

CENTRAL ELECTRONIC

MANUFACTURERS

DENVILLE, NEW JERSEY

POWER
TRIODE

TYPE

5680

PLATE DISSIPATION
—2.5KW

POWER TRIODE

DESCRIPTION

The Nucor tube type 5680 is a forced-air-cooled general purpose, three electrode tube, specifically designed for industrial and communication applications. The anode is capable of dissipating 2.5 kilowatts. It features a sturdily-supported, double-spiral thoriated tungsten filament. Rugged kovar grid and filament seals insure greater protection against mechanical stress and shock. The wide spacing between elements is an additional feature of this tube. Full input ratings apply to 30 mc. Reduced ratings as indicated, are applicable for useful power outputs extending to 50 mc.

SPECIFICATIONS

ELECTRICAL:

Filament Voltage 13.0 Volts
Filament Current 36 Amperes
Filament Starting Current 72 Amperes
Filament Cold Resistance 0.040 ohms
Amplification Factor 25
 $E_c = -200V, I_b = 0.2A$

Interelectrode Capacitances

Grid-Plate 12.0 $\mu\mu f$
Grid-Filament 15.0 $\mu\mu f$
Plate-Filament 1.8 $\mu\mu f$

PHYSICAL:

Mounting Position — Vertical, Anode Down
Type of Cooling — Forced Air Maximum Incoming
Air Temperature 45°C
Required Air Flow on Anode Plate Dissipation
(Kilowatts) 2.5 2.0 1.5
Air Flow — Cubic
Feet Per Min. 150 120 90
Pressure — Inches
Water 2.5 1.6 0.9
Maximum Glass Temperature 150°C
Net Weight, Approximate 5¼ Pounds



DIVISION OF NUCLEAR CORPORATION OF AMERICA

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR -- CLASS B

MAXIMUM RATINGS, ABSOLUTE VALUES

DC Plate Voltage	6,000 Volts
Maximum Signal DC Plate Current*	2.0 Amperes
Maximum Signal Plate Input*	6.0 Kilowatts
Plate Dissipation*	2.5 Kilowatts

TYPICAL OPERATION

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	5,000 Volts
DC Grid Voltage	—150 Volts
Peak A-F Grid-to-Grid Voltage	1,260 Volts
Zero Signal DC Plate Current	0.4 Amperes
Maximum Signal DC Plate Current	2.25 Amperes
Effective Load Resistance, Plate to Plate	4,000 Ohms
Maximum Signal Driving Power, Approximate	175 Watts
Maximum Signal Power Output, Approximate	7.2 Kilowatts

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

RADIO-FREQUENCY POWER AMPLIFIER -- CLASS B

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

MAXIMUM RATINGS, ABSOLUTE VALUES

DC Plate Voltage	6,000 Volts
DC Plate Current	1.5 Amperes
Plate Input	3.75 Kilowatts
Plate Dissipation	2.5 Kilowatts

TYPICAL OPERATION

DC Plate Voltage	6,000 Volts
DC Grid Voltage	—160 Volts
Peak R-F Grid Voltage	300 Volts
DC Plate Current	0.56 Amperes
DC Grid Current, Approximate	0.0 Amperes
Driving Power, Approximate**	47 Watts
Power Output, Approximate	1 Kilowatt

**At crest of audio-frequency cycle with modulation factor of 1.0.

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR -- PULSED OPERATION

MAXIMUM RATINGS, ABSOLUTE VALUES

DC Plate Voltage	17,500 Volts
DC Grid Voltage	—5,000 Volts
Peak Cathode Current	.35 Amperes
Plate Dissipation †	1.2 Kilowatts
Duty Cycle	.030

† Air Flow = 75 CFM

PLATE-MODULATED RADIO-FREQUENCY 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	5,000 Volts
DC Grid Voltage	—2,000 Volts
DC Plate Current	1.5 Amperes
DC Grid Current	0.2 Amperes
Plate Input	7.5 Kilowatts
Plate Dissipation	1.6 Kilowatts

