

# 4CX7500A Power Tetrode



## GENERAL CHARACTERISTICS

### ELECTRICAL

|   |                         |     |
|---|-------------------------|-----|
| Filament: .....                                       | Thoriated Tungsten Mesh |     |
| Voltage .....   | 7.0 +/- 0.35            | V   |
| Current, at 7.0 Volts .....                           | 110                     | A   |
| Amplification Factor, average                         |                         |     |
| Grid to Screen .....                                  | 4.5                     |     |
| Direct Interelectrode Capacitances (Cathode Grounded) |                         |     |
| Cin .....   | 145                     | pF  |
| Cout .....  | 20                      | pF  |
| Cgp .....   | 0.5                     | pF  |
| Direct Interelectrode Capacitances (Grids Grounded)   |                         |     |
| Cin .....   | 74.1                    | pF  |
| Cout .....  | 20.6                    | pF  |
| Cpk .....   | 0.065                   | pF  |
| Maximum Frequency for Full Ratings (CW) .....         | 220                     | MHz |

### Mechanical

#### Maximum Overall Dimensions:

|   |                                   |
|---|-----------------------------------|
| Length .....  | 8.72 In, 21.5 cm                  |
| Diameter .....  | 5.66 in, 14.4 cm                  |
| Net Weight (approximate) .....  | 7.7 lbs, 3.5 kg                   |
| Operating Position .....  | Axis vertical, Base Up<br>or Down |
| Cooling .....   | Forced Air                        |
| Maximum Operating Temperature, Ceramic / Metal Seals and Anode Core ..... | 250 °C                            |
| Base .....  | Special Coaxial                   |

(Revised 10/13/94)



## P E N T A   L A B O R A T O R I E S

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### ELECTRON TUBES FOR INDUSTRY



# 4CX7500A Power Tetrode

## Radio Frequency Power Amplifier Class C Telegraphy or FM (Key Down Conditions)

### Absolute Maximum Conditions

|                          |      |         |
|--------------------------|------|---------|
| DC Plate Voltage .....   | 7500 | Volts   |
| DC Screen Voltage .....  | 1500 | Volts   |
| DC Grid Voltage .....    | -500 | Volts   |
| DC Plate Current.....    | 3.0  | Amperes |
| Plate Dissipation.....   | 7500 | Watts   |
| Screen Dissipation ..... | 165  | Watts   |
| Grid Dissipation .....   | 50   | Watts   |

### Typical Operation

|                          |      |      |      |      |
|--------------------------|------|------|------|------|
| Plate Voltage .....      | 6.5  | 6.5  | 6.5  | kVdc |
| Screen Voltage .....     | 635  | 750  | 750  | Vdc  |
| Grid Voltage .....       | -460 | -275 | -400 | Vdc  |
| Plate Current .....      | 2.1  | 2.2  | 2.4  | Adc  |
| Screen Current.....      | 195  | 128  | 140  | mAdc |
| Grid Current .....       | 185  | 90   | 95   | mAdc |
| Driving Power .....      | 247  | 100  | 130  | W    |
| Efficiency .....         | 79.3 | 77.6 | 77.0 | %    |
| Useful Output Power..... | 10.8 | 11.1 | 12.1 | kW   |
| Power Gain .....         | 16   | 20   | 19.7 | dB   |

## Radio Frequency Linear Amplifier Class AB1

### Absolute Maximum Ratings

|                          |      |         |
|--------------------------|------|---------|
| DC Plate Voltage .....   | 7500 | Volts   |
| DC Screen Voltage .....  | 1500 | Volts   |
| DC Grid Voltage .....    | -500 | Volts   |
| DC Plate Current.....    | 3.0  | Amperes |
| Plate Dissipation.....   | 7500 | Watts   |
| Screen Dissipation ..... | 165  | Watts   |
| Grid Dissipation .....   | 50   | Watts   |



