



**BEAM TETRODE**

**BRIEF DATA**

A beam tetrode with an absolute maximum anode dissipation rating of 30 W. It is designed for use in the output stage of an a.f. amplifier, or as a series valve in a stabilised power supply.

The KT66 is a commercial version of the CV1075

**HEATER**

Heater voltage. . . . .	6.3	V
Heater current (approx) . . . . .	1.3	A

**MAXIMUM RATINGS**

	Design Max	Absolute Max	
DC anode voltage . . . . .	500	550	V
DC screen voltage . . . . .	500	550	V
Negative dc grid voltage . . . . .	200	200	V
DC cathode current . . . . .	200	200	mA
Anode dissipation . . . . .	25	30	W
Screen dissipation . . . . .	3.5	4.5	W
* Anode and screen dissipation . . . . .	27	32	W
Heater-cathode voltage . . . . .	150	150	V
Bulb temperature . . . . .	250	250	°C
External grid-cathode resistor (cathode bias) :			
Pa+g2 < 27 W . . . . .		1.0	MΩ
Pa+g2 > 27 W . . . . .		500	kΩ
External grid-cathode resistor (fixed bias):			
Pa+g2 < 27W . . . . .		250	kΩ
Pa+g2 > 27W . . . . .		100	kΩ

\* Triode or ultra linear operation.

**CAPACITANCES (Measured on a cold unscreened valve)**

Grid to all less anode . . . . .	14.5	pF
Anode to all less grid . . . . .	10.0	pF
Anode to grid . . . . .	1.1	pF

# CHARACTERISTICS

## Tetrode Connection

DC anode voltage . . . . .	250	V
DC screen voltage . . . . .	250	V
Negative dc grid voltage . . . . .	15	V
Mutual conductance . . . . .	7	mA/V
Internal anode resistance . . . . .	22.5	kΩ

## Triode Connection

DC anode voltage . . . . .	250	V
Negative dc grid voltage . . . . .	15	V
Mutual conductance . . . . .	7.3	mA/V
Internal anode resistance . . . . .	1.3	kΩ

## TYPICAL OPERATION

Triode Connection. Class A. Single Valve. Cathode Bias.

$V_b$ . . . . .	270	440	V
$V_a, V_{g2}$ . . . . .	270	400	V
$-V_{g1}$ (approx) . . . . .	20	38	V
$V_{in}$ (pk) . . . . .	20	38	V
$R_k$ . . . . .	330	600	Ω
$I_a + I_{g2}$ (0) . . . . .	60	63	mA
$P_a + P_{g2}$ (0) . . . . .	15	25	W
$R_L$ . . . . .	2.75	4.5	kΩ
$P_{out}$ . . . . .	2.2	5.8	W
$D_{total}$ . . . . .	6.0	7.0	%

Triode Connection, Class AB1. Push-Pull. Cathode bias

$V_b$ . . . . .	270	440	V
$V_a, V_{g2}$ . . . . .	250	400	V
$-V_{g1}$ (approx) . . . . .	19	38	V
$V_{in}$ (g1-g1) (pk) . . . . .	38	76	V
* $R_k$ . . . . .	2 x 345	2 x 615	Ω
$I_a + I_{g2}$ (0) . . . . .	2 x 55	2 x 62	mA
$P_a + P_{g2}$ (0) . . . . .	2 x 14	2 x 25	W
$R_L$ (a-a) . . . . .	2.5	4.0	kΩ
$P_{out}$ . . . . .	4.5	14.5	W
$D_{tot}$ . . . . .	2.0	3.5	%
§ IMD . . . . .	3.0	3.0	%
$Z_{out}$ . . . . .	3.5	3.5	kΩ

\* It is essential to use two separate cathode bias resistors.

§ Intermodulation distortion : measured using two input signals at 50 and 6000 Hz (ratio of amplitudes 4:1)

**Tetrode Connection. Class AB1. Push-Pull. Cathode Bias**

$V_{b(a)(o)}$	450	V
$V_{b(a)(max\ sig)}$	425	V
$V_{a(o)}$	415	V
$V_{a(max\ sig)}$	390	V
$V_{g2(o)}$	300	V
$V_{g2(max\ sig)}$	275	V
$-V_{g1}$ (approx)	27	V
$I_{a(o)}$	2 x 52	mA
$I_{a(max\ sig)}$	2 x 62	mA
$I_{g2(o)}$	2 x 2.5	mA
$I_{g2(max\ sig)}$	2 x 9	mA
$P_{a(o)}$	2 x 21	W
$P_{a(max\ sig)}$	2 x 9	W
$P_{g2(o)}$	2 x 0.75	W
$P_{g2(max\ sig)}$	2 x 2.5	W
* $R_k$	2 x 500	$\Omega$
$R_L$ (a-a)	8	k $\Omega$
$V_{in(g1-g1)}$ (pk)	70	V
$P_{out}$	30	W
$D_{tot}$	6	%

\*It is essential to use two separate cathode bias resistors.

