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Feb. 14, 1966

6JU6, 22JU6

BEAM POWER TUBES

T12 Novar Types

Controlled Heater Warm-Up Time (22JU6)

For Horizontal-Deflection-Amplifier Service in Low-B+, Black-and-White TV Receivers

RCA Dark Heater

RCA-6JU6* and 22JU6 are high-perveance beam power tubes of the novar type having a T12 envelope. These types are particularly useful as horizontal-deflection amplifier tubes in black-and-white television receivers operating at low B + voltages.

A major feature of the 6JU6 and 22JU6 is a special plate structure designed to minimize secondary-electron emission from the plate. This structure provides a high ratio of plate current to grid-No.2 current and a high zero-bias plate current at low plate voltage and low grid-No.2 input. The low-voltage knee characteristic of the 6JU6 and 22JU6 permits the development of the high voltage required for the picture tube and a reserve of horizontal scan at low-B+ supply voltages. These tubes require a relatively low value of grid-No.1 bias voltage for plate current cutoff under high pulse voltage conditions. This feature makes possible efficient operation in receivers with low grid-No.1 driving voltage.

A separate base-pin terminal is provided for grid No.3 to permit the application of a positive voltage to this grid to minimize possible interference from "snivets". Two base-pin terminals are provided for grid No.2 to increase grid dissipation capability and to provide added flexibility in circuit design.

The 22JU6 has a 0.450-A/22.0-V heater having a controlled 11-second warm-up time for use in series heater-string arrangements. Both the 6JU6 and 22JU6 utilize the RCA Dark Heater for long life and dependable performance.

* Formerly Developmental Type A40523A.

ELECTRICAL CHARACTERISTICS -- Bogey Values

		6JU6	22JU6	
Heater Voltage, ac or dc	E_h	6.3	22.0	V
Heater Current	I_h	1.6	0.450	A
Heater Warm-up Time	t_h	-	11	s
Direct Interelectrode Capacitances:[a]				
Grid No.1 to plate	c_{g1-p}	1.2		pF
Input: G1 to (K,G3,G2,H)	c_i	22		pF
Output: P to (K,G3,G2,H)	c_o	9.0		pF

For the following characteristics, see Conditions below:

Amplification Factor (Triode Connection)[b]	μ	-	-	4.7		
Plate Resistance (Approx.)	r_p	-	-	-	18	kΩ
Transconductance	g_m	-	-	-	7000	μmho
DC Plate Current	I_b	-	470[c]	-	45	mA
DC Grid-No.2 Current	I_{c2}	-	32[c]	-	1.5	mA
Cutoff DC Grid-No.1 Voltage for I_b = 1 mA	$E_{c1(co)}$	-75	-	-	-32	V

Conditions:

Heater Voltage	E_h	Bogey value				V
Peak Positive-Pulse Plate Voltage[d]	e_{bm}	6500	-	-	-	V
DC Plate Voltage	E_b	-	50	125	130	V
Grid No.3	-	Connected to cathode at socket				
DC Grid-No.2 Voltage	E_{c2}	125	125	125	125	V
DC Grid-No.1 Voltage	E_{c1}	-	0	-20	-20	V

MECHANICAL CHARACTERISTICS

Maximum Overall Length	3.550 in
Maximum Seated Length	3.170 in.
Maximum Diameter	1.562 in
Envelope	JEDEC Designation T12
Top Cap[e]	Skirted Miniature (JEDEC Designation C1-2 or C1-3)
Bases[f] (Alternatives)	Large-Button Novar 9-Pin with Exhaust Tip (JEDEC Designation E9-88) or Large-Button Novar 9-Pin (JEDEC Designation E9-76)
Terminal Connections (See TERMINAL DIAGRAM)	JEDEC Designation 9QL
Type of Cathode	Coated Unipotential
Operating Position	Any

MAXIMUM RATINGS -- Design Maximum Values[g]

For operation as a Horizontal-Deflection-Amplifier Tube in a 525-line, 30-frame system

