



# C1112

## BEAM POWER TETRODE

### Service Type CV2131

The data should be read in conjunction with the Power Tetrode Preamble.

#### ABRIDGED DATA

V.H.F. radial beam transmitting tetrode

Anode dissipation	250	W max
Anode voltage	4.0	kV max
Frequency for full ratings	75	MHz max
Frequency at reduced ratings	120	MHz max
Output power (class C unmodulated)	1.0	kW

#### GENERAL

##### Electrical

Filament		thoriated tungsten
Filament voltage	5.0	V
Filament current	14.1	A
Peak usable cathode current	2.0	A
Perveance	0.65	mA/V <sup>3/2</sup>
Grid-screen amplification factor (V <sub>a</sub> = 2.5kV, V <sub>g2</sub> = 500V, I <sub>a</sub> = 100mA)	5.1	
Mutual conductance (V <sub>a</sub> = 2.5kV, V <sub>g2</sub> = 500V, I <sub>a</sub> = 100mA)	4.0	mA/V
Inter-electrode capacitances:		
input	12.7	pF
output	4.5	pF
grid to anode	0.12	pF

##### Mechanical

Overall length	151mm (5.944 inches) max
Overall diameter	87mm (3.425 inches) max
Net weight	170g (6 ounces) approx
Mounting position	vertical, base up or down
Base	B.S.448-B5F

### COOLING

An adequate flow of air must be provided to cool the envelope and glass to metal seals of the valve when operating at frequencies above 30MHz, or under conditions where the maximum values of temperature given below might be exceeded.

Anode seal temperature . . . . .	220	°C max
Base pin seal temperature . . . . .	180	°C max

A heat dissipating anode connector of large surface area is necessary.

### AUDIO FREQUENCY POWER AMPLIFIER OR MODULATOR (Class B)

#### MAXIMUM RATINGS (Absolute values)

Anode voltage . . . . .	4.0	kV max
Anode dissipation . . . . .	250	W max
Screen voltage . . . . .	600	V max
Screen dissipation . . . . .	35	W max
Grid voltage (negative value) . . . . .	500	V max
Grid dissipation . . . . .	10	W max
Grid to filament resistance . . . . .	250	kΩ max
Cathode current (mean) . . . . .	450	mA max

#### TYPICAL OPERATING CONDITIONS

##### (Class B without grid current, 2 valves)

Anode voltage . . . . .	2.0	2.5	3.0	kV
Screen voltage . . . . .	500	500	500	V
Grid voltage . . . . .	-88	-91	-94	V
Peak a.f. input voltage (grid to grid) . . . . .	172	178	184	V
Maximum-signal anode current	2 x 150	2 x 155	2 x 155	mA
Zero-signal anode current . . . . .	2 x 50	2 x 50	2 x 50	mA
Maximum-signal screen current	2 x 14	2 x 10	2 x 10	mA
Effective load (anode to anode) . . . . .	14.5	18	22	kΩ
Anode dissipation . . . . .	2 x 105	2 x 132	2 x 147	W
Output power . . . . .	390	510	635	W
Efficiency . . . . .	65	66	68	%
Total distortion . . . . .	3.2	2.6	2.8	%

### TYPICAL OPERATING CONDITIONS

(Class B with grid current, 2 valves)

Anode voltage	2.0	2.5	3.0	kV
Screen voltage	300	300	300	V
Grid voltage	-49	-51	-55	V
Peak a.f. input voltage (grid to grid)	328	306	280	V
Maximum-signal anode current	2 x 347	2 x 312	2 x 275	mA
Zero-signal anode current	2 x 50	2 x 50	2 x 50	mA
Maximum-signal screen current	2 x 55	2 x 44	2 x 34.5	mA
Grid current	2 x 38	2 x 30	2 x 21	mA
Effective load (anode to anode)	6.6	9.2	14	k $\Omega$
Anode dissipation	2 x 207	2 x 210	2 x 205	W
Nominal driving power	2 x 6.0	2 x 4.0	2 x 2.7	W
Output power	974	1140	1240	W
Efficiency	70	73	75	%
Total distortion	5.0	5.0	5.0	%

### RADIO FREQUENCY POWER AMPLIFIER

(Class B telephony, carrier conditions per valve for use with a maximum modulation factor of 1.0)

#### MAXIMUM RATINGS (Absolute values)

Anode voltage	4.0	kV max
Anode dissipation	250	W max
Screen voltage	600	V max
Screen dissipation	23	W max
Grid dissipation	6.5	W max
Grid to filament resistance	250	k $\Omega$ max
Cathode current (mean)	200	mA max

