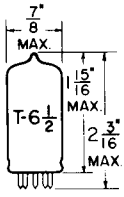
TUNG-SOL

TRIODE-PENTODE

MINIATURE TYPE

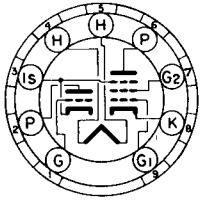


GLASS BULB

COATED UNIPOTENTIAL CATHODE

HEATER
5.2 VOLTS 0.6±6% AMP.
AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW
SMALL BUTTON
9 PIN BASE
9EG

THE 5DH8 IS A MINIATURE TUBE CONTAINING A SHARP-CUTOFF PENTODE AND A HIGH-MU TRIODE IN ONE ENVELOPE. THE PENTODE SECTION IS INTENDED FOR USE AS A VIDEO IF AMPLIFIER OR AS AN AUDIO IF AMPLIFIER. PROVIDED THE CATHODE IS GROUNDED, THE TRIODE SECTION MAY BE USED AS A VERTICAL OSCILLATOR, SYNC AMPLIFIER, SYNC SEPARATOR, OR SYNC CLIPPER. AN INTERNAL CONNECTION BETWEEN THE PENTODE SUPPRESSOR AND TRIODE CATHODE ALLOWS THE SUPPRESSOR TO BE GROUNDED WHEN A CATHODE BIAS RESISTOR IS EMPLOYED FOR THE PENTODE SECTION. 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

WITHOUT EXTERNAL SHIELD

PENTODE SECTION:		
GRID #1 TO PLATE (MAX.)	0.03	μμf
INPUT: G_1 TO (K+H+S)	6.5	μμf
OUTPUT: PLATE TO (K+S+TK+I.S.+H&SUPPRESSOR)	2.2	μμf
PLATE TO (K+S & H)	4.2	μμf
TRIODE SECTION:		
GRID TO PLATE	1.6	μμf
INPUT: G TO (K+I.S.+H & P_S)	2.4	μμf
OUTPUT: P TO (K+I.S.+H & P_S)	1.4	μμf
PENTODE GRID #1 TO TRIODE PLATE	0.008	μμf
TRIODE GRID TO PENTODE PLATE	0.005	μμf
PENTODE PLATE TO TRIODE PLATE	0.04	μμf

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RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

CLASS A_1 AMPLIFIER SERVICE

	PENTODE SECTION	TRIODE SECTION	
HEATER VOLTAGE	5.2	5.2	VOLTS
MAXIMUM PLATE VOLTAGE	300	300	VOLTS
MAXIMUM SCREEN-SUPPLY VOLTAGE	300	---	VOLTS
MAXIMUM SCREEN VOLTAGE	SEE SCREEN RATING CHART		
MAXIMUM POSITIVE DC GRID #1 VOLTAGE	0	0	VOLTS
MAXIMUM PLATE DISSIPATION	2.2	2.0	WATTS
MAXIMUM SCREEN DISSIPATION	0.55	---	WATTS
MAXIMUM HEATER-CATHODE VOLTAGE:			
HEATER POSITIVE WITH RESPECT TO CATHODE			
DC COMPONENT	100	100	VOLTS
TOTAL DC AND PEAK	200	200	VOLTS
HEATER NEGATIVE WITH RESPECT TO CATHODE			
TOTAL DC AND PEAK	200	200	VOLTS
MAXIMUM GRID #1 CIRCUIT RESISTANCE:			
WITH FIXED BIAS	0.25	0.5	MEGOHMS
WITH CATHODE BIAS	1.0	1.0	MEGOHMS
HEATER WARM-UP TIME (APPROX.)*	11.0		SECONDS

VERTICAL OSCILLATOR SERVICE[A]