DC Plate Supply Voltage	E_{bb}	770 V
Peak Positive-Pulse Plate Voltage[h]	e_{bm}	6500 V
Peak Negative-Pulse Plate Voltage	$-e_{bm}$	1500 V
DC Grid-No.3 Voltage[k]	E_{c3}	75 V
DC Grid-No.2 (Screen-Grid) Voltage	E_{c2}	220 V
DC Grid-No.1 (Control-Grid) Voltage:		
Negative-bias value	$-E_{c1}$	55 V
Peak Negative-Pulse Grid-No.1 Voltage	$-e_{c1m}$	330 V

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Heater-Cathode Voltage:			
Peak	e_{hkm}	±200	V
Average	$E_{hk(av)}$	100	V
Heater Voltage, ac or dc *(6JU6)*	E_h	5.7 to 6.9	V
Heater Current *(22JU6)*	I_h	0.420 to 0.480	A
Cathode Current:			
Peak	i_{km}	950	mA
Average	$I_{k(av)}$	275	mA
Grid-No.2 Input	P_{g2}	3.5	W
Plate Dissipation[m]	P_b	17	W
Envelope Temperature (at hottest point on envelope surface)	T_E	240	°C

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:	$R_{g1(ckt)}$		
For grid-No.1-resistor-bias operation	-	0.47	MΩ
For plate-pulsed operation (horizontal-deflection circuits only)	-	10	MΩ

[a] Measured without external shield in accordance with the current issue of EIA Standard RS-191.

[b] With grid No.2 connected to plate at socket.

[c] This value can be measured by a method involving a recurrent waveform such that the Maximum Ratings of the tube will not be exceeded.

[d] Under pulse-duration condition specified in Footnote h.

[e] Designed to mate with "1/4-inch" Connector generally available from your local RCA Distributor.

[f] Designed to mate with "Novar 9-Contact" Socket generally available from your local RCA Distributor.

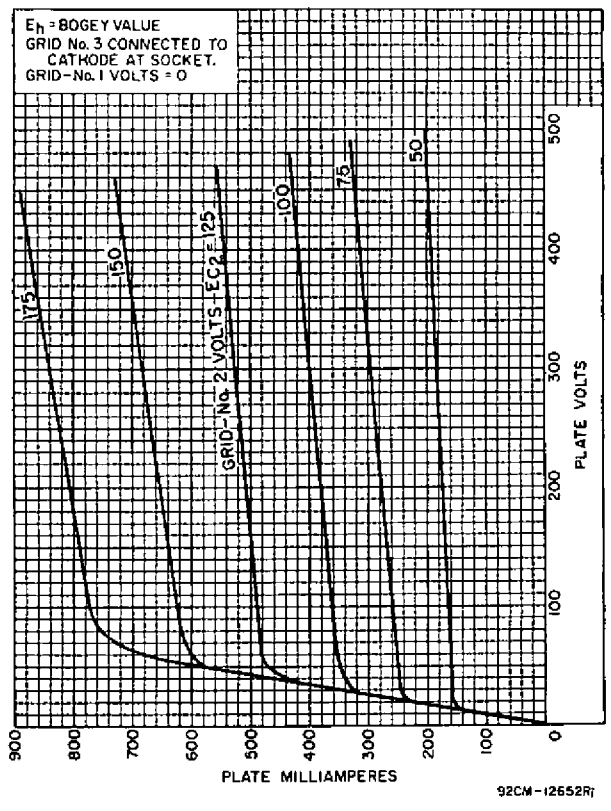
[g] As defined in the current issue of EIA Standard RS-239.

[h] This rating is applicable where the duration of the voltage pulse does not exceed 15% of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 μs.

