

# SUBMINIATURE TETRODE THYRATRON

# EN70

Subminiature tetrode inert gas-filled thyatron with negative control characteristic.

## LIMITING VALUES (absolute ratings, not design centre)

It is important that these limits are never exceeded and such variations as mains fluctuations, component tolerances and switching surges must be taken into consideration in arriving at actual valve operating conditions.

Max. peak anode voltage		
Inverse	500	V
Forward	500	V
Max. cathode current		
Peak	100	mA
Average (max. averaging time 15s)	20	mA
Max. negative control-grid voltage		
Before conduction	200	V
During conduction	10	V
Max. average positive control-grid current for anode voltage more positive than $-10V$ (averaging time 1 cycle)	700	$\mu A$
Max. peak positive control-grid current during the time that the anode voltage is more positive than $-10V$	2.0	mA
Max. peak positive control-grid current during the time that the anode voltage is more negative than $-10V$	30	$\mu A$
Max. control-grid resistor	10	M $\Omega$
*(Recommended min. control-grid resistor 100k $\Omega$ )		
Max. negative shield-grid voltage		
Before conduction	100	V
During conduction	5.0	V
Max. average positive shield-grid current for anode voltage more positive than $-10V$ (averaging time 1 cycle)	700	$\mu A$
**Max. shield-grid resistor	1.0	M $\Omega$
Max. peak heater to cathode voltage		
Cathode negative	25	V
Cathode positive	100	V
Heater voltage limits	5.7 to 6.9	V
Min. valve heating time	10	s
Max. operating frequency	100	c/s
Ambient temperature limits	-55 to +70	$^{\circ}C$

\*It is not desirable that the control-grid should be positive when the anode is more negative than  $-10V$ , but where this condition is unavoidable the control-grid resistor may need to be greater than the recommended minimum value.

\*\*Where circuit conditions permit, the shield-grid should be connected directly to the cathode.



## CHARACTERISTICS

### Electrical

Heater voltage	6.3	V
Heater current at 6.3V		
Average	150	mA
Maximum	165	mA
Anode to control-grid capacitance	0.08	pF
Input capacitance	1.1	pF
Output capacitance	1.2	pF
Ionisation time (approx.)	0.5	$\mu$ s
Anode voltage drop	11	V
Critical control-grid current at $V_a = 350V_{r.m.s.}$	0.2	$\mu$ A

### Mechanical

Type of cooling	Convection
Mounting position	Any

**Note**—Direct soldered connections to the leads of this valve must be at least 5mm from the seal and any bending of the valve leads must be at least 1.5mm from the seal.

Max. net weight	{ 0.1 oz 3.0 g
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## TYPICAL OPERATING CONDITIONS

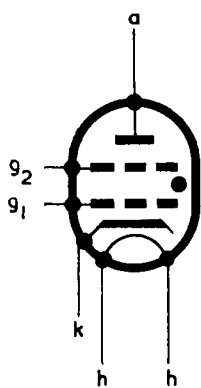
Heater voltage	6.3	V
R.M.S. anode voltage	150	V
Shield-grid voltage	0	V
R.M.S. control-grid voltage (180° out of phase with anode voltage)	5.0	V
*Peak control-grid signal voltage	5.0	V
Control-grid circuit resistance	1.0	M $\Omega$
Anode circuit resistance	3.75	k $\Omega$

\*The frequency of the signal is high compared with 50c/s

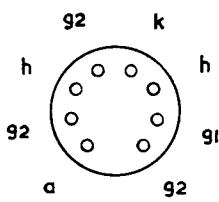
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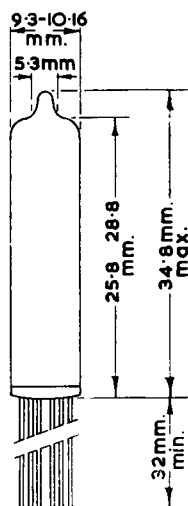
*Subminiature tetrode inert gas-filled thyatron with negative control characteristic.*