	TRIODE SECTION	
HEATER VOLTAGE	5.2	VOLTS
MAXIMUM DC PLATE VOLTAGE	300	VOLTS
MAXIMUM PEAK NEGATIVE GRID VOLTAGE	400	VOLTS
MAXIMUM PLATE DISSIPATION	1.0	WATTS
MAXIMUM DC CATHODE CURRENT	12	MA.
MAXIMUM PEAK CATHODE CURRENT	35	MA.
MAXIMUM HEATER-CATHODE VOLTAGE:		
HEATER POSITIVE WITH RESPECT TO CATHODE		
DC COMPONENT	100	VOLTS
TOTAL DC AND PEAK	200	VOLTS
HEATER NEGATIVE WITH RESPECT TO CATHODE		
TOTAL DC AND PEAK	200	VOLTS
MAXIMUM GRID CIRCUIT RESISTANCE:		
WITH FIXED BIAS	2.2	MEGOHMS
WITH CATHODE BIAS	2.2	MEGOHMS
WITH GRID-LEAK BIAS	2.2	MEGOHMS

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

	PENTODE SECTION	TRIODE SECTION	
HEATER VOLTAGE	5.2	5.2	VOLTS
HEATER CURRENT	0.6±6%	0.6±6%	AMP.
PLATE VOLTAGE	125	250	VOLTS
SCREEN VOLTAGE	125	---	VOLTS
GRID #1 VOLTAGE	---	---	VOLTS
CATHODE-BIAS RESISTOR	56	390	OHMS
AMPLIFICATION FACTOR	---	53	

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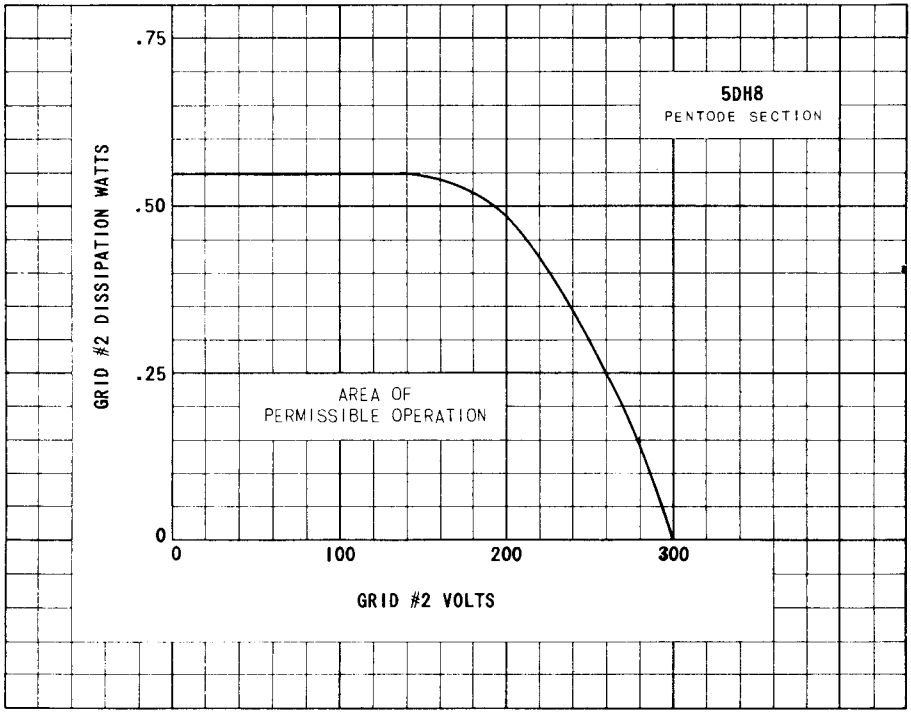
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS - CONT'D.

