AMPEREX TUBE TYPE 6083

The 6083/AX-9909 is a five-electrode tube designed for use as a radio-frequency power amplifier, oscillator and audio-frequency amplifier. The anode is capable of dissipating 45 watts, and cooling is accomplished by radiation. The cathode is a coated unipotential cathode. Maximum ratings apply up to 60 megacycles.

GENERAL CHARACTERISTICS

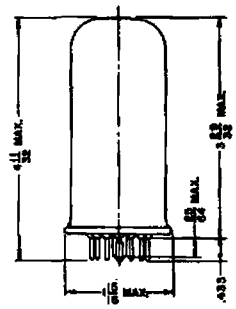
ELECTRICAL

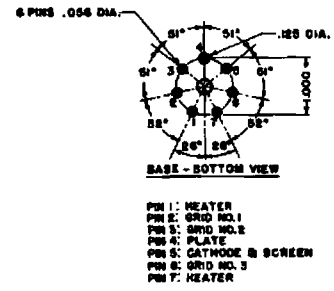
	Min.	Bogey	Max.	
Heater Voltage	11.4	12.6	13.8	volts
Heater Current at Bogey Voltage	1.22	1.35	1.48	amperes
Amplification Factor				
G1-G2 Mu at Eb=1000 volts,				
Ec2=300 volts, Ib=40 ma	5.4	6.7	8.0	
Peak Cathode Current[1]	—	—	1.5	amperes
Direct Interelectrode Capacitances				
Grid-Plate	—	0.1	0.2	μμf
Input	21	22.5	24	μμf
Output	9.8	11	12.2	μμf

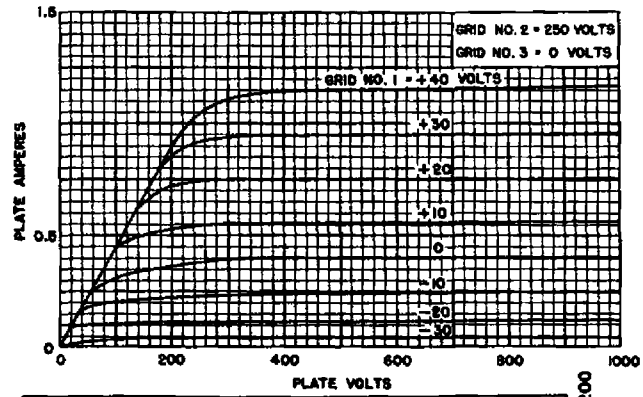
MECHANICAL

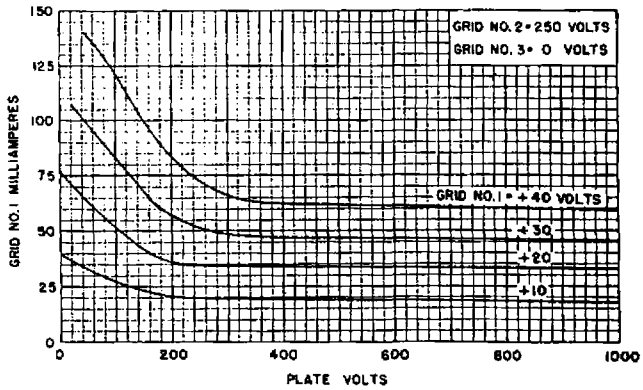
Mounting Position	Any
Maximum Glass Temperature at bottom seals	180° C
Net weight, approximate	2.7 ounces

