

## TUNG-SOL

## PENTODE

MINIATURE TYPE

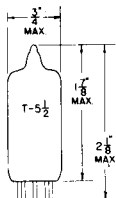
UNIPOTENTIAL CATHODE

HEATER

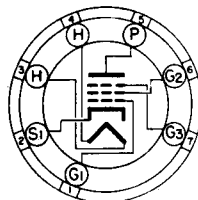
6.3±10% VOLTS 0.3 AMP.

AC OR DC

ANY MOUNTING POSITION



GLASS BULB



BOTTOM VIEW

SMALL-BUTTON MINIATURE  
7 PIN BASE

7EN

THE 6DT6 IS A SHARP CUTOFF PENTODE IN THE 7 PIN MINIATURE CONSTRUCTION. IT IS INTENDED FOR USE AS AN FM DETECTOR IN TELEVISION RECEIVERS. DESIGNED SO THAT GRID #1 AND GRID #3 CAN EACH BE USED AS INDEPENDENT SHARP CUTOFF CONTROL ELECTRODES, THE TUBE MAY ALSO BE USED IN DELAY CIRCUITS, GAIN-CONTROLLED AMPLIFIER CIRCUITS, AND MIXER CIRCUITS. WITH THE EXCEPTION OF HEATER WARM-UP TIME AND HEATER CHARACTERISTICS, IT IS IDENTICAL TO THE 3DT6.

### DIRECT INTERELECTRODE CAPACITANCES — APPROX.

WITH EXTERNAL SHIELD, #316, CONNECTED TO CATHODE

GRID #1 TO PLATE	0.02	$\mu$ f
GRID #1 TO GRID #3	0.1	$\mu$ f
GRID #3 TO ALL OTHER ELECTRODES	6.1	$\mu$ f
GRID #1 TO GRID #2, GRID #3, HEATER, AND INTERNAL SHIELD AND CATHODE	5.8	$\mu$ f
GRID #3 TO PLATE	1.4	$\mu$ f

### RATINGS

INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM

#### FM DETECTOR SERVICE

HEATER VOLTAGE	6.3±10% ←	VOLTS
MAXIMUM PLATE VOLTAGE	330 ←	VOLTS
MAXIMUM GRID #3 (SUPPRESSOR) VOLTAGE	28 ←	VOLTS
MAXIMUM GRID #2 SUPPLY VOLTAGE	330 ←	VOLTS
MAXIMUM GRID #2 (SCREEN) VOLTAGE	SEE RATING CHART	
MAXIMUM GRID #1 (CONTROL-GRID) VOLTAGE:		
POSITIVE BIAS VALUE	0	VOLTS
MAXIMUM PLATE DISSIPATION	1.7 ←	WATTS
MAXIMUM GRID #2 INPUT:		
FOR GRID #2 VOLTAGES UP TO 165 VOLTS	1.1 ←	WATTS
FOR GRID #2 VOLTAGES BETWEEN 165 AND 330 VOLTS	SEE RATING CHART	
MAXIMUM HEATER-CATHODE VOLTAGE:		
HEATER NEGATIVE WITH RESPECT TO CATHODE	200	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE	200 <sup>A</sup>	VOLTS
HEATER WARM-UP TIME (APPROX.) *	11	SECONDS

<sup>A</sup> THE DC COMPONENT MUST NOT EXCEED 100 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.

CONTINUED ON FOLLOWING PAGE

→ INDICATES A CHANGE.

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CONTINUED FROM PRECEDING PAGE

## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A<sub>1</sub> AMPLIFIER

HEATER VOLTAGE	→ 6.3±10%	VOLTS
HEATER CURRENT	0.3	AMP.
PLATE SUPPLY VOLTAGE	150	VOLTS
GRID #3 SUPPLY VOLTAGE	0	VOLTS
GRID #2 SUPPLY VOLTAGE	100	VOLTS
CATHODE-BIAS RESISTOR	560	OHMS
PLATE RESISTANCE (APPROX.)	0.15	MEGOHM
TRANSCONDUCTANCE:		
GRID #1 TO PLATE	800	μMhos
GRID #3 TO PLATE	515	μMhos
GRID #1 VOLTAGE (APPROX.) FOR PLATE CURRENT OF 10 μAMP	-4.5	VOLTS
GRID #3 VOLTAGE (APPROX.) FOR PLATE CURRENT OF 10 μAMP	-3.5	VOLTS
PLATE CURRENT	1.1	MA.
GRID #2 CURRENT	2.1	MA.

