

February 1, 1957

Dual-Control-Grid Pentode Types 3DT6, 4DT6 and 6DT6

The 3DT6, 4DT6 and 6DT6 are miniature 7-pin dual-control-grid pentodes designed for service as combined limiter, FM detector and audio voltage amplifier in television receivers. Since both Grid No. 1 and Grid No. 3 exhibit sharp-cutoff characteristics, these tubes are also well suited to gating, mixing and delay circuits.

The 3DT6 and 4DT6 have been designed for use in receivers which employ series connected heaters especially in television receivers where the picture-tube heater is in series with other heaters. When each is employed in this type of circuit with other tubes similarly designed having the same heater current rating, heater voltage surges across individual tubes are minimized inasmuch as heater warm-up characteristic is controlled.

GENERAL DATA

Electrical:

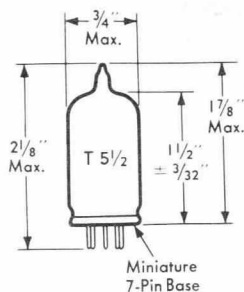
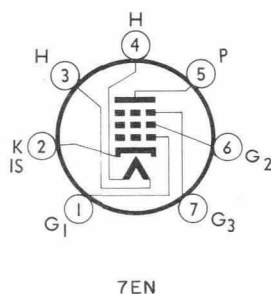
Cathode	Coated Unipotential		
Heater:	3DT6	4DT6	6DT6
Voltage (ac or dc)	3.15	4.2	6.3 Volts
Current	0.60±6%	0.45±6%	0.3 Ampere
Warm-up Time Δ	11	11	.. Seconds
Direct Interelectrode Capacitances	Shielded#		
Grid 1 to Plate	0.02 $\mu\mu\text{f}$		
Grid 3 to Plate	1.4 $\mu\mu\text{f}$		
Grid 1 Input*	5.8 $\mu\mu\text{f}$		
Grid 3 to All Elements	6.1 $\mu\mu\text{f}$		
Grid 1 to Grid 3	0.1 $\mu\mu\text{f}$		

Mechanical:

Bulb	T-5½
Base	Miniature 7-Pin (JETEC E7-1)
Outline	5-2
Basing	7EN
Mounting Position	Any

Characteristics as a Class A Amplifier

Plate Voltage	150	Volts
Grid 3 Voltage	0	Volts
Grid 2 Voltage	100	Volts
Cathode Bias Resistor	560	Ohms
Plate Resistance (approx.)	0.15	Megohms
Grid 1 Transconductance	800	μmhos
Grid 3 Transconductance	515	μmhos
Grid 1 Cutoff Bias $\square$	-4.5	Volts
Grid 3 Cutoff Bias $\square$	-3.5	Volts
Plate Current	1.1	Ma.
Grid 2 Current	2.1	Ma.



LIMITER FM DETECTOR SERVICE

Maximum Ratings:

Design-Center Values

Plate Voltage	300 max.	Volts
Grid 3 Voltage	25 max.	Volts
Grid 2 (Screen) Supply Voltage	300 max.	Volts
Grid 2 Voltage	See Grid 2 Input Rating Curve	

Grid 1 Voltage:

Positive DC Value	0 max.	Volts
Plate Dissipation	1.5 max.	Watts
Grid 2 Dissipation	1.0 max.	Watts

Heater-Cathode Voltage

Heater Positive with respect to Cathode

DC Component	100 max.	Volts
Total DC and peak	200 max.	Volts
Heater Negative with respect to Cathode		
Total DC and peak	200 max.	Volts

Maximum Circuit Values:

Grid 1 Circuit Resistance

For fixed bias operation	0.25 max.	Megohm
For cathode bias operation	0.5 max.	Megohm

NOTES

With JETEC shield #316 connected to Cathode.