TYPICAL OPERATION

DC Plate Voltage	5,000 Volts
DC Grid Voltage	—800 Volts
Peak R-F Grid Voltage	1,370 Volts
DC Plate Current	0.74 Amperes
DC Grid Current, Approximate	0.10 Amperes
Driving Power, Approximate	130 Watts
Power Output, Approximate	2.7 Kilowatts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR CLASS C TELEGRAPHY

(Key-down conditions per tube without amplitude modulation) †

MAXIMUM RATINGS, ABSOLUTE VALUES

DC Plate Voltage	6,000 Volts
DC Grid Voltage	—2,000 Volts
DC Plate Current	2.0 Amperes
DC Grid Current	0.2 Amperes
Plate Input	12 Kilowatts
Plate Dissipation	2.5 Kilowatts

TYPICAL OPERATION

DC Plate Voltage	6,000 Volts
DC Grid Voltage	—800 Volts
Peak R-F Grid Voltage	1,510 Volts
DC Plate Current	1.4 Amperes
DC Grid Current, Approximate	0.16 Amperes
Driving Power, Approximate	225 Watts
Power Output, Approximate	6 Kilowatts

† Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.

TYPICAL OPERATION

DC Plate Voltage	15,500 Volts
DC Grid Voltage (during pulse)	—750 Volts
DC Plate Current	0.20 Amperes
DC Grid Current	0.013 Amperes
Duty Cycle	.023
Peak Power Output	90 Kilowatts

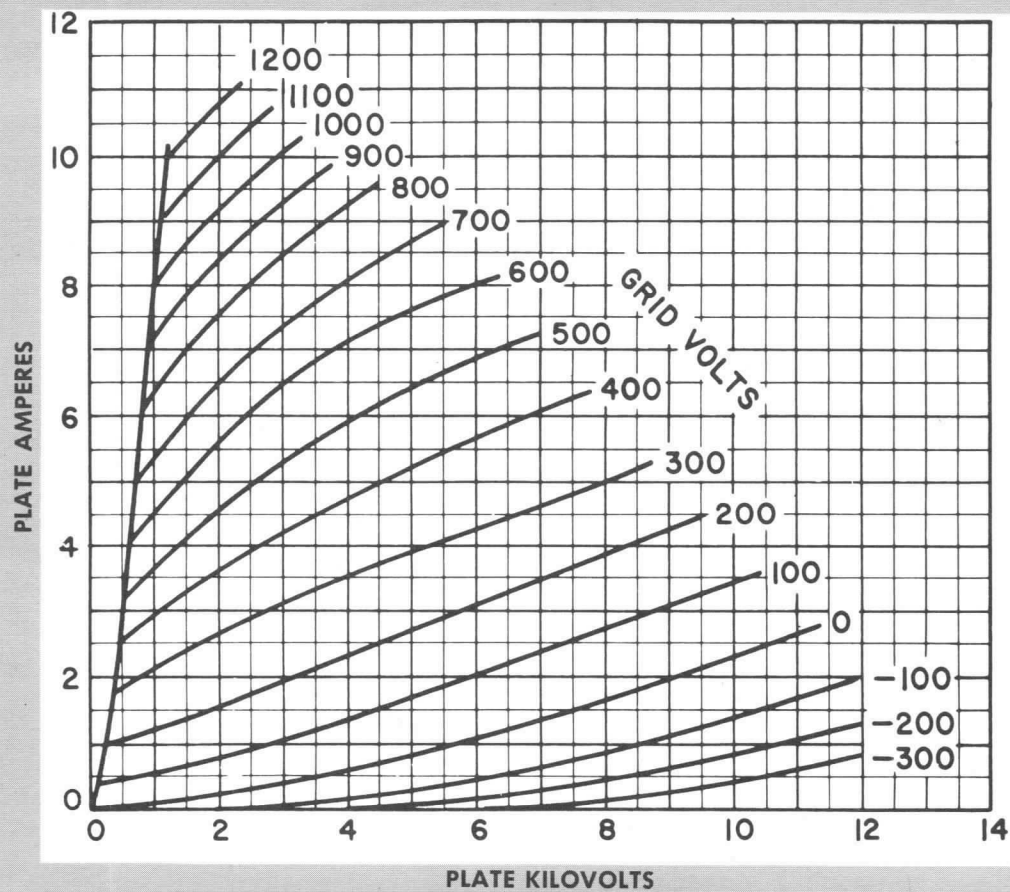
MAXIMUM RATINGS vs. OPERATING FREQUENCY

Frequency	30
Percentage of Maximum rated Plate Voltage and Plate Input	
Class C — Telegraphy	100