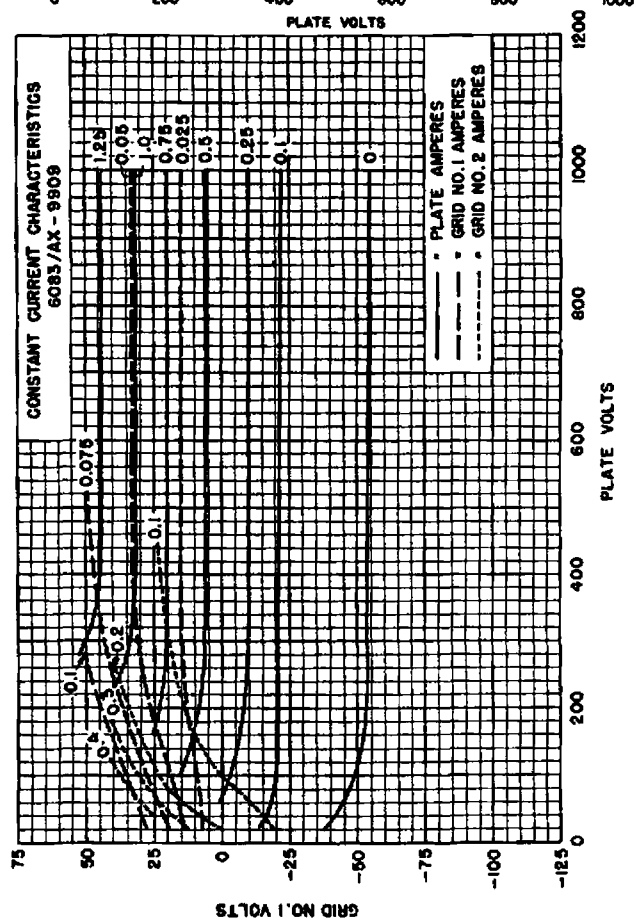
[1]Represents maximum usable cathode current (plate current plus current to each grid) for any condition of operation.