TYPICAL OPERATION IN THE ACCOMPANYING LOCKED-OSCILLATOR,  
QUADRATURE-GRID FM DETECTOR CIRCUIT  
AT A CARRIER FREQUENCY OF 4.5 MC:

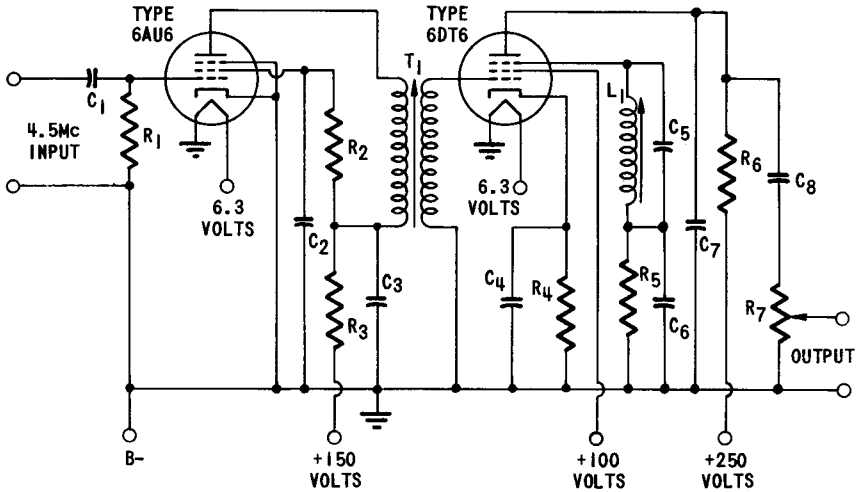
INPUT SIGNAL TO GRID OF DRIVER TUBE	15	200	500	MV RMS
PLATE SUPPLY VOLTAGE	250	250	250	VOLTS
GRID #3 VOLTAGE (OBTAINED FROM A 560000-OHM RESISTOR)	-5	-6	-6.4	VOLTS
GRID #2 SUPPLY VOLTAGE	100	100	100	VOLTS
CATHODE-BIAS RESISTOR	560	560	560	OHMS
PLATE LOAD RESISTOR	0.27	0.27	0.27	MEGOHM
PLATE CURRENT	0.23	0.22	0.21	MA.
GRID #2 CURRENT	3.4	5.5	6	MA.
GRID #1 CURRENT	0.013	0.6	0.8	MA.
BANDWIDTH:				
FOR A TOTAL HARMONIC DISTORTION OF 10 PERCENT	65	120	118	KC
AM REJECTION (APPROX.) <sup>B</sup>	33	29	28	DB
AUDIO OUTPUT VOLTAGE (RMS, APPROX.):				
WITH ± 7.5-KC DEVIATION FROM MEAN VALUE OF 4.5 MC	5.5	6.5	7.5	VOLTS
WITH ± 25-KC DEVIATION FROM MEAN VALUE OF 4.5 MC	17	21	23	VOLTS
TOTAL HARMONIC DISTORTION:				
WITH ± 25-KC DEVIATION FROM MEAN VALUE OF 4.5 MC	2	3	4	PERCENT
SENSITIVITY:				
WITH ± 7.5-KC DEVIATION FROM MEAN VALUE OF 4.5 MC			5 <sup>C</sup>	MILLIVOLTS
WITH ± 25-KC DEVIATION FROM MEAN VALUE OF 4.5 MC			15 <sup>C</sup>	MILLIVOLTS
MAXIMUM CIRCUIT VALUES:				
GRID #1 CIRCUIT RESISTANCE: FOR FIXED-BIAS OPERATION			0.25	MEGOHM
FOR CATHODE-BIAS OPERATION			0.5	MEGOHM

