

# Pencil Tube Oscillator

## L-Band Cavity Oscillator

### ELECTRICAL

Heater, for Unipotential Cathode:

Voltage (AC or DC) . . . . .	6.3 ± 10%	V
Current at 6.3 volts . . . . .	0.33 max.	A
Frequency . . . . .	1090	MHz
Tuning Range . . . . .	±15	MHz

RF Coaxial Output Terminal . . . . . Mates with female  
snap-on-type connector  
Sealectro No.51-007-0000, or equivalent

Characteristic Impedance (Approx.) . . . . .	50	Ω
Maximum Output VSWR (All phase angles) . . . . .	1.3:1	

### MECHANICAL

Operating Position . . . . .	Any
Dimensions and Terminal Connections . . . . .	See Dimensional Outline
Weight (Approx.) . . . . .	4 oz

### ENVIRONMENTAL

The units will remain stable within ± 3 MHz in frequency and - 2 dB in peak power output (from nominal conditions) under any combination of the following conditions:

Operating Temperature . . . . .	-46 to +71	°C
Altitude . . . . .	Up to 35,000	ft
Output VSWR (All phase angles) . . . . .	1.1:1	
Plate and Heater Voltage Variation . . . . .	±10	%
Duty Factor . . . . .	Up to 0.01	

### GRID-PULSED OSCILLATOR - CLASS C MAXIMUM RATINGS, Absolute-Maximum Values

For a maximum duty factor<sup>a</sup> of 0.01<sup>c</sup><sup>b</sup>

DC Plate Voltage . . . . .	1540 max.	V
DC Grid Voltage:		
Negative-bias value . . . . .	100 max.	V
Positive value during gating pulse . . . . .	0 max.	V
Peak Plate Current . . . . .	1.2 max.	A
Peak Grid Current . . . . .	0.7 max.	A

Plate Dissipation . . . . .	15 max.	W
Grid Dissipation . . . . .	1.0 max.	W
<b>Peak Heater-Cathode Voltage:</b>		
Heater negative with respect to cathode . . . . .	60 max.	V
Heater positive with respect to cathode . . . . .	60 max.	V

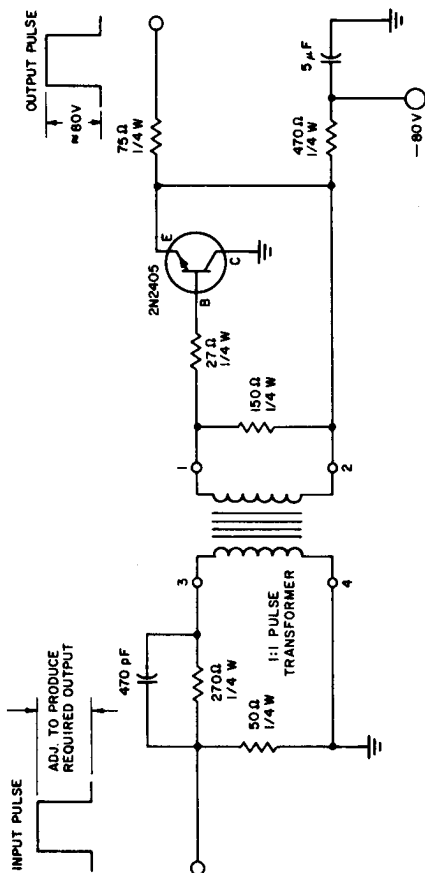
**Typical Operation with Rectangular Waveshape in Grid-Pulsed Circuit at 1090 MHz**

With duty factor of 0.001 and pulse duration of 0.45 microsecond

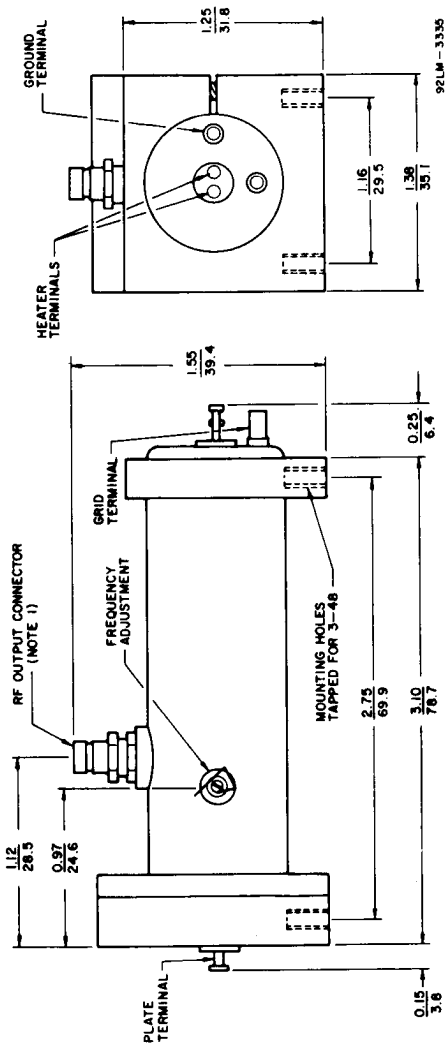
DC Plate Voltage . . . . .	1400	V
Grid-Bias Voltage . . . . .	-80	V
DC Plate Current . . . . .	1	mA
Useful Power Output at Peak of Pulse . . . . .	500	W

- a** Duty factor is defined as the product of the pulse duration and repetition rate. For variable pulse durations and pulse repetition rates, the duty factor is defined as the ratio of the "ON" time to total elapsed time in any 500-microsecond interval. "ON" time is defined as the sum of the durations all individual pulses which occur during the indicated interval. Pulse duration is defined as the time interval between the two points on the pulse at which the instantaneous value is 70% of the peak power value. Peak value is defined as the maximum value of a smooth curve through the average of the fluctuations over the top portion of the pulse.
- b** When operated for 10 minutes per hour. For continuous pulsing, the maximum duty factor is 0.005.

## RECOMMENDED GRID-PULSE AMPLIFIER (MODULATOR)



## DIMENSIONAL OUTLINE



Note 1: Mates with female snap-on-type connector Seaelectro No.51-007-0000, or equivalent

Dimensions in        inches  
       mm unless otherwise noted

The millimeter dimensions are derived from the original inch dimensions (1 inch = 25.4 mm exactly).