## 4CX7500A Power Tetrode

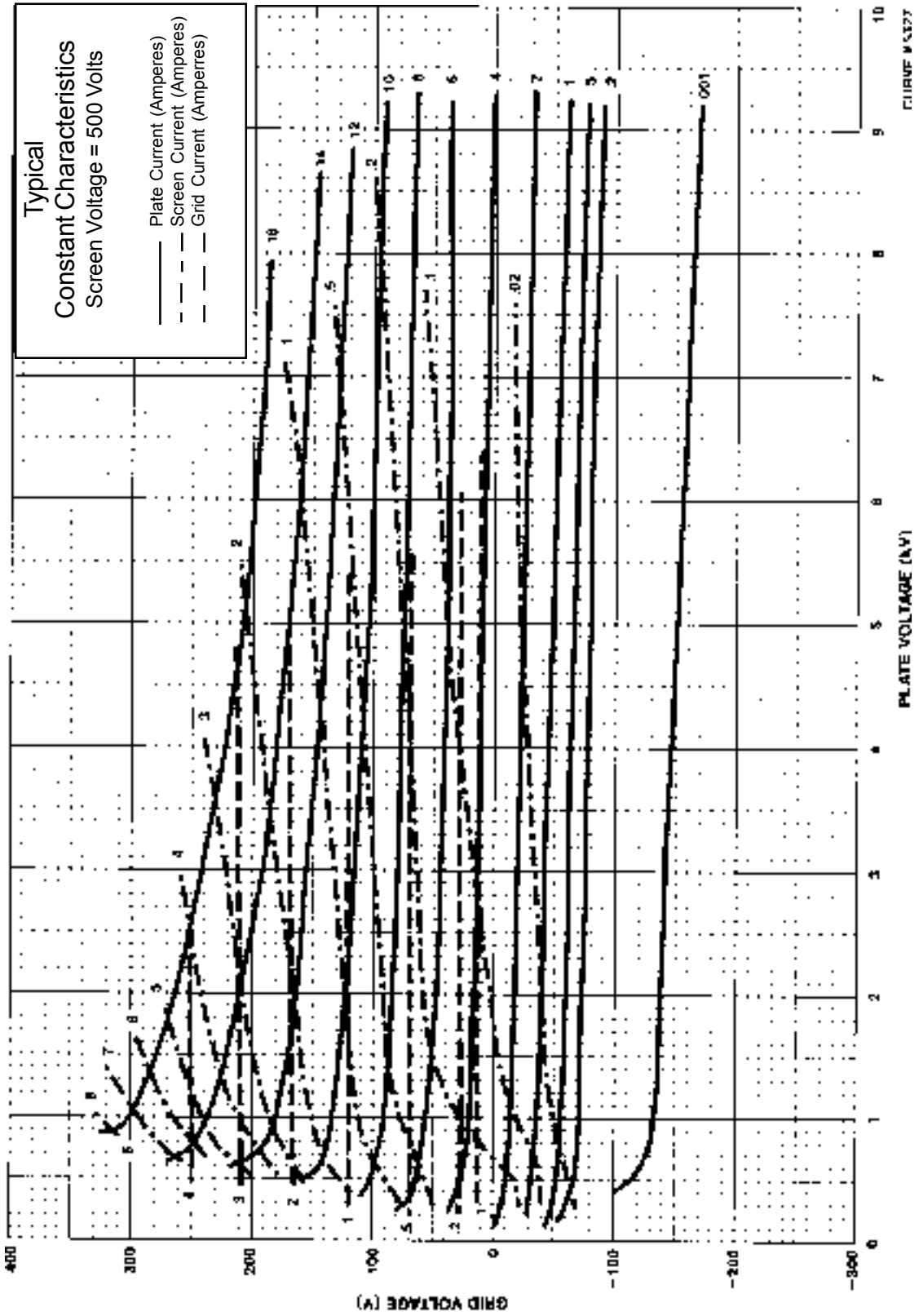
### Typical Operation

Peak Envelope or Modulation Crest Conditions (frequencies below 30 MHz)

|                                      |      |      |
|--------------------------------------|------|------|
| Plate Voltage .....                  | 7500 | Vdc  |
| Zero Signal Plate Current .....      | 750  | mAdc |
| Max. Signal Plate Current .....      | 2.2  | Adc  |
| Screen Voltage .....                 | 1250 | Vdc  |
| Screen Current .....                 | 95   | mAdc |
| Grid Bias Voltage .....              | -190 | Vdc  |
| Grid Current .....                   | 0    | mAdc |
| Useful Power Out .....               | 10   | kW   |
| Driving Power .....                  | 0    | W    |
| Intermodulation Distortion Products  |      |      |
| 3 <sup>rd</sup> Order Products ..... | -32  | dB   |
| 5 <sup>th</sup> Order Products ..... | -44  | dB   |