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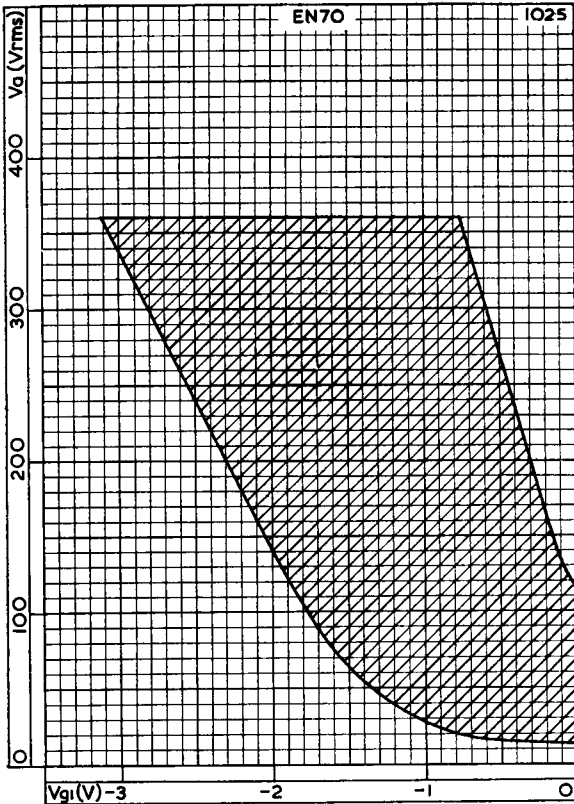
**B8D BASE**  
(10mm. subminiature)



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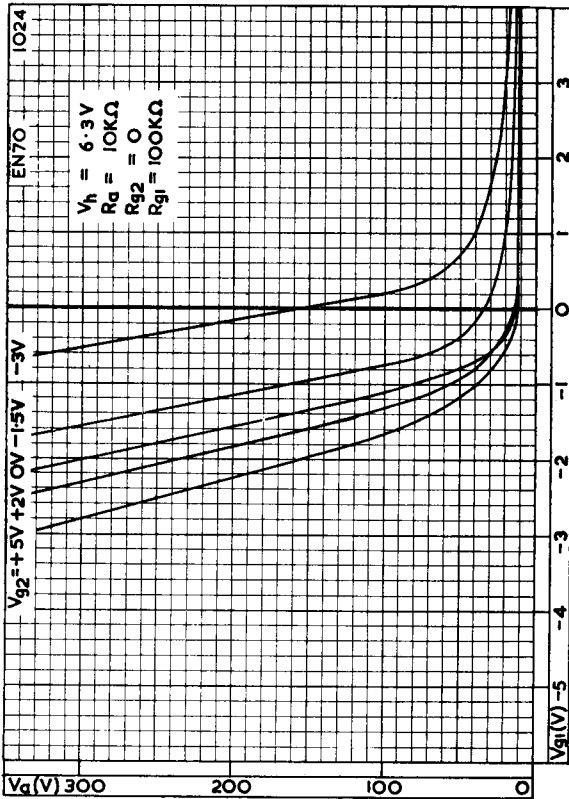


CONTROL CHARACTERISTIC

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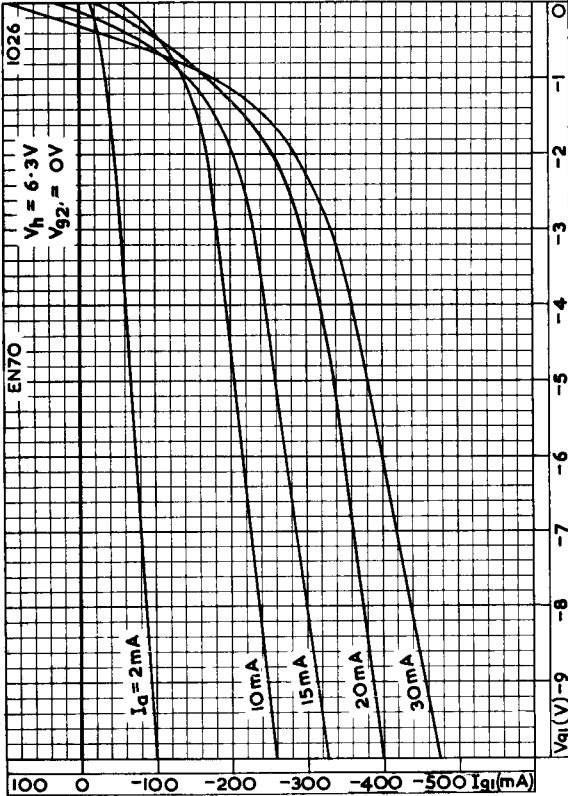


SPREAD OF CONTROL CHARACTERISTIC

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GRID ION CURRENT CHARACTERISTIC