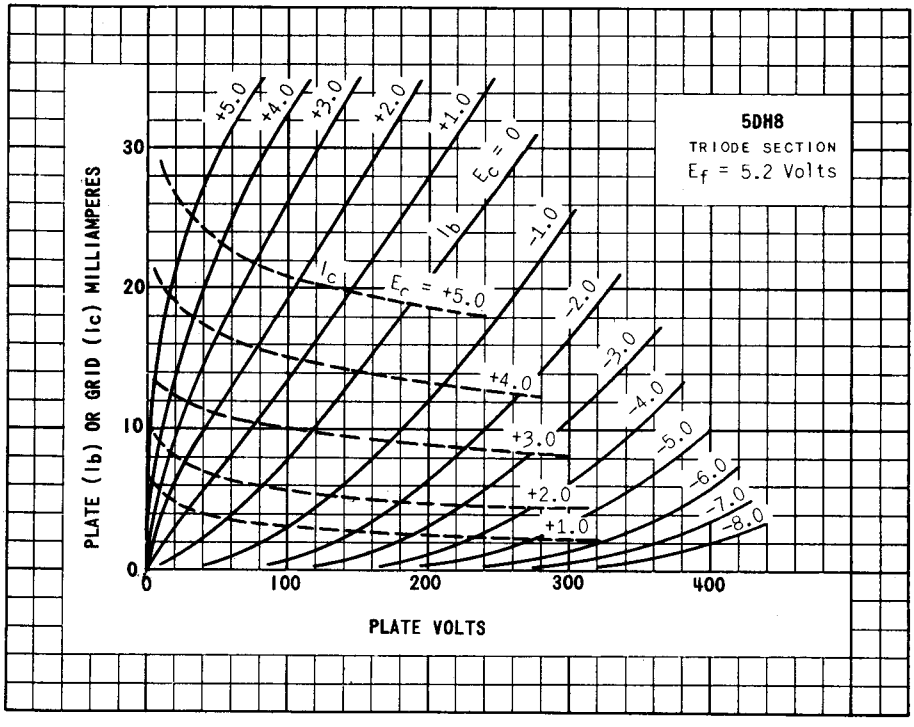
	PENTODE SECTION	TRIODE SECTION	
PLATE RESISTANCE (APPROX.)	150 000	12 000	VOLTS
TRANSCONDUCTANCE	8 600	4 400	μMHOS
PLATE CURRENT	13.5	7.3	MA.
SCREEN CURRENT	3.8	---	MA.
GRID #1 VOLTAGE (APPROX.)			
Ib = 10 μAMPS	---	-10	VOLTS
Ib = 20 μAMPS	-6	---	VOLTS

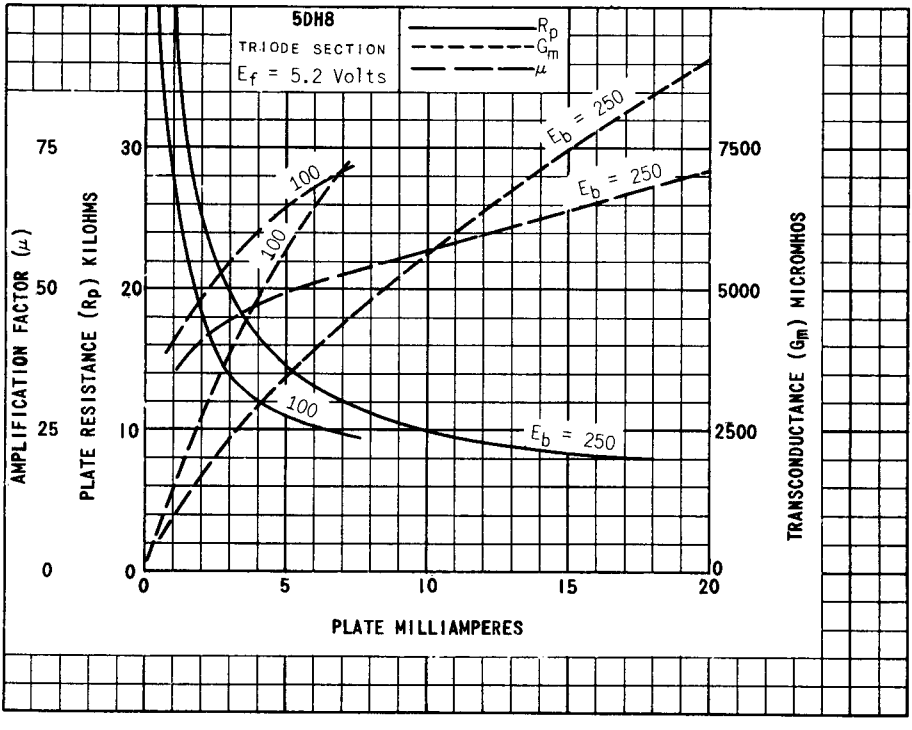
*HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

