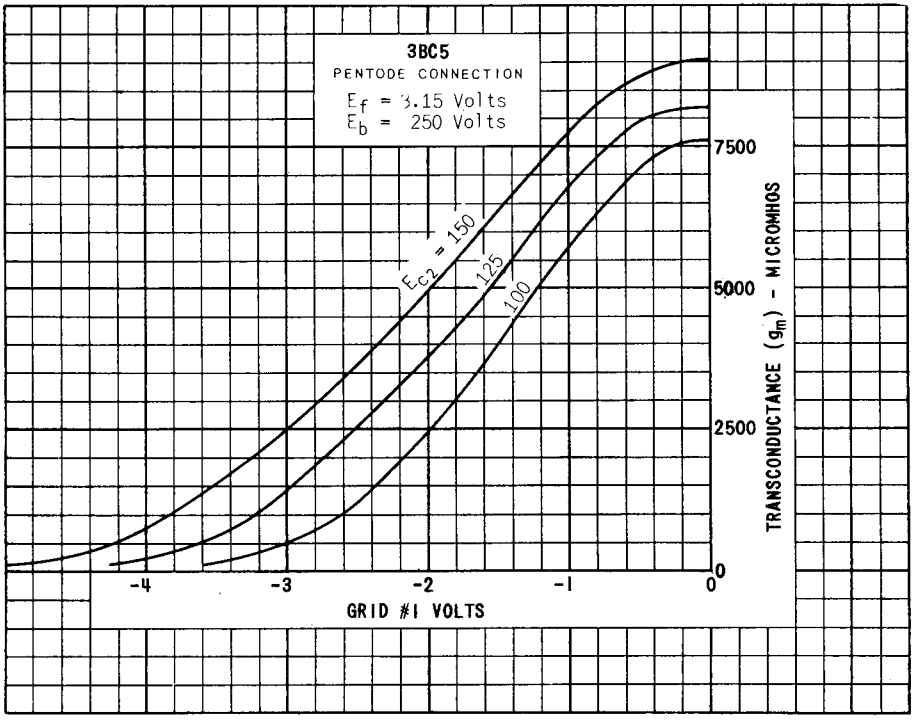
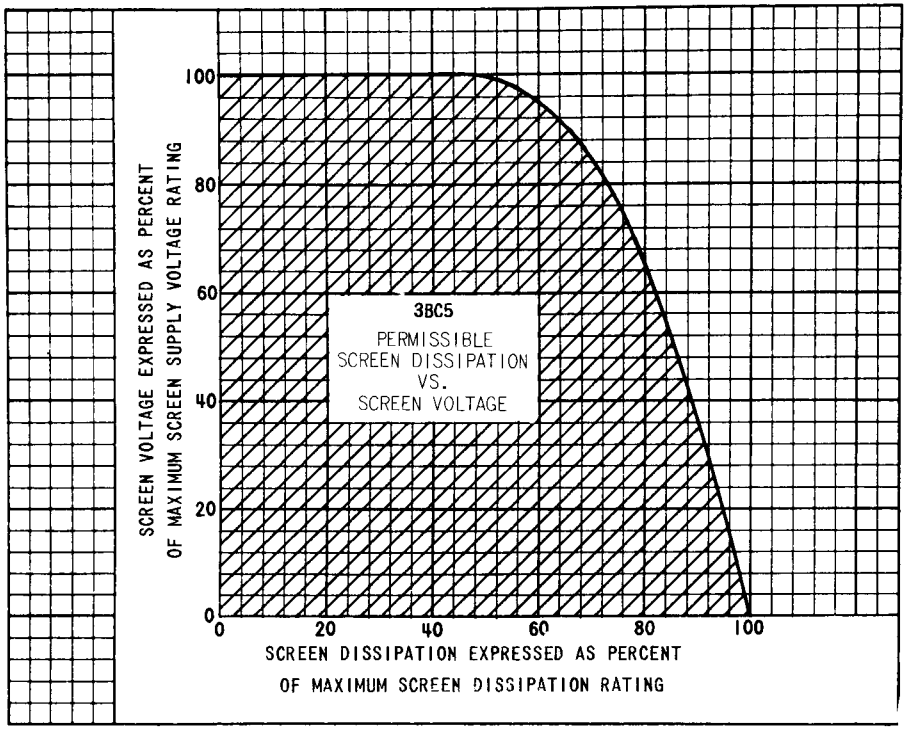

3BC5
PENTODE CONNECTION
E_f = 3.15 Volts
E_{c_2} = 150 Volts
I_b
I_{c_2}
PLATE (I_b) OR GRID #2 (I_{c_2}) MILLIAMPERES
PLATE VOLTS
E_{c_1} = 0
-0.5
-1.0
-1.5
-2.0
E_{c_1} = 0
-2.5
-1.0
-3.0
-2.0
-4.0
0
5
10
15
20
25
0
50
100
150
200
250
300
350


3BC5
PENTODE CONNECTION
E_f = 3.15 Volts
E_{c_1} = 0 Volts
PLATE MILLIAMPERES
PLATE VOLTS
E_{c_2} = 150
125
100
75
50
0
5
10
15
20
25
0
50
100
150
200
250
300
350


3BC5
PENTODE CONNECTION
E_f = 3.15 Volts
E_b = 250 Volts
E_{c2} = 150
125
100
7500
5000
2500
0
TRANSCONDUCTANCE (g_m) - MICROMHOS
-4
-3
-2
-1
0
GRID #1 VOLTS


3BC5
PERMISSIBLE
SCREEN DISSIPATION
VS.
SCREEN VOLTAGE
SCREEN VOLTAGE EXPRESSED AS PERCENT
OF MAXIMUM SCREEN SUPPLY VOLTAGE RATING
100
80
60
40
20
0
0
20
40
60
80
100
SCREEN DISSIPATION EXPRESSED AS PERCENT
OF MAXIMUM SCREEN DISSIPATION RATING