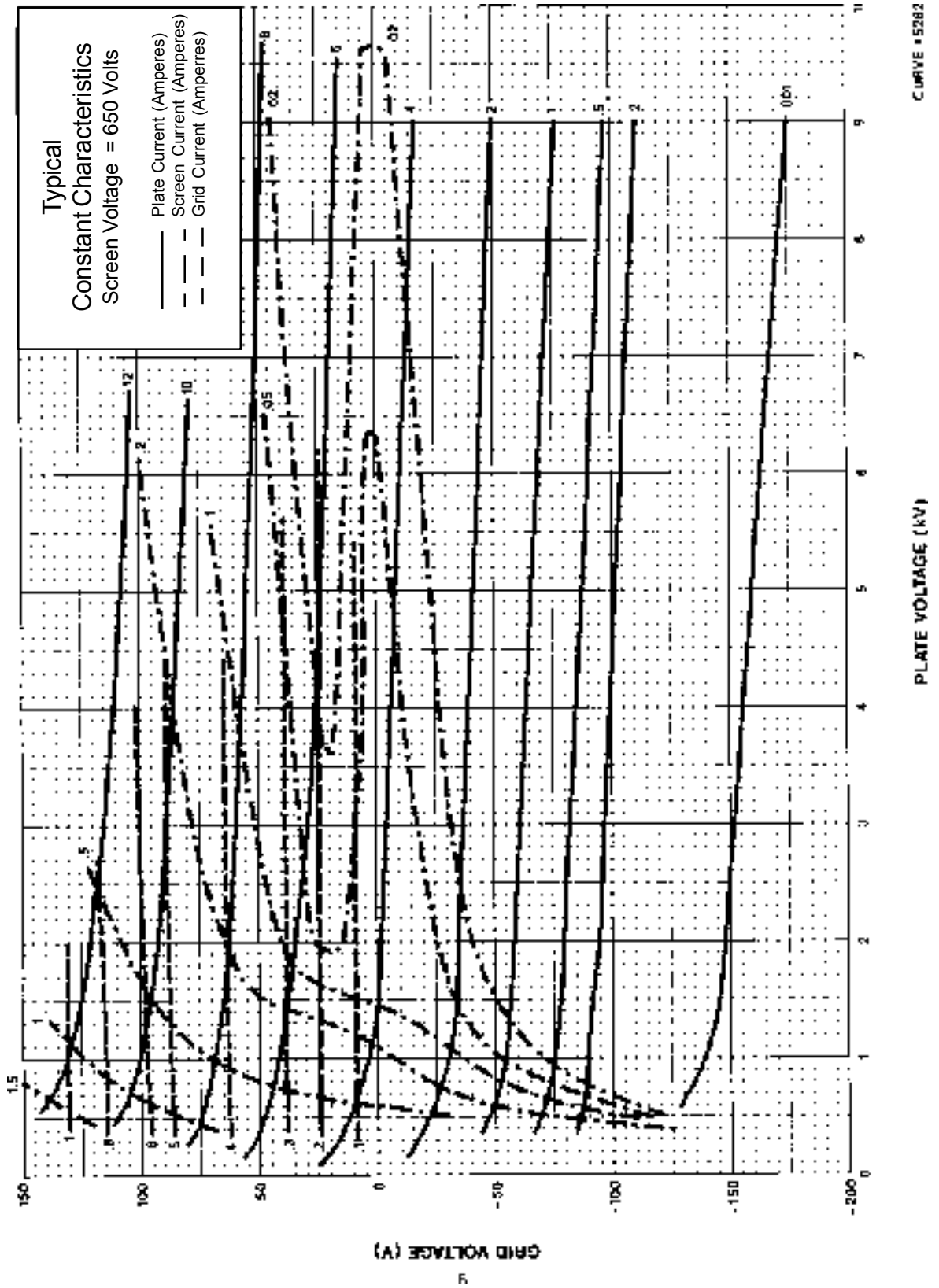


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