EIMAC

A Division of Varian Associates

SAN CARLOS, CALIFORNIA

Tentative Data

X3034

POWER AMPLIFIER S-BAND (1.1 KW CW) TWT

The Eimac X3034 is a power-amplifier TWT intended for use in broadband communications systems. It is designed to operate at frequencies from 1.7 to 2.1 gigacycles with a minimum output power of 1.1 kilowatts. The electron gun of this TWT has a confined flow configuration which makes focusing adjustments unnecessary and produces a stable beam. Excellent isolation between input and output is assured through the use of terminated severed circuits. This TWT incorporates the Eimac Modulating Anode which provides a versatile means for controlling the beam.

Eimac electromagnet assembly Type Number H-199 has been designed for use with the X3034.

CHARACTERISTICS

ELECTRICAL

Cathode: Impregnated, Unipotential	
Heating Time	5 Min
Heater: Voltage (±5%)	5.6 Vac or Vdc
Current (Nominal)	3.8 Aac or Adc
Power Gain (Saturated)	20 db
Power Gain (Small Signal)	25 db
Output Power	1.1 kW
Frequency Range	1.7-2.1 Gc
Maximum Power Variation in any 50 Mc band (Note 1)	1 db

MECHANICAL

Maximum Dimensions:	
Length	34⅝ inches
Width	7⅛ inches
Depth	7½ inches
Weight (Including Electromagnet)	160 pounds
Input Coupling (rf)	Type N Coaxial
Output Coupling (rf)	⅞" coaxial, EIA STD RS-225
Mounting Position	Any

Cooling: Forced Air and Water	*Flow Rate*	*Pressure Drop*
Cathode	20 cfm	free
Body	1 gpm	50 psi
Collector	5 gpm	10 psi
Electromagnet	1.5 gpm	40 psi

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ELECTROMAGNET POWER SUPPLY REQUIREMENTS

Upper Coil	Adjustable to 50 Vdc at 10 Adc
Lower Coil	Adjustable to 35 Vdc at 7 Adc

MAXIMUM RATINGS

BEAM VOLTAGE	13 kVdc
BEAM CURRENT	1 Adc
BEAM INPUT POWER	11 kW
BODY CURRENT	25 mAdc
COLLECTOR DISSIPATION	11 kW
LOAD VSWR	1.2:1
WATER INLET TEMPERATURE	50 °C

