

# REFLEX KLYSTRON

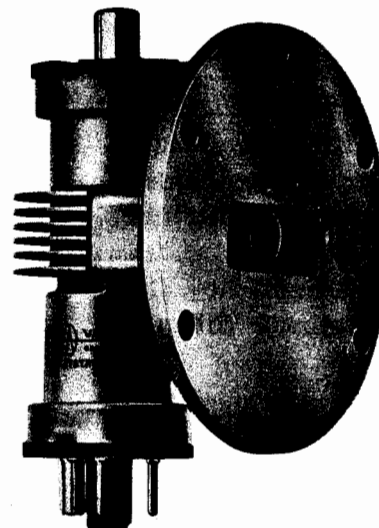
**VA-221A-G  
AND  
VA-221K  
5.860-7.850 Gc**

## DESCRIPTION

The VA-221 klystrons are specifically designed for reliable local oscillator or low power transmitter service in microwave relay systems. The VA-221 series of klystrons cover the microwave spectrum from 5.860 to 7.850 Gc.

## FEATURES

Long life... Low tuning rate... Waveguide output...  
Low FM distortion... Uniform characteristics...  
No modulation anomalies... Exceptional frequency stability... Controlled impedance characteristics simplify duplexing.



## GENERAL CHARACTERISTICS<sup>1</sup>

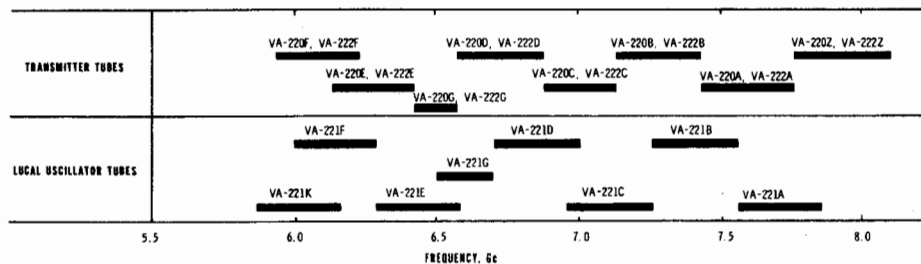
### ELECTRICAL

Frequency Range	
VA-221K	5.860 to 6.160 Gc
VA-221F	5.985 to 6.285 Gc
VA-221E	6.285 to 6.585 Gc
VA-221G	6.505 to 6.705 Gc
VA-221D	6.705 to 7.005 Gc
VA-221C	6.955 to 7.255 Gc
VA-221B	7.255 to 7.555 Gc
VA-221A	7.550 to 7.850 Gc
Output Power, minimum	
VA-221A	20 mW
VA-221B-G and K	25 mW
Heater Voltage	5.7 to 7.0 V
Heater Current, typical	0.44 A

### PHYSICAL

Dimensions	See Outline Drawing
Weight, approximate	8 oz
Mounting Position	Any
Cathode	Oxide coated, unipotential
Base	Small-Wafer Octal (B6-242)
Cooling <sup>2</sup>	Conduction
Tube Body Temperature, maximum	150° C
RF Output	Mates with UG-344/U flange, or equivalent
Reflector	Top Cap C1-1
Tuner	Single screw

