



S11E12

SPECIAL QUALITY BEAM TETRODE

Indirectly heated—for parallel operation

TENTATIVE**GENERAL**

The S11E12 is a Special Quality Beam Tetrode intended for use as a series or shunt control valve in stabilised power supply units, and has similar characteristics (within ratings) to the 12E1. It is indirectly heated and should be parallel connected to the supply. A special shock resistant construction is employed which gives increased reliability and life expectancy.

Quality tests are performed on electrical characteristics, vibration noise, base strain, glass strain, electrode resonance, vibration fatigue, shock resistance, heater cycling, stability and life.

RATING

Heater Voltage	(volts)	V_h	6.3
Heater Current	(amps)	I_h	1.6
Maximum Anode Voltage	(volts)	$V_a(\text{max})$	800
Maximum Screen Voltage	(volts)	$V_{g2}(\text{max})$	300
Maximum Control Grid Voltage	(volts)	$V_{g1}(\text{max})$	—100
Maximum Voltage between Grids 1 and 2	(volts)	$V_{g1-g2}(\text{max})$	400
Mutual Conductance	(mA/V)	g_m	13.5*
Inner Mu		μ_{g1-g2}	5.5*
Maximum Anode Dissipation	(watts)	$P_a(\text{max})$	28
Maximum Screen Dissipation	(watts)	$P_{g2}(\text{max})$	5
Maximum Cathode Current	(mA)	$I_k(\text{max})$	300
Maximum Heater to Cathode Voltage (DC heater negative)	(volts)	$V_{h-k}(\text{max})$	350
Maximum Heater to Cathode Voltage (DC heater positive)	(volts)	$V_{h-k}(\text{max})$	150
Maximum Resistance Grid 1 to Cathode—Fixed Bias	(ohms)	$R_{g1-k}(\text{max})$	100,000
Maximum Resistance Grid 1 to Cathode—Cathode Follower	(M Ω)	$R_{g1-k}(\text{max})$	1

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Maximum Acceleration (continuous operation)	(g)	2
Maximum Shock (short duration)	(g)	500
Maximum Peak Anode Voltage (Scanning Operation)	(volts) $V_{a(pk)max}$	1,500†

* Measured at $V_a = V_{g2} = 150$ v ; $I_a = 200$ mA ; $I_{g2} = 12$ mA ;
 $V_{g1} = -8.5$ v.

† For duty cycle of 1/25 and maximum pulse duration 200
 μ seconds.

All maximum ratings are Absolute Values not Design
 Centres.

INTER-ELECTRODE CAPACITANCES (pF)

Anode/Grid 1	C_{a-g1}	1.8
Grid 1/Earth	C_{in}	19.5
Anode/Earth	C_{out}	16.5

"Earth" denotes the remaining earthy potential electrodes,
 heater and shields connected to cathode.

DIMENSIONS

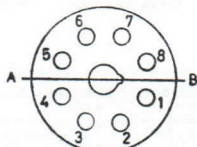
Maximum Overall Length	(mm)	98
Maximum Diameter	(mm)	44
Maximum Seated Height	(mm)	83
Approximate Nett Weight	(ozs)	$2\frac{1}{2}$
Approximate Packed Weight	(ozs)	$5\frac{1}{2}$

MOUNTING POSITION—Vertical. If run horizontally
 then it is recommended that the axis AB be on a horizontal
 plane.

BULB—Clear.

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TENTATIVE**BASE**—International Octal.

Viewed from free end of pins

CONNECTIONS

Pin 1	Internal Connection	IC
Pin 2	Heater	h
Pin 3	Anode	a
Pin 4	Grid 2	g2
Pin 5	Grid 1	g1
Pin 6	Beam Plates	bp
Pin 7	Heater	h
Pin 8	Cathode	k

Note.—Pins 6 and 8 should be connected together at the valve holder.

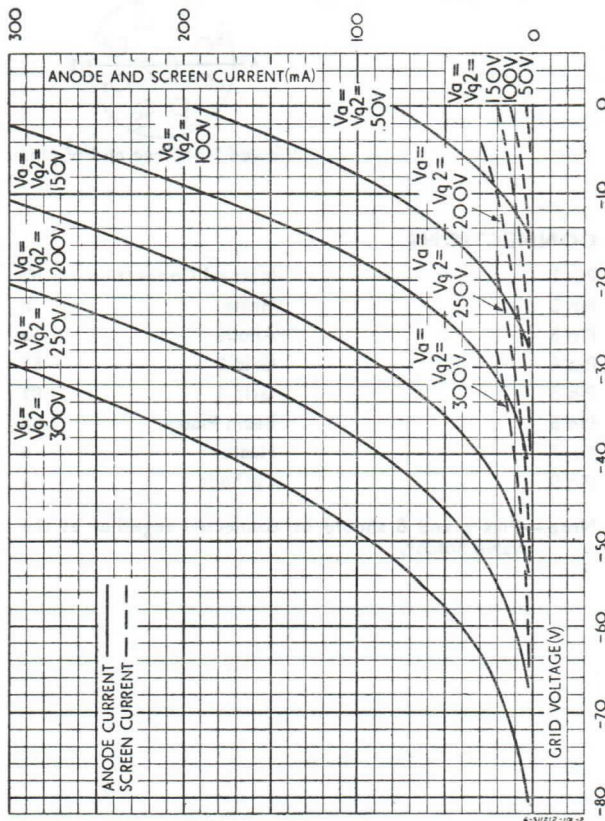
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AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}/V_{g1}$

Curves taken with short duration pulse

Pulse Length = $12\mu\text{sec}$, Pulse Ratio = 400:1Grid Current starts at $V_{g1} = -1.0\text{V}$ (approx.)