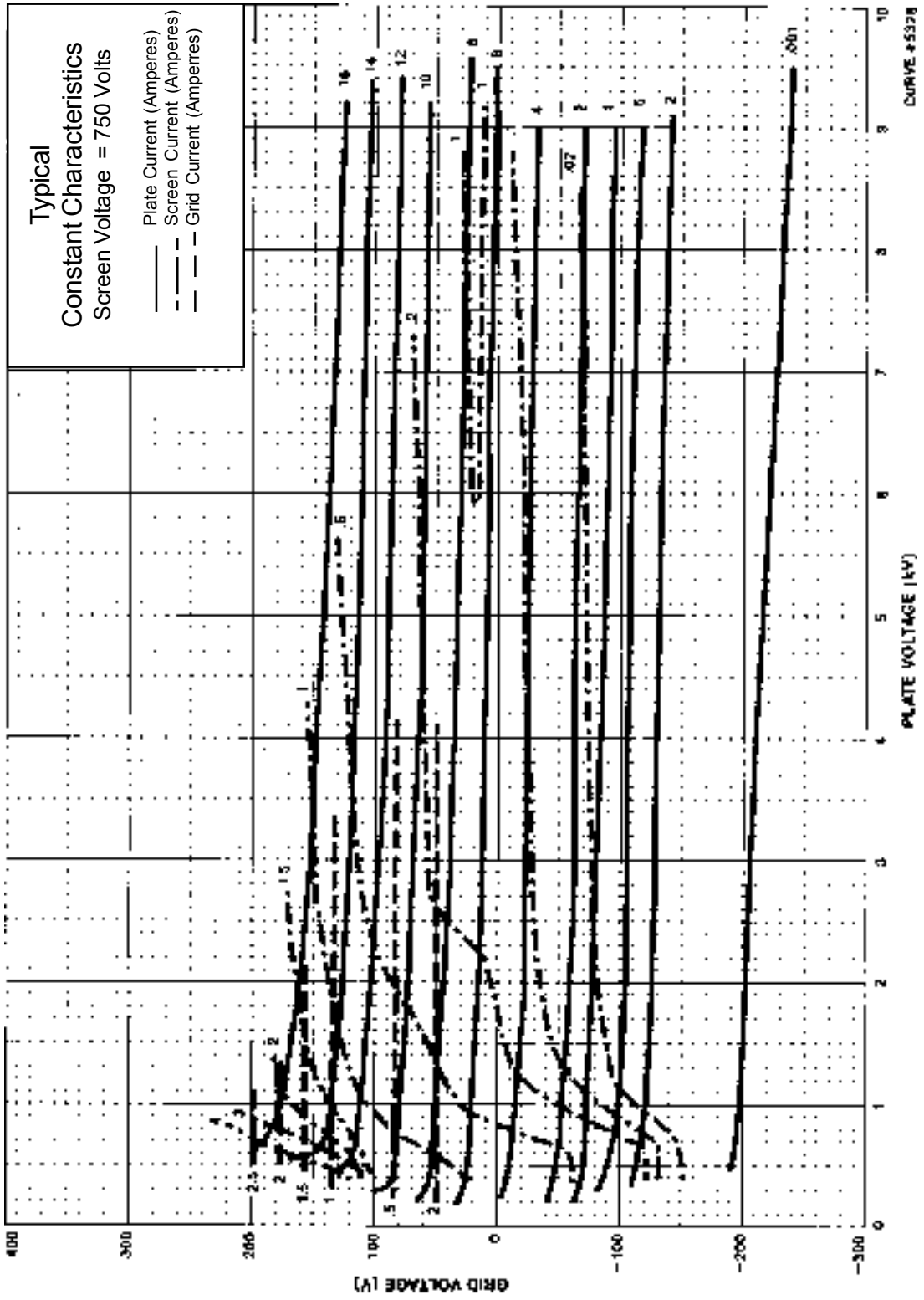


