

ELECTRONIC TUBE REFERENCE

6J10

Power - Beam (NOT sweep) electronic tube

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
BEAMPOWER-PENTODE

Duodecar combination tube for FM limiting, discrimination, and audio power output in radio and television receivers, integrating signal processing with a beam-power sound-output section.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12BT	BASE PINS	12
NOMINAL HEATER	6.3 V / 950 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

12BT - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	–	H – Heater	CONNECTED
PIN2	B	G2 – Screen Grid	CONNECTED
PIN3	B	G3 – Suppressor Grid	CONNECTED
PIN3	B	K – Cathode	CONNECTED
PIN4	A	P – Plate (Anode)	CONNECTED
PIN5	A	G3 – Suppressor Grid	CONNECTED
PIN6	A	G2 – Screen Grid	CONNECTED
PIN7	A	G1 – Control Grid	CONNECTED
PIN8	A	K – Cathode	CONNECTED
PIN8	–	IS – Internal Screen	CONNECTED
PIN9	B	P – Plate (Anode)	CONNECTED
PIN11	B	G1 – Control Grid	CONNECTED
PIN12	–	H – Heater	CONNECTED

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	100000 Ω
TRANSCONDUCTANCE	0.0065 S
MAXIMUM PLATE VOLTAGE	150 V
MAXIMUM SCREEN VOLTAGE	110 V
MAXIMUM PLATE DISSIPATION	10 W
MAXIMUM SCREEN DISSIPATION	2 W
MAXIMUM CATHODE CURRENT	13 mA
<i>Published ratings/characteristics promoted from supplied datasheet.</i>	

SECTION2 Beam Power	
PLATE RESISTANCE	100000 Ω
TRANSCONDUCTANCE	0.0065 S
MAXIMUM PLATE VOLTAGE	275 V
MAXIMUM SCREEN VOLTAGE	275 V
MAXIMUM PLATE DISSIPATION	10 W
MAXIMUM SCREEN DISSIPATION	2 W
MAXIMUM CATHODE CURRENT	13 mA
<i>Published ratings/characteristics promoted from supplied datasheet.</i>	

Duodecar types used as a combined limiter, discriminator, and audio power-output tube in FM radio and television receivers. Outlines section, 8C; require duodecar 12-contact socket. Types 10Z10, and 13Z10/13J10 are identical with type 6Z10/6J10 except for 12BT heater ratings. 6Z10/6J10 10Z10 13Z10/13J10 Heater Voltage (ac/dc) 6.



SOURCE OPERATING CONDITIONS

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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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	275 V	Published operating/characteristic table
Screen Voltage	275 V	Published operating/characteristic table

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current	44 mA	Published operating/characteristic table
Transconductance	6500 μ S	Published operating/characteristic table
Plate Resistance	100000 ohm	Published operating/characteristic table



SOURCE OPERATING CONDITIONS

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1966 Tung Sol Electronic Tubes 2 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input signal center frequency	10.7 MHz	DiscriminatorSection
Plate supply voltage	285 V	DiscriminatorSection;10.7MHz
Plate voltage	122 V	DiscriminatorSection;10.7MHz
Grid 2 voltage	100 V	DiscriminatorSection;10.7MHz

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Minimum signal voltage for limiting action	1.25 V	RMS
Peak audio output voltage	16.6 V	10.7MHz discriminator
Total harmonic distortion	1.6 percent	10.7MHz discriminator

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA1;OutputSection
Grid 2 voltage	250 V	ClassA1;OutputSection
Grid 1 voltage	-8 V	ClassA1;OutputSection
Zero-signal plate current	35 mA	ClassA1;OutputSection
Maximum-signal plate current	39 mA	ClassA1;OutputSection
Load resistance	5000 ohm	ClassA1;OutputSection
Maximum-signal power output	4.2 W	ClassA1;OutputSection



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ELECTRON TUBE DATABASE

SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1971 RCA HB3 Binder 5 of 7

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Voltage (AC or DC)	6 V	Published table value column 1
Voltage (AC or DC)	3 V	Published table value column 2
Voltage (AC or DC)	0.6 V	Published table value column 3
Current at heater volts =	6.3 V	Published table value column 1
Current at heater volts =	0.95 V	Published table value column 2

