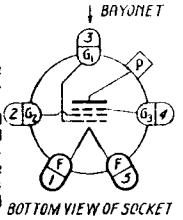


PENTODE POWER AMPLIFIER OSCILLATOR

The RK-28 is a pentode type power amplifier tube having a thoriated tungsten filament, a molybdenum plate, a hard glass bulb and an isolantite base. It is designed for use as a power amplifier, oscillator or frequency multiplier. The RK-28 may also be used in circuits employing suppressor or control grid modulation.



FILAMENT RATING

Filament Voltage	10	volts
Filament Current	5	amp

DIRECT INTERELECTRODE CAPACITANCES

Grid to Plate	0.02	μμf
Input	15	μμf
Output	15	μμf

R-F POWER AMP. OR OSC.—CLASS C

MAXIMUM RATINGS

D-C Plate Voltage—Telegraphy	2000	volts
D-C Plate Voltage—Telephony With Con. Grid or Sup. Grid Modulation	2000	volts
With Plate—Screen Mod.	1500	volts
D-C Screen Voltage	400	volts
D-C Plate Current	150	ma
D-C Control Grid Current	25	ma
R-F Control Grid Current	8	amp
Plate Dissipation	100	watts
Screen Dissipation	35	watts

TYPICAL OPERATION

	Telephony Control Grid Modulation		Telephony Suppressor Grid Modulation	Telephony Plate & Screen Modulation		Telegraphy		
D-C Plate Voltage	2000	2000	2000	1500	1500	2000	2000	volts
D-C Screen Voltage	400	400	400	400	400	400	400	volts
D-C Sup. Grid. Volt.	0	+45	−45	0	+45	0	+45	volts
D-C Con. Grid Volt.	−140	−140	−100	−100	−100	−100	−100	volts
D-C Plate Current	85	80	85	135	135	120	150	ma
D-C Screen Current	20	20	65	64	52	75	55	ma
D-C Con. Grid Current	4	4	13	13	13	13	13	ma
Screen Resistor	—	—	—	17000‡	21000‡	—	—	ohms
Peak R-F Input Volt.	170	170	150	170	170	170	170	volts
R-F Driving Power	3.5 *	3.5 *	1.8	2.0	2.0	2.0	2.0	watts
Carrier Power Output	70	75	60	135	155	160	210	watts
Peak A-F Volt.—Plate	—	—	—	1500*	1500*	—	—	volts
Peak A-F Volt.—Grid	50 *	50 *	90 *	400 *	400 *	—	—	volts
A-F Modulating Power	1.0 *	1.0 *	1.2 *	150	140	—	—	watts
Peak Power Output	280*	300*	240*	540 *	620 *	—	—	watts

*At the peak of the a-f cycle with 100% modulation.
‡Connected to plate end of modulation trans. and by-passed for r.f. only.

R-F POWER AMPLIFIER—CLASS B—TELEPHONY

MAXIMUM RATINGS

D-C Plate Voltage	2000	volts
D-C Screen Voltage	400	volts
D-C Plate Current	80	ma
Plate Dissipation (Carrier)	100	watts
Screen Dissipation (Carrier)	35	watts

TYPICAL OPERATION

D-C Plate Voltage	2000	volts
D-C Screen Voltage	400	volts
D-C Suppressor Grid Voltage	0	volts
D-C Control Grid Voltage	−38	volts
D-C Plate Current	75	ma
D-C Screen Current	30	ma
Peak R-F Input Voltage	90 *	volts
R-F Driving Power	0.9 *	watts
Carrier Power Output	50	watts
Peak Power Output	200*	watts

*At the peak of the a-f cycle with 100% modulation.

OPERATING NOTES

FREQUENCY RANGE

The RK-28 may be operated at the maximum ratings at frequencies up to 30 megacycles. Above 30 megacycles the reduced efficiency realized requires that the plate voltage be lowered to a maximum of 1500 volts to prevent the plate dissipation from exceeding the maximum rated value. The operation of the tube at frequencies higher than 60 megacycles is not recommended.

EXCITATION

The Class C amplifier characteristic curves show the power output, plate current and screen current plotted vs. excitation as denoted by the d-c control grid current in milliamperes. The power output flattens off around 12 or 13 ma. of grid current with very little gained above these values. The screen dissipation increases with excitation and for this reason the excitation should be kept at a reasonable value.

SHIELDING

Shielding of the grid input tuning system from the plate tuning apparatus is desirable and will provide improved stability. If a shield is applied to the RK-28 it should enclose the base and extend to the lower internal shield and should clear the glass bulb by at least 1/16".

BIAS

At least 20 volts of fixed bias should be used with 2000 volts on the plate to protect the tube in case of failure of the bias or excitation. Additional bias may be obtained by the use of a grid or cathode resistor.

CRYSTAL OSCILLATOR

Using crystal control, 150 watts of r-f power output may be obtained without overheating the crystal.

PLATE TEMPERATURE

The plate of the RK-28 will show a light red color (See Plate Temperature Color Scale) when operated at the maximum rated plate dissipation. Dissipations above the rated value should be avoided.

