

L-Band Pencil-Tube Oscillator-Amplifier

1090 MHz

500 W PEAK

*These Units^a are Designed to Implement New Airborne Transponder Systems***ELECTRICAL****Heater, for Unipotential Cathode**Voltage (AC or DC) 6.3 $\pm$ 10% V

Current at 6.3 volts (Total) 0.66 max A

Frequency 1090 MHz

Tuning Range $\pm$ 15 MHz**RF Coaxial Output**

Terminal Mates with female screw-type connector

Sealectro No.50-007-0259, Micon No.1002,

or equivalent

Characteristic impedance (approx.) 50 Ω

Output VSWR 1.5:1

All phase angles

Change in Peak Power OutputDuring Modulation^b 0.5 max dBPulse Rise Time (10% to 90%) 0.05-0.10 μ sPulse Decay Time (90% to 10%) 0.05-0.20 μ s

RF Delay Time (measured at 50% of

pulse amplitude) 0.25 max μ sRF Jitter 0.01 max μ s**MECHANICAL**

Operating Position Any

Dimensions and Terminal Connections See *Dimensional Outlines*

Weight (Approx.) 7 oz

ENVIRONMENTAL*The units will remain stable within $\pm$ 2.5 MHz in frequency and $\pm$ 3 dB in peak power output (from nominal conditions) under any combination of the following conditions:***Vibration^c**

5 to 53 Hz 0.1 inch DA

53 to 500 Hz $\pm$ 15 g's

Shock 20 g's

Ambient Temperature -54 to +125 $^{\circ}$ C

Altitude 30,000 ft

Output VSWR (All phase angles) 1.5:1

Plate and Heater Voltage Variation $\pm$ 10 %

Duty Factor (Long term) 0.01

GRID-PULSED OSCILLATOR—CLASS C**Absolute-Maximum Ratings***For a maximum long-term duty factor^d of 0.01^e*

DC Plate Voltage (Each Unit) 1100 max V

Peak Oscillator Grid Current 0.5 max A

Peak Amplifier Cathode Current 2.0 max A

Peak Plate Current

Oscillator 0.7 max A

Amplifier 1.5 max A

Plate Dissipation (Total) 18 max W

← Indicates a change.



Peak Heater-Cathode Voltage

Heater negative with respect to cathode. . . .	60 max	V
Heater positive with respect to cathode. . . .	60 max	V

TYPICAL OPERATION

With Rectangular Wave Shape in Grid-Drive Circuit at 1090 MHz

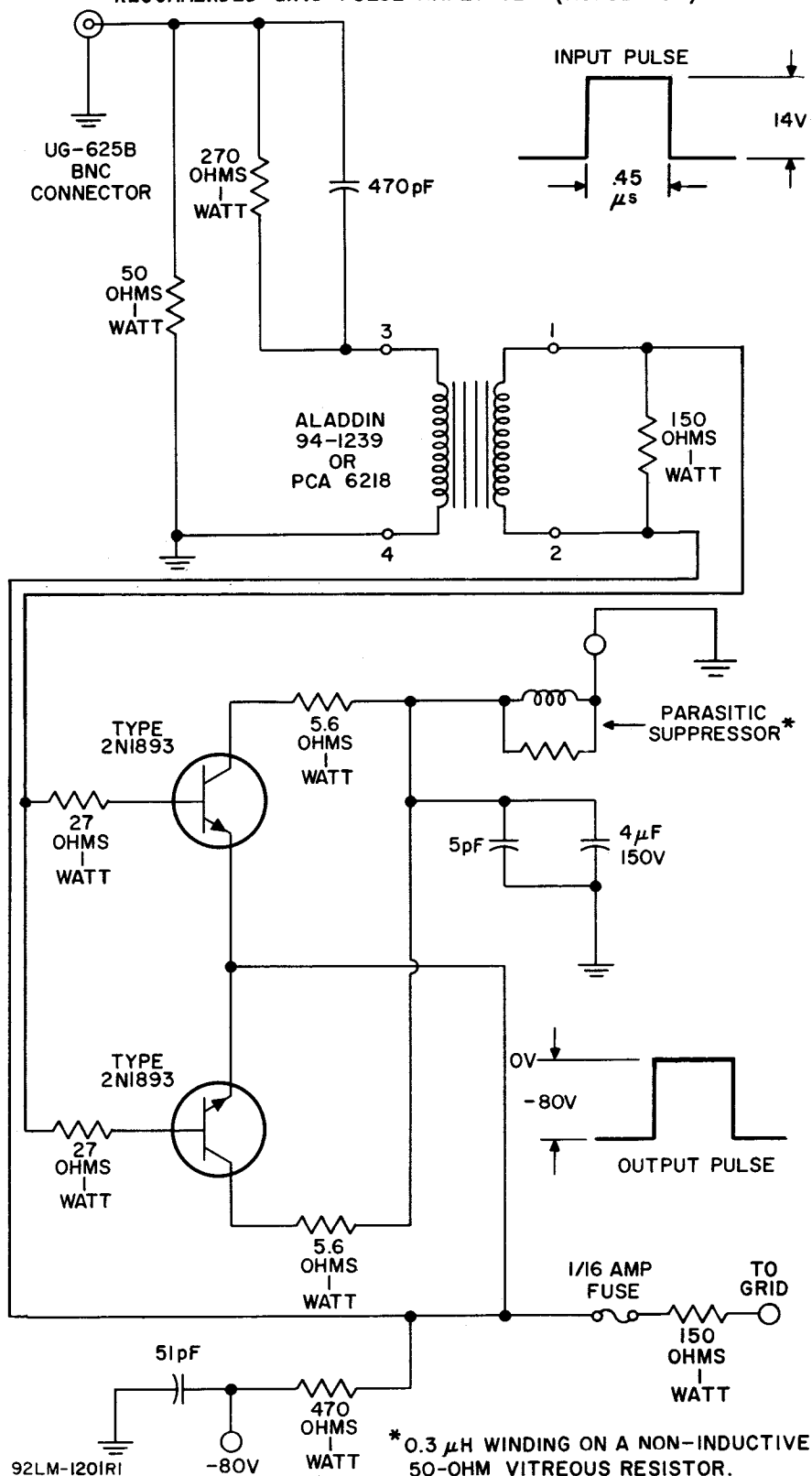
With duty factor of 0.01 and pulse duration of
0.45 microsecond

