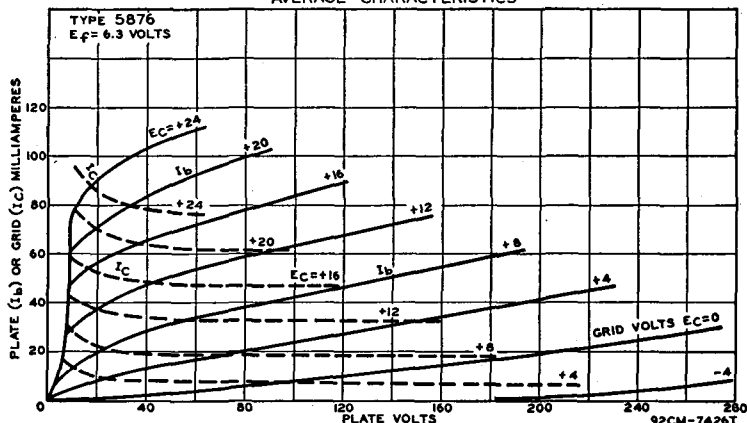


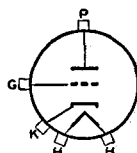
AVERAGE CHARACTERISTICS



MEDIUM-MU TRIODE

5893

Pencil-type tube used as plate-pulsed oscillator, as rf power amplifier and oscillator, and as frequency doubler. May be used with full input up to 1000 Mc and with reduced input up to



3300 Mc. Designed for use in coaxial-cylinder-type circuits, it may also be used in parallel-line and lumped circuits. Class C Telegraphy maximum plate dissipation, CCS 7 watts, ICAS 8 watts. May be mounted in any position. OUTLINE 66, *Outlines* Section.

HEATER VOLTAGE (AC/DC):	6.0 + 5%	volts
	-10%	
HEATER CURRENT	0.330	ampere
TRANSCONDUCTANCE*	6000	μmhos
AMPLIFICATION FACTOR*	27	
PLATE RESISTANCE (Approx.)*	4500	ohms
DIRECT INTERELECTRODE CAPACITANCES:		
Grid to plate	1.75	μf
Grid to cathode and heater	2.5	μf
Plate to cathode and heater	0.07 max	μf

* Plate-supply volts, 200; cathode resistor, 100 ohms; plate milliamperes, 25.

PLATE-PULSED OSCILLATOR^A—Class C

For a maximum "on" time^B of 5 microseconds

Maximum Ratings:

PEAK POSITIVE-PULSE PLATE-SUPPLY VOLTAGE [†]	1750 max	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	150 max	volts
PEAK PLATE CURRENT FROM PULSE SUPPLY	3 max	amperes
PEAK RECTIFIED GRID CURRENT	1.3 max	amperes
DC PLATE CURRENT	3 max	ma
DC GRID CURRENT	1.3 max	ma
PLATE DISSIPATION [*]	6 max	watts
DUTY FACTOR ^B	0.001 max	
PULSE DURATION	1.5 max	μsec
PLATE-SEAL TEMPERATURE	175 max	°C

Typical Operation with Rectangular Wave Shape in Cathode-Drive Circuit at 3300 Mc:

With duty factor^B of 0.001

Peak Positive-Pulse Plate-Supply Voltage [†]	1750	volts
Peak Negative-Pulse Grid Voltage [‡]	110	volts
From grid resistor of	100	ohms
Peak Plate Current from Pulse Supply	3.0	amperes

RCA Transmitting Tubes

Peak Rectified Grid Current.....	1.1	amperes
DC Plate Current.....	3	ma
DC Grid Current.....	1.1	ma
Useful Power Output at Peak of Pulse [‡] (Approx.).....	1200	watts
Pulse Duration.....	1	μsec
Pulse Repetition Rate.....	1000	pps

▲ In this class of service, the heater should be allowed to warm up for a minimum of 60 seconds before plate voltage is applied.

• On time for this tube is the sum of the durations of all the individual pulses which occur during any 5000-microsecond interval. Pulse duration is defined as the time interval between the two points on the pulse at which the instantaneous value is 70 per cent of the peak 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.

♦ The magnitude of any spike on the plate voltage pulse should not exceed a value of 2000 volts with respect to cathode, and its duration should not exceed 0.01 microsecond measured at the peak-pulse-value level.

* In applications where the plate dissipation exceeds 2.5 watts, it is important that a large area of contact be provided between the plate cylinder and the connector in order to provide adequate heat conduction.

■ Duty factor is the product of pulse duration and repetition rate. For variable pulse durations and pulse repetition rates, the duty factor for this tube is defined as the ratio of time "on" to total elapsed time in any 5000-microsecond interval.