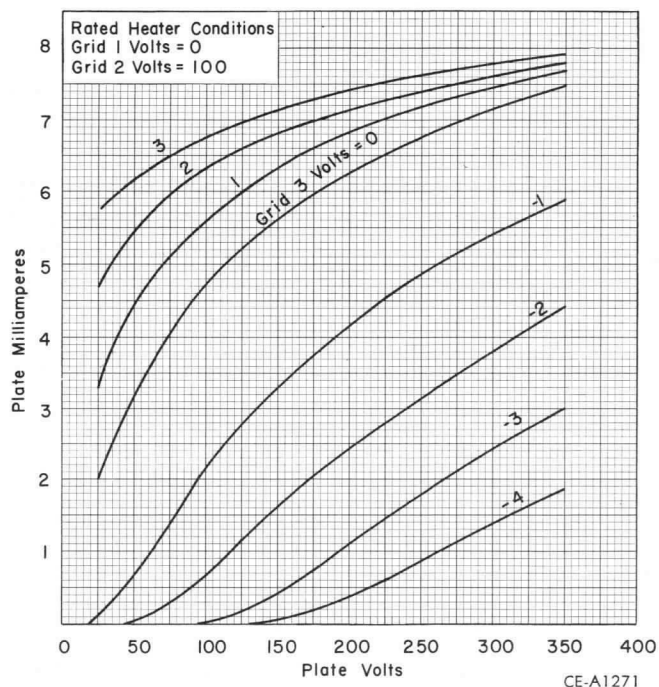
$\square$ For Plate Current of 20 μamp .

Δ Heater Warm-up Time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three times rated heater voltage divided by rated heater current.

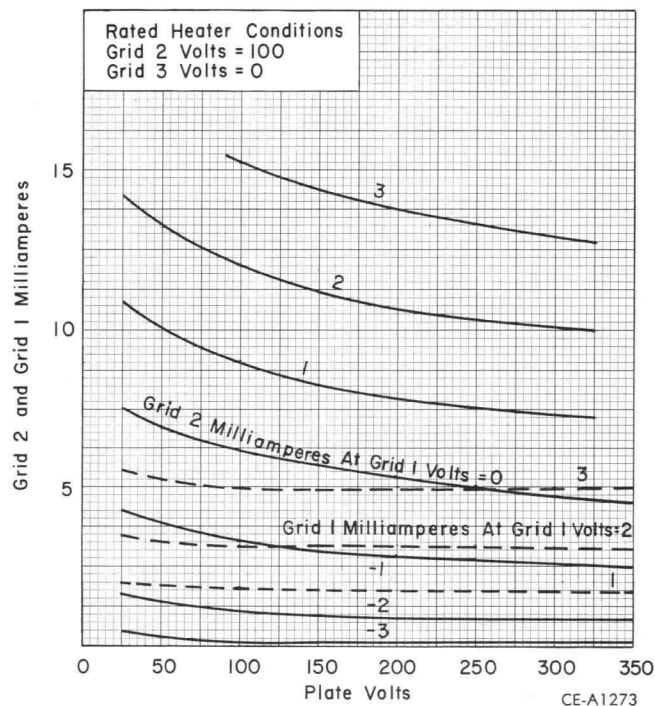
* Grid 1 to all elements of tube except plate.

