

VOLTAGE REFERENCE TUBE

85A2

Gas-filled two-electrode tube intended
for use as a voltage reference.

LIMITING VALUES (Absolute Ratings)

Min. voltage necessary for ignition	115	V
Max. burning current	10	mA
Min. burning current	1	mA
Ambient temperature limits	-55 to +90	°C

PREFERRED OPERATING CONDITION

Burning current	6	mA
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CHARACTERISTICS

At Preferred Operating Condition

Max. ignition voltage	115	V
Burning voltage (variation from tube to tube)	83 to 87	V
Incremental resistance		
Average	300	Ω
Maximum	450	Ω
Temperature coefficient of burning voltage over temperature range 15 to 90°C	-4.0	mV/°C
*Max. percentage variation of burning voltage		
During the first 300 hours of life	0.3	%
During the subsequent 1,000 hours	0.2	%
Typical percentage drift of burning voltage per 1,000 hours after 1,300 hours	0.1	%

*After the initial warming-up period of 3 minutes.

DISCONTINUITIES OF THE I_a/V_a CHARACTERISTIC

Typical voltage jumps over current range 4 to 10 mA	5.0	mV
Maximum voltage jumps over current range 4 to 10 mA	50	mV

SHORT-TERM STABILITY

Maximum short-term variation of burning voltage for any 8 hour period after the first 100 hours life will be better than 0.01% provided there is an initial warming-up period of 3 minutes.

Maximum short-term (100 hours max.) variation of burning voltage after the first 300 hours of life is 0.1%.

In order to avoid voltage variations due to temperature fluctuations it will in general be sufficient to draught shield the tube (see temperature coefficient of tube).

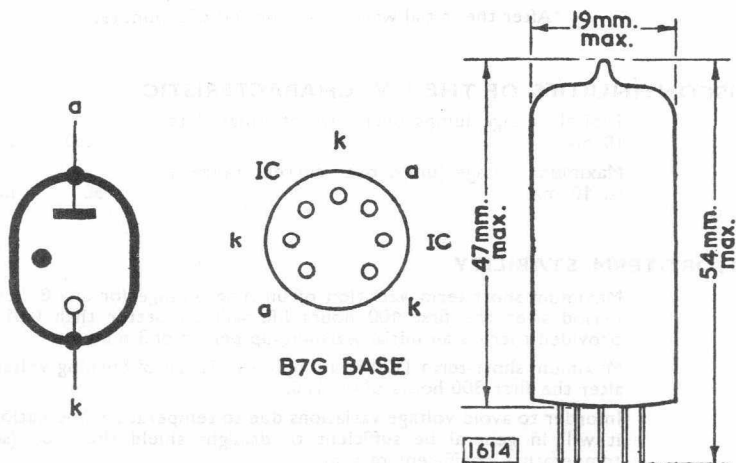
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OPERATING NOTES

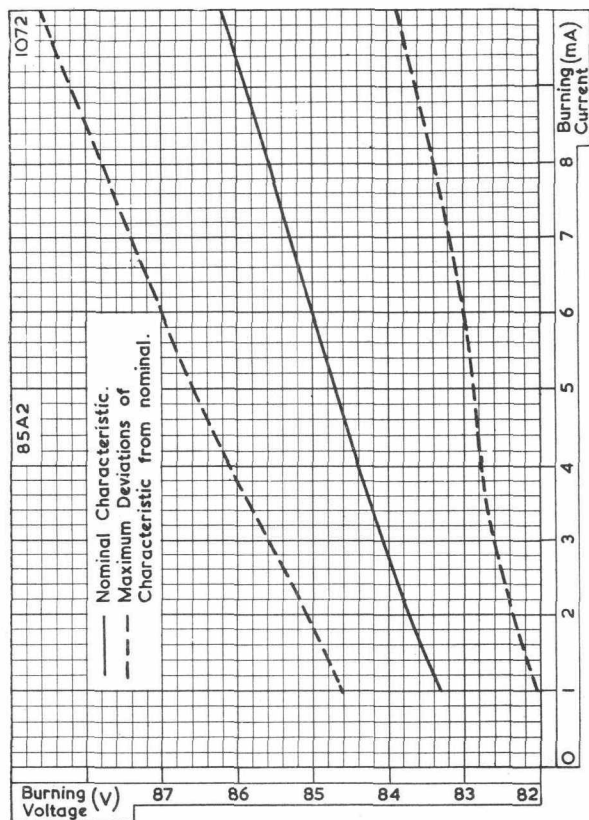
1. To obtain a good life a reverse current must not be drawn from this tube. This condition is satisfied if any inverse voltage does not exceed 75 V.
2. The maximum ignition voltage quoted is the greatest voltage which is necessary to ignite any tube in the presence of some ambient illumination. A voltage of at least this value must be available if reliability of ignition is to be obtained. In complete darkness there may be considerable delay in igniting the tube.
3. A steady burning voltage is reached within 3 minutes.
4. The greatest constancy of burning voltage is obtained if the tube is operated at only one value of current.
5. The noise generated by the tube over a frequency band of 30 to 10,000 c/s is of the order of $60 \mu\text{V}$, which is equivalent to the noise generated by a resistor of approximately $22 \text{ M}\Omega$ at a temperature of 300°K . The noise is evenly distributed over the frequency range.



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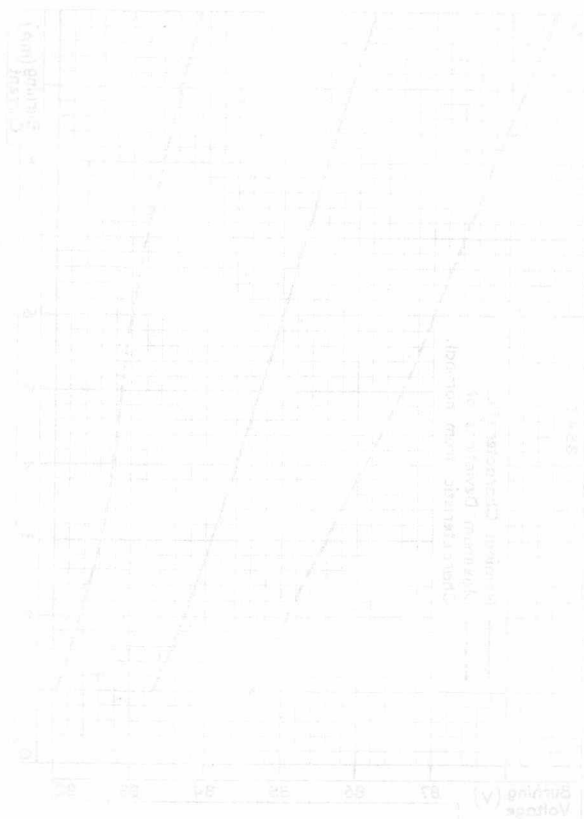
BURNING VOLTAGE PLOTTED AGAINST BURNING CURRENT



6243

VOLTAGE REFERENCE RANGE

For use as a voltage reference
for the 100-ohm range



BURNING VOLTAGE PLOTTED AGAINST BURNING CURRENT

