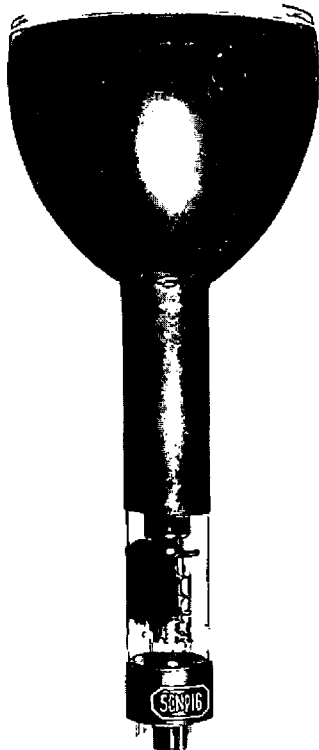


Toshiba

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REGISTRATION DATA

Type **5CNP16**

Date issued Jan. 31, 1959



Toshiba 5CNP16 is a 5-inch flying-spot cathode-ray tube for black and white television, with flat face, electrostatic focus, and magnetic deflection type, specially designed for the operation at the low anode voltage. This tube has an aluminized P16 screen, extremely short persistence, and excellent brightness, and gives sufficient small spot size and brightness, at the anode voltage 20 kV. This tube has many merits for design and maintenance of power supply and deflection system of equipments, compare with conventional types.

General :

Heater, for Unipotential Cathode :

Voltage (AC or DC)	6.3 volts
Current	0.6 amp

Direct Interelectrode Capacitance :

Grid No. 1 to all other electrodes	6 $\mu\mu\text{f}$
Cathode to all other electrodes	5 $\mu\mu\text{f}$
External conductive neck coating	500 max. $\mu\mu\text{f}$
to ultor	100 min. $\mu\mu\text{f}$

Faceplate, Flat	Clear Glass
Phosphor	P 16
Fluorescence	Violet and Near Ultraviolet
Phosphorescence	Violet and Near Ultraviolet
Persistence	Extremely Short
Focusing Method	Electrostatic
Deflection Method	Magnetic
Deflection Angle (Approx.)	50 degrees
Overall Length	14 $\frac{3}{8}$ " \pm $\frac{3}{8}$ "
Greatest Diameter	5" \pm $\frac{1}{8}$ "
Minimum Useful Screen Diameter	4 $\frac{1}{4}$ "
Cap	JEDEC No. J1-21
Base	JEDEC No. B 6-63
Mounting Position	Any

Maximum Ratings, (Design-center Values):

Ultor* Voltage	20000 max. volts DC
Grid-No. 3 Voltage	3500 max. volts DC
Grid-No. 2 Voltage	410 max. volts DC
Grid-No. 1 Voltage:	
Negative bias value	125 max. volts DC
Positive bias value	0 max. volts DC
Positive peak value	2 max. volts
Peak Heater-Cathode Voltage:	
Heater negative with respect to cathode:	
During equipment warm-up period not exceeding 15 seconds	410 max. volts
After equipment warm-up period	150 max. volts
Heater positive with respect to cathode	150 max. volts

Characteristics Range Values for Equipment Design:

For any ultor voltage (E_{C4}) between 16500 and 20000 volts	
Grid-No. 3 voltage for focus with ultor current of 100 μ amp.	11.7% to 15.9% of E_{C4} volts
Grid-No. 1 voltage for visual extention	
of undeflected focused spot when circuit design utilizes	
grid-No. 2 voltage (E_{C2}) at fixed value	11% to 26% of E_{C2} volts



Maximum Grid-No. 3 current for ultor current of 200 μ amp.

Grid-No. 2 current -15 to +15 μ amp

Examples of Use of Design Ranges :

For ultor voltage of 20000 volts DC

Grid-No. 3 voltage for Focus with ultor current of 100 μ amp. 2220 to 3160 volts DC

Grid-No. 2 voltage 200 volts DC

Grid-No. 1 voltage for visual extinction of undeflected focus spot -22 to -52 volts DC

Maximum Circuit Values :

Grid-No. 1-Circuit Resistance 1.5 max. megohms

* The "ultor" in a cathode-ray tube is the electrode to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection. In the 5CNP16, the ultor function is performed by Grid No. 4. Since grid No. 4 and collector are connected together within the 5CNP16, they are collectively referred to simply as "ultor" for convenience in presenting data and curves. Brilliance and definition decrease with decreasing ultor voltage. In general, the ultor voltage should not be less than 18000 volts.