Receiving Tube Section

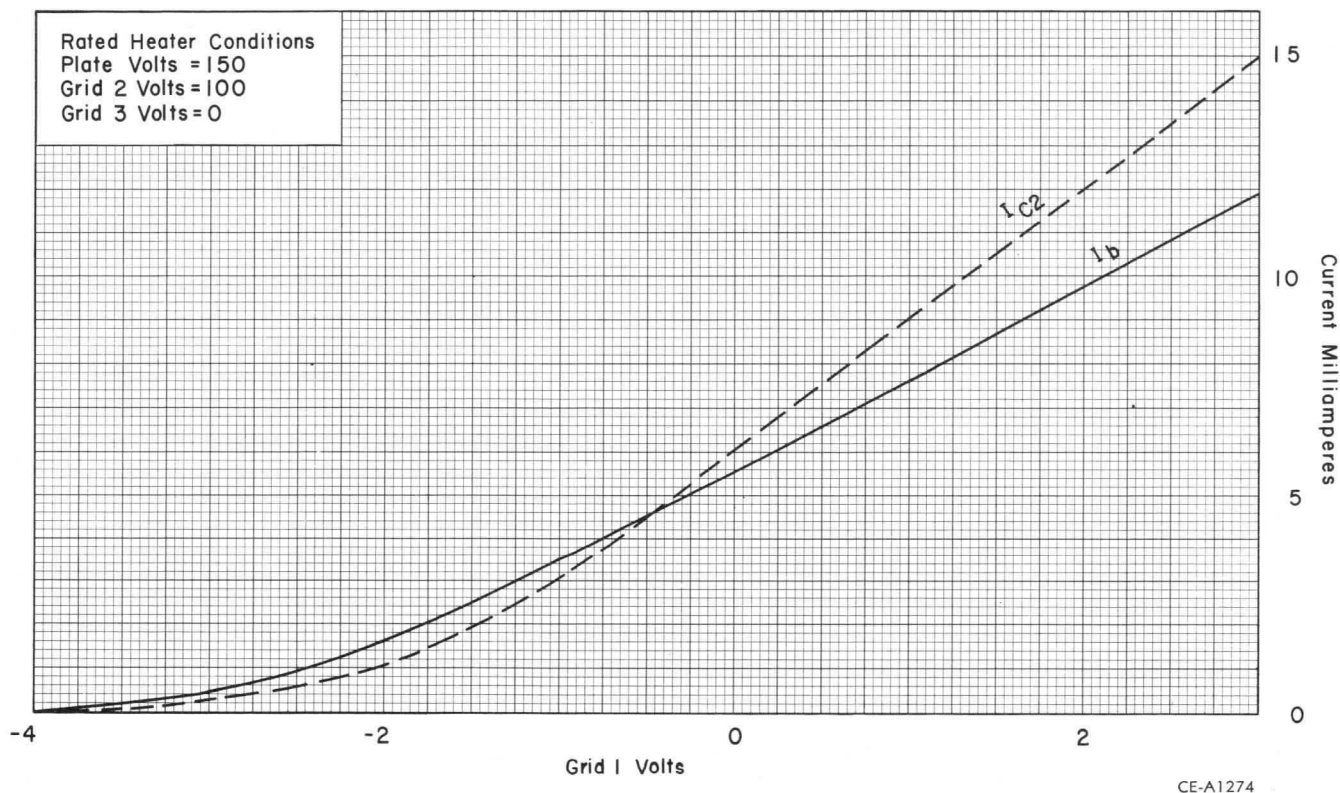
AVERAGE PLATE CHARACTERISTICS



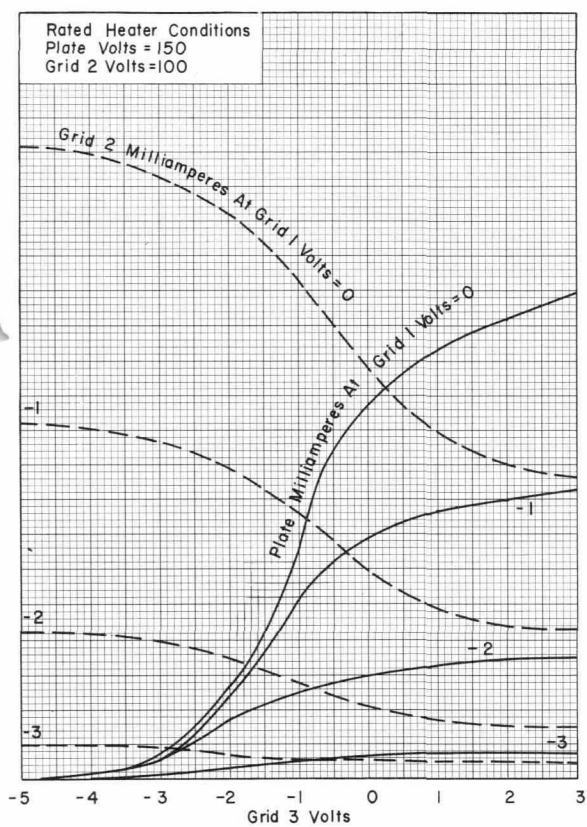