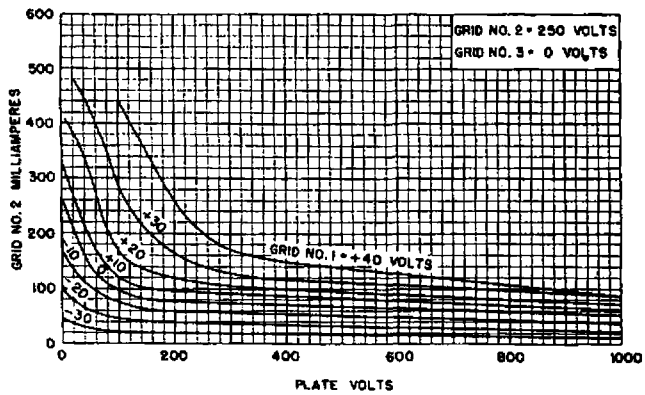




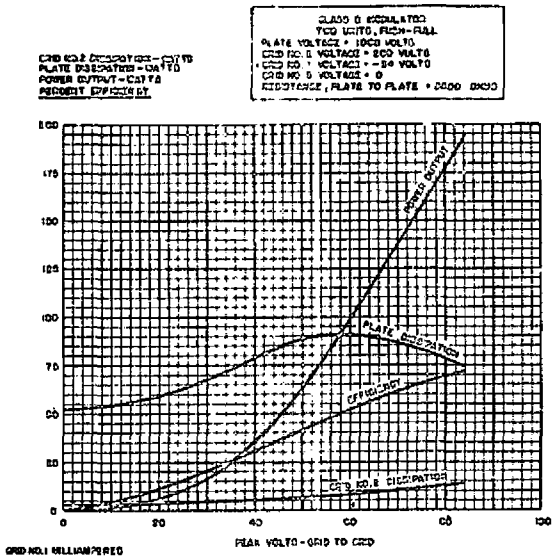


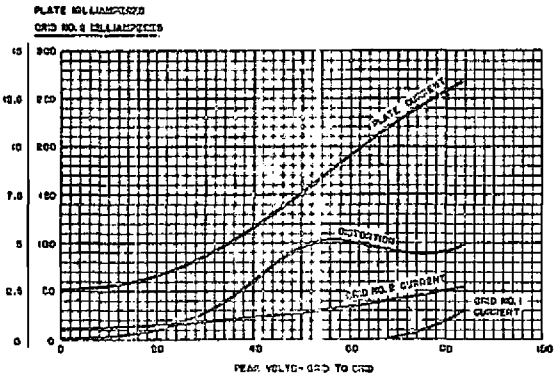


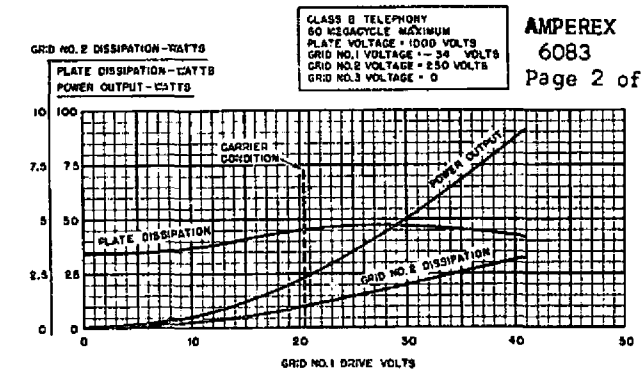


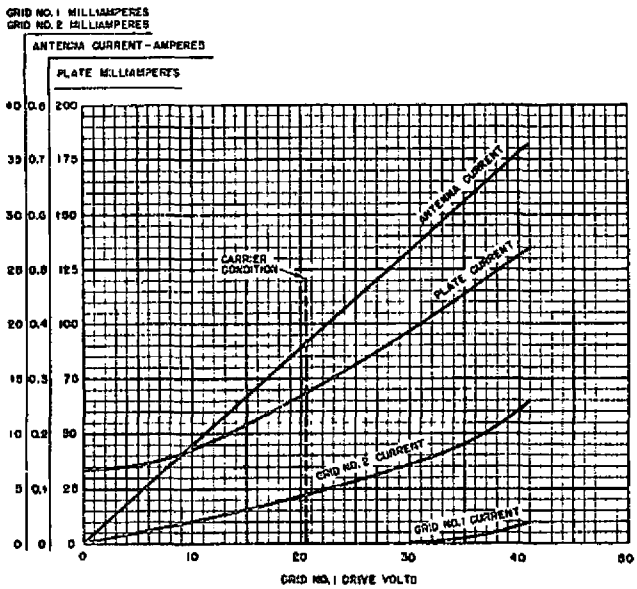


from RTMA release #1230, Sept. 4, 1953

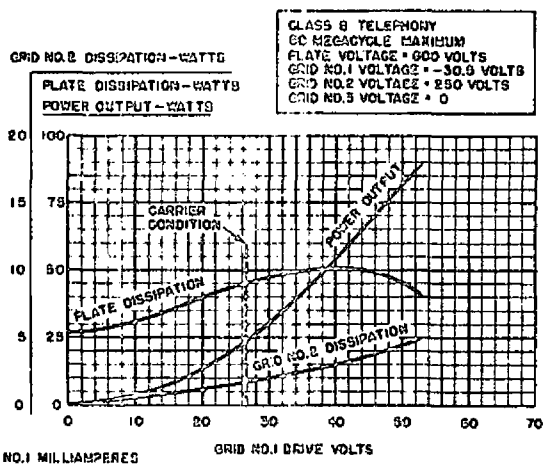

GRID NO.2 DISSIPATION-WATTS
PLATE DISSIPATION-WATTS
POWER OUTPUT-WATTS
PERCENT EFFICIENCY
POWER OUTPUT
PLATE DISSIPATION
EFFICIENCY
GRID NO.2 DISSIPATION
PEAK VOLTS-GRID TO GRID

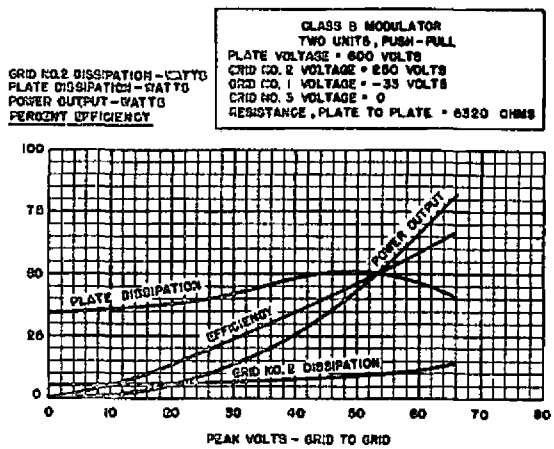

GRID NO.1 MILLIAMPERES
PERCENT DISTORTION
PLATE MILLIAMPERES
GRID NO.2 MILLIAMPERES
PLATE CURRENT
DISTORTION
GRID NO.2 CURRENT
GRID NO.1 CURRENT
PEAK VOLTS-GRID TO GRID

