BACKWARD WAVE OSCILLATOR

RESERVATION DATE: JUNE 24, 1960

MANUFACTURER'S DESIGNATION: LOU-2C/316H

JEDEC DESIGNATION: 7785

GENERAL CHARACTERISTICS

High speed electronic tuning over the frequency range of 12.4 to 18.0 kMc distinguishes the type 7785 Backward Wave Oscillator. This traveling wave tube, designed for CW or pulse oscillator service, develops a useful power output of 30 to 70 milliwatts over the major portion of its frequency coverage. The smooth and continuous tuning curve, expressing the helix voltage vs. the operating frequency relationship, is exceedingly useful in the design of swept frequency circuits. The mechanical construction, employing precision machine methods, is typified by a voltage tuning curve uniformity from tube to tube held to $\pm 1\%$. The compact rugged housing and its associated permanent magnet form a structure which facilitates handling, and insures reliable operation during its normal life expectancy of several thousand hours.

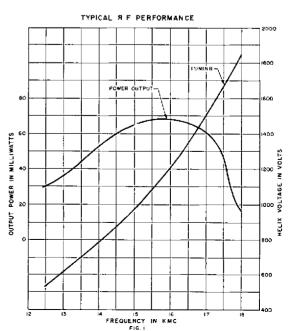
ELECTRICAL RATINGS ABSOLUTE VALUES

Maximum Heater Voltage	7 V
Minimum Cathode Warmup Time	2 Minutes
Maximum Heater Cathode Voltage	10 V
Maximum First Anode Voltage	300 Vdc
Maximum First Anode Current	2 mAdc
Maximum Second Anode Voltage	2 kVdc
Maximum Second Anode Current	4 mAdc
*Maximum Helix and Collector Voltage	2 kVdc
Maximum Helix and Collector Current	10 mAdc
Maximum Collector Dissipation	10 W
Maximum Helix Voltage to Ground	2 kVdc

^{*}Helix and Collector connected internally

ELECTRICAL INFORMATION

Maximum Frequency 18.0 kMc Minimum Frequency 12.4 kMc 7785 (LOU-2C/316H)



MECHANICAL INFORMATION

Type of Cathode Impregnated Tungsten Type of Envelope Special Magnetic Field Strength 650 Gauss Mounting Position Any 121/2 Pounds Weight **RF** Output Connector RG91/U Waveguide UG541/U Choke Flange DC Connector Winchester Receptacle

PM6S-LR6N

Type of Cooling Convection Air at

20°C Ambient

Ambient Temperature -55°C to 85°C Maximum Collector Temperature 170°C

TYPICAL OPERATION

Heater Voltage	6.3 V
Heater Current	.84 A
First Anode Voltage	230 Vdc
First Anode Current	.40 mAdc
Second Anode Voltage	503 – 1936 kVdc
Second Anode Current	1.7 mAdc
Helix and Collector Voltage	503 – 1936 kVdc
Helix and Collector Current	5 mAdc
Power Output (See Fig. I)	10 mW min.
Spectrum Width	.19 Mc
Pulling Figure	3.23 Mc
Pushing Figure	4.18 Mc
Noise Figure	
(±.2 Mc or more from carrier frequ	ency) –30 db
(Total power in a 4 Mc band)	-96 dbm

^{*}At 16.683 kMc

7785 (LOU2C/316H) UG-541/U-RF OUTPUT WINCHESTER RECEPTACLE FIG. 2

MECHANICAL DIMENSIONS

Mechanical dimensions are given on the outline drawing, Fig. 2. If two or more tubes are operated adjacent to each other the packages should be oriented in the same direction.

HUGHES AIRCRAFT COMPANY

MICROWAVE TUBE DIVISION