



EIMAC

A Division of Varian Associates
SAN CARLOS, CALIFORNIA

Tentative Data

5KM300SI

S-BAND

100 KW CW

**POWER AMPLIFIER
KLYSTRON**

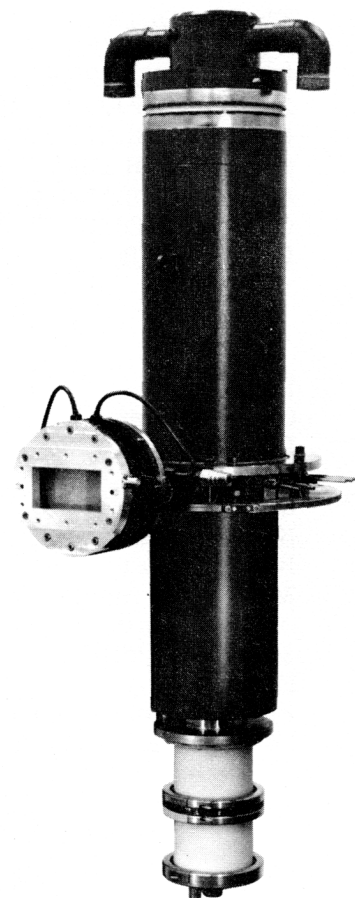
The Eimac 5KM300SI power amplifier klystron was designed specifically for use in the ground transmitters of spacecraft communications systems. The 5KM300SI has a rated output power of 100 kilowatts at frequencies from 2100 to 2400 megacycles with a 3 db bandwidth of 15 megacycles and a minimum gain of 55 decibels.

Five integral cavities are used in the 5KM300SI. Both input and output couplings are fixed. The output window is a thick beryllium oxide disc which will withstand severe abuse. An arc detector is provided to protect this window.

The electron gun of this klystron provides an exceptionally uniform beam which contributes greatly to stability and high efficiency. This gun incorporates the Eimac Modulating Anode which provides a versatile means for controlling the beam.

The 5KM300SI incorporates an ion pump which maintains a low gas pressure in the klystron and also provides a continuous indication of this pressure during operation.

A focusing electromagnet, Catalog Number H-225, has been designed for use with the 5KM300SI.



CHARACTERISTICS

ELECTRICAL

Heater: Voltage ($\pm 5\%$)	- - - - -	13 Vac
Current (Nominal)	- - - - -	5.4 Aac
Cathode: Impregnated, Unipotential		
Heating Time	- - - - -	5 Min
Ion Pump Supply		
Voltage	- - - - -	3 to 4 kVdc
Current	- - - - -	1 mAdc
Power Gain	- - - - -	55 db
Output Power	- - - - -	100 kW
Frequency Range	- - - - -	2100 to 2400 Mc
Phase shift as a function of beam voltage	- - - - -	0.026 $^{\circ}/V$

MECHANICAL

Operating Position	- - - - -	- - - - -	any
Input Coupling (rf)	- - - - -	- - - - -	UG-23 D/U
Output Coupling (rf)	- - - - -	- - - - -	WR-430 Waveguide
Weights: 5KM300SI	- - - - -	- - - - -	235 lbs
H-225 Electromagnet	- - - - -	- - - - -	180 lbs
Tuner Starting Torque (max)-	- - - - -	- - - - -	50 in-oz
Tuner Stop Torque	- - - - -	- - - - -	6 in-lbs
Cooling: Forced Air and Water		Flow Rate	Pressure Drop
Cathode	- - - - -	25 cfm	Free
Klystron Body	- - - - -	2.3 gpm	60 psi
Klystron Collector	- - - - -	65 gpm	23 psi
Electromagnet	- - - - -	2.5 gpm	45 psi



5KM300SI

ELECTROMAGNET POWER SUPPLY REQUIREMENTS

Voltage, adjustable to - - - - - 160 Vdc
Current, adjustable to - - - - - 20 Adc

MAXIMUM RATINGS

BEAM VOLTAGE - - - - - 38 kVdc
BEAM CURRENT - - - - - 7.9 Adc
BEAM INPUT POWER - - - - - 300 kW
BODY CURRENT (WITHOUT DRIVE) - - - - - 50 mAdc
BODY CURRENT (WITH DRIVE) - - - - - 350 mAdc
COLLECTOR DISSIPATION - - - - - 300 kW
INLET COOLANT PRESSURE - - - - - 125 psig
COOLANT OUTLET TEMPERATURE - - - - - 80 °C
LOAD VSWR - - - - - 1.2:1

TYPICAL OPERATION

	<u>Synchronously Tuned</u>		<u>High Efficiency Tuned</u>		
Frequency - - - - -	2115	2388	2115	2388	Mc
Output Power - - - - -	74	79	104	109	kW
Driving Power - - - - -	1	1.15	215	190	mW
Power Gain - - - - -	78	78	57	57.3	db
Beam Voltage - - - - -	35	35	35	35	kVdc
Beam Current - - - - -	7.2	7.2	7.2	7.2	Adc
Body Current - - - - -	135	85	340	190	mAdc
Modulating Anode Voltage (with respect to cathode) - - - - -	35	35	35	35	kVdc
3 db Bandwidth - - - - -	3.5	4	15	15	Mc
Efficiency - - - - -	29.4	31.5	41.3	45.3	%
Electromagnet Current - - - - -	18.1	18.1	18.1	18.1	Adc
Load VSWR - - - - -	1.1:1	1.1:1	1.1:1	1.1:1	

