Genalex

GOLD LION
KT88

Made in England

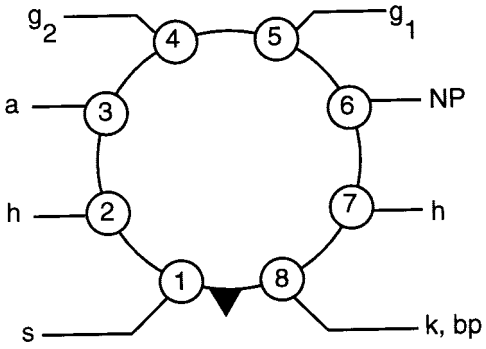
Draft of new spec sheet 4/30/2002

BEAM TETRODE
6-3V INDIRECTLY HEATED

The KT88 has an absolute maximum anode dissipation rating of 42W and is designed for use in the output stage of an a.f. amplifier. Two valves in Class AB1 give a continuous output of up to 100W. The KT88 is also suitable for use as a series valve in a stabilized power supply.

The KT88 is a commercial version of the CV5220 and is similar to the 6550.

BASE CONNECTIONS AND VALVE DIMENSIONS



Base: Metal shell wafer octal

Bulb: Tubular

Max. Overall length: 125 mm

Max. Seated length: 110 mm

Max.Diameter: 52 mm

HEATER

V_h	6.3	V
I_h	1.6 (approx)	A

MAXIMUM RATINGS

	Absolute	*Design Maximum*	*Units*
V_a	800	800	V
V_{g2}	600	600	V
$V_{a,\ g\ 2}$	600	600	V
$V_{g\ 1}$	200	200	V
P_a	42	35	W
P_{g2}	8	6	W
P_{a+g2}	46	40	W
I_k	230	230	ma
V_{h-k}	250	200	V
T_{bulb}	250	250	degrees C

R_{g1-k} (cathode bias)

$P_{a\|g2}$ < 135W	470	k ohm
$P_{a\|g2}$ > 35W	270	k ohm

R_{g1-k} (fixed bias)

$P_{a\|g2}$ < 135W	220	k ohm
$P_{a\|g2}$ > 35W	100	k ohm

CAPACITANCES (Measured on a cold unscreened valve)

Triode Connection

$C_{g1\text{-}a.g.2}$: 7.9pF $C_{g1\text{-all less a.g2}}$: 9.3pF $C_{a.g2\ \text{-all less g1}}$: 17pF

Tetrode Connection

$C_{g1\text{-}a}$: 1.2pF $C_{al\ \text{-all less a}}$: 16pF $C_{a\ \text{-all less g1}}$: 12pF

CHARACTERISTICS

Tetrode Connected		
V_a	250	V
V_{g2}	250	V
I_a	140	mA
I_{g2}	3 (approx)	mA
V_{g1}	15 (approx)	V
g_m	11.5	mA/V
r_a	12	ohms
$\mu_{g1\text{-}g2}$	8	--

Triode Connected		
$V_{a,g2}$	250	V
$I_{a+\ g2}$	143	mA
$-V_{g1}$	15 approx	V
g_m	12	mA/V
r_a	670	ohms
μ	8	--

TYPICAL OPERATION

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

$V_{a(b)}$	560	V
$V_{a(o)}$	521	V
V_{g2}	300	V
$I_{a(o)}$	2 x 64	mA
$I_{a(max.\ sig)}$	2 x 73	mA
$I_{g2(o)}$	2 x 1.7	mA
$I_{g2(max.\ sig)}$	2 x 9	mA
$R_{L(a-a)}$	9	kohm
R_{k*}	2 x 460	ohm
$-V_{g1}$	30 (approx)	V
P_{out}	50	W
D_{tot}	3	%
I.M.	11	%
$P_{a(o)}$	2 x 33	W
$P_{a(max.\ sig)}$	2 x 12	W
$P_{g2(o)}$	2 x 0.5	W
$P_{g2(max.\ sig)}$	2 x 2.7	W
$V_{in(g1-g1)(pk)}$	60	V

*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)