<sup>B</sup> RATIO OF THE AUDIO OUTPUT VOLTAGE PRODUCED BY 30-PERCENT AMPLITUDE MODULATION OF THE 4.5-MC CARRIER FREQUENCY TO THE AUDIO OUTPUT PRODUCED BY ± 25-KC DEVIATION FROM THE 4.5-MC CARRIER FREQUENCY, WITH A MODULATING FREQUENCY OF 400 CPS IN BOTH CASES.

<sup>C</sup> SIGNAL LEVEL AT WHICH DETECTOR CIRCUIT WILL HANDLE THE INDICATED DEVIATION IN FREQUENCY FROM THE MEAN VALUE OF 4.5 MC, BEFORE DISTORTION OCCURS.

→ INDICATES A CHANGE.

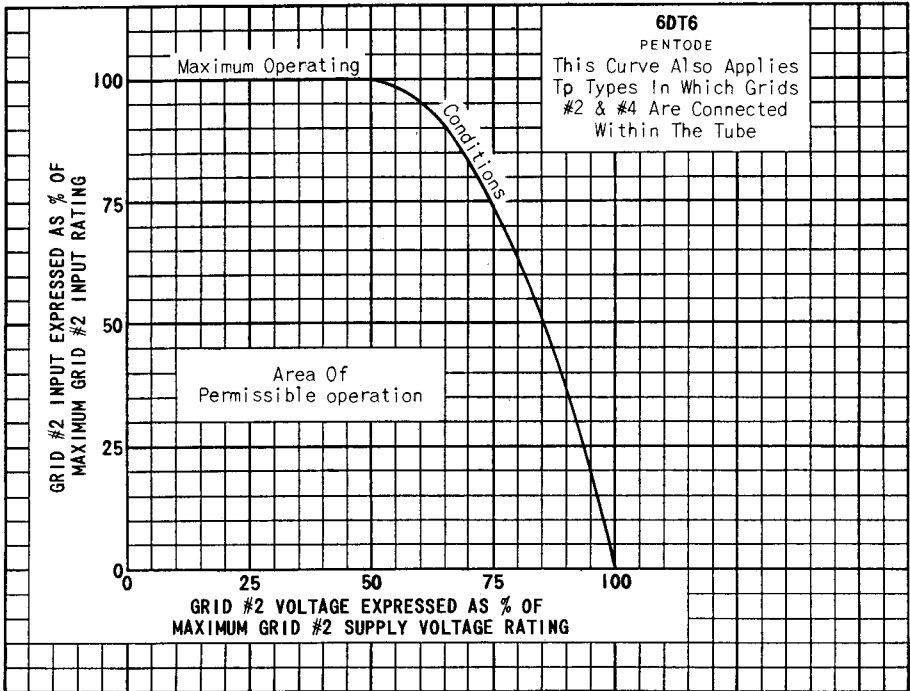
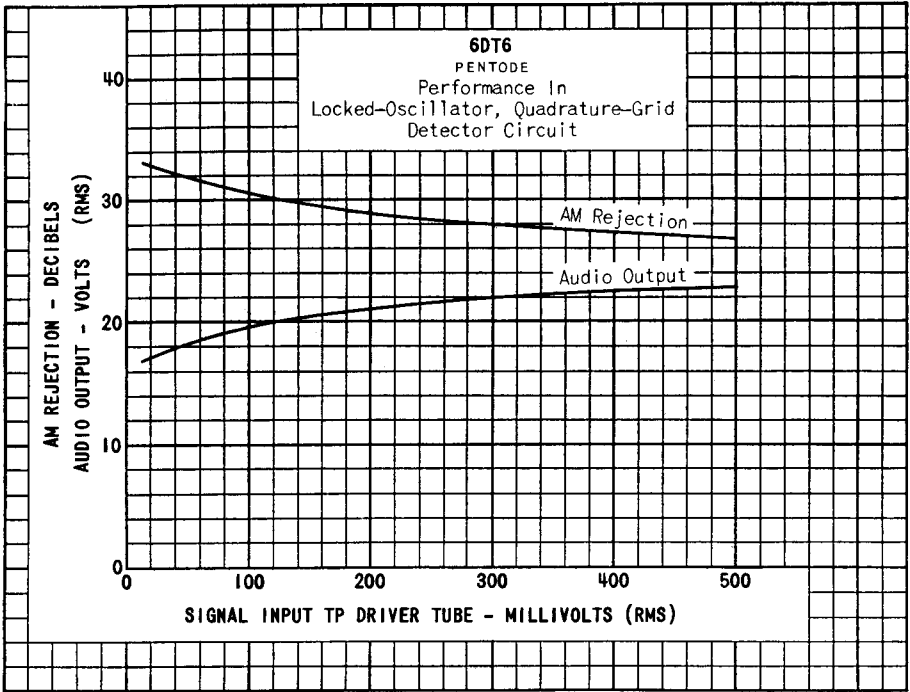
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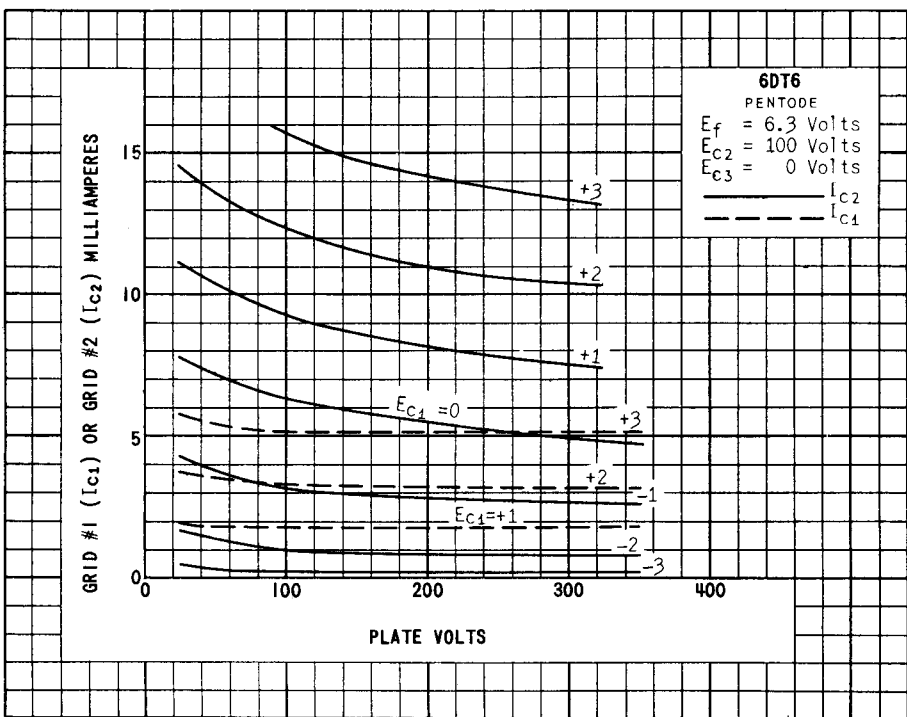
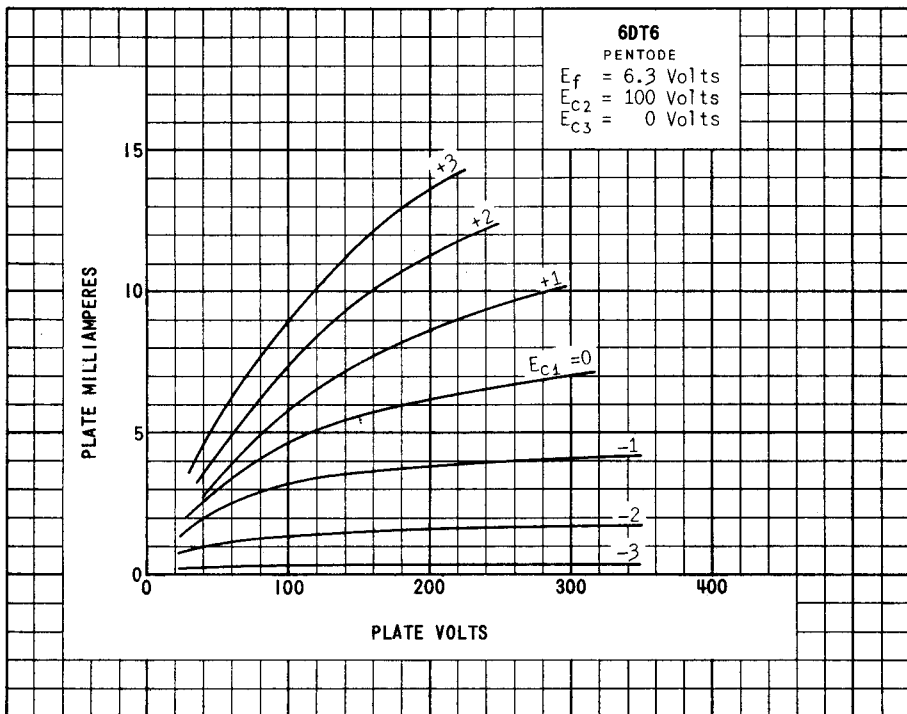
LOCKED-OSCILLATOR, QUADRATURE-GRID DETECTOR CIRCUIT  
UTILIZING TYPE 6DT6

