TETRODE THYRATRON

Tetrode inert gas-filled thyatron with negative control characteristic. Primarily designed for industrial control applications.

This data should be read in conjunction with DEFINITIONS AND GENERAL OPERATIONAL RECOMMENDATIONS—THYRATRONS, preceding this section of the handbook.

LIMITING VALUES (absolute ratings, not design centre)

It is important that these limits are never exceeded and such variations as mains fluctuations, component tolerances and switching surges must be taken into consideration in arriving at actual valve operating conditions.

Max. peak anode voltage
  Inverse  1.3  kV
  Forward  650  V

Max. cathode current
  Peak     2.0  A
  Average (max. averaging time 15s)  300  mA
  Surge (fault protection max. duration 0.1s)  10  A

Max. negative control-grid voltage
  Before conduction  250  V
  During conduction  10  V

Max. average positive control-grid current for anode voltage more positive than −10V (averaging time 1 cycle)  20  mA

Max. control-grid resistance
  $I_g<200mA$  10  MΩ
  $I_g>200mA$  2.0  MΩ

Max. negative shield-grid voltage
  Before conduction  100  V
  During conduction  10  V

Max. average positive shield-grid current for anode voltage more positive than −10V (averaging time 1 cycle)  20  mA

Max. screen-grid resistor  1.0  MΩ

Max. peak heater-cathode voltage
  Cathode negative  25  V
  Cathode positive  100  V

Min. valve heating time (for $I_{(pk)}$ max = 2.0A)  20  s

Ambient temperature limits  -75 to +90  °C

Note—Where circuit conditions permit, the shield-grid should be connected directly to the cathode.
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CHARACTERISTICS

**Electrical**
- Heater voltage: 6.3 V
- Heater current at 6.3V: 950 mA

**Capacitances**
- Anode to grid: 0.25 pF
- Anode to cathode: 0.06 pF
- Grid to cathode: 0.2 pF
- Anode to shield-grid: 3.0 pF

**Control ratio**
- \( g_2 \) to \( k \) and \( R_{g1}=0Ω \): 275
- \( g_1 \) to \( k \) and \( R_{g2}=0Ω \): 370

**Anode voltage drop**
- 10 V

**Recovery (deionisation) time**
- \( V_{na}=-650V, I_{n(pk)}=2A, R_{g1}=100kΩ \)
- \( V_{g1}=-100V \)
- \( V_{g1}=-50V \)
- 240 \( µs \)
- 1.0 ms

**Mechanical**
- Type of cooling: Convection
- Mounting position: Any

**CONTROL CHARACTERISTIC** (See page 5).

The curves given indicate the spread in characteristics due to:
(a) Variations in characteristics due to changes in heater voltage.
(b) Variations in characteristics during life.
(c) Variation in grid resistor.
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GRID ION CURRENT CHARACTERISTICS
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RECOVERY TIME PLOTTED AGAINST CONTROL-GRID VOLTAGE

$V_a = 650V$
$I_a (pk) = 2\cdot QA$
$V_{g2} = 0V$
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CONTROL CHARACTERISTIC (see page 2)
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**OPERATING RANGE OF CRITICAL GRID VOLTAGE**