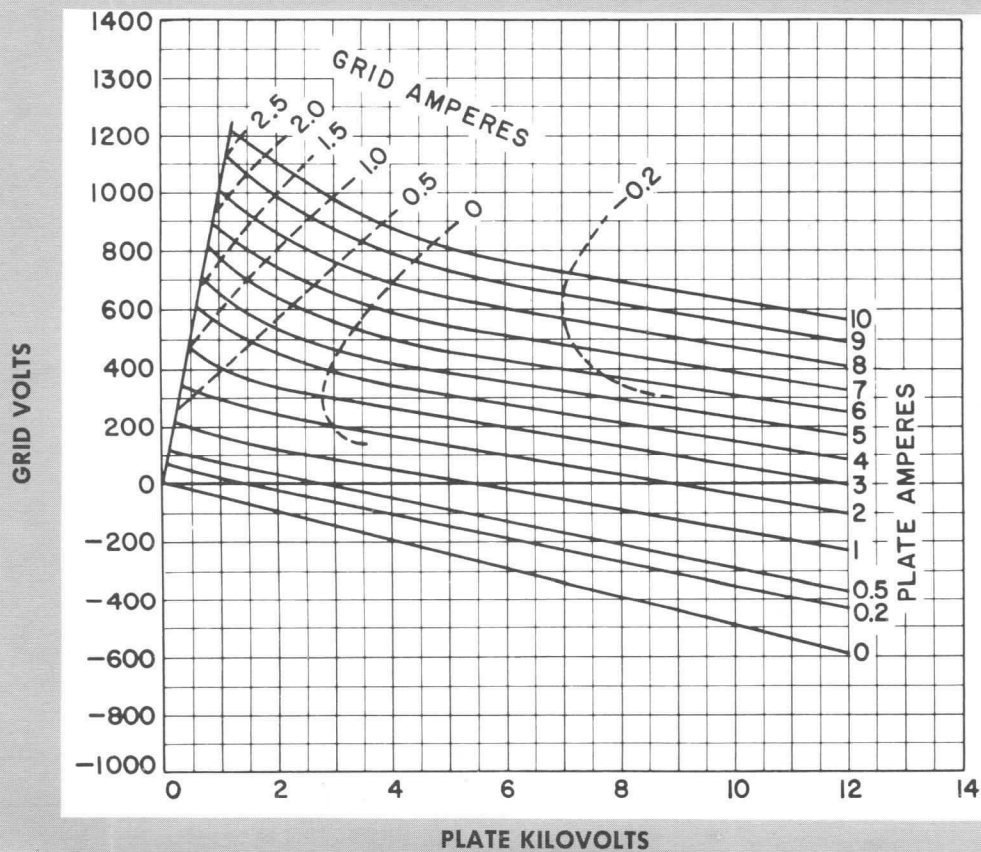
50 Megacycles

75 Per Cent

PLATE CHARACTERISTICS



CONSTANT CURRENT CHARACTERISTICS



POWER
TRIODE

TYPE

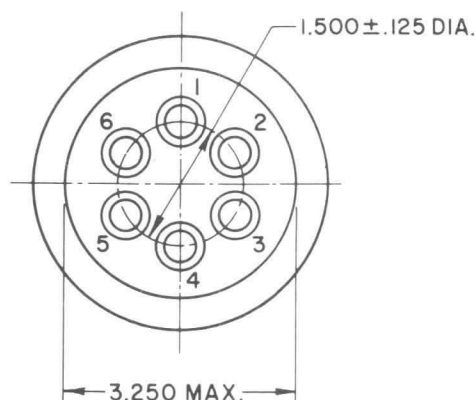
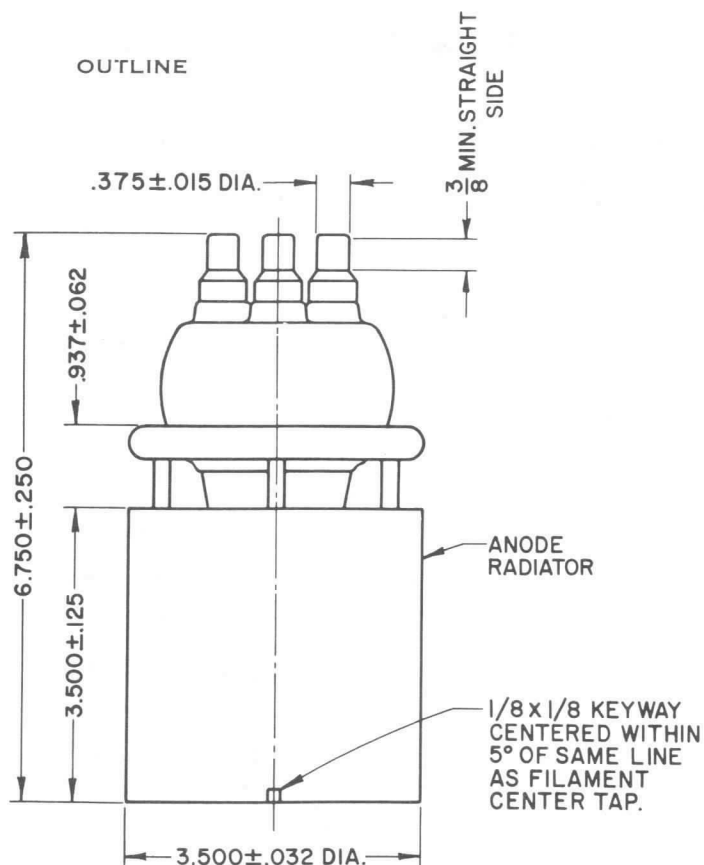
5680

PLATE DISSIPATION
—2.5KW

CENTRAL ELECTRONIC