TYPICAL OPERATION

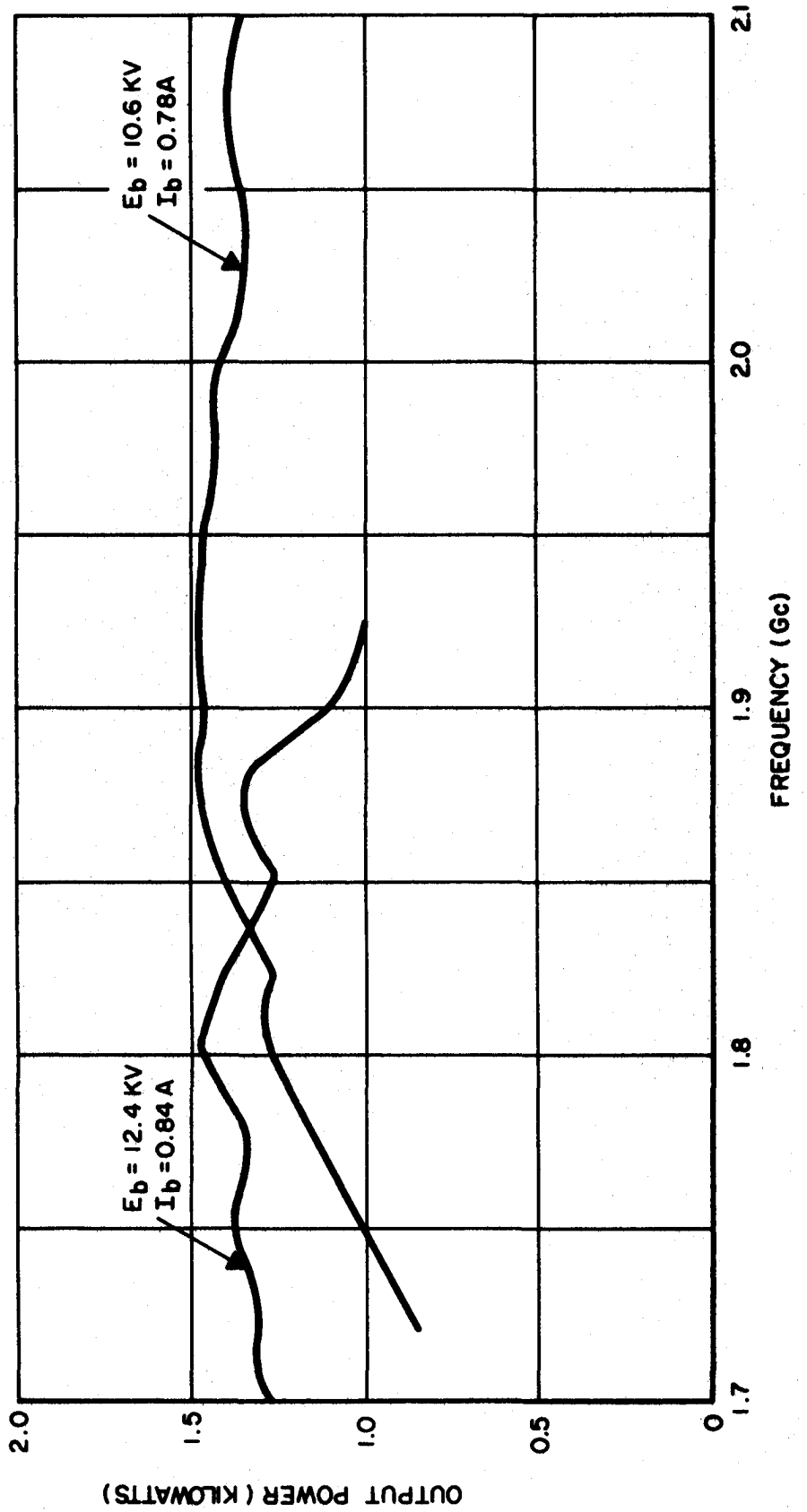
Frequency	1.7	1.8	1.9	2.0	2.1	Gc
Beam Voltage	12.4	12.4	10.6	10.6	10.6	kVdc
Beam Current	0.84	0.84	0.78	0.78	0.78	Adc
Mod Anode Voltage (with respect to cathode)	10.0	10.0	9.7	9.7	9.7	kVdc
Body Current	13	13	17	17	17	mAdc
Drive Power	10	10	10	10	10	W
Output Power	1.25	1.47	1.47	1.43	1.36	kW
Gain	20.9	21.6	21.6	21.5	21.3	db
Electromagnet Currents						
Upper Coil	9.5	9.5	9.5	9.5	9.5	Adc
Lower Coil	6	6	6	6	6	Adc

NOTE:

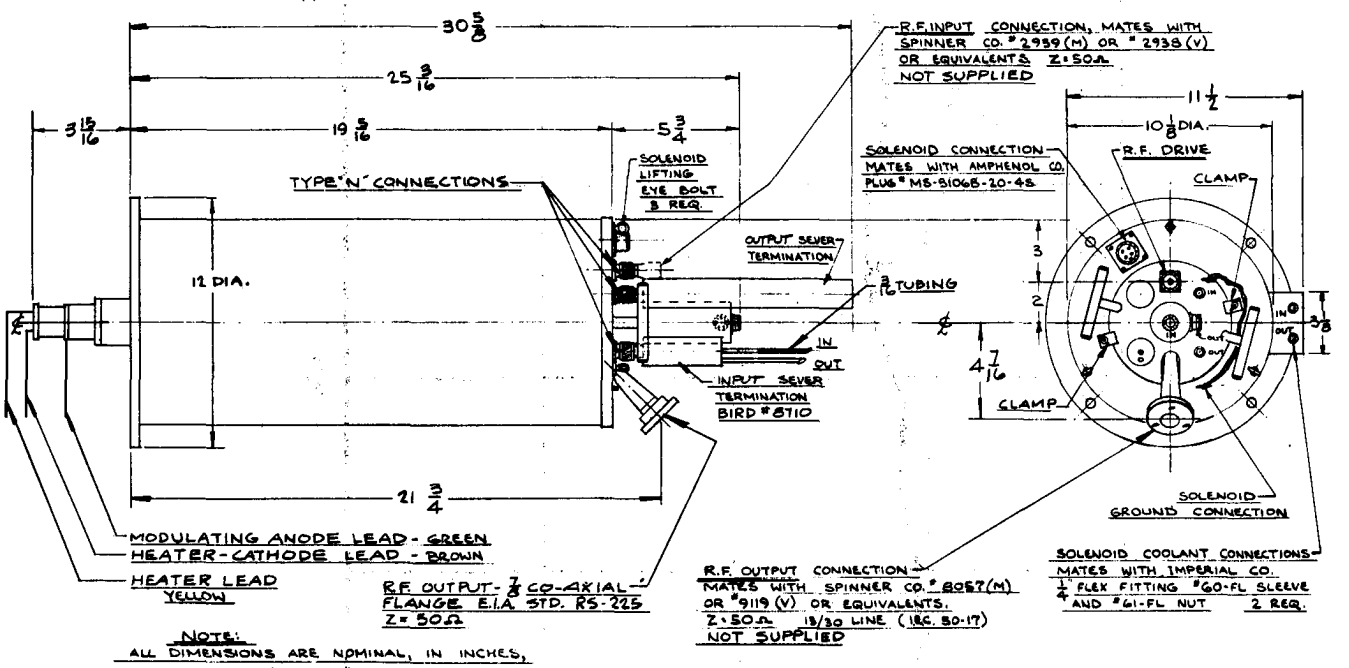
(1) Beam Voltage may be optimized for each 50 Mc segment.