Push-Pull. Class AB1.
Fixed Bias. Tetrode Connection

Va(b)	560	V
$V_{a(o)}$	552	V
V_{g2}	300	V
$I_{a(o)}$	2 x 60	mA
$I_{a(max.\ sig)}$	2 x 145	mA
$I_{g2(o)}$	2 x 1.7	mA
$I_{g2(max.\ sig)}$	2 x 15	mA
$R_{L(a-a)}$	4.5	kohm
$-V_{g1}$	34 (approx)	V
P_{out}	100	W
D_{tot}	2.5	%
I.M.	10	%
$P_{a(o)}$	2 x 33	W
$P_{a(max.\ sig)}$	2 x 28	W
$P_{g2(o)}$	2 x 0.5	W
$P_{g2(max.\ sig)}$	2 x 4.5	W
$V_{in(g1-g1)(pk)}$	67	V

*It is essential to provide two separately adjustable bias voltage sources, having a voltage adjustment range of 25%.
**Intermodulation distortion: measured using two input signals at 50 and 6000 hz (ratio of amplitudes 4:1).

Push-Pull. Class AB1.
Cathode Bias. Ultra-Linear Connection
(40% Tapping Points)

Va, g 2(b)	500	375	V
Va, g 2(o)	436	328	V
Ia|g2(o)	2x87	2x87	ma
Ia|g2(max. sig)	2x 99	2x96	ma
RL(a-a)	6	*5*	k ohms
Rk*	2 x 600	2 x 400	ohms
-Vg1	52 (approx)	35 (approx)	V
Pout	50	30 W	
Dtot	1.5	1 %	
I. M.**	4	3 %	
Pa|g2(o)	2 x 38	2 x 28.5	W
Pa|g2(max. sig)	2 x 17	2 x 16	W
Vin(g1-g1)(pk)	104	71 V	
Zout	4.8	4.5	k ohms

*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).

Push-Pull. Class AB1.
Fixed Bias. Ultra-Linear Connection.
(40% Tapping Points)

Va, g 2(b)	560	460	V
Va, g 2(o)	553	453	V
Ia|g2(o)	2 x 50	2 x 50	ma
Ia|g2(max. sig)	2 x 157	2 x 140	ma
RL(a-a)	4.5	4	k ohms
-Vg1*	75 (approx)	59 (approx)	V
Pout	100	70	W
Dtot	2	2	%
I. M.**	11	10	%
Pa|g2(o)	2 x 27.5	2 x 22.5	W
Pa|g2(max. sig)	2 x 33	2 x 27	W
Vin(g1-g1)(pk)	140	114	V
Zout	7	6.5	k ohms

*It is essential to provide two separately adjustable bias voltage sources, having a voltage adjustment range of 25%.
**Intermodulation distortion: measured using two input signals at 50 and 6000 hz (ratio of amplitudes 4:1).

Push-Pull. Class AB1.
Cathode Bias. Triode Connection.

Va, g 2(b)	400	485	V
Va, g 2(o)	349	442	V
Ia|g2(o)	2 x 76	2 x 94	ma
Ia|g2(max. sig)	2 x 80	2 x 101	ma
RL(a-a)	4	*4*	k ohms
-Vg1	40 (approx)	50 (approx)	V
Pout	17	31	W
Dtot	5.6	1.5	%
I. M.*	5.6	5.6	%
Pa|g2(o)	2 x 26.5	2 x 40	W
Pa|g2(max. sig)	2 x 19	2 x 27	W
Rk	2 x 525	2 x 525	ohms
Vin(g1-g1)(pk)	140	114	V
Zout	2	1.9	k ohms