#### TYPICAL OPERATING CONDITIONS (for frequencies up to 75MHz)

Anode voltage	2.5	3.0	4.0	kV
Screen voltage	500	500	500	V
Grid voltage	-84	-90	-100	V
Peak r.f. grid voltage	66	61	56	V
Anode current	150	125	94	mA
Grid current (modulation factor 1.0)	7.7	2.8	0.7	mA
Anode dissipation	250	250	250	W
Screen dissipation (modulation factor 1.0)	6.0	3.8	4.0	W
Nominal driving power	1.4	0.6	0.35	W
Output power	125	125	126	W
Efficiency	33	33	33.5	%

### ANODE AND SCREEN MODULATED R.F. POWER AMPLIFIER

(Class C telephony, carrier conditions per valve for use with a maximum modulation factor of 1.0)

#### MAXIMUM RATINGS (Absolute values)

Anode voltage . . . . .	3.2	kV max
Anode dissipation . . . . .	165	W max
Screen voltage . . . . .	600	V max
Screen dissipation . . . . .	35	W max
Grid voltage (negative value) . . . . .	500	V max
Grid dissipation . . . . .	10	W max
Grid to filament resistance . . . . .	250	k $\Omega$ max
Cathode current (mean) . . . . .	270	mA max

#### TYPICAL OPERATING CONDITIONS (for frequencies up to 75MHz)

Anode voltage . . . . .	2.5	3.0	kV
Screen voltage . . . . .	400	400	V
Grid voltage . . . . .	-200	-310	V
Peak r.f. grid voltage . . . . .	280	400	V
Peak screen modulating voltage (modulation factor 1.0) . . . . .	350	350	V
Anode current . . . . .	200	225	mA
Screen current . . . . .	30	30	mA
Grid current . . . . .	13	13	mA
Anode dissipation . . . . .	125	165	W
Screen dissipation . . . . .	12	12	W
Nominal driving power . . . . .	3.8	5.5	W
Output power . . . . .	375	510	W
Efficiency . . . . .	75	75.5	%

## R.F. POWER AMPLIFIER OR OSCILLATOR

(Class C telegraphy, key-down conditions, one valve)

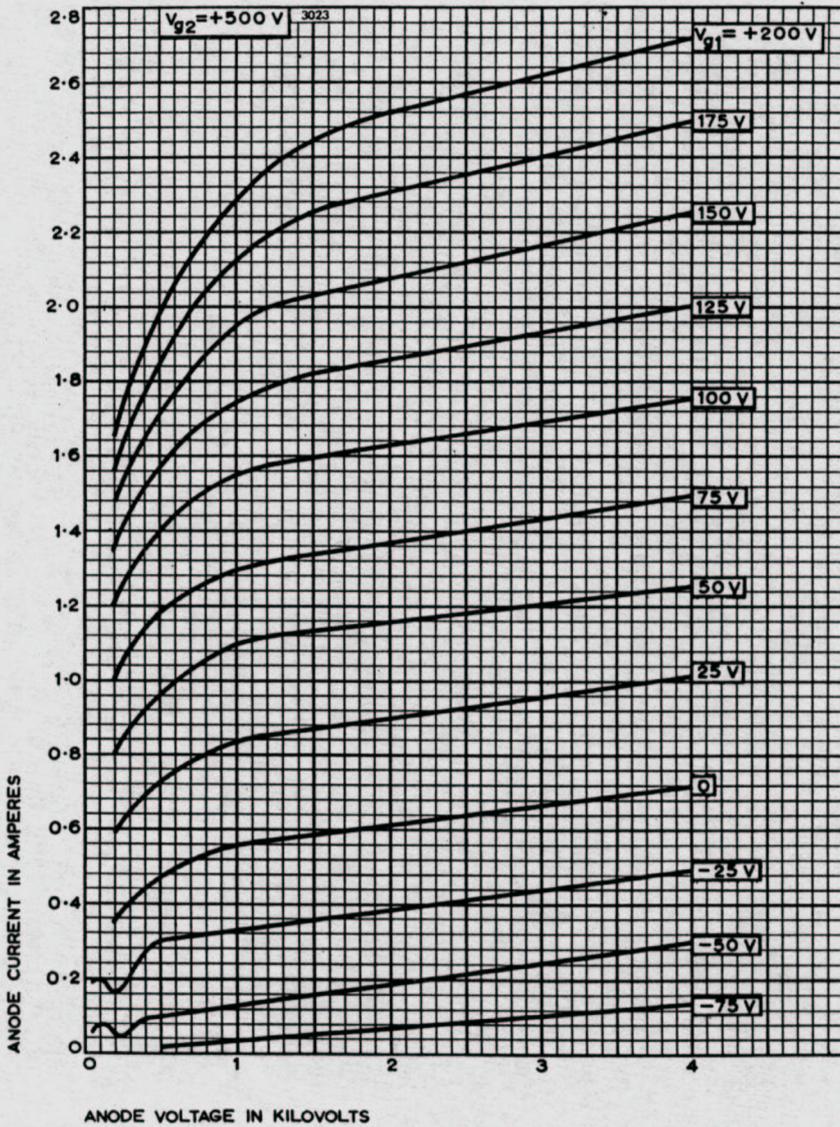
### MAXIMUM RATINGS (Absolute values)