(2) In the event of rapid change in VSWR such as caused by a transmission line arc, the rf drive must be removed in 20 milliseconds. It is recommended that an isolator be inserted in the output line between a re-active filter and the TWT.

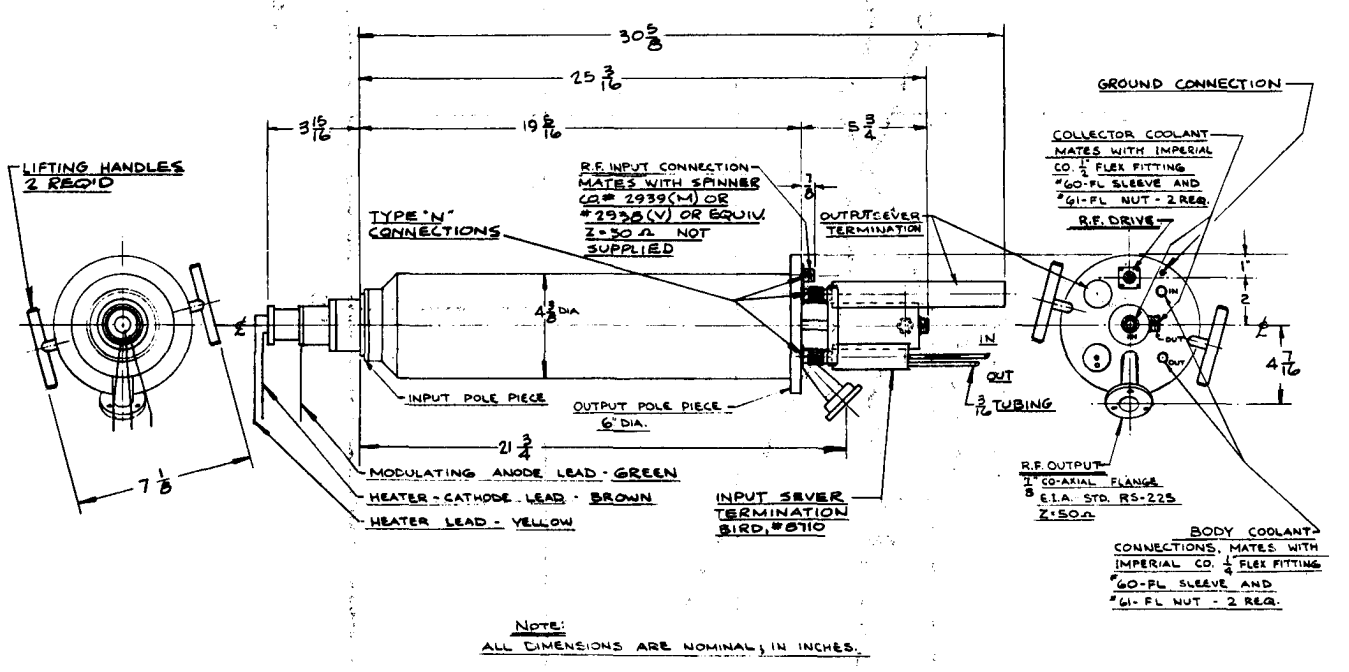
(3) The nominal input and output impedances are designed to work into 50 ohm transmission lines.


Eb = 10.6 KV
Ib = 0.78A
Eb = 12.4 KV
Ib = 0.84 A
2.0
1.5
1.0
0.5
0
1.7
1.8
1.9
2.0
2.1
FREQUENCY (Gc)
OUTPUT POWER (KILOWATTS)

X-3034



X-3034 AND H-199



X-3034 TWT