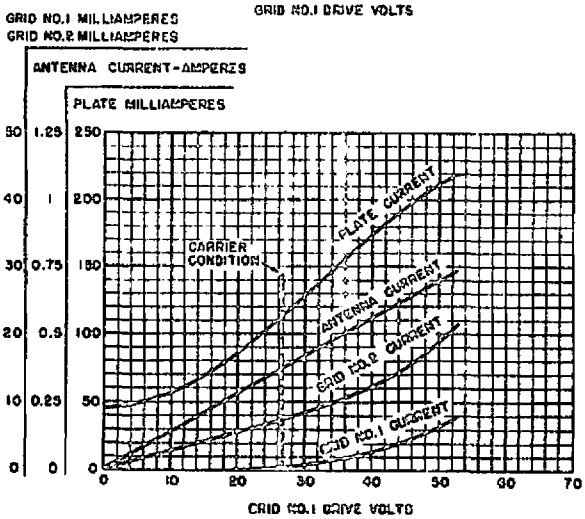

CLASS B TELEPHONY
60 MEGACYCLE MAXIMUM
PLATE VOLTAGE = 1000 VOLTS
GRID NO.1 VOLTAGE = -34 VOLTS
GRID NO.2 VOLTAGE = 250 VOLTS
GRID NO.3 VOLTAGE = 0
GRID NO.2 DISSIPATION-WATTS
PLATE DISSIPATION-WATTS
POWER OUTPUT-WATTS
CARRIER CONDITION
POWER OUTPUT
PLATE DISSIPATION
GRID NO.2 DISSIPATION
GRID NO.1 DRIVE VOLTS

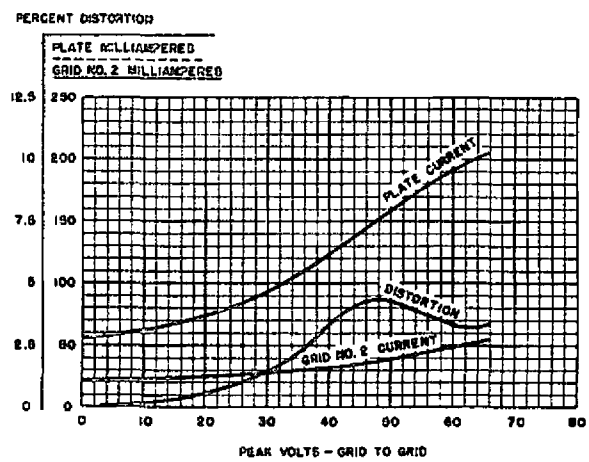

GRID NO.1 MILLIAMPERES
GRID NO.2 MILLIAMPERES
ANTENNA CURRENT-AMPERES
PLATE MILLIAMPERES
CARRIER CONDITION
ANTENNA CURRENT
PLATE CURRENT
GRID NO.2 CURRENT
GRID NO.1 CURRENT
GRID NO.1 DRIVE VOLTS

6083


CLASS B TELEPHONY
60 MEGACYCLE MAXIMUM
PLATE VOLTAGE = 600 VOLTS
GRID NO.1 VOLTAGE = -30.5 VOLTS
GRID NO.2 VOLTAGE = 250 VOLTS
GRID NO.3 VOLTAGE = 0
GRID NO.2 DISSIPATION-WATTS
PLATE DISSIPATION-WATTS
POWER OUTPUT-WATTS
CARRIER CONDITION
POWER OUTPUT
PLATE DISSIPATION
GRID NO.2 DISSIPATION
GRID NO.1 DRIVE VOLTS


CLASS B MODULATOR
TWO UNITS, PUSH-PULL
PLATE VOLTAGE = 600 VOLTS
GRID NO.2 VOLTAGE = 250 VOLTS
GRID NO.1 VOLTAGE = -33 VOLTS
GRID NO.3 VOLTAGE = 0
RESISTANCE, PLATE TO PLATE = 6320 OHMS
GRID NO.2 DISSIPATION-WATTS
PLATE DISSIPATION-WATTS
POWER OUTPUT-WATTS
PERCENT EFFICIENCY
POWER OUTPUT
PLATE DISSIPATION
EFFICIENCY
GRID NO.2 DISSIPATION
PEAK VOLTS-GRID TO GRID