DC Plate Voltage.	1000	V
Each unit		
Oscillator Grid Bias.	-80	V
Amplifier Cathode Bias.	+25	V
DC Plate Current.	20	mA
Total		
Useful Power Output	500	W
At peak of pulse		

- ^a The ruggedized oscillator-amplifier combination is built to satisfy all AIMS/FAA (Army Integrated Meteorological Systems) requirements.
- ^b With 56 pulses in 100 microsecond interval.
- ^c Tested per methods described in MIL-E-5400 and MIL-T-5422.
- ^d Duty factor is the product of pulse duration and repetition rate. For variable pulse durations and pulse repetition rates, the duty factor is defined as the ratio of the time "ON" to total elapsed time in any 2500-microsecond interval. "ON" time is defined as the sum of the duration of 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. The 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.
- ^e This value is for continuous pulsing. The duty factor can be 0.25 for any interval up to 100 microseconds in length as long as the long-term duty factor does not exceed 0.01.

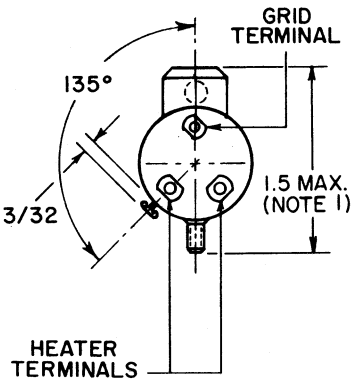
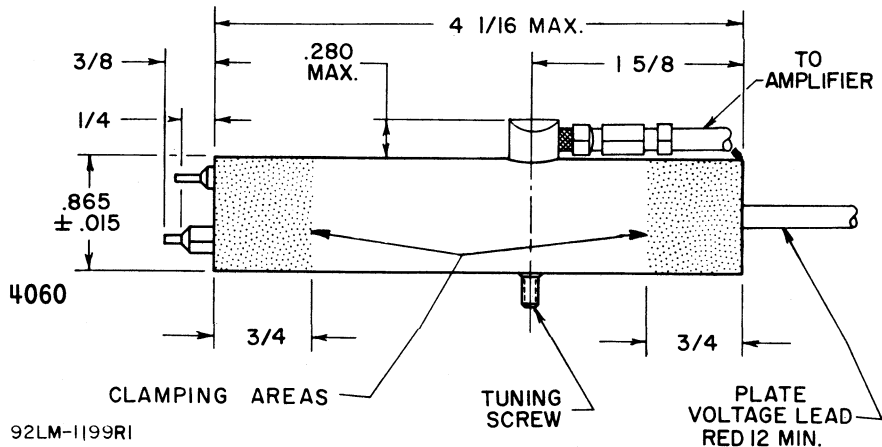


