

DATA FOR E.I.A. REGISTRATION

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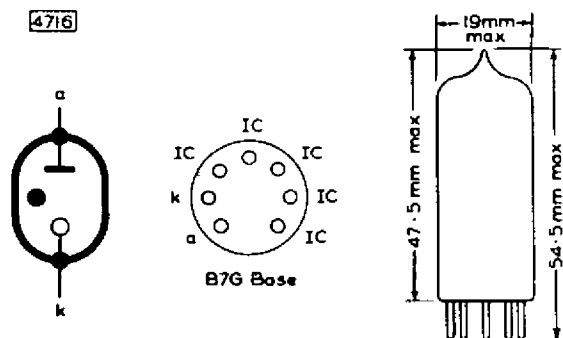
VOLTAGE REFERENCE TUBE TYPE 83A1

The 83A1 is a miniature voltage reference tube of the cold cathode discharge type.

PHYSICAL SPECIFICATION

Base	E7-1
Bulb	Glass
Maximum overall length	2 <sup>1</sup> / <sub>8</sub> " (54.5mm)
Maximum seated height	1 <sup>7</sup> / <sub>8</sub> " (47.5mm)
Maximum bulb diameter	3/4" (19.0mm)

BASING DIAGRAM AND CONNECTIONS



MAXIMUM RATINGS (Absolute values)

* Minimum DC starting voltage	130	volts
** Maximum starting current	10	milliamperes
Maximum cathode current	6.0	milliamperes
Minimum cathode current	3.5	milliamperes
Maximum bulb temperature (during operation)	150	°C
Maximum bulb temperature (during stand-by and storage)	100	°C
Maximum negative anode voltage	50	volts

The effective series resistance should never be less than 2000 ohms.

\* This value holds good over the life of the tube, and in light or in darkness. In total darkness a starting delay of 5 seconds may occur.

\*\* To be restricted for long life to approximately 30 seconds once or twice in each 8 hours of operation.

CHARACTERISTICS

Preferred operating cathode current	4.5	milliamperes
DC operating voltage at preferred cathode current	83.0 to 84.5	volts
†Maximum jump voltage (over the range 3.5 to 6.0 milliamperes)	1.0	milli volts
†Typical r.m.s. noise voltage (30c/s to 10kc/s)	100	microvolts
†Maximum incremental resistance	350	ohms
†Minimum incremental resistance	110	ohms
†Nominal temperature coefficient (averaged over the range 25 to 120°C)	(-0.003 %/°C) (-2.5 millivolts/°C)	

†These values hold good with little or no change over the life of the tube.

LIFE PERFORMANCE

Limits of the typical variations of operating voltage at the temperatures shown and over the period indicated.

Continuous operation at preferred current

Bulb temperature:	25	100	150	°C
Life period				
0 to 300 hours	0 to+0.35	0 to+0.35	0 to+2.0	volts
300 to 2500 hours	0 to+0.20	0 to+0.20	-2.0 to+4.0	volts
300 to 10,000 hours	+0.05 to+0.35	+0.05 to+0.35	-	volts

For storage or stand-by

Period

0 to 500 hours	negligible	<1.5 <sup>††</sup>	-	volts
0 to 3500 hours	negligible	<6.0 <sup>††</sup>	-	volts

††Subsequent operation of the tube for approximately 50 hours at the preferred operating cathode current and at a bulb temperature lower than 100°C will restore the operating voltage to within 0.2 volt of the original value.