### Recommended Transmitter Tubes for VA-221 Series Local Oscillators

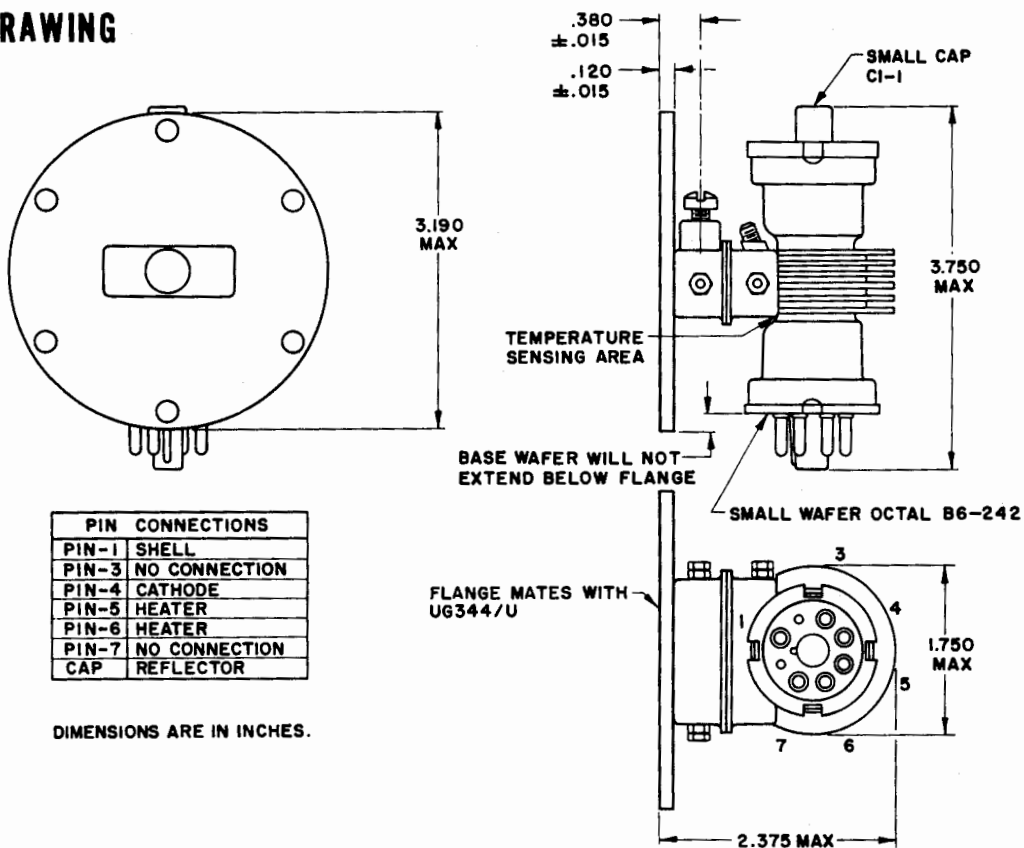


Read Operating Instructions before installing the tube.

**OPERATING CONDITIONS AND RATINGS**

	Typical Operation <sup>3</sup>		Range Values for Equipment Design <sup>4</sup>		Absolute Ratings <sup>5</sup>	
	VA-221C		Min	Max	Min	Max
Frequency .....	6.955	7.255	---	---	---	---
Output, matched load .....	34	41	25	---	---	---
Beam Voltage .....	300	300	---	---	---	330 Vdc
Beam Current .....	25	24	---	32	---	35 mAdc
Reflector Voltage <sup>6</sup> .....	-97	-110	-75	-115	-20	-500 Vdc
Electronic Tuning Range, 3-db <sup>7</sup> .....	34	40	25	---	---	---
Reflector Voltage Modulation Coefficient ..	1.4	1.5	0.8	2.8	---	---
Temperature Coefficient .....	50	50	---	±100	---	---
Heater Voltage .....	6.3	6.3	5.7	7.0	5.7	7.0 V
Heater Current, at 6.3 volts .....	0.44	0.44	---	0.50	---	---
Heater-Cathode Voltage .....	0	0	---	---	---	±45 Vdc

**OUTLINE DRAWING**



NOTES:

1. Characteristics and operating values are based on performance tests.
2. The maximum allowable tube surface temperature is 150° C. Forced air cooling is required in the fin area during operation when the input power exceeds 10 watts. For maximum tube life, the tube temperature should be less than 100° C.
3. Although the values shown are for the VA-221C, they are representative of other VA-221 series tubes with the exceptions noted under "General Characteristics."
4. These values are acceptance limits for the VA-221C. Equipment design should allow for these variations.
5. Ratings should not be exceeded under continuous or transient conditions. A single rating may be the limitation and simultaneous operation at another rating may not be possible. Equipment design should limit voltage and environmental variations so that ratings will never be exceeded. Performance limits and test conditions are given on the tube Specification sheet.
6. Reflector voltage must always be negative with respect to the cathode by at least 20 volts.
7. The electronic tuning range is measured between the half-power points.