**Ultra-linear Connection. Push-Pull. 40% Taps. Class AB1. Cathode Bias.**

$V_b$	450	V
$V_{a,g2(o)}$	425	V
$V_{a,g2(max\ sig)}$	400	V
$I_{a+g2(o)}$	2 x 62.5	mA
$I_{a+g2(max\ sig)}$	2 x 72.5	mA
$P_{a+g2(o)}$	2 x 26.5	W
$P_{a+g2(max\ sig)}$	2 x 13	W
* $R_k$	2 x 560	$\Omega$
$-V_{g1}$ (approx)	35	V
$P_{out}$	32	W
$R_L$ (a-a)	7	k $\Omega$
$Z_{out}$	9	k $\Omega$
$D_{tot}$	2	%
†IM	4	%

\*It is essential to use two separate cathode bias resistors.

†Intermodulation distortion : measured using two input signals at 50 and 6000 Hz (ratio of amplitudes 4:1).

## Ultra-linear Connection. Class AB1. Push-Pull. 40% Taps. Fixed Bias.

$V_{a,g2(o)}$ . . . . .	525	V
$V_{a,g2(max\ sig)}$ . . . . .	500	V
$I_{a+g2(o)}$ . . . . .	2 x 35	mA
$I_{a+g2(max\ sig)}$ . . . . .	2 x 80	mA
$P_{a+g2(o)}$ . . . . .	2 x 18	W
$P_{a+g2(max\ sig)}$ . . . . .	2 x 15	W
* $-V_{g1}$ (approx)	67	V
$R_L(a-a)$ . . . . .	8	k $\Omega$
$V_{in(g1-g1)}(pk)$ . . . . .	127	V
$P_{out}$ . . . . .	50	W
$D_{tot}$ . . . . .	3	%
†IM . . . . .	15	%
$Z_{out}$ . . . . .	10	k $\Omega$

\*A negative bias range of  $\pm 25\%$  of this value should be available for each valve.

†Intermodulation distortion : measured using two input signals at 50 and 6000 Hz (ratio of amplitudes 4:1)

## LIFE PERFORMANCE

The average life expectancy of the KT66 when operated at absolute maximum ratings (see page 1) is at least 8000 hours. At a reduced rating of  $P_a + g_2 = 21$  W a life of at least 10,000 hours should be obtained. The environment must be a static one and the valve should be switched not more than 12 times in each 24 hours.

A valve is considered to have reached the end of life when it is either inoperative or one or more of its characteristics have reached the following values:

$P_{out}$ . . . . .	50% of initial value	
* $g_m$ . . . . .	< 5.5	mA/V
*Measured at:		
$V_a$ . . . . .	250	V
$V_{g2}$ . . . . .	250	V
$I_a$ . . . . .	85	mA

## INSTALLATION

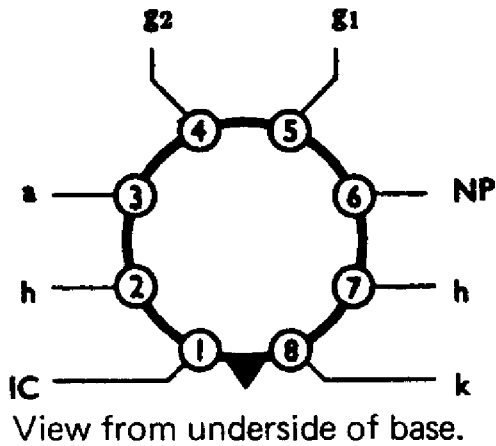
The valve may be mounted in any position but when horizontal it should be orientated as shown in Fig.1. No retaining device or external screening is normally necessary.

Adequate ventilation should be provided. A pair of valves working at maximum ratings should be mounted at not less than 9 cm (3.5 in.) between centres.

For the prevention of parasitic oscillation, a series resistor of 100–300  $\Omega$  should be connected close to the screen tag of the valve socket. When the

valve is triode connected, this resistor should be connected between screen and anode. A control grid series resistor of 10–50 kΩ is also recommended. In push-pull applications having a large change in anode current between the quiescent and full output conditions, an inductance input filter circuit of good regulation should be used. A badly regulated supply will cause a fall in power output and/or excessive quiescent anode dissipation.

### BASE CONNECTIONS AND VALVE DIMENSIONS



Base : International Octal (B8-0)  
 Bulb : Dome top tubular

Max. overall length : 135 mm  
 Max. seated length : 121 mm  
 Max. diameter : 53 mm

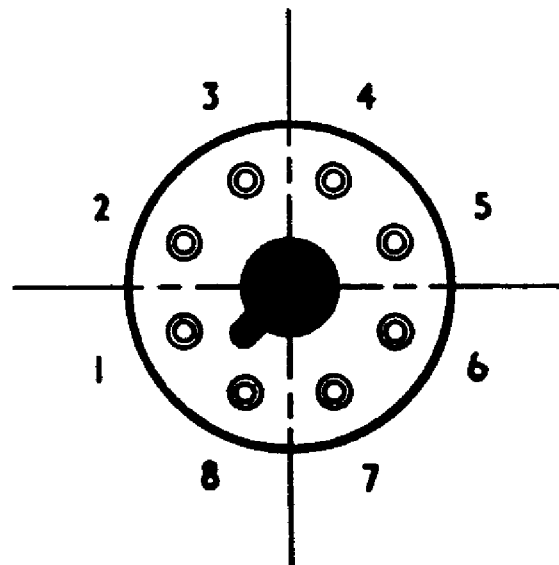


Fig. 1.

Correct orientation of the valve socket for horizontally mounting the KT66.

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