MANUFACTURERS

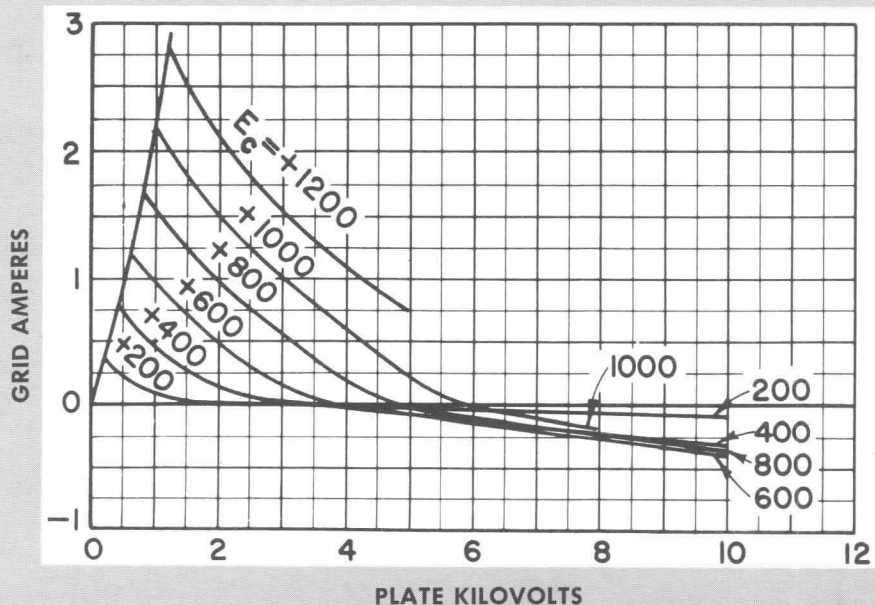
DENVILLE, NEW JERSEY



TERMINAL COLOR CODE

- 1=GRID -- BLACK
- 2=FIL. -- YELLOW
- 3=GRID -- BLACK
- 4=F.C.T. -- RED
- 5=GRID -- BLACK
- 6=FIL. -- YELLOW

GRID CHARACTERISTICS



DIVISION OF NUCLEAR CORPORATION OF AMERICA