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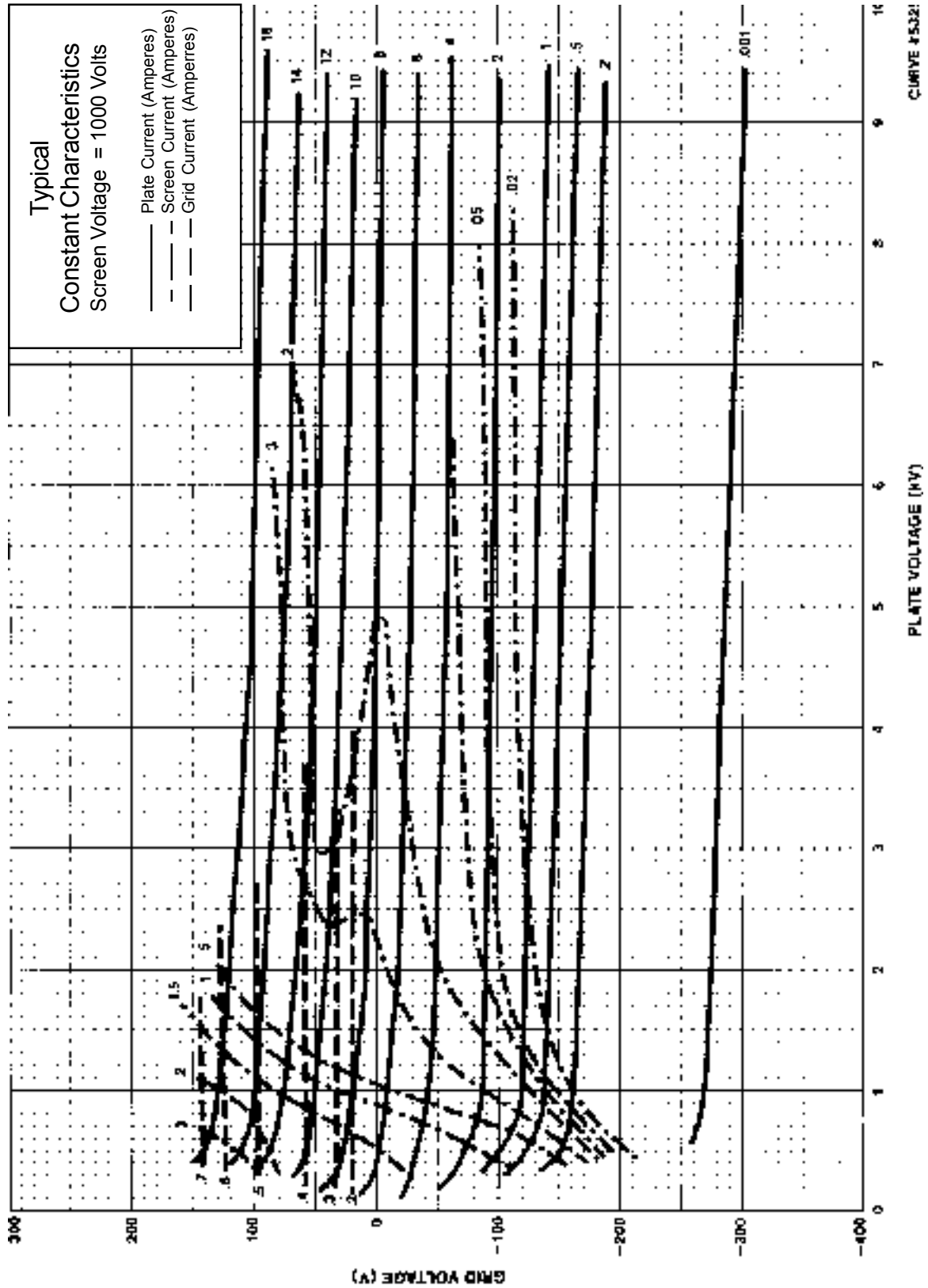


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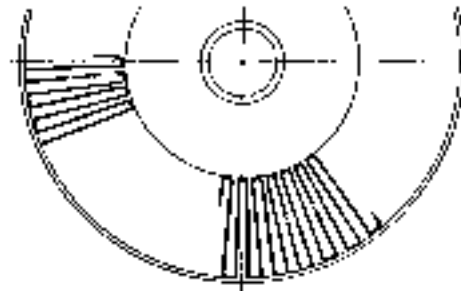


