



**varian**  
palo alto tube division

## TECHNICAL DATA

# 3KM3LB

KLYSTRON AMPLIFIER

350-475 MHz  
1.0 kW

### DESCRIPTION

The 3KM3LB is a three-cavity, externally-tuned klystron amplifier for use in tropo-scatter communication systems. This tube delivers a narrowband CW output of 1 kilowatt or more over its tunable frequency range of 350 to 475 megahertz. It includes an integral modulating anode, which provides a convenient means for amplitude or pulse modulation. The external cavities permit an unlimited number of tuning cycles without damaging the vacuum seals. The 3KM3LB operates within the H-157 R-F Circuit Assembly, which includes the focusing electromagnets, tunable cavities, output load coupler, and an SK-110 Air System Socket.

### MAXIMUM RATINGS<sup>1</sup>

|                               |          |
|-------------------------------|----------|
| Beam Voltage .....            | 9 kVdc   |
| Beam Current .....            | 750 mAdc |
| Body Current .....            | 75 mAdc  |
| Collector Dissipation .....   | 3 kW     |
| Heater Surge Current .....    | 62 A     |
| Focus Electrode Voltage ..... | -500 Vdc |



### GENERAL CHARACTERISTICS<sup>2</sup>

#### ELECTRICAL

|                                  |                |
|----------------------------------|----------------|
| Frequency Range .....            | 350 to 475 MHz |
| Heater Voltage .....             | 7.5 V          |
| Heater Current, typical .....    | 31 A           |
| Heater Warm-up Time, minimum ... | 5 min          |
| Focusing .....                   | Electromagnet  |

#### PHYSICAL

|                              |                      |
|------------------------------|----------------------|
| Dimensions .....             | See Outline Drawings |
| Weight, approximate          |                      |
| 3KM3LB .....                 | 46 lb                |
| H-157 Circuit Assembly ..... | 570 lb               |
| Mounting Position .....      | Vertical, cathode-up |
| Cooling .....                | Forced Air           |
| Connectors .....             | See Outline Drawings |

TYPICAL OPERATING CONDITIONS<sup>2</sup>

|                               | High Efficiency<br>Tuned |      | Broadband<br>Tuned |
|-------------------------------|--------------------------|------|--------------------|
| Frequency .....               | 350                      | 475  | 350 MHz            |
| Power Output .....            | 2.4                      | 2.3  | 1 kW               |
| Drive Power .....             | 10                       | 10   | 10 W               |
| Gain .....                    | 23.8                     | 23.6 | 20 dB              |
| Bandwidth, 3 dB .....         | 0.7                      | 0.9  | 3 MHz              |
| Efficiency .....              | 45.2                     | 43.3 | 23.3 %             |
| Body Current .....            | 30                       | 40   | 30 mAdc            |
| Beam Voltage .....            | 9                        | 9    | 8 kVdc             |
| Beam Current .....            | 0.59                     | 0.59 | 0.54 Adc           |
| Focus-Electrode Voltage ..... | -200                     | -200 | -135 Vdc           |
| Cavity Loading                |                          |      |                    |
| Cavity 1 .....                | ---                      | ---  | 9 W                |
| Cavity 2 .....                | ---                      | ---  | 25 W               |
| Focus-Coil Currents           |                          |      |                    |
| Prefocus .....                | 0.7                      | 0.7  | 0.7 Adc            |
| 1st Body .....                | 2                        | 2    | 2 Adc              |
| 2nd Body .....                | 1.3                      | 1.3  | 1 Adc              |
| Collector .....               | 1                        | 1    | 1 Adc              |

## COOLING

Values are for forced air at sea level and 20 °C air inlet temperature.

|                        | Air Flow<br>(ft <sup>3</sup> /min) | Pressure Drop<br>(in.-H <sub>2</sub> O) |
|------------------------|------------------------------------|-----------------------------------------|
| Cathode (with SK-110   |                                    |                                         |
| Air System Socket) ... | 5                                  | 0.4                                     |
| Output Cavity .....    | 50                                 | 1.0                                     |
| Collector .....        | 200                                | 1.5                                     |

## ELECTROMAGNET

|                             |          |
|-----------------------------|----------|
| Prefocus Coil, maximum      |          |
| Voltage .....               | 25 Vdc   |
| Current .....               | 1.25 Adc |
| Body Coils 2 and 3, maximum |          |
| Voltage .....               | 175 Vdc  |
| Current .....               | 3 Adc    |
| Collector Coil, maximum     |          |
| Voltage .....               | 50 Vdc   |
| Current .....               | 1.5 Adc  |