GRID NO.1 MILLIAMPERES
GRID NO.2 MILLIAMPERES
ANTENNA CURRENT-AMPERES
PLATE MILLIAMPERES
CARRIER CONDITION
PLATE CURRENT
ANTENNA CURRENT
GRID NO.2 CURRENT
GRID NO.1 CURRENT
GRID NO.1 DRIVE VOLTS


PERCENT DISTORTION
PLATE MILLIAMPERES
GRID NO.2 MILLIAMPERES
PLATE CURRENT
DISTORTION
GRID NO.2 CURRENT
PEAK VOLTS-GRID TO GRID

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

A.F. Power Amplifier and Modulator—Class B

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	1000 volts max.
D.C. Grid No. 2 Voltage	300 volts max.
Maximum Signal D.C. Plate Current[1]	210 ma max.
Maximum Signal Plate Input[1]	180 watts max.
Maximum Signal Grid No. 2 Input[1]	7 watts max.
Plate Dissipation[1]	45 watts max.

Typical Operation

Unless otherwise specified, values are for two tubes

	CCS	CCS	CCS	
D.C. Plate Voltage	600	800	1000	volts
D.C. Grid No. 3 Voltage	0	0	0	volts
D.C. Grid No. 2 Voltage	250	250	250	volts
D.C. Grid No. 1 Voltage	33	33.5	34	volts
Peak A.F. Grid No. 1 to Grid No. 1 Voltage	66	69	84	volts
Zero Signal D.C. Plate Current	2x28	2x28	2x26	ma
Maximum Signal D.C. Plate Current	2x102	2x108	2x134	ma
Zero Signal D.C. Grid No. 2 Current	2x11	2x8	2x5	ma
Max. Signal D.C. Grid No. 2 Current	2x28	2x27	2x28	ma
Effective Load Resistance, Plate to Plate	6320	7560	8800	ohms
Max. Signal Driving Power, approx.	0	0	0.06	watts
Max. Signal Power Output, approx.	82	110	194	watts

R.F. Power Amplifier—Class B

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

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	1000 volts max.
D.C. Grid No. 3 Voltage	0 volts max.
D.C. Grid No. 2 Voltage	300 volts max.
D.C. Plate Current	170 ma max.
Plate Input	72 watts max.
Grid No. 3 Input	— watts max.
Grid No. 2 Input	6 watts max.
Plate Dissipation	45 watts max.

Typical Operation

	CCS	CCS	CCS	
D.C. Plate Voltage	600	800	1000	volts
D.C. Grid No. 3 Voltage	0	0	0	volts
D.C. Grid No. 2 Voltage	250	250	250	volts
D.C. Grid No. 1 Voltage	−30.5	−33	−34	volts
Peak R.F. Grid No. 1 Voltage	26.5	22.5	20.5	volts
D.C. Plate Current	114	85	68	ma
D.C. Grid No. 2 Current	7.5	6	4.5	ma
D.C. Grid No. 1 Current, approximate	0	0	0	ma
Driving Power, approximate[2]	0.38	0.17	0.08	watts
Power Output, approximate	23	23	23	watts

Plate and Screen Grid Modulated R.F. Power Amplifier — Class C — Telephony

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

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	800 volts max.
D.C. Grid No. 3 Voltage	0 volts max.
D.C. Grid No. 2 Voltage	300 volts max.
D.C. Grid No. 1 Voltage	−250 volts max.
D.C. Plate Current	170 ma max.
D.C. Grid No. 1 Current	12 ma max.
Plate Input	136 watts max.
Grid No. 2 Input	6 watts max.
Plate Dissipation	30 watts max.