AVERAGE CHARACTERISTICS



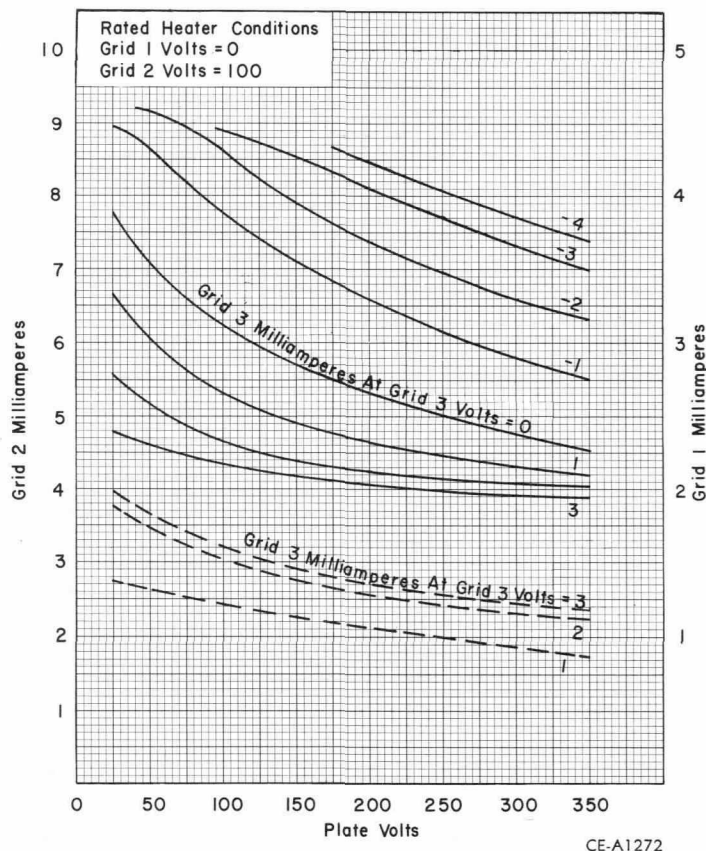
AVERAGE CHARACTERISTICS



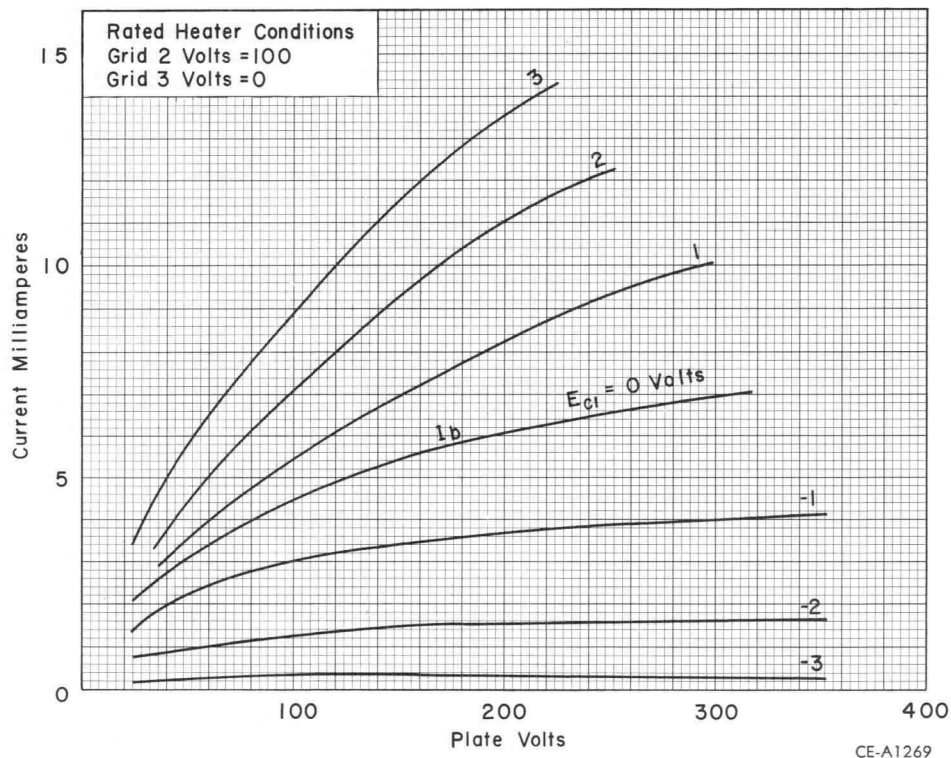