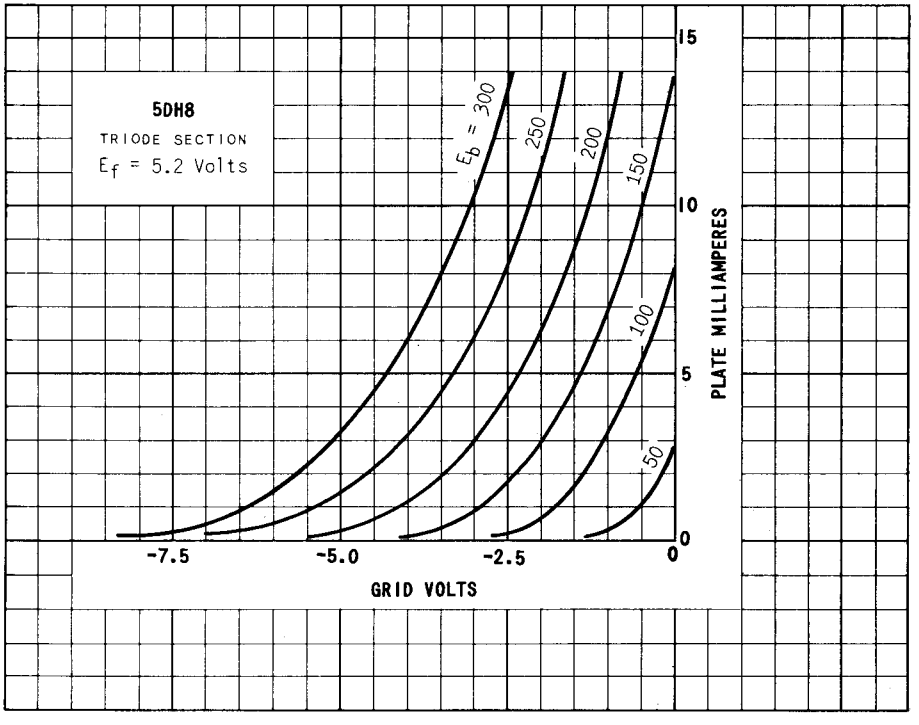
AFOR OPERATION IN A 525-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCAST STATIONS: FEDERAL COMMUNICATIONS COMMISSION", THE DUTY CYCLE OF THE VOLTAGE PULSE MUST NOT EXCEED 15% OF ONE SCANNING CYCLE.

