



**ELECTRON TUBE DEPARTMENT ■ COMPONENTS DIVISION**  
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY

**X-395\*  
BACKWARD WAVE  
AMPLIFIER  
TUBE**

## T E N T A T I V E

### GENERAL CHARACTERISTICS

The X-395 is an S-band backward wave amplifier tube with a helical wave propagation structure employing continuous beam operation. The tube is designed for use as a narrow band medium noise r-f amplifier with a pass band that can be electronically tuned over the frequency range of 2540 to 4050 megacycles.

The X-395 is a glass envelope tube mounted in an aluminum capsule and requires a solenoid to focus the electron beam. Type "TNC" female r-f connectors are included as an integral part of the capsule.

### ELECTRICAL DATA

|                   |                 |
|-------------------|-----------------|
| Frequency Range   | 2540 - 4050 mcs |
| Pass Band (3 db)  | 6 - 22 mcs      |
| Small Signal Gain | 20 db minimum   |
| Noise Figure      | 15 db maximum   |

### MECHANICAL DATA

|                   |                          |
|-------------------|--------------------------|
| Mounting Position | Any                      |
| Capsule Length    | 24 inches                |
| Capsule Diameter  | 1-3/8 inches             |
| Net Weight        | 3-1/2 pounds             |
| R-F Connectors    | Type "TNC" Female        |
| D-C Connections   | Color Coded Flying Leads |
| Cooling           | Not Required             |

\*This number identifies a particular experimental tube design, such number and identification data being subject to change without notice. This tube is for experimental purposes only, carries no obligation for future manufacture and should not be used for design purposes without prior arrangement.

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MAXIMUM RATINGS

|                         |                                        |
|-------------------------|----------------------------------------|
| Heater Voltage          | 6.5 Volts dc maximum                   |
| Heater Current          | 4 Amperes maximum                      |
| Cathode Voltage         | -250 to -1400 Volts maximum            |
| Cathode Current         | 4 ma maximum                           |
| Focus Voltage           | -10 to +10 Volts maximum)              |
| Anode No. 1 Voltage     | +5 to +80 Volts maximum )              |
| Anode No. 2 Voltage     | +5 to 200 Volts maximum ) with respect |
| Anode No. 3 Voltage     | +20 to 300 Volts maximum) to cathode   |
| Anode No. 4 Voltage     | +70 to 800 Volts maximum)              |
| Anode No. 5 Voltage)    |                                        |
| Helix No. 1 Voltage)    |                                        |
| Helix No. 2 Voltage)    |                                        |
| Capsule Voltage )       |                                        |
| Collector Voltage       | Zero Volts (Ground)                    |
| Focus Current           | 250 Volts maximum                      |
| Anode No. 1 Current     | .2 ma maximum                          |
| Anode No. 2 Current     | .2 ma maximum                          |
| Anode No. 3 Current     | .2 ma maximum                          |
| Anode No. 4 Current     | .2 ma maximum                          |
| Anode No. 5 Current     | .2 ma maximum                          |
| Helix No. 1 Current)    |                                        |
| Helix No. 2 Current)    |                                        |
| Capsule Current )       | .3 ma maximum                          |
| Collector Current       | 4 ma maximum                           |
| Solenoid Magnetic Field | 750 Gauss maximum                      |

TYPICAL OPERATION

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Frequency (Center of Pass Band) | 3500 megacycles                   |
| Pass Band (3 db)                | 14 megacycles                     |
| Small Signal Gain               | 24 db                             |
| Noise Figure                    | 12 db                             |
| Heater Voltage                  | 6.3 Vdc                           |
| Heater Current                  | 3.5 Adc                           |
| Cathode Voltage                 | -820 Vdc with respect to ground   |
| Cathode Current                 | 2.0 ma                            |
| Focus Voltage                   | -7 Vdc )                          |
| Anode No. 1 Voltage             | +18 Vdc )                         |
| Anode No. 2 Voltage             | +15 Vdc ) with respect to cathode |
| Anode No. 3 Voltage             | +200 Vdc)                         |
| Anode No. 4 Voltage             | +300 Vdc)                         |
| Anode No. 5 Voltage)            |                                   |
| Helix No. 1 Voltage)            |                                   |
| Helix No. 2 Voltage)            |                                   |
| Capsule Voltage )               |                                   |
| Collector Voltage               | Zero Volts (Ground)               |
|                                 | 200 Volts with respect to ground  |

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|                      |           |
|----------------------|-----------|
| Focus Current        | 0 ma      |
| Anode No. 1 Current  | .05 ma    |
| Anode No. 2 Current  | .02 ma    |
| Anode No. 3 Current  | .03 ma    |
| Anode No. 4 Current  | .05 ma    |
| Anode No. 5 Current  | .02 ma    |
| Helix No. 1 Current) |           |
| Helix No. 2 Current) | .03 ma    |
| Capsule Current )    |           |
| Collector Current    | 1.8 ma    |
| Magnetic Field       | 700 gauss |

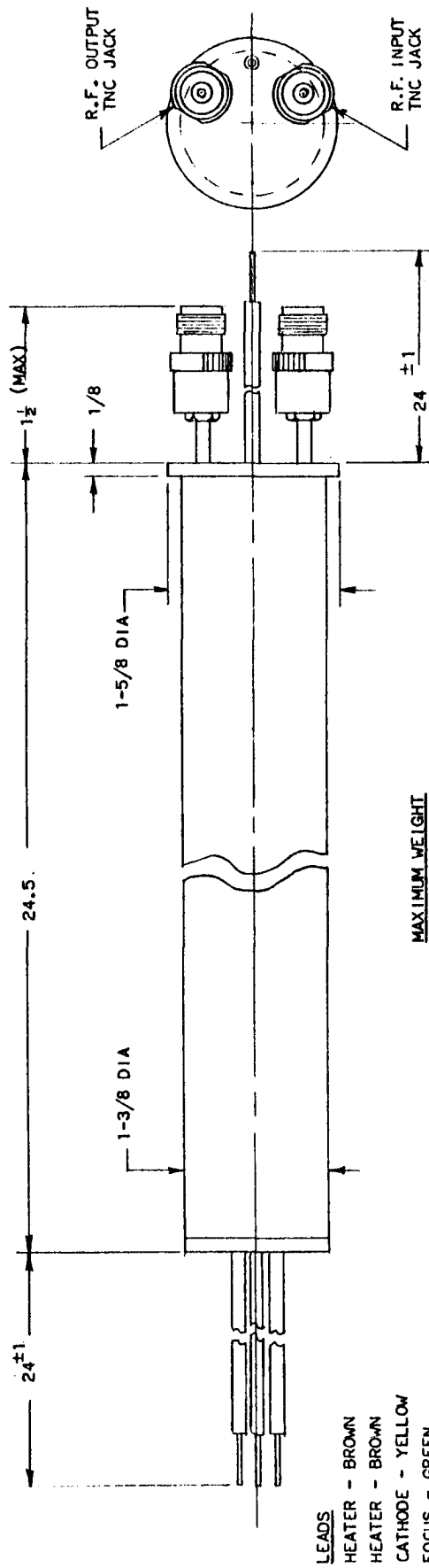
Additional information for specific applications can be obtained from the

Electron Tube Applications Section  
ITT Components Division  
P.O. Box 412  
Clifton, New Jersey

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TYPE X-395