



Address: 5, Yablochkova Lane, Ryazan, 390023, Russia
 Telephone: +7 (0912) 24-9217
 Telephone/Fax: +7(0912) 24-9238
 E-mail: info@pulsetech.ru
 Internet: <http://www.pulsetech.ru>

PULSED TECHNOLOGIES LTD



THYRATRON

TP11-1k/35 THYRATRON

Low-pressure hydrogen-filled thyatron TP11-1k/35 with superdense glow discharge is designed to switch energy stored in a capacitor bank or pulse-forming network with pulse width from tens of nanoseconds to some microseconds.

Description. General Data

The tetrode 2-sections compact thyatron is enclosed into a brazed metal/ceramic envelope. The tube is fitted with hollow cathode without additional heating serving as an effective charge emitter providing reduced commutation time 3-4 ns. Patented dielectric coating protects ceramic insulator from destruction in cases when inverse anode voltage reaches 100% of direct value. Hollow anode modification, capable of conducting high inverse current with capability to be handled from the side of positive electrode, ground grid modification, as well as tubes with electrode radiators and no-flanges tubes are available upon your request.

Environmentally safe product.

The design of the thyatron is protected by RF patents NN 1792207, 1807798, 20201, 28283.

Typical characteristics

Peak forward anode voltage, kV	35
Peak forward anode current, A	1000
Average anode current, A	0.05
Pulse repetition rate, pps	60
Anode current pulse duration (level 0.5), μ s	0,35
Grid bias voltage, V	-150
Heating voltage, V (min/max)	3.0/7.0
Heating current at $U_{h.v.} = 6.0$ V, A, max	1,0
Warm-up time, minutes	5

Maximum and minimum ratings (Absolute values)

These ratings cannot be used simultaneously, and no individual rating must be exceeded.

Peak forward anode voltage (U_o), kV ^(1, 2)	0,5÷40
Peak forward anode current, kA	3
Peak inverse anode voltage, kV ⁽³⁾	40
Anode current pulse duration, μ s	0.01÷5
Average anode current (i_b), A ⁽⁴⁾	0.15
Maximum anode current rise rate, A/s ⁽⁵⁾	$5 \cdot 10^{11}$
Jitter, ns ⁽⁵⁾	< 1.0
Anode heating factor $P_b = (U_a \times I_b \times f)$, V*A*pps	10^9
RMS current $rms \sqrt{I_b \times i_b}$ ($i_b = CUF$)	7
Pulse repetition rate, Hz	10000
Preionisation current, mA	5÷30
Rate of rise of trigger voltage pulse, kV/ μ s, not less	> 5.0
Peak open circuit trigger voltage, kV,	1.0÷6
Peak trigger current, A, (not less/not more) ⁽⁶⁾	0.1/10
Trigger current pulse width, μ s	0.1÷2.0

Operation of the thyatron when two or more parameters are exceeded simultaneously may be permitted only upon agreement with the Manufacturer.

^(Note 1) The dwell time at the peak anode voltage should be minimized in order to minimize pre-firing. For operation at the rated peak forward anode current, the dwell time less 0.5 of pulse period, but must not exceed 1 millisecond.

^(Note 2) At the end of the current pulse and before voltage is reapplied to anode, the anode voltage must stay at 0 minus 500 Volts for at least 250 ms for thyatron recovery.

^(Note 3) The inverse anode voltage up to 40 kV applies for a previously non-conducting tube. Exclusive only of a spike not longer than 25 nanoseconds, the peak inverse anode voltage must not exceed 5kV during the first 50 microseconds after conduction.

^(Note 4) Only with forced air cooling.

^(Note 5) With pulsed preionisation current. The ultimate value which can be attained depends on the external circuit.

^(Note 6) Driver circuit output impedance - not more 1 kOhm

Life in terms of cumulative charge transfer, C (min) - 1×10^6
 Maximum overall dimensions ($\varnothing_{\text{cathode flange}} \times H_{\text{max}}$), mm - 35x110.
 Net weight - not more than 0,1 kg.

For reliable operation in compliance with the ratings listed we recommend to use specially designed high performance thyatron driver (thyatron trigger system) TU-4P.

TP11-1K/35