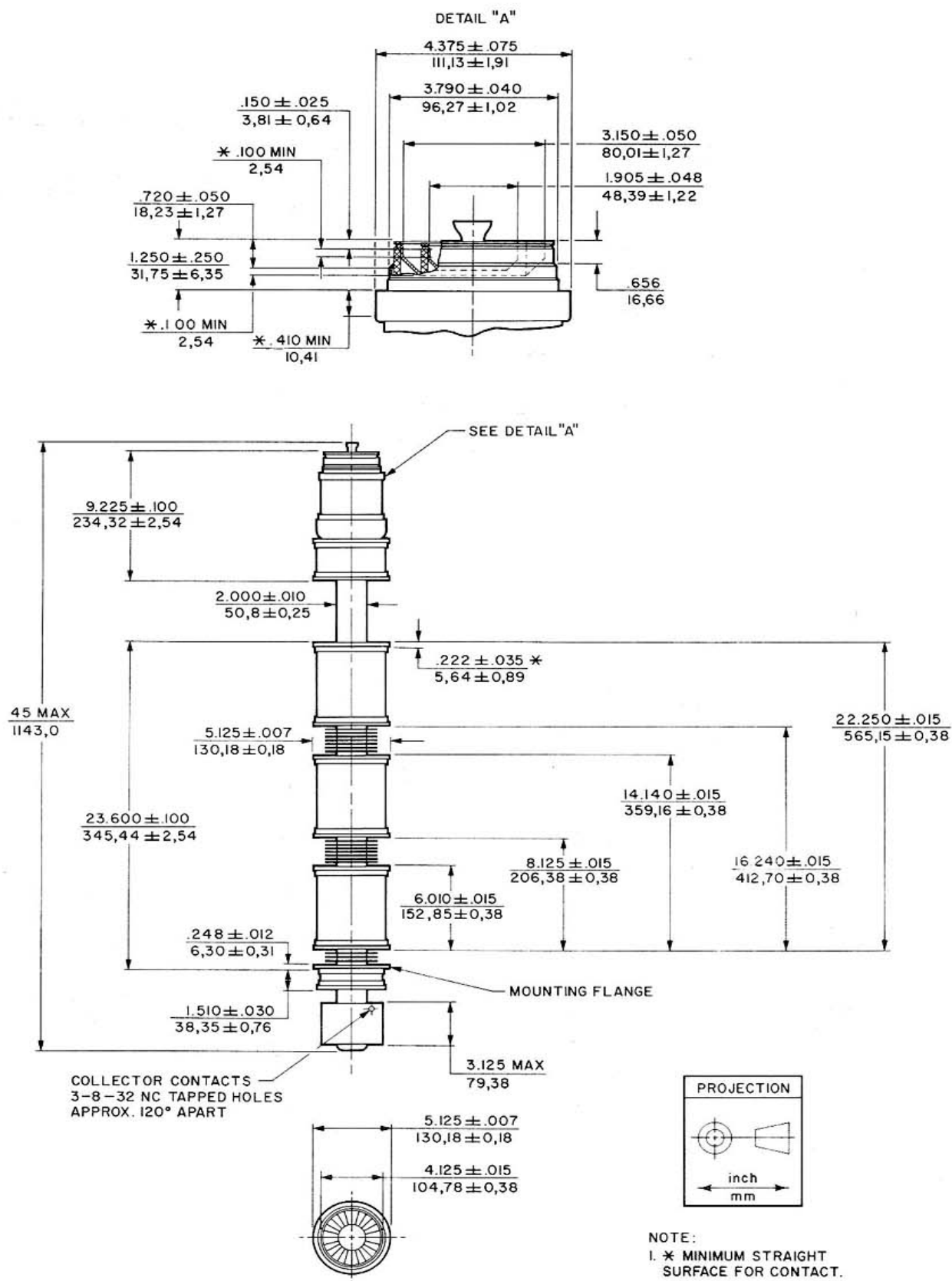
## NOTES:

1. Ratings should not be exceeded under continuous or transient conditions. A single rating may be the limitation and simultaneous operation at more than one rating may not be possible. Equipment design should limit voltage and environmental variations so that the absolute ratings will never be exceeded.
2. Characteristics and operating values are based on

performance tests. These figures may change without notice as a result of additional information or product refinement. Varian Associates should be consulted before using this information for final equipment design.

3. To protect against internal arcs, a 10,000-ohm, 100-watt resistor should be connected between the modulating anode and the beam supply.

## OUTLINE DRAWING



3KM3LB

# OUTLINE DRAWING