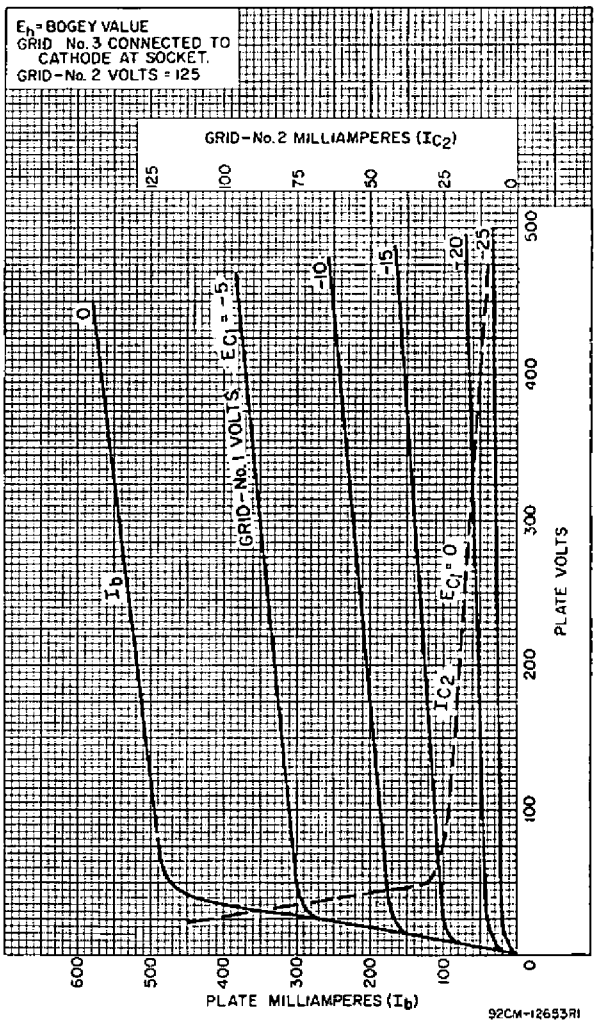
[k] In horizontal-deflection-amplifier service, a positive voltage may be applied to grid No.3 to reduce interference from "snivets" which may occur in both vhf and uhf television receivers. A typical operating value for this voltage is 30 V.

[m] An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

TYPICAL PLATE CHARACTERISTICS

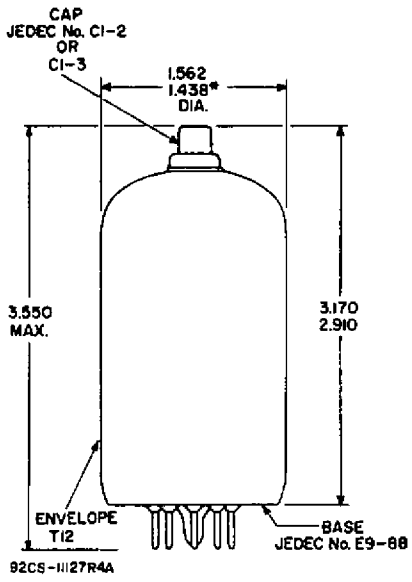


TYPICAL CHARACTERISTICS

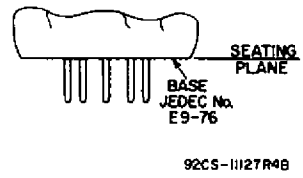


DIMENSIONAL OUTLINE

Dimensions in Inches

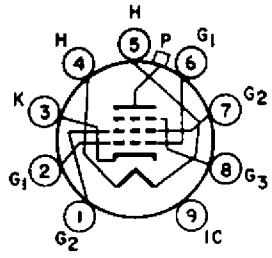


Alternative Base



* Applies to the minimum diameter except in the area of the seal.

TERMINAL DIAGRAM (Bottom View)



JEDEC 9QL

Pin 1 - Grid No.2	Pin 6 - Grid No.1
Pin 2 - Grid No.1	Pin 7 - Grid No.2
Pin 3 - Cathode	Pin 8 - Grid No.3
Pin 4 - Heater	Pin 9 - Do Not Use
Pin 5 - Heater	Top Cap - Plate