The Eimac 8162/3X3000F7 is an external-anode power triode intended to be used as a zero-bias Class-B amplifier in audio or radio-frequency applications. Operation with zero grid bias offers circuit simplicity by eliminating the bias supply. In addition, grounded-grid operation is attractive since a power gain of over twenty times can be obtained with the 8162/3X3000F7.

GENERAL CHARACTERISTICS

ELECTRICAL
Filament: Thoriated-Tungsten
Voltage - - - - - 7.5 volts
Current - - - - - 51 amperes
Amplification Factor - - - - - 200
Interelectrode Capacitances:
   Grid-Filament - - - - 38 uuf
   Grid-Plate - - - - 24 uuf
   Plate-Filament - - - - 0.6 uuf
Frequency for Maximum Ratings - - 30 Mc

MECHANICAL
Base - - - - - - - - - - See outline drawing
Operating Position - - - - - - - - Vertical, base up or down
Cooling - - - - - - - - Forced air
Maximum Operating Temperatures:
   Anode Core and Seals - - - - 150°C
Max Dimensions:
   Height (Does not include filament connectors) - 8.6 inches
   Diameter - - - - 4.16 inches
Net Weight - - - - - 7.5 pounds

A-F AMPLIFIER OR MODULATOR
CLASS-B, GRID-DRIVEN

MAXIMUM RATINGS (Per Tube)
D-C PLATE VOLTAGE 5000 VOLTS
D-C PLATE CURRENT 2.5 AMPS
PLATE DISSIPATION 3 KW
GRID DISSIPATION 225 WATTS

TYPICAL OPERATION, Two Tubes,
Sinusoidal Wave

D-C Plate Voltage 4000 volts
D-C Grid Voltage 0 volts
Zero-Sig D-C Plate Current* 0.640 amps
Max-Sig D-C Plate Current 4.00 amps
Max-Sig D-C Grid Current 0.860 amps
Driving Power 120 watts
Peak A-F Driving Voltage (per tube) 185 volts
Load Resistance, Plate-to-Plate 2200 ohms
Max-Sig Plate Output Power 11,000 watts

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R-F LINEAR AMPLIFIER
CLASS-B, GROUNDED-GRID

MAXIMUM RATINGS
D-C PLATE VOLTAGE  5000 VOLTS
D-C PLATE CURRENT  2.5 AMPS
PLATE DISSIPATION    3 KW
GRID DISSIPATION     225 WATTS

TYPICAL OPERATION, Single-Tone Conditions

D-C Plate Voltage  4000  5000 volts
Zero-Sig D-C Plate Current*  0.32  0.44 amps
Max-Sig D-C Plate Current  2.00  1.56 amps
Max-Sig D-C Grid Current  0.42  0.33 amps
Driving Impedance    50  50 ohms
Resonant Load Impedance  1120  1850 ohms
Max-Sig Driving Power  360  215 watts
Peak Envelope Plate Output
    Power                5500  5500 watts
    Power Gain          15.3  25.6 times

R-F LINEAR AMPLIFIER
CARRIER CONDITIONS, GRID-DRIVEN

MAXIMUM RATINGS
D-C PLATE VOLTAGE  5000 VOLTS
D-C PLATE CURRENT  2.5 AMPS
PLATE DISSIPATION    3 KW
GRID DISSIPATION     225 WATTS

TYPICAL OPERATION

D-C Plate Voltage  4000 volts
D-C Grid Voltage  0 volts
Zero-Sig D-C Plate Current*  0.32 amps
D-C Plate Current  0.815 amps
D-C Grid Current  0.205 amps
Driving Impedance †  220 ohms
Peak Driving Voltage †  160 volts
Driving Power      15 watts
Plate Output Power  1100 watts

NOTE: "TYPICAL OPERATION" data are obtained by calculation from published characteristic curves and confirmed by direct tests. No allowance for circuit losses, either input or output, has been made.

APPLICATION

INPUT CIRCUIT - When the 3X3000F7 is operated as a grounded-grid r-f amplifier, the use of a resonant tank in the cathode circuit is recommended in order to obtain greatest linearity and power output. For best results with a single-ended amplifier it is suggested that the cathode tank circuit operate at a "Q" of five or more.

COOLING - The maximum temperature rating for the anode core and seals of the 3X3000F7 is 150°C. Sufficient forced-air cooling must be provided to keep the temperature of the anode core and the temperatures of the glass-to-metal seals below 150°C. Tube life is usually prolonged if these areas are maintained at temperatures below the maximum rating. Minimum air flow requirements to maintain anode-core and seal temperatures below 150°C with inlet-air temperatures of 40°C and 55°C are tabulated. A maximum ambient temperature of 40°C will apply to most commercial installations, while the 55°C data is useful when designing equipment in conformance with MIL-E-5400 Curve A (Class I).

In addition, a minimum air flow of 7 CFM must be directed into the filament stem structure, between the inner and outer filament conductors. This rate of air flow provides sufficient stem cooling at ambient temperatures up to 55°C.

*Approximate Values
†Modulation Crest Conditions
SEA LEVEL PRESSURE, ANODE-TO-BASE AIR FLOW

<table>
<thead>
<tr>
<th>Plate** Dissipation (Watts)</th>
<th>40°C Max Ambient Air Temp</th>
<th>55°C Max Ambient Air Temp</th>
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</thead>
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<tr>
<td></td>
<td>Air Flow (CFM)</td>
<td>Pressure Drop (Inches of Water)</td>
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<tr>
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**Since the power dissipated by the filament is about 375 watts and since grid dissipation can, under some circumstances, represent another 225 watts, allowance has been made in preparing this tabulation for an additional 600 watts dissipation.

** Dimension Data Table **

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<th>REF</th>
<th>NOM</th>
<th>MIN</th>
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<tr>
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<td>0.437</td>
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ALL DIMENSIONS IN INCHES