AVERAGE CHARACTERISTICS



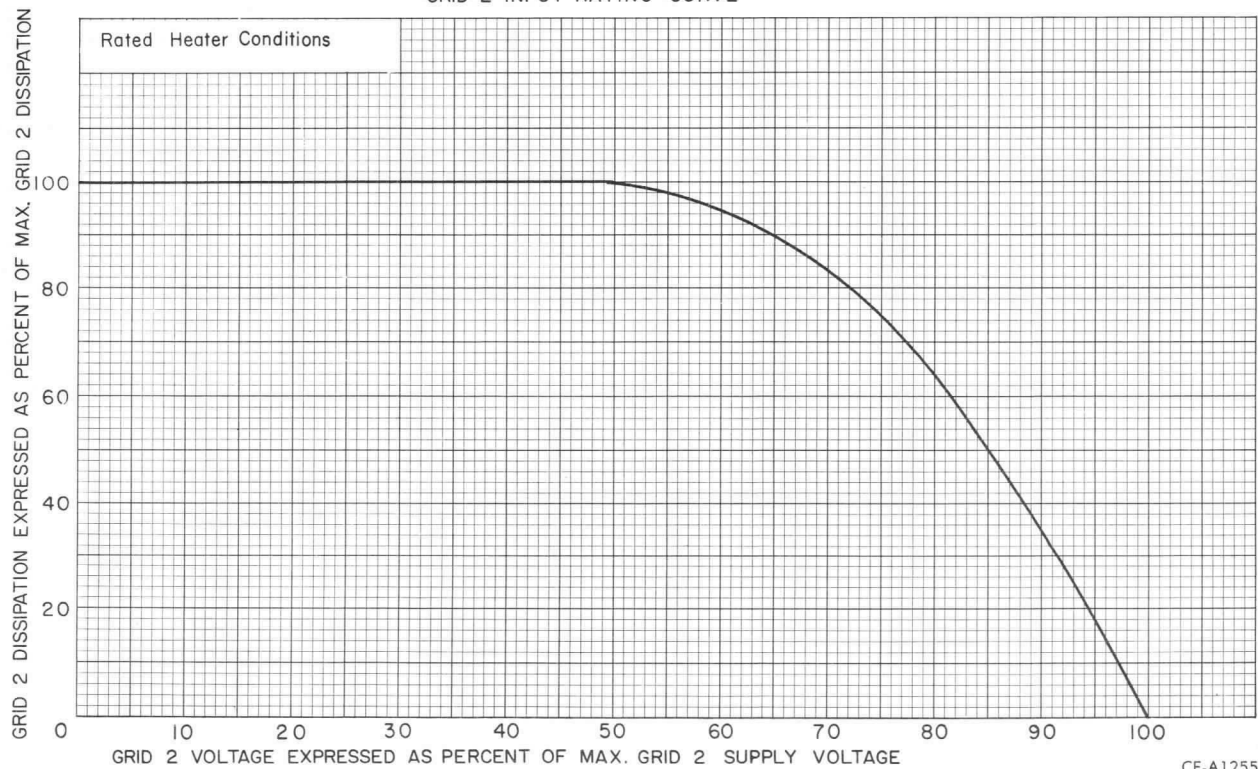
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



