

**TUNG-SOL****CATHODE RAY**

THE 21BSP4 IS A DIRECT VIEW PICTURE TUBE DESIGNED FOR TELEVISION APPLICATIONS. ITS FEATURES INCLUDE:

|                                 |                                |
|---------------------------------|--------------------------------|
| GRAY FILTER FACEPLATE           | ALUMINIZED SCREEN              |
| MAGNETIC FOCUS AND DEFLECTION   | EXTERNAL CONDUCTIVE COATING    |
| RECTANGULAR GLASS CONSTRUCTION  | EXTERNAL SINGLE FIELD ION TRAP |
| 19 1/16" X 15 1/16" RASTER SIZE |                                |

**ELECTRICAL DATA**

|                                               |      |          |
|-----------------------------------------------|------|----------|
| FOCUSING METHOD                               |      | MAGNETIC |
| DEFLECTING METHOD                             |      | MAGNETIC |
| DEFLECTION ANGLE (APPROX.)                    |      |          |
| HORIZONTAL                                    | 85   | DEGREES  |
| DIAGONAL                                      | 90   | DEGREES  |
| DIRECT INTERELECTRODE CAPACITANCES (APPROX.): |      |          |
| CATHODE TO ALL OTHER ELECTRODES               | 5    | $\mu f$  |
| GRID #1 TO ALL OTHER ELECTRODES               | 6    | $\mu f$  |
| MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE  | 2500 | $\mu f$  |
| MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE  | 2000 | $\mu f$  |

**OPTICAL DATA**

|                                             |                 |         |
|---------------------------------------------|-----------------|---------|
| PHOSPHOR NUMBER                             | SULFIDE TYPE    | P-4     |
| FLUORESCENT COLOR                           |                 | WHITE   |
| PHOSPHORESCENT COLOR                        |                 | WHITE   |
| PERSISTENCE                                 | SHORT TO MEDIUM |         |
| FACEPLATE TRANSMISSION AT CENTER (APPROX.): | 74              | PERCENT |

**RATINGS**

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

|                                                |               |          |
|------------------------------------------------|---------------|----------|
| HEATER VOLTAGE                                 | 6.3           | VOLTS    |
| HEATER CURRENT                                 | 0.6 $\pm 5\%$ | AMP.     |
| MAXIMUM DC ANODE VOLTAGE                       | 22 000        | VOLTS    |
| MAXIMUM DC GRID #2 VOLTAGE                     | 550           | VOLTS    |
| MAXIMUM GRID #1 VOLTAGE:                       |               |          |
| DC NEGATIVE-BIAS VALUE                         | 155           | VOLTS    |
| DC POSITIVE-BIAS VALUE                         | 0             | VOLTS    |
| POSITIVE-PEAK VALUE                            | 2             | VOLTS    |
| MAXIMUM DC PEAK HEATER-CATHODE VOLTAGE:        |               |          |
| HEATER NEGATIVE WITH RESPECT TO CATHODE        |               |          |
| DURING WARM-UP PERIOD NOT TO EXCEED 15 SECONDS | 450           | VOLTS    |
| AFTER EQUIPMENT WARM-UP PERIOD                 | 200           | VOLTS    |
| HEATER POSITIVE WITH RESPECT TO CATHODE        | 200           | VOLTS    |
| MAXIMUM GRID #1 CIRCUIT RESISTANCE             | 1.5           | MEG OHMS |
| HEATER WARM-UP TIME (APPROX.)*                 | 11.0          | SECONDS  |

**TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS**

|                                                 |                |          |
|-------------------------------------------------|----------------|----------|
| DC ANODE VOLTAGE                                | 16 000         | VOLTS    |
| DC GRID #2 VOLTAGE                              | 300            | VOLTS    |
| DC GRID #1 VOLTAGE <sup>A</sup>                 | -28 TO -72     | VOLTS    |
| DC FOCUSING COIL CURRENT (APPROX.) <sup>B</sup> | 116 $\pm 15\%$ | MA.      |
| DC ION TRAP MAGNET STANDARD COIL #117 (APPROX.) | 30             | MA.      |
| DC ION TRAP MAGNET RATED STRENGTH               | 33             | GAUSSSES |

<sup>A</sup> VISUAL EXTINCTION OF FOCUSED RASTER.