Anode voltage . . . . .	4.0	kV max
Anode dissipation . . . . .	250	W max
Screen voltage . . . . .	600	V max
Screen dissipation . . . . .	35	W max
Grid voltage (negative value) . . . . .	500	V max
Grid dissipation . . . . .	10	W max
Grid to filament resistance . . . . .	250	k $\Omega$ max
Cathode current (mean) . . . . .	420	mA max

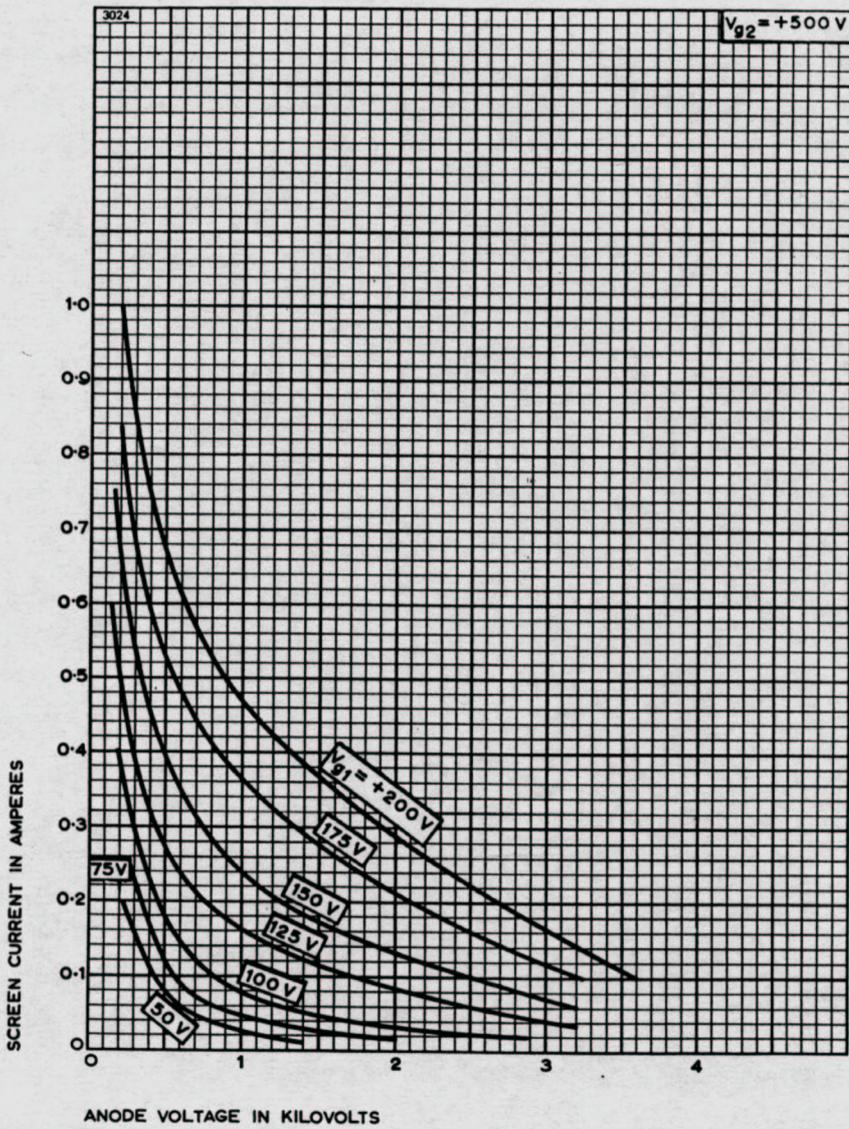
### TYPICAL OPERATING CONDITIONS (for frequencies up to 75MHz)