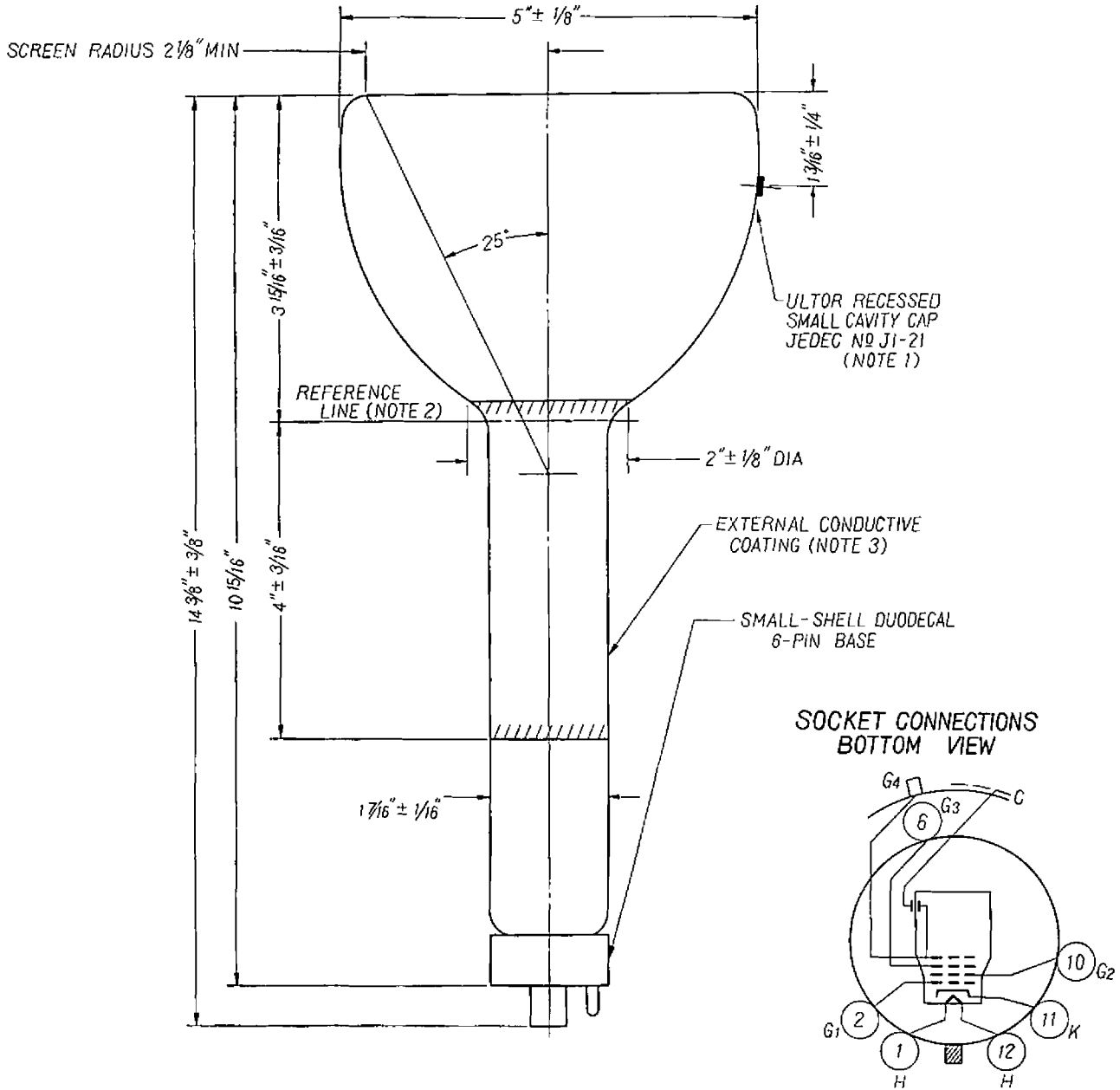
OPERATING CONSIDERATIONS

The maximum ratings in the tabulated data are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in equipment designed so that these maximum ratings will not be exceeded when the equipment is operated from ac or dc power-line supplies whose normal voltage including normal variations fall which in ± 10 per cent of the line-center voltage value of 100 volts.

Resolutions of better than 1000 lines at center of the reproduced picture can be produced by the 5CNP16 when it is operated which 20000 volts on the ultor. At lower ultor voltages, the resolution capability decreases.

For the best picture quality, you may operate this tube with selected multiplier photo tubes. Toshiba prepares a excellent multiplier photo tube type "M7309" for these purposes.