◊ Obtained from grid resistor of value shown.

‡ This value is determined from the average power output using the duty factor of the peak power-output pulse. This procedure is necessary because the power-output-pulse duty factor may be less than the applied-voltage-pulse duty factor because of a delay in the start of rf power output.

PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE.....	260 max	320 max	volts
DC GRID VOLTAGE.....	-100 max	-100 max	volts
DC PLATE CURRENT.....	33 max	33 max	ma
DC GRID CURRENT.....	15 max	15 max	ma
PLATE INPUT.....	8.5 max	10.5 max	watts
PLATE DISSIPATION*.....	5 max	5.5 max	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.....	90 max	90 max	volts
Heater positive with respect to cathode.....	90 max	90 max	volts
PLATE-SEAL TEMPERATURE.....	175 max	175 max	°C

Typical Operation in Cathode-Drive Circuit at 500 Mc:	CCS	ICAS	
DC Plate Voltage.....	250	300	volts
DC Grid Voltage◊.....	-36	-45	volts
DC Plate Current.....	30	30	ma
DC Grid Current (Approx.).....	11	12	ma
Driver Power Output (Approx.).....	1.8	2.0	watts
Useful Power Output (Approx.).....	5.5	6.5	watts

Maximum Circuit Values (CCS or ICAS conditions):

Grid-Circuit Resistance.....	0.1 max	megohm
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* In applications where the plate dissipation exceeds 2.5 watts, it is important that a large area of contact be provided between the plate cylinder and the connector in order to provide adequate heat conduction.

◊ Obtained from grid resistor.

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telephony[#] and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE.....	320 max	400 max	volts
DC GRID VOLTAGE.....	-100 max	-100 max	volts
DC PLATE CURRENT.....	35 max	40 max	ma
DC GRID CURRENT.....	15 max	15 max	ma
PLATE INPUT.....	11 max	16 max	watts
PLATE DISSIPATION*.....	7 max	8 max	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.....	90 max	90 max	volts
Heater positive with respect to cathode.....	90 max	90 max	volts
PLATE-SEAL TEMPERATURE.....	175 max	175 max	°C

RCA Transmitting Tubes

Typical Operation as RF Power Amplifier in Cathode-Drive Circuit:

	500 Mc	1000 Mc	500 Mc	1000 Mc	
DC Plate Voltage.....	300	300	350	350	volts
DC Grid Voltage ϕ	-47	-30	-51	-33	volts
DC Plate Current.....	33	33	35	35	ma
DC Grid Current (Approx.).....	13	12	13	13	ma
Driver Power Output (Approx.).....	2	1.9	2.5	2.4	watts
Useful Power Output (Approx.).....	7.5	5.5	8.5	6.5	watts

Typical Operation as Oscillator in Cathode-Drive Circuit at 500 Mc:

DC Plate Voltage.....	300	350	volts
DC Grid Voltage ϕ	-47	-51	volts
DC Plate Current.....	33	35	ma
DC Grid Current (Approx.).....	13	13	ma
Useful Power Output (Approx.).....	5	6	watts

Maximum Circuit Values (CCS or ICAS conditions):

Grid-Circuit Resistance..... 0.1 max megohm

Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

* In applications where the plate dissipation exceeds 2.5 watts, it is important that a large area of contact be provided between the plate cylinder and the connector in order to provide adequate heat conduction.

ϕ Obtained from grid resistor.

FREQUENCY DOUBLER

Maximum Ratings:

	CCS	ICAS	
DC PLATE VOLTAGE.....	260 max	320 max	volts
DC GRID VOLTAGE.....	-100 max	-100 max	volts
DC PLATE CURRENT.....	33 max	33 max	ma
DC GRID CURRENT.....	12 max	12 max	ma
PLATE INPUT.....	8.5 max	10.5 max	watts
PLATE DISSIPATION*.....	6 max	7.5 max	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.....	90 max	90 max	volts
Heater positive with respect to cathode.....	90 max	90 max	volts
PLATE-SEAL TEMPERATURE.....	175 max	175 max	°C

Typical Operation as Doubler to 1000 Mc in Cathode-Drive Circuit:

DC Plate Voltage.....	250	300	volts
DC Grid Voltage ϕ	-40	-50	volts
DC Plate Current.....	33	33	ma
DC Grid Current (Approx.).....	7	8	ma
Driver Power Output (Approx.).....	3.2	3.5	watts
Useful Power Output (Approx.).....	2.75	3.0	watts

AVERAGE CHARACTERISTICS

