9T40

Vapour Cooled Triode

The NEC 9T40 is a high power vapour cooled triode designed for use as an amplifier, modulator and oscillator in medium and short wave frequency broadcast transmitter and in industrial heating services.

The tube features rugged coaxial construction and its ring-sealed terminals provide low lead inductances which assures stable operation at high frequencies.

The cathode consists of multistrand, thoriated-tungsten filaments, completely balanced and stress free throughout life.

Electrical characteristics of the NEC 9T40 are similar with those of the 9T38, except that the anode dissipation rating is increased to 150 kW.

Maximum ratings of plate voltage and input apply at frequencies up to 2 MHz/a.

ELECTRICAL DATA

GENERAL DATA

Filament: Thoriated tungsten

Voltage .......................................................... 18 volts

Current ........................................................ 315 amps.
Maximum Starting Current ........................................ 1000 amps.

Transconductance (at Ib=5 amps.) .................................. 80 milli-mhos

Amplification Factor .................................................. 40

Direct Interelectrode Capacitances:

- Grid to Plate ......................................................... 100 µF
- Grid to Filament ..................................................... 180 µF
- Plate to Filament .................................................. 3 µF

MECHANICAL DATA

Dimension:

- Maximum Diameter ................................................ 360 mm
- Maximum Overall Length ....................................... 745 mm
- Net Weight (approx.) ........................................... 53 kg

Mounting Position: Vertical, anode down

Cooling:

To plate: Vapour-cooling required

To stem and glass bulb: Forced-air-flow required (Note 1, 2)

- Minimum air flow ................................................ 5 ³/§/min.
- Maximum glass temperature ..................................... 180 °C
- Maximum seal temperature ....................................... 165 °C

Accessories Required:

Filament connector .................................................. NEC VT-326

Note 1. The specified air flow should be directed vertically from a nozzle of approx. 70 mm diameter into the center of stem.
Note 2. Start forced-air-flow for each portion of the tube prior to the application of filament voltage. Continue air flow at least 3 minutes after removal of all voltages.

AF POWER AMPLIFIER AND MODULATOR-CLASS B

MAXIMUM RATINGS: Absolute Values

DC Plate Voltage ........................................... 15000 volts
Max.-Signal DC Plate Current (Note 3) ...................... 18 amps.
Max.-Signal Plate Input (Note 3) .......................... 270 kW
Plate Dissipation (Note 3) .................................. 150 kW

TYPICAL OPERATION: Values are for two tubes

DC Plate Voltage ........................................... 12000 14000 volts
DC Grid Voltage ............................................ -300 -340 volts
Peak AF Plate to Plate Voltage .............................. 19200 22400 volts
Zero-Signal DC Plate Current ................................ 2 2 amps.
Max.-Signal DC Plate Current ............................... 32 30 amps.
Max.-Signal DC Grid Current ............................... 1.72 1.24 amps.
Effective Load Resistance, Plate to Plate ................. 784 896 ohms
Max.-Signal Driving Power (approx.) ....................... 572 390 watts
Max.-Signal Power Output (approx.) ......................... 234 273 kW

Note 3. Averaged over any audio-frequency cycle of sine-wave form.

PLATE-MODULATED RF POWER AMPLIFIER-CLASS C TELEPHONY

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)
MAXIMUM RATINGS : Absolute Values

DC Plate Voltage ........................................ 12000 volts
DC Grid Voltage ........................................ -1500 volts
DC Plate Current ........................................ 16 amps.
DC Grid Current .......................................... 4.5 amps.
Plate Input ............................................... 190 kW
Plate Dissipation ........................................ 100 kW
Grid Dissipation .......................................... 2.5 kW

TYPICAL OPERATION :

DC Plate Voltage ........................................ 10000 10000 12000 volts
DC Grid Voltage ........................................ -530 -530 -720 volts
Peak RF Grid Voltage .................................. 980 1010 1300 volts
DC Plate Current ........................................ 10.4 13 14.5 amps.
DC Grid Current (approx.) ............................. 2.3 3 3.8 amps.
Power Output (approx.) ................................. 85.2 104 150 kW

RF POWER AMPLIFIER AND OSCILLATOR-CLASS C TELEGRAPHY
(Key-down conditions per tube without amplitude
modulation)

MAXIMUM RATINGS : Absolute Values

DC Plate Voltage ........................................ 15000 volts
DC Grid Voltage ........................................ -1500 volts
DC Plate Current ........................................ 20 amps.
DC Grid Current .......................................... 4.5 amps.
Plate Input ............................................... 300 kW
Plate Dissipation ........................................ 120 kW
Grid Dissipation .................................................. 2.5 kW

**TYPICAL OPERATION:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Plate Voltage</td>
<td>12000</td>
<td>15000</td>
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<tr>
<td>DC Grid Voltage</td>
<td>-1200</td>
<td>-1200</td>
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<td>(From a grid resistor of)</td>
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<td>400</td>
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<tr>
<td>Peak RF Grid Voltage</td>
<td>1890</td>
<td>1880</td>
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<tr>
<td>DC Plate Current</td>
<td>18</td>
<td>20</td>
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<tr>
<td>DC Grid Current</td>
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<td>3</td>
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<td>Driving Power (approx.)</td>
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<td>5.1 kW</td>
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<tr>
<td>Power Output (approx.)</td>
<td>177</td>
<td>233 kW</td>
</tr>
</tbody>
</table>
LIFTING BADGE

(Unit in mm)

Nippon Electric Company Ltd.