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater negative with respect to cathode	200 V	Published table value
Heater positive with respect to cathode	200 V	Published table value
Grid No.1 to plate	0.2 pF	Published table value
Input: G	11 K	Published table value
Output: PB to (K D+G	7 K	Published table value
Grid No	1 pF	Published table value column 1
Grid No	0.01 pF	Published table value column 2
Plate Supply Voltage	330 V	Published table value
Grid-No	2 V	Published table value column 1
Grid-No	110 V	Published table value column 2
Cathode Current	13 mA	Published table value
Plate Supply Voltage	270 V	Published table value column 1
Plate Supply Voltage	85 V	Published table value column 2
Plate Supply Voltage	285 V	Published table value column 3
Plate Voltage	62 V	Published table value column 1
Plate Voltage	121 V	Published table value column 2
Plate Voltage	122 V	Published table value column 3
Grid-No	100 V	Published table value column 2
Grid-No	55 V	Published table value column 3
Grid-No	100 V	Published table value column 4
Peak AF Output Voltage	16.8 V	Published table value column 1
Peak AF Output Voltage	6 V	Published table value column 2
Peak AF Output Voltage	16.6 V	Published table value column 3
Plate Current	0.44 mA	Published table value column 1
Plate Current	0.25 mA	Published table value column 2
Plate Current	0.49 mA	Published table value column 3
Grid-No	2 mA	Published table value column 1
Grid-No	10 mA	Published table value column 2
Grid-No	4.1 mA	Published table value column 3
Grid-No	9.8 mA	Published table value column 4
Plate Load Resistor	0.33 MΩ	Published table value column 1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Load Resistor	0.085 MΩ	Published table value column 2
Plate Load Resistor	0.33 MΩ	Published table value column 3
Plate Voltage	275 V	Published table value
Grid-No	275 V	Published table value column 2
Plate Dissipation	10 W	Published table value
Grid-No	2 W	Published table value column 1
Grid-No	2 W	Published table value column 2
Plate Voltage	250 V	Published table value
Grid-No	250 V	Published table value column 2
Grid-No.1 (Control-Grid) Voltage	-8 V	Published table value
Peak AF Grid-No	1 V	Published table value column 1
Peak AF Grid-No	8 V	Published table value column 2
Zero-Signal Plate Current	35 mA	Published table value
Max.-Signal Plate Current	39 mA	Published table value
Zero-Signal Grid No	2 mA	Published table value column 1
Zero-Signal Grid No	2.5 mA	Published table value column 2
Max.-Signal Grid No	2 mA	Published table value column 1
Max.-Signal Grid No	7 mA	Published table value column 2
Max.-Signal Power Output	4.2 W	Published table value
For cathode-bias operation	0.5 MΩ	Published table value
signal at the quadrature grid when a	2 a	Published table value
CENTER V	4 V	Published table value
GRID-Ne	2 VOLTS	Published table value column 1
GRID-Ne	60 VOLTS	Published table value column 2
GRID-Ne.1 VOLTS=	3 VOLTS	Published table value
PLATE VOLTS=	60 VOLTS	Published table value
GRID -N,	2 VOLTS	Published table value column 1

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Resistances	200 Ω	Published table value column 1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Resistances	-400 Ω	Published table value column 2
Resistances	200 Ω	Published table value column 3
Resistances	-400 Ω	Published table value column 4
Plate Resistance (Approx.)	0.1 MΩ	Published table value
Load Resistance	5000 Ω	Published table value



SOURCE OPERATING CONDITIONS

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1975 RCA RC30

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

1975 RCA RC30

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warm-up Time (Average)	11 seconds	Heater Warm-up Time (Average) 11 11 seconds
Grid No.1 to Grid No	0.009 PF	Grid No.1 to Grid No.3 0.009 PF
Grid No.1 to Cathode, Heater, Grid No	3	Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, Plate,
Grid No	2	Grid No.3 to Cathode, Heater, Grid No.1, Grid No.2, Plate,
Plate Dissipation	10 watts	Plate Dissipation 10 watts
Grid-No	2 watts	Grid-No.2 Input 2 watts
Maximum-Signal Plate Current	39 mA	Maximum-Signal Plate Current 39 mA
Maximum-Signal Grid-No	13 mA	Maximum-Signal Grid-No.2 Current 13 mA
Load Resistance	5000 ohms	Load Resistance 5000 ohms

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No	275 volts	Grid-No.2 (Screen-Grid) Voltage 275 volts
Plate Voltage	250 volts	Plate Voltage 250 volts
Grid-No	250 volts	Grid-No.2 Voltage 250 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.1 (Control-Grid) Voltage	-8 volts	Grid-No.1 (Control-Grid) Voltage -8 volts
Peak AF Grid-No.1 Voltage	8 volts	Peak AF Grid-No.1 Voltage 8 volts
Zero-Signal Plate Current	35 mA	Zero-Signal Plate Current 35 mA
Zero-Signal Grid-No	3 mA	Zero-Signal Grid-No.2 Current 3 mA
Plate Resistance (Approx.)	0.1 megohm	Plate Resistance (Approx.) 0.1 megohm
Transconductance G5	0	Transconductance G500 /imhos
Grid-No	1	Grid-No. 1-Circuit Resistance:

1975 RCA RC30

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.22 PF	Grid No.1 to Plate 0.22 PF
Grid-No	33 kohms	Grid-No.2 Resistor 33 33 kohms

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Cathode. Heater, Grid No	11 pF	Grid No.1 to Cathode. Heater, Grid No.2, and Grid No.3 . . . 11 pF
Plate to Cathode, Heater, Grid No	7.5 pF	Plate to Cathode, Heater, Grid No.2, and Grid No.3 7.5 pF

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Supply Voltage	330 volts	Plate Supply Voltage 330 volts
Grid-No	330 volts	Grid-No.2 Voltage 330 volts
Grid-No.1 Voltage, Peak positive value	60 volts	Grid-No.1 Voltage, Peak positive value 60 volts
Average Cathode Current	13 mA	Average Cathode Current 13 mA
Plate Voltage	135 volts	Plate Voltage 135 135 135 volts
Grid-No	0 volts	Grid-No.3 (Suppressor-Grid) Voltage 4 4 0 volts
Grid-No	280 volts	Grid-No.2 (Screen-Grid) Supply Voltage 280 280 volts
Grid-No	75 volts	Grid-No.2 Voltage 75 volts
Grid No	0 volts	Grid No. 1 (Control-Grid) Voltage 0 0 0 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance, Grid No.1 to Plate	360	Transconductance, Grid No.1 to Plate 360 /imhos
Transconductance, Grid No	700	Transconductance, Grid No.3 to Plate 700 /imhos
Average Plate Current	5	Average Plate Current 5 til A
Grid-No	4.5 mA	Grid-No.2 Current 4.5 mA
Grid No	3	Grid No.3 Voltage (Approx.) for plate current of

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