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

INSTALLATION

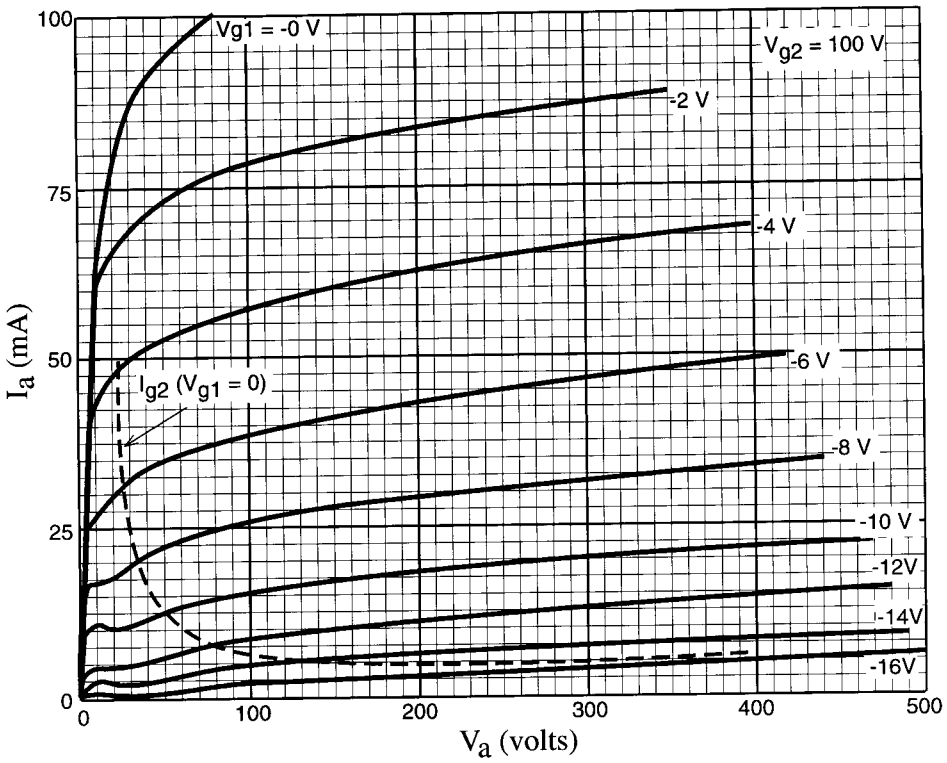
The valve may be mounted either vertically or horizontally.

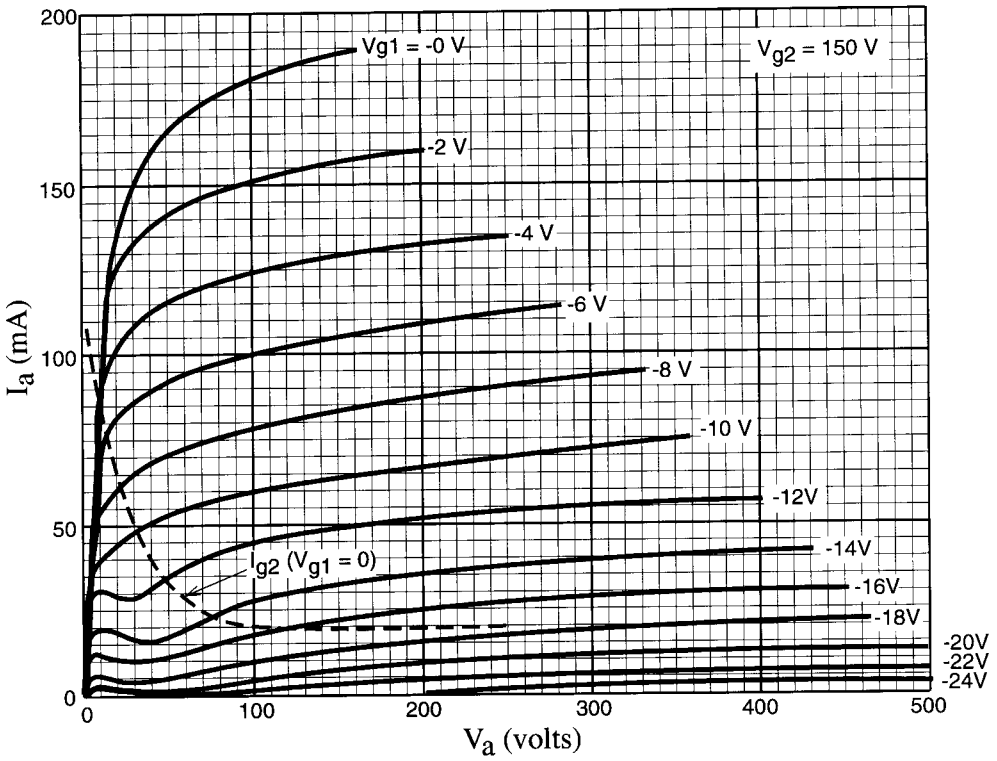
When a pair of valves is mounted vertically, it is recommended that the centers of the valve sockets are not less than 4 inches apart and that pins 4 and 8 of each valve are in line.