<sup>B</sup> FOR STANDARD FOCUS COIL #109, OR EQUIVALENT, WITH THE COMBINED GRID #1 BIAS VOLTAGE AND VIDEO-SIGNAL VOLTAGE ADJUSTED TO PRODUCE A HIGHLIGHT BRIGHTNESS OF 20 FOOT LAMBERTS ON A 15 1/16" BY 19 1/16" PICTURE SIZE.

\* HEATER WARM-UP TIME IS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TERMINALS TO INCREASE TO 5.0 VOLTS IN THE JETEC TEST CIRCUIT, WITH  $E=25$  VOLTS AND SERIES  $R=31.5$  OHMS.

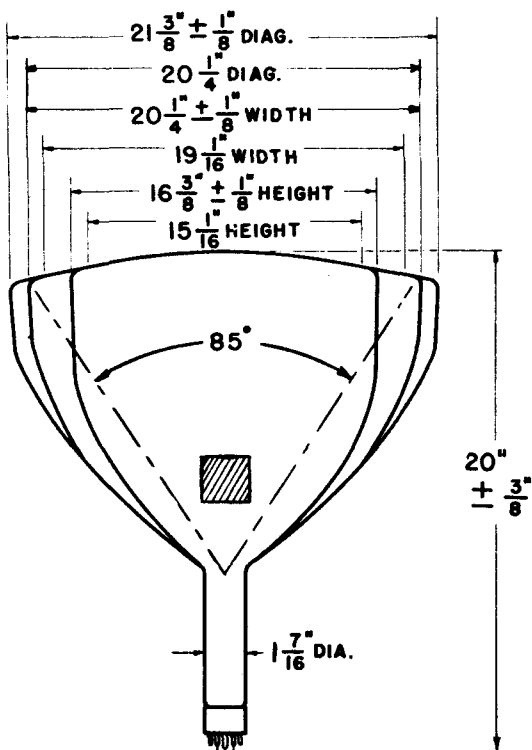
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## TUNG-SOL

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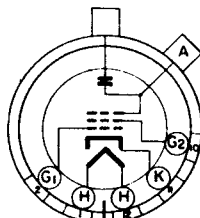
## MECHANICAL DATA

|                                                        |                            |        |
|--------------------------------------------------------|----------------------------|--------|
| OVERALL LENGTH                                         | 20 ± 3/8                   | INCHES |
| GREATEST DIMENSIONS OF BULB:                           |                            |        |
| DIAGONAL                                               | 21 3/8 ± 1/8               | INCHES |
| WIDTH                                                  | 20 1/4 ± 1/8               | INCHES |
| HEIGHT                                                 | 16 3/8 ± 1/8               | INCHES |
| MIN. USEFUL SCREEN DIMENSIONS:                         |                            |        |
| DIAGONAL                                               | 20 1/4                     | INCHES |
| WIDTH                                                  | 19 1/16                    | INCHES |
| HEIGHT                                                 | 15 1/16                    | INCHES |
| BULB CONTACT                                           | RECESSED SMALL CAVITY CAP  | J1-21  |
| BASE                                                   | SMALL SHELL DUODECAL 5 PIN | B5-57  |
| BASING                                                 |                            | 12N    |
| BULB CONTACT ALIGNMENT                                 |                            |        |
| J1-21 CONTACT ALIGNS WITH PIN POSITION #6 ± 30 DEGREES |                            |        |



## PIN CONNECTIONS

PIN 1 - HEATER  
 PIN 2 - GRID #1  
 PIN 10 - GRID #2  
 PIN 11 - CATHODE



PIN 12 - HEATER  
 ANODE CAP:  
 GRID NO.3

BOTTOM VIEW