$C_1$ : 47 $\mu\mu\text{f}$ , 400 VOLTS  
 $C_2$   $C_3$ : 0.02 $\mu\text{f}$ , 400 VOLTS  
 $C_4$ : 0.01 $\mu\text{f}$ , 200 VOLTS  
 $C_5$ : 18 $\mu\mu\text{f}$ , 200 VOLTS  
 $C_6$ : 0.05 $\mu\text{f}$ , 200 VOLTS  
 $C_7$ : 100 TO 1000 $\mu\mu\text{f}$ ,  
400 VOLTS  
 $C_8$ : 0.02 $\mu\text{f}$ , 400 VOLTS

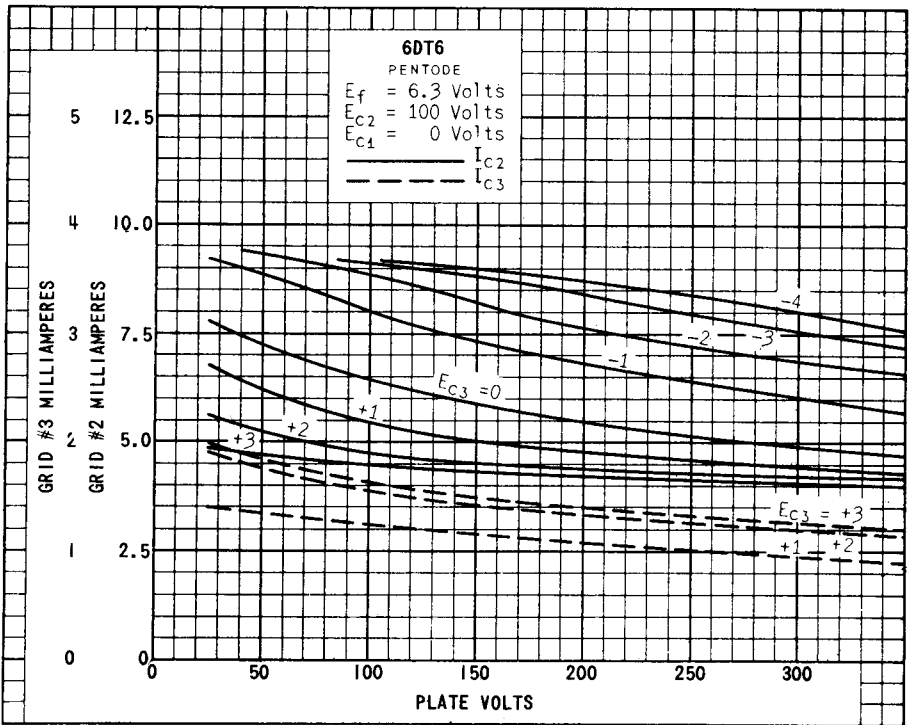
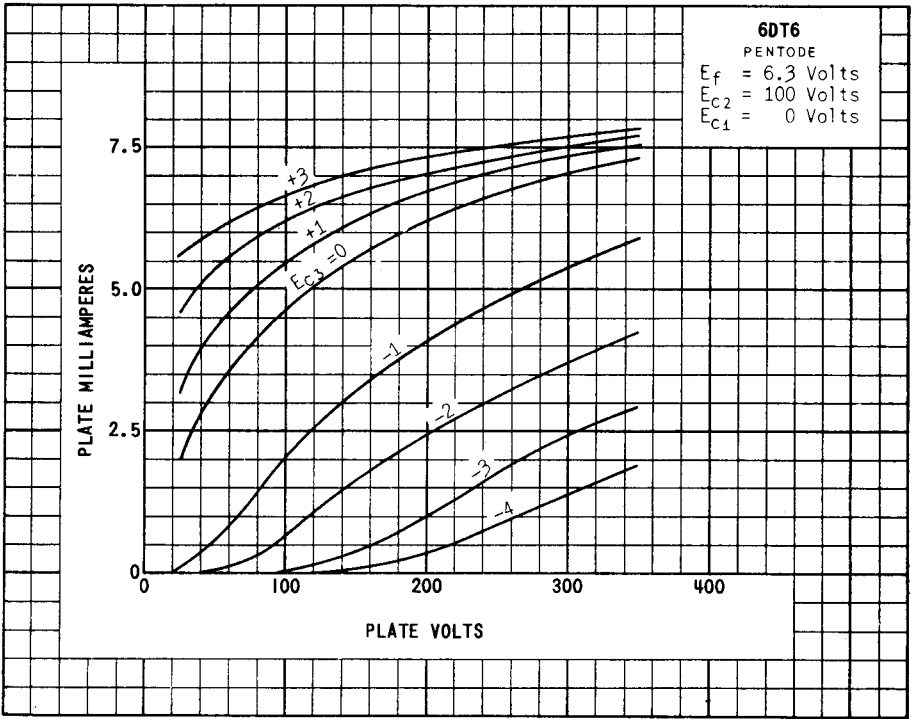
$L_1$ : SLUG-TUNED INDUCTOR  
WITH Q OF 50 AND  
TUNEABLE TO 4.5-MC.  
 $R_1$ : 100000 OHMS, 0.5 WATT  
 $R_2$ : 12000 OHMS, 0.5 WATT  
 $R_3$ : 1000 OHMS, 0.5 WATT  
 $R_4$ : 560 OHMS, 0.5 WATT  
 $R_5$ : 560000 OHMS, 0.5 WATT