When a pair of valves is mounted horizontally, it is recommended that the centers of the valve sockets are not less than 4 inches apart and that pins 4 and 8 of each valve are in the same vertical line.

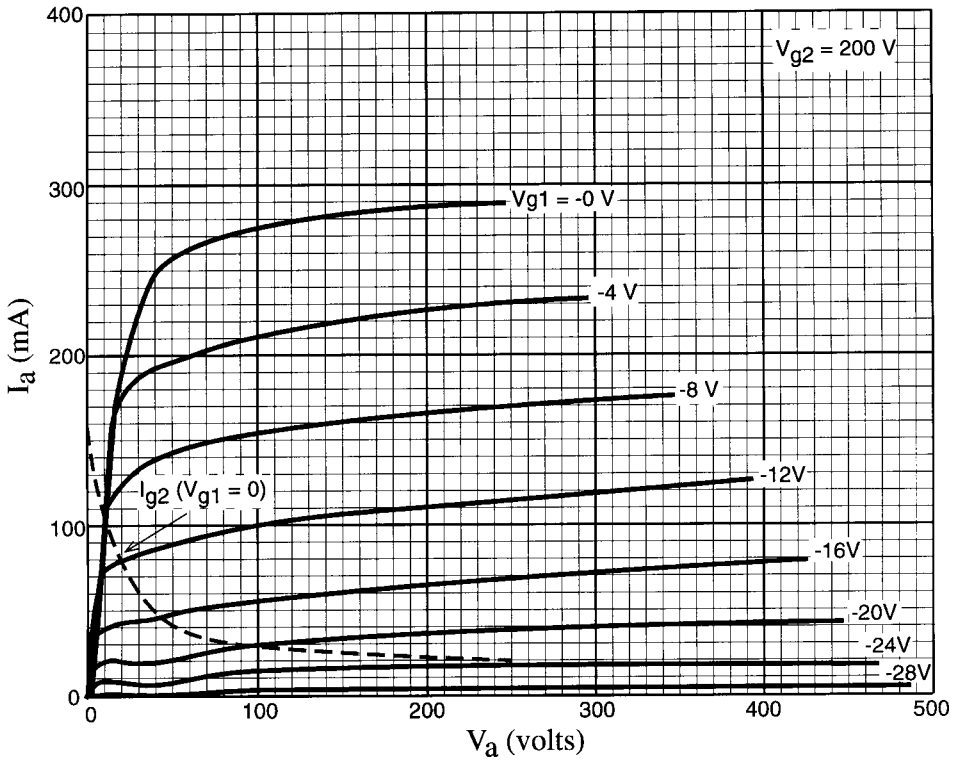
Free air circulation around the valve is desirable.