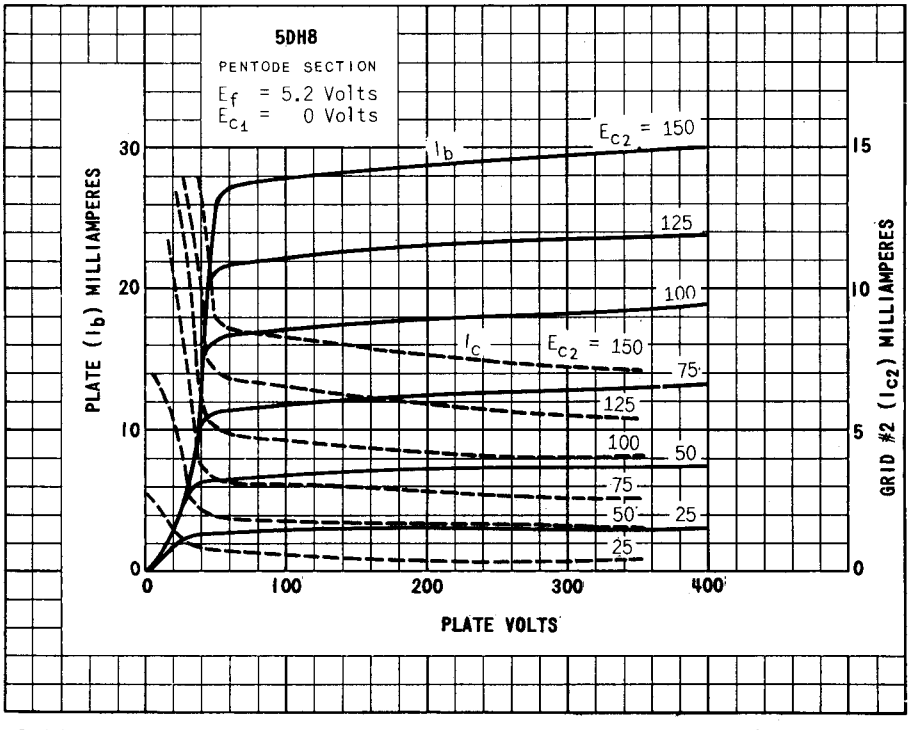
DESIGN-MAXIMUM RATINGS ARE THE LIMITING VALUES EXPRESSED WITH RESPECT TO BOGIE TUBES AT WHICH SATISFACTORY TUBE LIFE CAN BE EXPECTED TO OCCUR. TO OBTAIN SATISFACTORY CIRCUIT PERFORMANCE, THEREFORE, THE EQUIPMENT DESIGNER MUST ESTABLISH THE CIRCUIT DESIGN SO THAT NO DESIGN-MAXIMUM VALUE IS EXCEEDED WITH A BOGIE TUBE UNDER THE WORST PROBABLE OPERATING CONDITIONS WITH RESPECT TO SUPPLY-VOLTAGE VARIATION, EQUIPMENT COMPONENT VARIATION, EQUIPMENT CONTROL ADJUSTMENT, LOAD VARIATION, AND ENVIRONMENTAL CONDITIONS.

