THERMIONIC TUBE, DIODE - on base

Cat: EM4040-001 (with '6X4' dual diode tube)

DESCRIPTION:

- 1x Base with diode tube socket and terminals: PA4040-003
- 1x Diode tube type 6X4: PA4040-002

EM4040-001 dual diode (thermionic)

Physical size: 115x82x70mm LxWxH (incl.tube) Weight: 0.07 kg

The Diode tube includes a small heater than must be energised before the tube can operate. It heats the cathode so that electrons can be driven from the cathode to the anode. When running, the heater can be seen glowing red inside the tube.

A resistor is placed into the anode circuit to limit the current flow and an AC voltage is applied between either of the two anodes (outer metal areas) and the single cathode (inner heated section). The cathode is coated with a special material and when it is hot and when a voltage is placed between the cathode and the anode, electrons flow from the cathode to the anode causing a DC current to flow. When detected by an ammeter, the DC current appears to flow from the positive anode to the negative cathode, which is the opposite direction to the electron flow. This 'conventional current flow' is a normal phenomenon of electricity and can probably be discussed in class.

RECTIFICATION:

Current cannot flow in the opposite direction, therefore, if AC is applied between an anode and the cathode, current can flow only in one direction during the time when the anode is positive. In the time when the anode is negative to the cathode, no current flows. This effect of changing AC (alternating current) into DC (direct current) is called rectification. Only half of the AC sine wave can pass current and this DC current flow is called **'half wave'** rectification.

By using a 'centre tapped' transformer, the other half of the sine wave can be applied to the second anode. Then current flows in the one direction for the whole duration of the sine wave. This is called **'full wave'** rectification. Discuss this in class.

6X4 DOUBLE DIODE TUBE DATA:

VOLTAGE: Anode (+) to Cathode (-), up to 350 Volts max. (100V typ.)

CURRENT FLOW: use resistor to limit to 70 milliamps max.

CATHODE HEATER: approx. 6.3V.AC. at 0.6 amps.

SOCKET: Standard 7 pin miniature valve base.

PINOUTS: Anode 1: pin#1 Anode 2: pin#6

Cathode: pin#7 Heater: Pins #3 and #4

Designed and manufactured in Australia