



GT1C THYRATRON (ARGON-FILLED)

DESCRIPTION

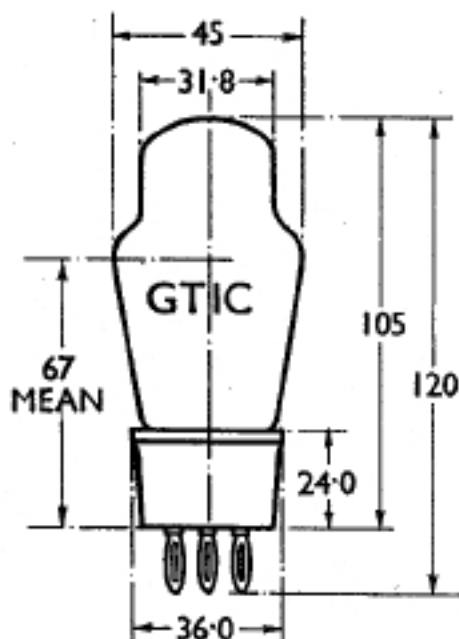
Type GT1C Thyatron is a trigger device. It comprises an indirectly heated cathode, an anode and a control grid, and is enclosed in a bulb which is argon-filled. The GT1C can be employed to control current up to 1 amp. (peak value) in either A.C. or D.C. circuits.

Owing to the special design a long life with freedom from clean-up is ensured with anode currents up to 1.0 amp. peak value.

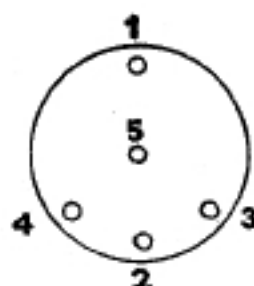
RATINGS

| | | | | | | | |
|----------------------------|-----|-----|-----|-----|-----|------------|-----------------------------------|
| Heater Voltage | ... | ... | ... | ... | ... | 4.0 to 4.3 | volts |
| Heater Current | ... | ... | ... | ... | ... | 1.35 | approx. amp |
| Maximum Safe Anode Voltage | ... | ... | ... | ... | ... | 500 | peak volts |
| Maximum Safe Anode Current | ... | ... | ... | ... | ... | 1.0 | peak amp |
| | | | | | | 0.5 | R.M.S. amp |
| | | | | | | 0.3 | average amp |
| | | | | | | | (measured on a moving coil meter) |
| Cathode—anode Voltage drop | ... | ... | ... | ... | ... | 16 | max. volts |
| Grid Control Ratio | ... | ... | ... | ... | ... | 28 | |
| Cathode heating time | ... | ... | ... | ... | ... | 30 | min. secs |

DIMENSIONS



BASE



View looking on underside of base.

5-PIN

- Pin 1: Anode
- 2: Grid
- 3: Heater
- 4: Heater
- 5: Cathode

All dimensions are in mm. and are the maximum except where otherwise stated.

TYPE GT1C

OPERATING CONDITIONS

General

Current is carried through the Thyatron by the passage of electrons from the cathode to the anode under the influence of a positive potential applied to the latter. If, however, a sufficiently negative grid bias is applied before the anode is made positive, the flow of current between anode and cathode will be withheld. If the anode voltage is now increased above, or the negative grid bias reduced below a critical value (see characteristic curve), anode current will start to flow and the argon becomes ionised.

Under this condition the internal voltage drop between anode and cathode is about 10/16 volts irrespective of the value of anode current. It is therefore, essential that the impedance of the external circuit shall be sufficient to limit the anode current to the rating given above.

Once the argon is ionised, the grid has normally no longer any power to control the value of the anode current. In D.C. circuits the anode current can only be stopped by breaking the circuit or by removing the applied anode voltage for a time long enough to allow the ions to disperse. In A.C. circuits, since the anode current falls to zero at some part of every cycle, the grid is able to control the instant in the succeeding cycle at which current will start again.

In Time Base Circuit

Type GT1C may be used to provide a "saw-tooth" wave for a linear time base if the required frequency is confined to the lower audio frequencies. Up to about 500 c/s the departure from the desired wave form is negligible.

Type GT1C being designed primarily as a relay for handling relatively large current has a comparatively long de-ionization time, approximately 30/40 microseconds. For this reason it may be said that the maximum operating frequency of a time base using a GT1C does not exceed 8 kc/s. The recommended circuit for type GT1C in a time base is shown on opposite page.

The voltage developed by the relay under linear conditions is of insufficient amplitude to produce an adequate trace on a high vacuum cathode ray tube and a sweep amplifier is therefore provided. In the circuit shown, the stage gain of this amplifier is controlled by degeneration, using a variable unshunted cathode resistor.

PRECAUTIONS IN USE

It is essential that the cathode be allowed at least 30 seconds to reach full operating temperature before any anode current is permitted to flow. Disregard of this precaution will cause cumulative destruction of the cathode.

It is also essential that the anode current shall never, even momentarily, exceed the rated peak value of 1 amp. This point requires particular attention in circuits where there are capacitors which may charge or discharge through the Thyatron. In circuits where an accident overload may be liable to occur, it is wise to protect the Thyatron with an instantaneous overload circuit breaker set to operate at about 1 amp.—a fuse is not sufficiently rapid to afford protection.

The peak voltage developed at the grid of the GT1C during the discharge period should not exceed 10 volts negative to cathode, and this can usually be achieved by the use of a grid resistor of value between 10,000 ohms and 1 megohm.