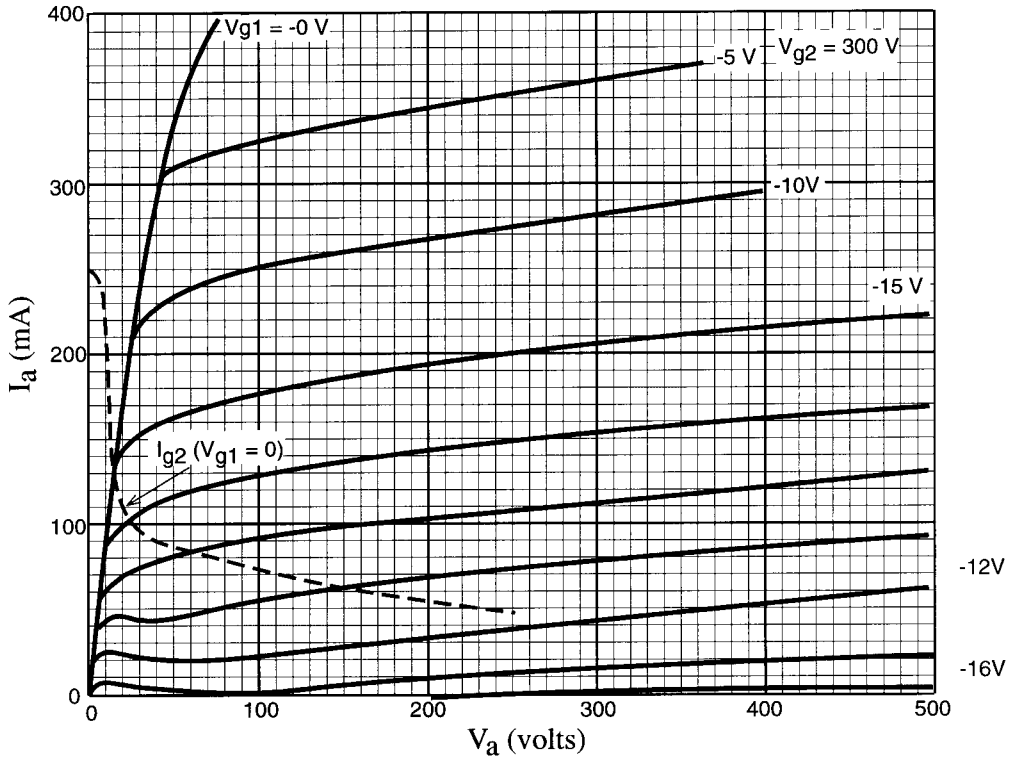
KT88

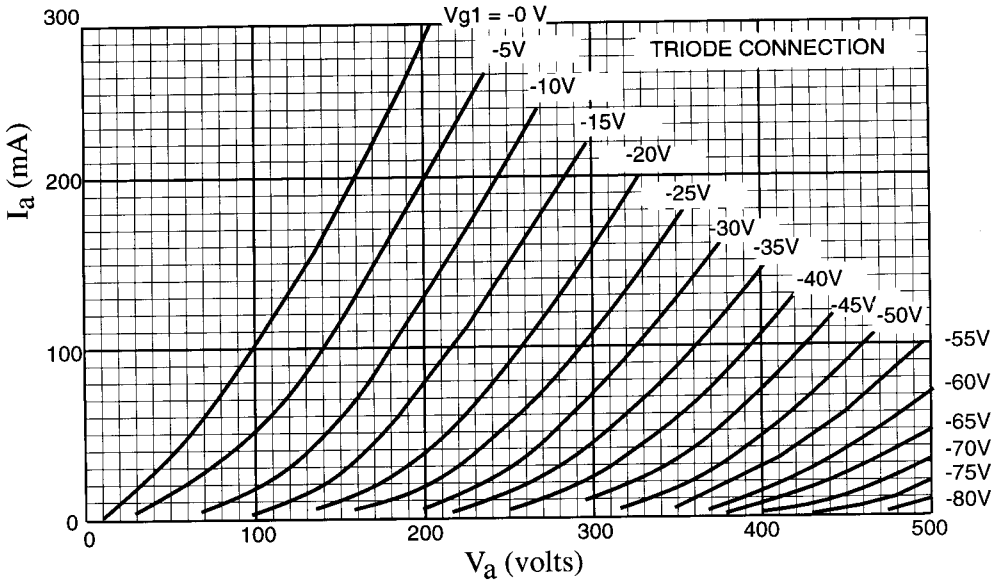

Vg1 = -0 V
Vg2 = 100 V
-2 V
-4 V
-6 V
-8 V
-10 V
-12V
-14V
-16V
Ig2 (Vg1 = 0)
Ia (mA)
Va (volts)
0
25
50
75
100
0
100
200
300
400
500