# 4CX7500A Power Tetrode





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| PERMITTED DATA |        |        |    |         |         |    |    |
|----------------|--------|--------|----|---------|---------|----|----|
| WV             | WV     | WV     | WV | WV      | WV      | WV | WV |
| 1              | 2.822  | 3.882  |    | 10.000  | 12.800  |    |    |
| 2              | 3.275  | 4.335  |    | 11.200  | 14.000  |    |    |
| 3              | 3.728  | 4.788  |    | 12.400  | 15.200  |    |    |
| 4              | 4.181  | 5.241  |    | 13.600  | 16.400  |    |    |
| 5              | 4.634  | 5.694  |    | 14.800  | 17.600  |    |    |
| 6              | 5.087  | 6.147  |    | 16.000  | 18.800  |    |    |
| 7              | 5.540  | 6.600  |    | 17.200  | 20.000  |    |    |
| 8              | 5.993  | 7.053  |    | 18.400  | 21.200  |    |    |
| 9              | 6.446  | 7.506  |    | 19.600  | 22.400  |    |    |
| 10             | 6.899  | 7.959  |    | 20.800  | 23.600  |    |    |
| 11             | 7.352  | 8.412  |    | 22.000  | 24.800  |    |    |
| 12             | 7.805  | 8.865  |    | 23.200  | 26.000  |    |    |
| 13             | 8.258  | 9.318  |    | 24.400  | 27.200  |    |    |
| 14             | 8.711  | 9.771  |    | 25.600  | 28.400  |    |    |
| 15             | 9.164  | 10.224 |    | 26.800  | 29.600  |    |    |
| 16             | 9.617  | 10.677 |    | 28.000  | 30.800  |    |    |
| 17             | 10.070 | 11.130 |    | 29.200  | 32.000  |    |    |
| 18             | 10.523 | 11.583 |    | 30.400  | 33.200  |    |    |
| 19             | 10.976 | 12.036 |    | 31.600  | 34.400  |    |    |
| 20             | 11.429 | 12.489 |    | 32.800  | 35.600  |    |    |
| 21             | 11.882 | 12.942 |    | 34.000  | 36.800  |    |    |
| 22             | 12.335 | 13.395 |    | 35.200  | 38.000  |    |    |
| 23             | 12.788 | 13.848 |    | 36.400  | 39.200  |    |    |
| 24             | 13.241 | 14.301 |    | 37.600  | 40.400  |    |    |
| 25             | 13.694 | 14.754 |    | 38.800  | 41.600  |    |    |
| 26             | 14.147 | 15.207 |    | 40.000  | 42.800  |    |    |
| 27             | 14.600 | 15.660 |    | 41.200  | 44.000  |    |    |
| 28             | 15.053 | 16.113 |    | 42.400  | 45.200  |    |    |
| 29             | 15.506 | 16.566 |    | 43.600  | 46.400  |    |    |
| 30             | 15.959 | 17.019 |    | 44.800  | 47.600  |    |    |
| 31             | 16.412 | 17.472 |    | 46.000  | 48.800  |    |    |
| 32             | 16.865 | 17.925 |    | 47.200  | 50.000  |    |    |
| 33             | 17.318 | 18.378 |    | 48.400  | 51.200  |    |    |
| 34             | 17.771 | 18.831 |    | 49.600  | 52.400  |    |    |
| 35             | 18.224 | 19.284 |    | 50.800  | 53.600  |    |    |
| 36             | 18.677 | 19.737 |    | 52.000  | 54.800  |    |    |
| 37             | 19.130 | 20.190 |    | 53.200  | 56.000  |    |    |
| 38             | 19.583 | 20.643 |    | 54.400  | 57.200  |    |    |
| 39             | 20.036 | 21.096 |    | 55.600  | 58.400  |    |    |
| 40             | 20.489 | 21.549 |    | 56.800  | 59.600  |    |    |
| 41             | 20.942 | 22.002 |    | 58.000  | 60.800  |    |    |
| 42             | 21.395 | 22.455 |    | 59.200  | 62.000  |    |    |
| 43             | 21.848 | 22.908 |    | 60.400  | 63.200  |    |    |
| 44             | 22.301 | 23.361 |    | 61.600  | 64.400  |    |    |
| 45             | 22.754 | 23.814 |    | 62.800  | 65.600  |    |    |
| 46             | 23.207 | 24.267 |    | 64.000  | 66.800  |    |    |
| 47             | 23.660 | 24.720 |    | 65.200  | 68.000  |    |    |
| 48             | 24.113 | 25.173 |    | 66.400  | 69.200  |    |    |
| 49             | 24.566 | 25.626 |    | 67.600  | 70.400  |    |    |
| 50             | 25.019 | 26.079 |    | 68.800  | 71.600  |    |    |
