

QUICK REFERENCE DATA

Cold cathode, neon-filled, side-viewing indicator tubes with long life expectancy. The ZM1081 incorporates a red filter to improve the contrast of display; particularly suitable where many tubes are displayed side by side. The ZM1083 is electrically identical but has no filter coating. Compatible with numerical indicators ZM1080, ZM1082.

Character height	10.5 mm 0.4 in
Minimum distance between mounting centres	19 mm 0.75 in
Viewing angle	120 deg
Characters	- + ~
Cathode current	2.0 mA
Minimum supply voltage	170 V

CHARACTERISTICS AND RANGE VALUES FOR EQUIPMENT DESIGN

(Measured at 20 to 50°C unless otherwise stated)

The values given state the range over which the tube will operate both initially and during life. No allowance has been made for supply voltage and component variations.

Minimum anode-to-cathode voltage necessary for ignition	170	V
Nominal anode-to-cathode maintaining voltage at 2.0mA (see page 3)	140	V
Anode-to-cathode voltage below which all tubes will extinguish	115	V

D.C. operation

Maximum cathode current	3.5	mA
Minimum cathode current	1.5	mA

Probe current to individual non-conducting cathodes (I_{kk})

See page 4

LIFE EXPECTANCY at recommended operating conditions and room temperature
(see note 1)

Continuous display of one character	> 5000	h
Sequentially changing the display from one character to the others, every 100 hours or less	> 15 000	h

RATINGS (ABSOLUTE MAXIMUM SYSTEM)

Cathode current (each character)

Maximum average (max. averaging time = 20ms)	3.5	mA
Maximum peak	12	mA
Minimum average during conduction	1.5	mA
Bulb temperature		
Maximum	+70	°C
Minimum (see note 2)	-50	°C

MOUNTING POSITION

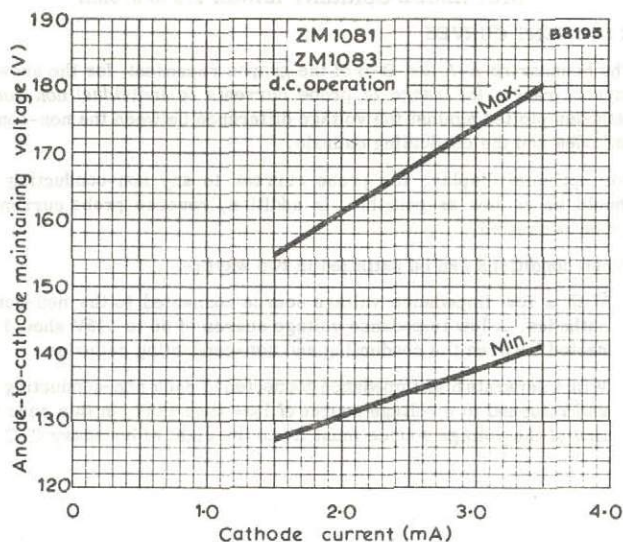
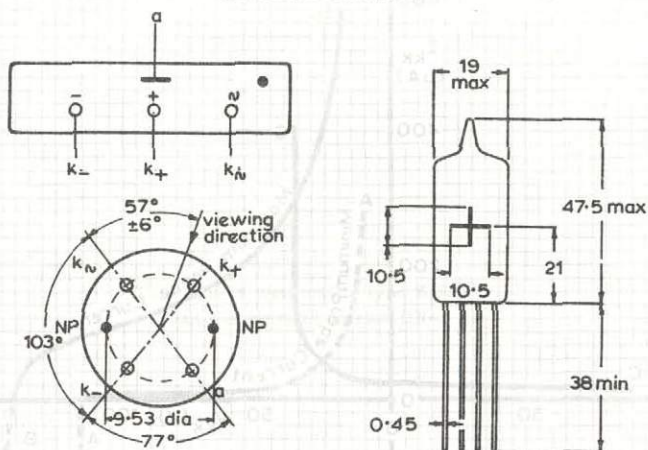
Any. The characters are viewed through the side of the envelope. The characters will appear upright (within $\pm 3^\circ$) when the tube is mounted vertically.

OPERATING NOTES

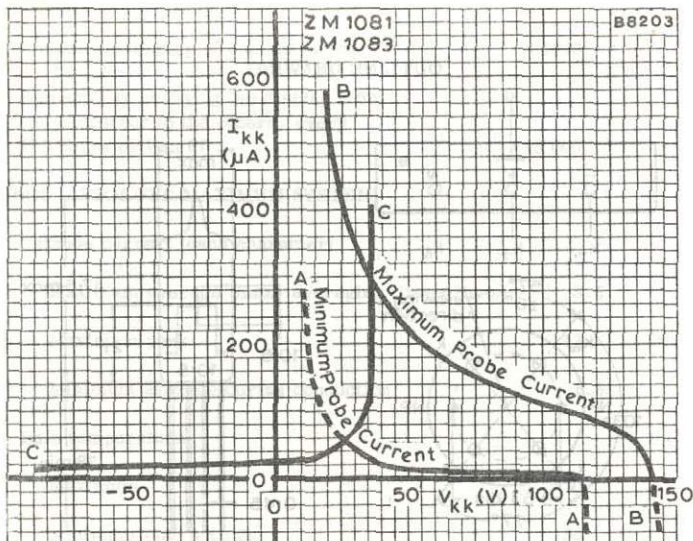
1. The life expectancy figures given above relate to operation with d.c. cathode currents between 1.5 and 2.5mA.
2. For bulb temperatures below 0°C the life expectancy of the tube is substantially reduced.
3. The leads are tinned and may be dip-soldered to a minimum of 5mm from the seals at a solder temperature of 240°C for a maximum of 10 seconds.
4. Care should be taken not to bend the leads nearer than 1.5mm from the seals.
5. The tube may be soldered directly into the circuit but heat conducted to the glass-to-metal seals should be kept to a minimum by the use of a thermal shunt.



OUTLINE DRAWING



ANODE-TO-CATHODE MAINTAINING VOLTAGE PLOTTED AGAINST CATHODE CURRENT



PROBE CURRENTS TO INDIVIDUAL CATHODES D.C. ANODE CURRENT RANGE 1.5 to 3.5mA

PROBE CURRENT CURVES

The boundaries A-A and B-B of the graphs represent, for the shown anode current range, the range of probe currents to individual non-conducting cathodes plotted against the voltage difference between the non-conducting cathodes and the conducting cathode.

For optimum display, the probe current to any non-conducting cathode should be as low as possible. In addition, reverse probe current should not be permitted.

These conditions can be satisfied in two ways:-

1. With a low impedance voltage source connected to the non-conducting cathodes. A low impedance voltage source of 36 to 115V should be connected between the conducting and non-conducting cathodes.
2. With a separate high impedance connected to each non-conducting cathode and returned to a voltage source of less than 115V. In this case the load line of the voltage source must lie to the right of boundary C-C.