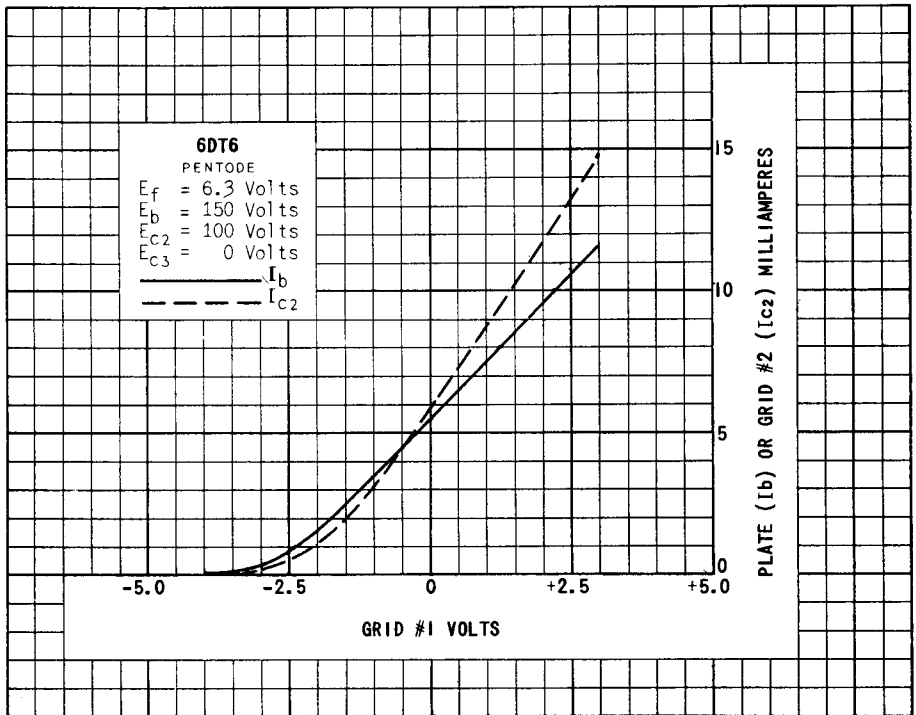
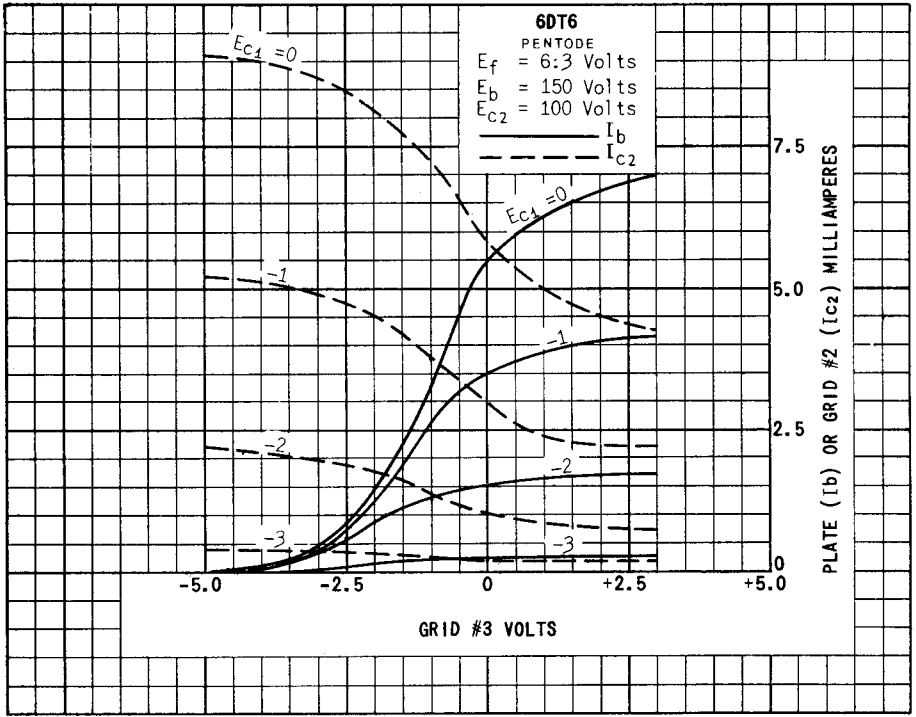
$R_6$ : 270000 OHMS, 0.5 WATT  
 $R_7$ : 0.5 MEGOHM POTENTIOMETER  
 $T_1$ : SLUG-TUNED, BIFILAR  
WOUND IF TRANSFORMER  
WITH RATIO OF 1:1.5,  
Q > 60, AND TUNEABLE  
TO 4.5-MC WITH TUBE AND  
WIRING CAPACITANCE.





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