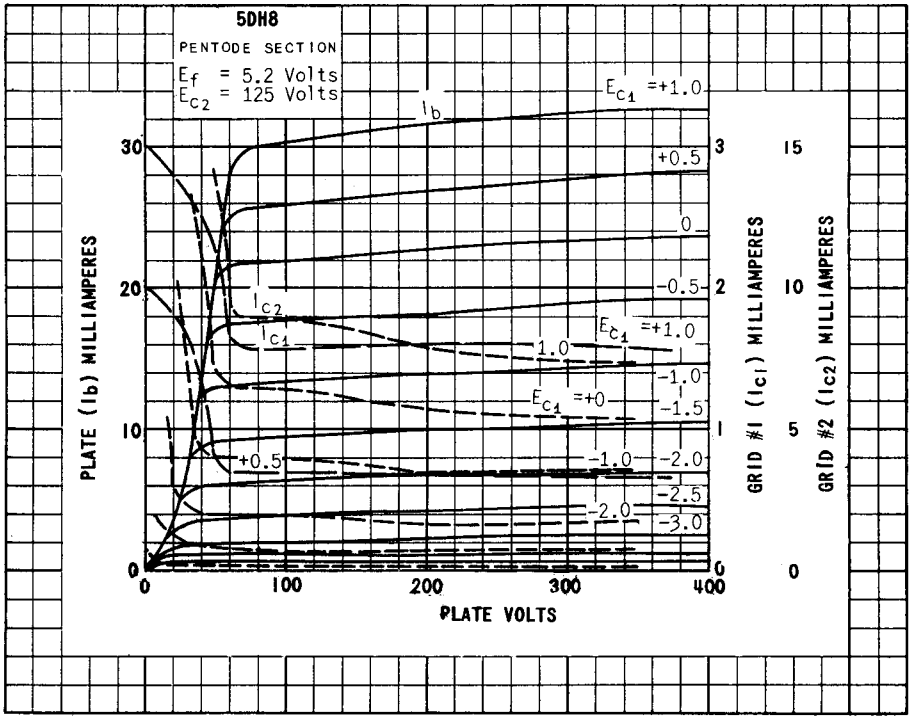


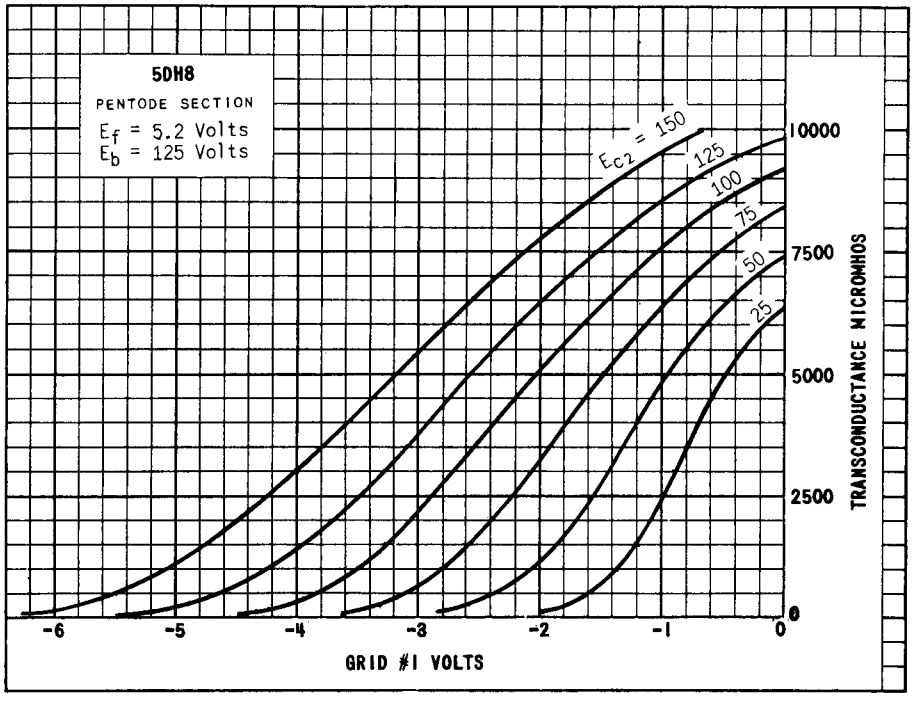

5DH8
TRIODE SECTION
E_f = 5.2 Volts
PLATE (Ib) OR GRID (Ic) MILLIAMPERES
PLATE VOLTS
Ib
Ic
E_c = 0
E_c = +5.0
+5.0
+4.0
+3.0
+2.0
+1.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
0
10
20
30
100
200
300
400


5DH8
TRIODE SECTION
E_f = 5.2 Volts
R_p
G_m
μ
AMPLIFICATION FACTOR (μ)
PLATE RESISTANCE (R_p) KILOHMS
TRANSCONDUCTANCE (G_m) MICROMHOS
PLATE MILLIAMPERES
E_b = 250
100
75
50
25
0
30
20
10
7500
5000
2500
5
15
20


5DH8
TRIODE SECTION
E_f = 5.2 Volts
E_b = 300
250
200
150
100
50
15
10
5
0
PLATE MILLIAMPERES
-7.5
-5.0
-2.5
0
GRID VOLTS


5DH8
PENTODE SECTION
E_f = 5.2 Volts
E_{c_1} = 0 Volts
I_b
E_{c_2} = 150
125
100
75
50
25
I_c
E_{c_2} = 150
125
100
75
50
25
30
20
10
0
PLATE (I_b) MILLIAMPERES
15
10
5
0
GRID #2 (I_{c_2}) MILLIAMPERES
0
100
200
300
400
PLATE VOLTS


5DH8
PENTODE SECTION
E_f = 5.2 Volts
E_{c2} = 125 Volts
I_b
E_{c1} =+1.0
+0.5
0
-0.5
I_{c2}
I_{c1}
1.0
-1.0
-1.5
-2.0
-2.5
-3.0
PLATE (Ib) MILLIAMPERES
GRID #1 (I_{c1}) MILLIAMPERES
GRID #2 (I_{c2}) MILLIAMPERES
PLATE VOLTS
0
100
200
300
400
5
10
15
20
30
1
2
3


5DH8
PENTODE SECTION
E_f = 5.2 Volts
E_b = 125 Volts
E_{c2} = 150
125
100
75
50
25
TRANSCONDUCTANCE MICROMHOS
GRID #1 VOLTS
10000
7500
5000
2500
0
-6
-5
-4
-3
-2
-1
0