Anode voltage . . . . .	2.5	3.0	4.0	kV
Screen voltage . . . . .	500	500	500	V
Grid voltage . . . . .	-150	-180	-225	V
Peak r.f. grid voltage . . . . .	220	265	303	V
Anode current . . . . .	300	345	312	mA
Screen current . . . . .	60	60	45	mA
Grid current . . . . .	13	15	13	mA
Anode dissipation . . . . .	175	235	248	W
Screen dissipation . . . . .	30	30	22.5	W
Nominal driving power . . . . .	2.9	3.8	4.2	W
Output power . . . . .	575	800	1000	W
Efficiency . . . . .	77	77	80	%

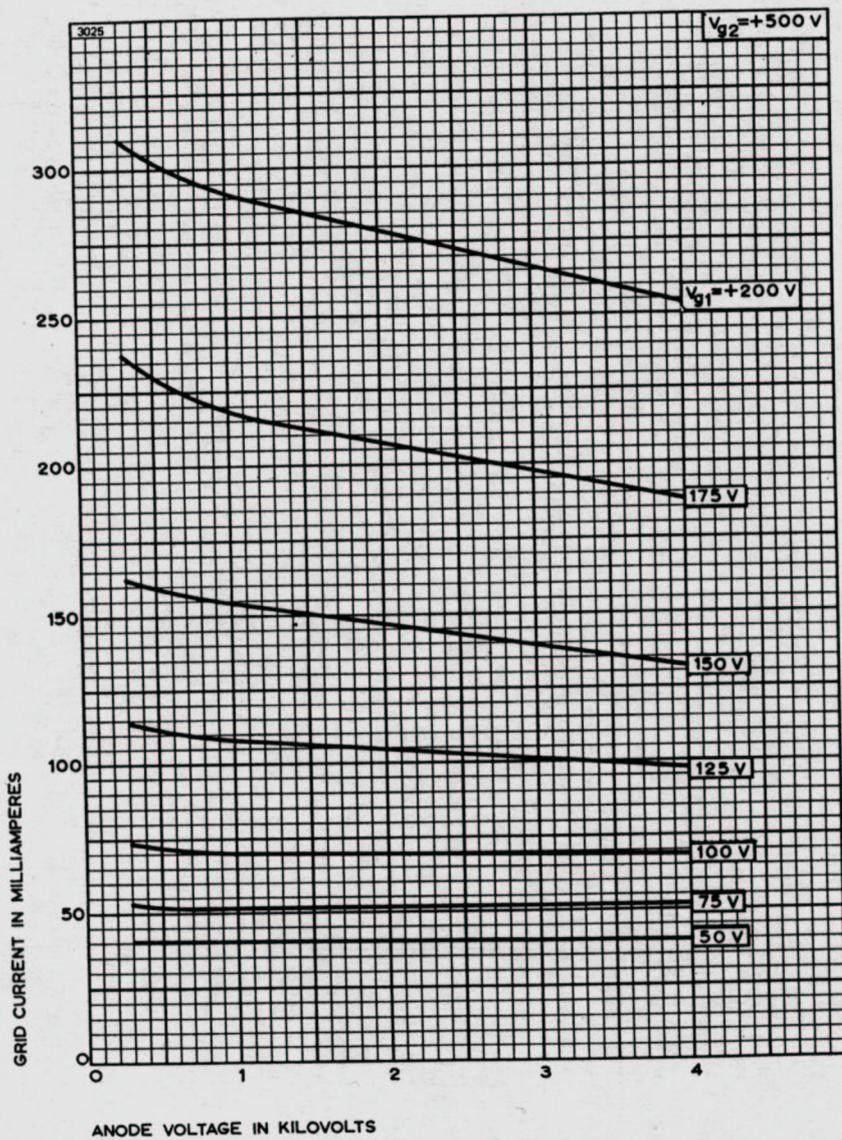
### TYPICAL ANODE CHARACTERISTICS



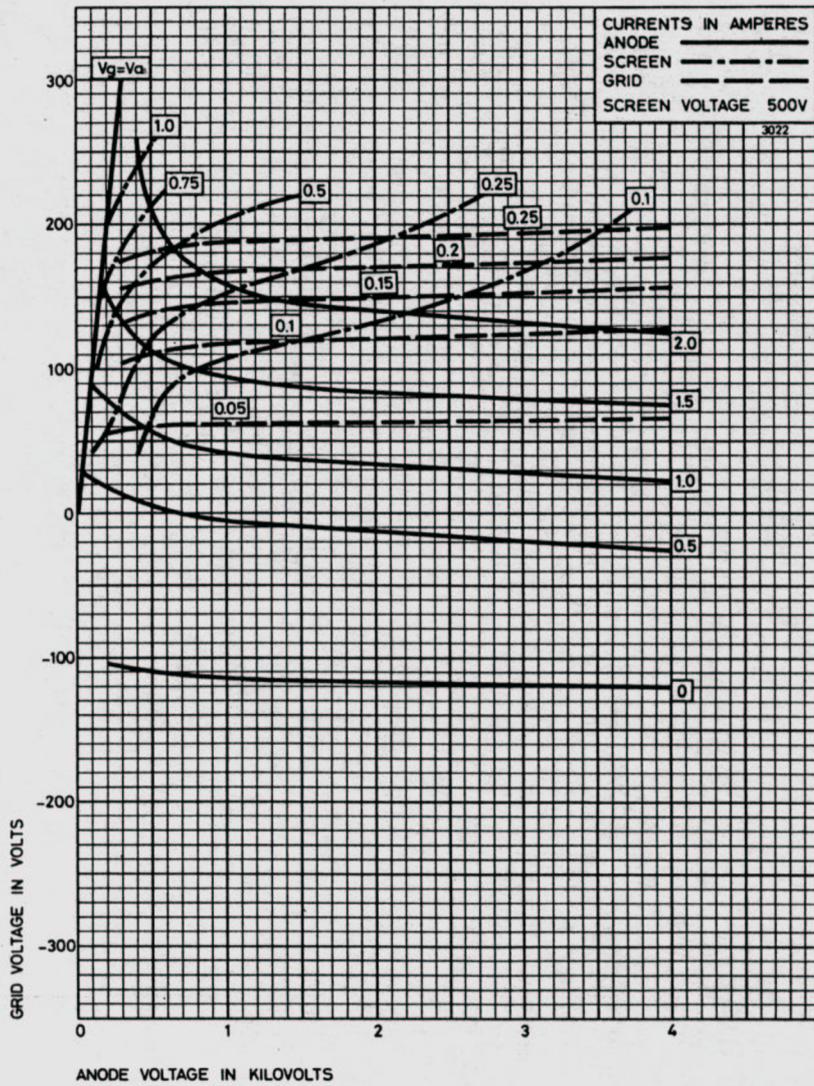
### TYPICAL SCREEN CHARACTERISTICS



### TYPICAL GRID CHARACTERISTICS



### TYPICAL CONSTANT CURRENT CHARACTERISTICS

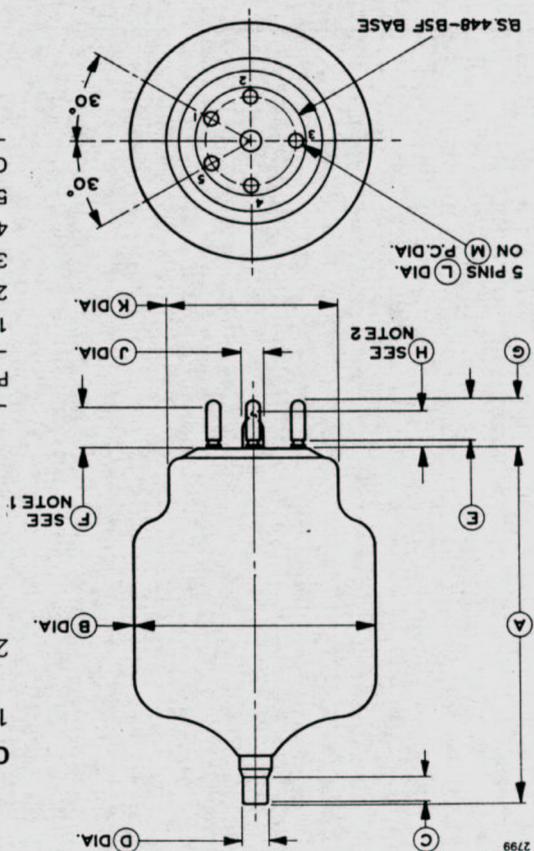


OUTLINE

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Outline Notes

- 1. Limit of parallel portion of pins.
- 2. Seal-off length.



Pin	Element
1	Filament
2	Screen
3	Grid
4	Screen
5	Filament
Cap	Anode

Ref	Millimetres	Inches	Ref	Millimetres	Inches
A	127.0 ± 6.0	5.000 ± 0.236	G	18.00 max	0.708 max
B	87.00 max	3.425 max	H	15.00 max	0.590 max
C	9.00 min	0.354 min	J	7.50 max	0.295 max
D	9.00 ± 0.13	0.354 ± 0.005	K	62.00 max	2.440 max
E	14.94 ± 0.25	0.588 ± 0.010	L	4.750 ± 0.076	0.187 ± 0.003
F	15.00 min	0.590 min	M	31.75	1.250

Inch dimensions have been derived from millimetres.

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