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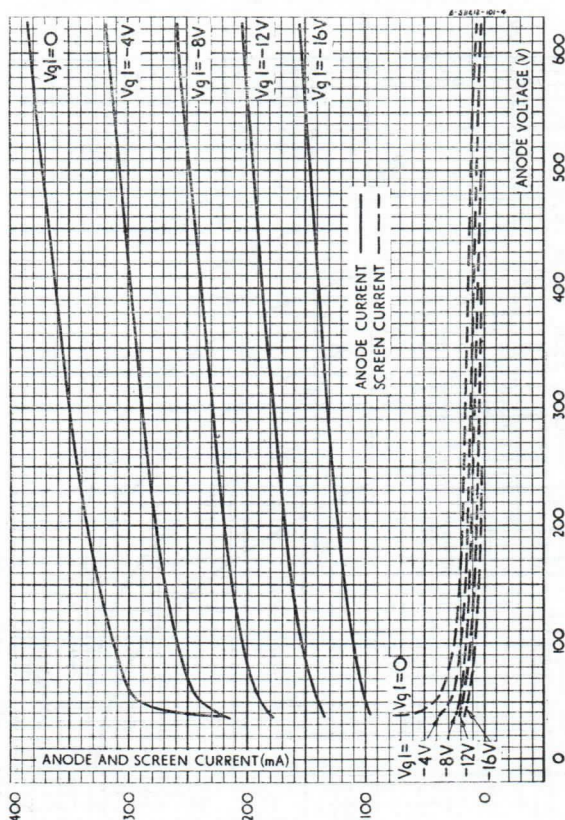
Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}/V_a$ $V_{g2} = 150V$

Curves taken with short duration pulse

Pulse Length = $12\mu\text{sec}$.

Pulse Ratio = 400:1



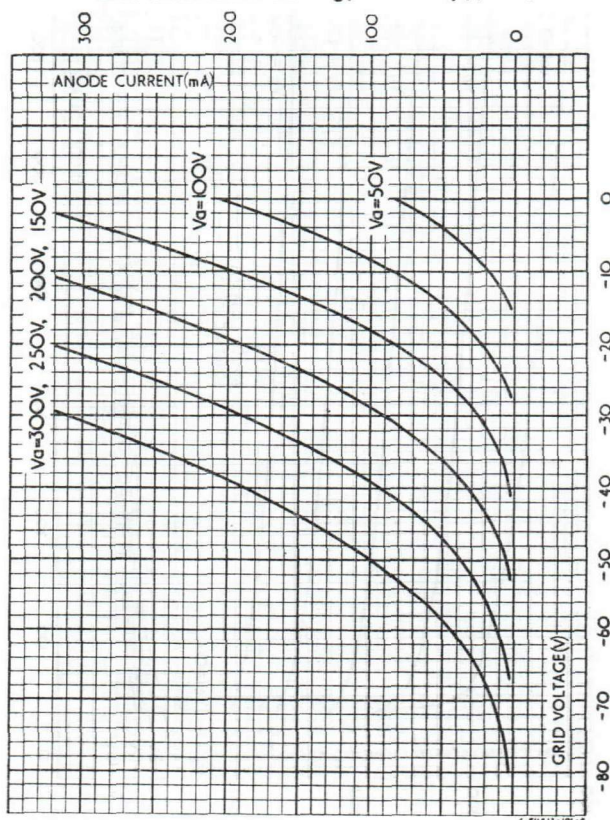
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AVERAGE CHARACTERISTIC CURVES: I_a/V_g
TRIODE CONNECTED

Curves taken with short duration pulse
Pulse Length = $12\mu\text{sec}$. Pulse Ratio = 400 : 1
Grid Current starts at $V_{g1} = -1.0\text{V}$ (approx.)



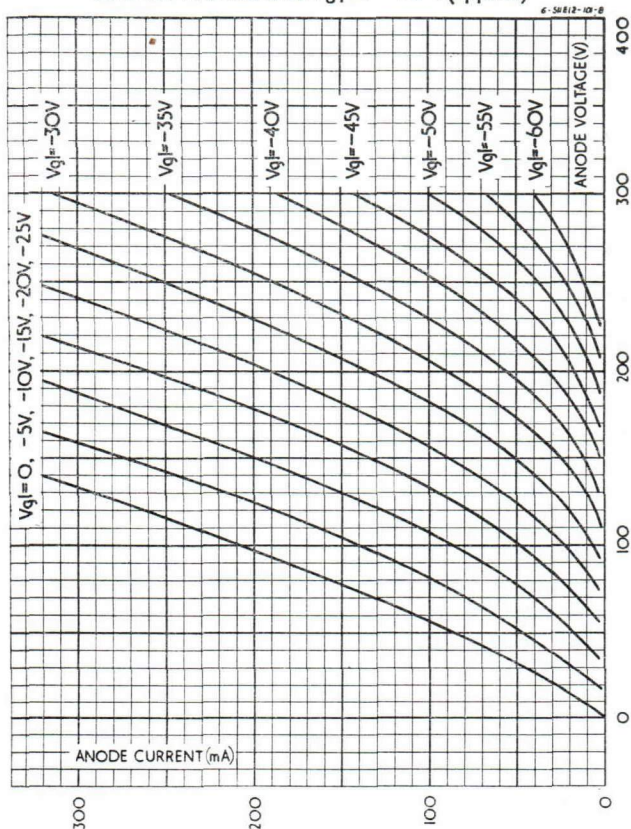
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