GRID 2 INPUT RATING CURVE



UHF TRIODE TYPES 2DX4, 3DX4 AND 6DX4

The 2DX4, 3DX4 and 6DX4 are miniature 7-pin triodes designed for local oscillator service in television receivers which operate in the ultra-high-frequency region. Internal lead inductance is reduced by employing double connections to the plate and grid.

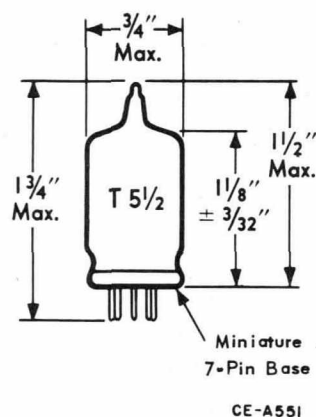
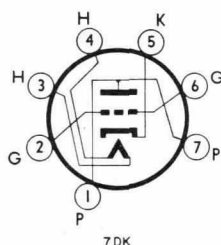
The 2DX4 and 3DX4 have been designed for use in receivers which employ series connected heaters, especially in television receivers where the picture-tube heater is in series with other heaters. When each is employed in this type of circuit with other tubes similarly designed having the same heater current rating, heater voltage surges across individual tubes are minimized inasmuch as heater warm-up characteristic is controlled.

ELECTRICAL

Cathode.....	Coated Unipotential			
Heater:	2DX4	3DX4	6DX4	
Voltage (ac or dc)	2.4	3.0	6.3 ± 0.6	Volts
Current	0.6 ± 0.040	0.45 ± 0.030	0.20	Ampere
Warm-Up Time (Note 1) ..	11	11	—	Seconds
Direct Interelectrode Capacitances:	Shielded		Unshielded	
Grid to Plate	1.6	3.9	1.6	μμf
Input	1.5	0.38	3.7	μμf
Output	0.18	0.20	1.5	μμf
Plate to Cathode	3.6	3.6	0.18	μμf
Grid to Cathode	3.4	3.4	3.6	μμf
Heater to Cathode			3.4	μμf

MECHANICAL

Bulb	T-5-1/2
Base	Miniature 7-Pin (JEDEC E7-1)
Basing	7DK
Mounting Position	Any
Outline	5-1



UHF OSCILLATOR SERVICE

MAXIMUM RATINGS

Design Maximum Values

DC Plate Voltage	150	max.	Volts
DC Grid Voltage	—50	max.	Volts
DC Grid Current	2	max.	Ma.
Plate Dissipation	2.2	max.	Watts
DC Cathode Current	20	max.	Ma.
Heater-Cathode Voltage:			
Heater Negative with Respect to Cathode:			
Total DC + Peak	100	max.	Volts
Heater Positive with Respect to Cathode:			
DC Component	50	max.	Volts
Total DC + Peak	100	max.	Volts

TYPICAL OPERATION at 1000 Mc: (Note 2)

Plate Supply Voltage	100	Volts
Plate Resistor	220	Ohms
Grid Resistor	10000	Ohms
Plate Current	14	Ma.
Grid Current	250	μamp

CHARACTERISTICS

Plate Voltage	85	Volts
Cathode Bias Resistor	150	Ohms
Amplification Factor	30	—
Plate Resistance	2700	Ohms
Transconductance	11000	μmhos
Plate Current	10	Ma.

NOTES

1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying four times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three times rated heater voltage divided by rated heater current.
2. Measured in JEDEC standard UHF oscillator No. 400.

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