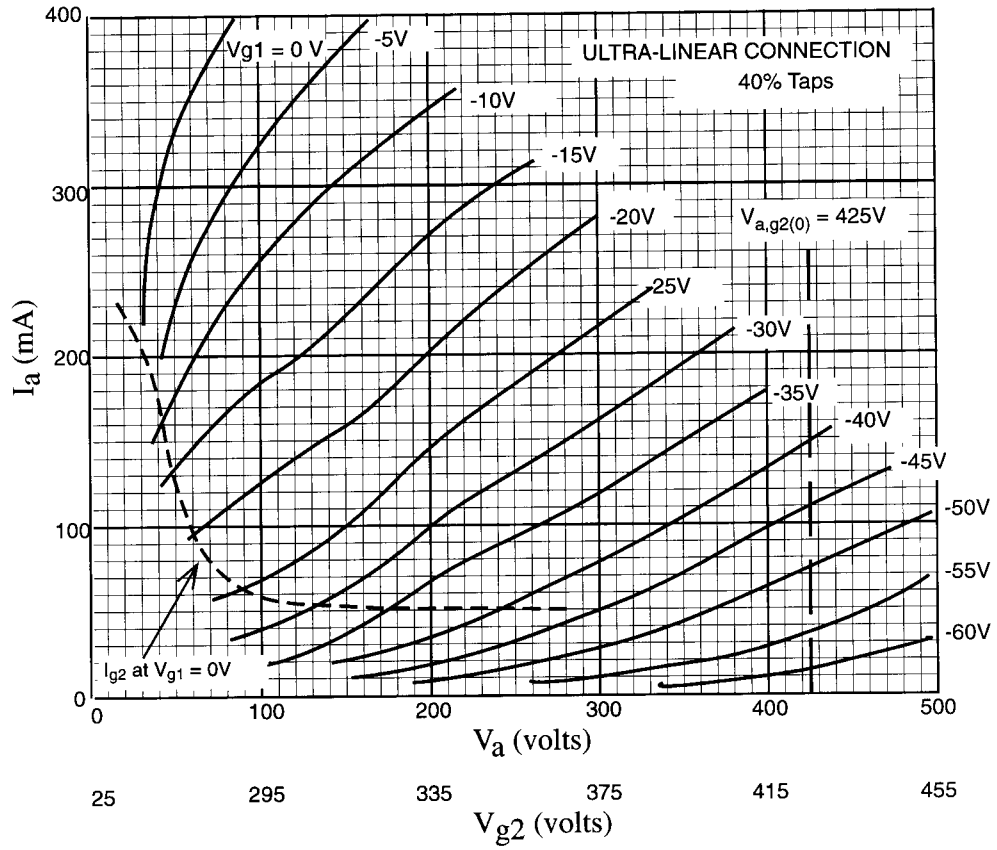

Vg1 = -0 V
Vg2 = 150 V
-2 V
-4 V
-6 V
-8 V
-10 V
-12V
-14V
-16V
-18V
-20V
-22V
-24V
Ig2 (Vg1 = 0)
Ia (mA)
Va (volts)
0
50
100
150
200
0
100
200
300
400
500

KT88


400
300
200
100
0
0
100
200
300
400
500
I_a (mA)
V_a (volts)
V_{g2} = 200 V
Vg1 = -0 V
-4 V
-8 V
-12V
-16V
-20V
-24V
-28V
I_{g2} (V_{g1} = 0)


400
300
200
100
0
0
100
200
300
400
500
I_a (mA)
V_a (volts)
Vg1 = -0 V
-5 V
V_{g2} = 300 V
-10V
-15 V
-12V
-16V
I_{g2} (V_{g1} = 0)


Vg1 = -0 V
-5V
-10V
-15V
-20V
-25V
-30V
-35V
-40V
-45V
-50V
-55V
-60V
-65V
-70V
-75V
-80V
TRIODE CONNECTION
300
200
100
0
0
100
200
300
400
500
Ia (mA)
Va (volts)


Vg1 = 0 V
-5V
-10V
-15V
-20V
-25V
-30V
-35V
-40V
-45V
-50V
-55V
-60V
ULTRA-LINEAR CONNECTION
40% Taps
Va,g2(0) = 425V
Ig2 at Vg1 = 0V
400
300
200
100
0
0
100
200
300
400
500
Ia (mA)
Va (volts)
25
295
335
375
415
455
Vg2 (volts)