| 51             | 25.472 | 26.532 |    | 70.000  | 72.800  |    |    |
| 52             | 25.925 | 26.985 |    | 71.200  | 74.000  |    |    |
| 53             | 26.378 | 27.438 |    | 72.400  | 75.200  |    |    |
| 54             | 26.831 | 27.891 |    | 73.600  | 76.400  |    |    |
| 55             | 27.284 | 28.344 |    | 74.800  | 77.600  |    |    |
| 56             | 27.737 | 28.797 |    | 76.000  | 78.800  |    |    |
| 57             | 28.190 | 29.250 |    | 77.200  | 80.000  |    |    |
| 58             | 28.643 | 29.703 |    | 78.400  | 81.200  |    |    |
| 59             | 29.096 | 30.156 |    | 79.600  | 82.400  |    |    |
| 60             | 29.549 | 30.609 |    | 80.800  | 83.600  |    |    |
| 61             | 30.002 | 31.062 |    | 82.000  | 84.800  |    |    |
| 62             | 30.455 | 31.515 |    | 83.200  | 86.000  |    |    |
| 63             | 30.908 | 31.968 |    | 84.400  | 87.200  |    |    |
| 64             | 31.361 | 32.421 |    | 85.600  | 88.400  |    |    |
| 65             | 31.814 | 32.874 |    | 86.800  | 89.600  |    |    |
| 66             | 32.267 | 33.327 |    | 88.000  | 90.800  |    |    |
| 67             | 32.720 | 33.780 |    | 89.200  | 92.000  |    |    |
| 68             | 33.173 | 34.233 |    | 90.400  | 93.200  |    |    |
| 69             | 33.626 | 34.686 |    | 91.600  | 94.400  |    |    |
| 70             | 34.079 | 35.139 |    | 92.800  | 95.600  |    |    |
| 71             | 34.532 | 35.592 |    | 94.000  | 96.800  |    |    |
| 72             | 34.985 | 36.045 |    | 95.200  | 98.000  |    |    |
| 73             | 35.438 | 36.498 |    | 96.400  | 99.200  |    |    |
| 74             | 35.891 | 36.951 |    | 97.600  | 100.400 |    |    |
| 75             | 36.344 | 37.404 |    | 98.800  | 101.600 |    |    |
| 76             | 36.797 | 37.857 |    | 100.000 | 102.800 |    |    |
| 77             | 37.250 | 38.310 |    | 101.200 | 104.000 |    |    |
| 78             | 37.703 | 38.763 |    | 102.400 | 105.200 |    |    |
| 79             | 38.156 | 39.216 |    | 103.600 | 106.400 |    |    |
| 80             | 38.609 | 39.669 |    | 104.800 | 107.600 |    |    |
| 81             | 39.062 | 40.122 |    | 106.000 | 108.800 |    |    |
| 82             | 39.515 | 40.575 |    | 107.200 | 110.000 |    |    |
| 83             | 39.968 | 41.028 |    | 108.400 | 111.200 |    |    |
| 84             | 40.421 | 41.481 |    | 109.600 | 112.400 |    |    |
| 85             | 40.874 | 41.934 |    | 110.800 | 113.600 |    |    |
| 86             | 41.327 | 42.387 |    | 112.000 | 114.800 |    |    |
| 87             | 41.780 | 42.840 |    | 113.200 | 116.000 |    |    |
| 88             | 42.233 | 43.293 |    | 114.400 | 117.200 |    |    |
| 89             | 42.686 | 43.746 |    | 115.600 | 118.400 |    |    |
| 90             | 43.139 | 44.199 |    | 116.800 | 119.600 |    |    |
| 91             | 43.592 | 44.652 |    | 118.000 | 120.800 |    |    |
| 92             | 44.045 | 45.105 |    | 119.200 | 122.000 |    |    |
| 93             | 44.498 | 45.558 |    | 120.400 | 123.200 |    |    |
| 94             | 44.951 | 46.011 |    | 121.600 | 124.400 |    |    |
| 95             | 45.404 | 46.464 |    | 122.800 | 125.600 |    |    |
| 96             | 45.857 | 46.917 |    | 124.000 | 126.800 |    |    |
| 97             | 46.310 | 47.370 |    | 125.200 | 128.000 |    |    |
| 98             | 46.763 | 47.823 |    | 126.400 | 129.200 |    |    |
| 99             | 47.216 | 48.276 |    | 127.600 | 130.400 |    |    |
| 100            | 47.669 | 48.729 |    | 128.800 | 131.600 |    |    |

- NOTES:**
1. ALL DIMENSIONS ARE FOR INFO ONLY & ARE NOT REQUIRED FOR IMPROVED MANUFACTURING.
  2. DIMENSIONS IN [ ] ARE MILLIMETERS.
  3. ALL CONTACT SURFACES.
  4. PIN SPACINGS AND OTHER DIMENSIONS ARE FOR SOONA DESIGN PURPOSES.