RECOMMENDED GRID-PULSE AMPLIFIER (MODULATOR)

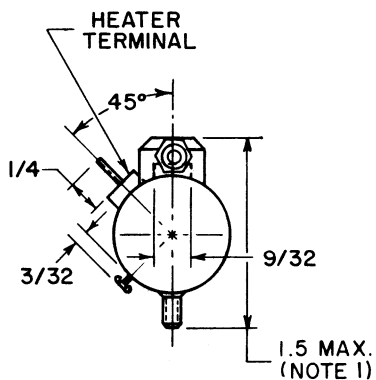


4060-4061

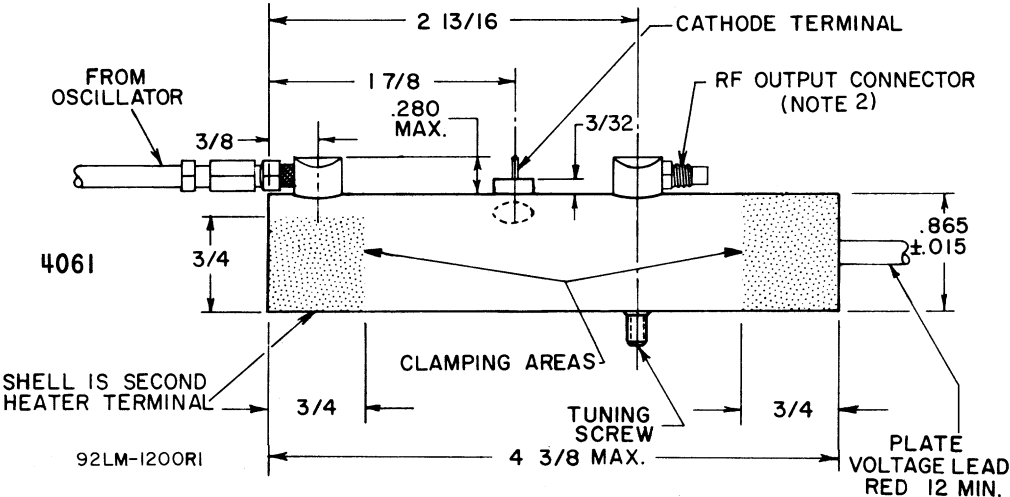
DIMENSIONAL OUTLINE (DIMENSIONS IN INCHES)



4060—LEFT SIDE VIEW



4061—LEFT SIDE VIEW



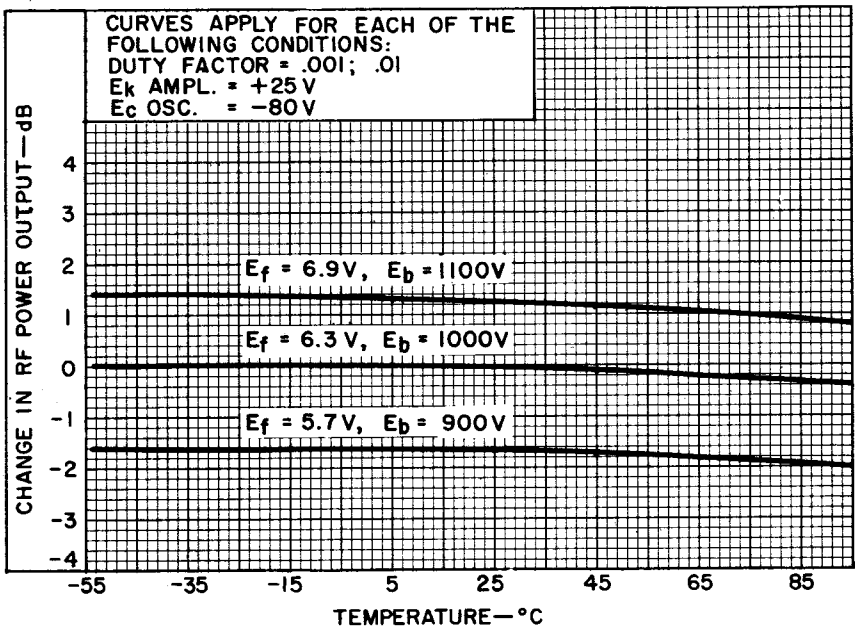
Note 1: When adjusted for operation at 1090 MHz.

Note 2: Mates with female screw-type connector Selectro No.50-007-0259, Micon No.1002, or equivalent.

These units are supplied without the mounting brackets; they are also available with brackets upon request.



Typical Change in Power Output vs. Temperature



Typical Output Frequency vs. Temperature