Typical Operation

	CCS	CCS	
D.C. Plate Voltage	600	800	volts
D.C. Grid No. 3 Voltage	0	0	volts
D.C. Grid No. 2 Voltage	250	250	volts
DC. Grid No. 1 Voltage	−120	−120	volts
Peak R.F Grid No 1 Voltage	150	150	volts
D.C. Plate Current	120	120	ma
D.C. Grid No. 2 Current	23	23	ma
D.C. Grid No. 1 Current, approximate	6.5	6.5	ma
Driving Power, approximate	0.9	0.9	watts
Power Output, approximate	51	75	watts

Suppressor-Modulated R.F. Power Amplifier Class C—Telephony

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

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	1000 volts max.
D.C. Grid No. 3 Voltage	−150 volts max.
D.C. Grid No. 2 Voltage	300 volts max.
D.C. Grid No. 1 Voltage	−250 volts max.
D.C. Plate Current	136 ma max.
D.C. Grid No. 1 Current	12 ma max.
Plate Input	72 watts max.
Grid No. 3 Input	0 watts max.
Grid No. 2 Input	6 watts max.
Plate Dissipation	45 watts max.

Typical Operation

	CCS	CCS	CCS	
D.C. Plate Voltage	600	800	1000	volts
D.C. Grid No. 3 Voltage	−60	−80	−100	volts
D.C. Grid No. 2 Voltage	150	150	150	volts
D.C. Grid No. 1 Voltage	−100	−100	−100	volts
Peak A.F. Grid No. 3 Voltage	60	80	100	volts
Peak R.F. Grid No. 1 Voltage	150	145	140	volts
D.C. Plate Current	111	98.5	72	ma
D.C. Grid No. 2 Current	26	25	24	ma
D.C. Grid No. 1 Current, approximate	11	11	10	ma
Driving Power, approximate	1.5	1.5	1.3	watts
Power Output, approximate	22	26	27	watts

R.F. Power Amplifier and Oscillator Class C—Telegraphy

Key-down conditions per tube without amplitude modulation[3]

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	1000 volts max.
D.C. Grid No. 3 Voltage	0 volts max.
D.C. Grid No. 2 Voltage	300 volts max.
D.C. Grid No. 1 Voltage	−250 volts max.
D.C. Plate Current	210 ma max.
D.C. Grid No. 1 Current	12 ma max.
Plate Input	210 watts max.
Grid No. 2 Input	7 watts max.
Plate Dissipation	45 watts max.

Typical Operation

	CCS	CCS	CCS	
D.C. Plate Voltage	600	800	1000	volts
D.C. Grid No. 3 Voltage	0	0	0	volts
D.C. Grid No. 2 Voltage	250	250	250	volts
D.C. Grid No. 1 Voltage	−100	−110	−120	volts
Peak R.F. Grid No 1 Voltage	124	134	144	volts
D.C. Plate Current	205	190	177	ma
D.C. Grid No. 2 Current	28	28	28	ma
D.C. Grid No. 1 Current, approximate	7.5	6	5	ma
Driving Power, approximate	0.84	0.73	0.65	watts
Power Output, approximate	78	107	132	watts

Electrical Data and Limits

Maximum ratings apply up to 60 megacycles.

Characteristic	Conditions		Limits Min.	Bogey	Max.
Grid No. 1 Voltage	Eb=250 V Ec₂=250 V Ib=850 ma	Ec₁:	—	—	40 volts
Grid No. 2 Current	Eb=250 V Ec₂=250 V Ib=850 ma	Ic₂:	—	—	200 ma
Grid No. 1 Current	Eb=250 V Ec₂=250 V Ib=850 ma	Ic₁:	—	—	70 ma
Plate Current	Eb=1000 V Ec₂=300 V Ec₁=−55 V	Ib:	—	—	5 ma
Plate Current	Eb=1000 V Ec₂=300 V Ec₁=−35 V	Ib:	27	50	73 ma
Plate Current	Eb=1000 V Ec₂=300 V Ec₁=−25 V	Ib:	84	128	172 ma
Grid No. 2 Current	Eb=1000 V Ec₂=300 V Ec₁=−35 V	Ic₂:	—	—	5 ma
Power Output	Eb=1000 V Ec₂=250 V Ec₁=−120 V Ib=175 ma f=60 megacycles	Po:	105	—	— watts

[1] Averaged over any audio-frequency cycle of sine-wave form.

[2] At crest of audio-frequency cycle with modulation factor of 1.0.

[3] Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.