

ELECTRONIC TUBE REFERENCE

3BY6

Voltage Radio Detector Converter electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
HEPTODE

Multi-grid heptode for specialized receiving and signal-processing service. Separate control grids permit mixer and converter-type operation, allowing multiple signals or control voltages to influence plate current.

GENERAL CHARACTERISTICS

BASE DESIGNATION	7CH	BASE PINS	7
NOMINAL HEATER	3.15 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

7CH - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – G1	A	G1 – Control Grid	CONNECTED
PIN2 – G5	A	G5 – Fifth Grid	CONNECTED
PIN2 – K	A	K – Cathode	CONNECTED
PIN3 – H	–	H – Heater	CONNECTED
PIN4 – H	–	H – Heater	CONNECTED
PIN5 – P	A	P – Plate (Anode)	CONNECTED
PIN6 – G2	A	G2 – Screen Grid	CONNECTED
PIN6 – G4	A	G4 – Fourth Grid	CONNECTED
PIN7 – G3	A	G3 – Suppressor Grid	CONNECTED

SECTION RATINGS

SECTION1 Heptode	
TRANSCONDUCTANCE	0.0019 S
MAXIMUM PLATE VOLTAGE	330 V
MAXIMUM SCREEN VOLTAGE	150 V
MAXIMUM PLATE DISSIPATION	2.3 W
MAXIMUM HEATER-CATHODE VOLTAGE	200 V
WARM-UP TIME	11 s
<i>RCA and Tung-Sol 3BY6 dual-control heptode/pentagrid gated amplifier for color television sync separation and clipping. Heater 3.15 V, 600 mA, controlled warm-up ~11 s in series-heater TV receivers. Maximum plate voltage 330 V, plate dissipation 2.3 W, screen-grid No.2+No.4 supply 330 V; actual screen voltages and power are limited by conditional rating charts, not simply the 330 V supply. Typical gated-amplifier operating point: plate 250 V, grids 2 and 4 supply 100 V, grid 3 -2.5 V, grid 1 -2.5 V; grid-1-to-plate gm 1900 μmhos (0.0019 S), distinct grid-3-to-plate gm 500 μmhos (0.0005 S), plate current 6.5 mA and screen current 9 mA. Screen max voltage field of 150 V retained as approved. Capacitances documented. Neither conversion conductance nor the separate control-grid gm should be conflated.</i>	

3BY6 is described in the supplied Tung-Sol datasheet as a controlled-warm-up gated-amplifier heptode equivalent to 6BY6. Published electrical ratings and operating characteristics were extracted from the supplied source.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

195X General Electric Essential Characteristics

Published test conditions and operating points. Values on this page are preserved as reported by this source.

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	GatedAmplifier;Grid3=-2.5V
Screen-grid voltage	100 V	GatedAmplifier;Grid3=-2.5V
Grid No.1 bias	2.5 V	GatedAmplifier;Grid3=-2.5V
Plate current	6.5 mA	GatedAmplifier;Grid3=-2.5V
Screen-grid current	9 mA	GatedAmplifier;Grid3=-2.5V
Transconductance	1900 uS	GatedAmplifier;Grid3=-2.5V
Plate voltage	10 V	GatedAmplifier;Grid3=0V
Screen-grid voltage	25 V	GatedAmplifier;Grid3=0V
Grid No.1 bias	0 V	GatedAmplifier;Grid3=0V
Plate current	1.4 mA	GatedAmplifier;Grid3=0V
Screen-grid current	3.5 mA	GatedAmplifier;Grid3=0V

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1961 TUNG SOL

Section 1 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warmup Time	11 s	GatedAmplifierService



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 1 of 4

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1966 TUNG SOL ELECTRONIC TUBES 1 OF 4

Section 1 · Heptode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	3.15 V	Published heater rating
Heater current	600 mA	Published heater rating

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid 1 to plate capacitance	0.08 pF	Published
Grid 3 to plate capacitance	0.35 pF	Published
Grid 1 to grid 3 capacitance	0.22 pF	Published

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	330 V	GatedAmplifier
Maximum grids 2 and 4 supply voltage	330 V	GatedAmplifier
Maximum negative grid 3 voltage	-55 V	GatedAmplifier



SOURCE DATA APPENDIX

1971 RCA HB3 Binder 4 of 7

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1971 RCA HB3 BINDER 4 OF 7
Section 1 · Heptode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Current – published value 1	0	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Current – published value 2	600	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Current – published value 3	0.04	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Voltage (ac or dc) at 0.600 A – published value 1	0 V	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Voltage (ac or dc) at 0.600 A – published value 2	0.6 V	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Voltage (ac or dc) at 0.600 A – published value 3	3.15 V	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Warm-up Time (Average)	11	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Heater~athode Voltage – published value 1	0 V	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Heater~athode Voltage – published value 2	0 V	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Current – published value 1	0.6	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.
Current – published value 2	0.04	Published datasheet value; multiple numbers on a row represent separate source limits or conditions.