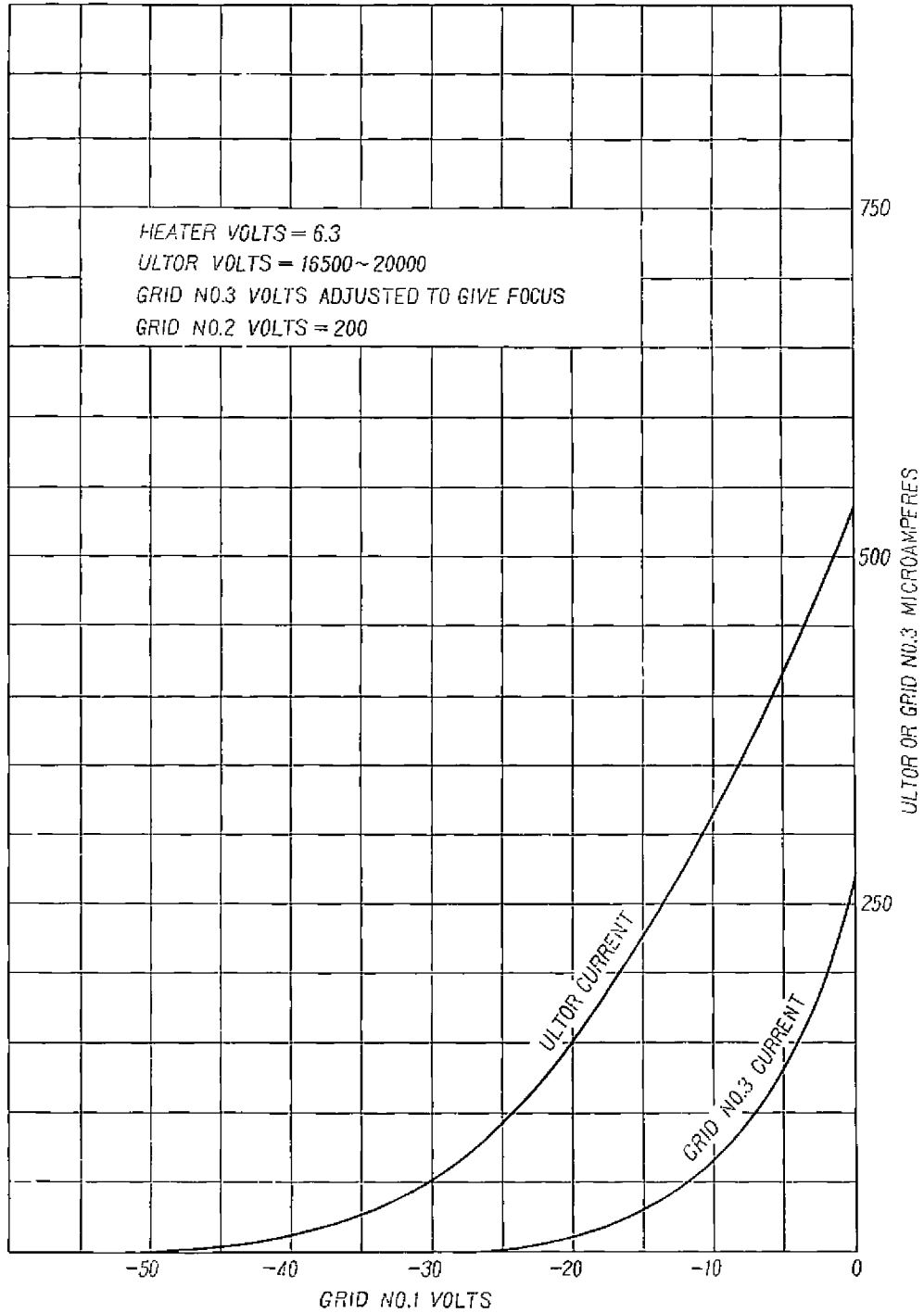
DIMENSIONAL OUTLINE



- Note 1: The plane through the tube axis and vacant pin position No. 3 may vary from the plane through the tube axis and ultor terminal by an angular tolerance (measured about the axis) of $\pm 10^\circ$. Ultor terminal is on same side as vacant pin position No. 6.
- Note 2: Reference line is determined by position where hinged gauge $1.500\text{''} + 0.03\text{''} - .000\text{''}$ and 2'' long will rest on bulb cone.
- Note 3: External conductive coating must be grounded.

- Socket contact corresponding to vacant pin position 3, 4, 5, 7, 8 and 9 should be removed.
- Pin 1: Heater
Pin 2: Grid No. 1
Pin 6: Grid No. 3
Pin 10: Grid No. 2
Pin 11: Cathode
Pin 12: Heater
Cap: Ultor (Grid No. 4 collector)
C: External conductive neck coating

5CNP16 AVERAGE CHARACTERISTICS



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All inquiries as to the data should be addressed to Tokyo Shibaura Electric Co., Ltd., Lamp and Tube Manufacturing and Sales Division, 72 Horikawacho, Kawasaki, Kanagawa-Ken, Japan.