Amperex® Electronic Corporation
TUBE DIVISION
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TUBE TYPES 6076 6076A

The 6076A is a ceramic and metal version of the 6076. It is an external anode tetrode for R.F. power amplifier service.

The 6076A is particularly suited for use in broadcast transmitters including VHF television.

The external anode of this tube is capable of dissipating 3.0 kW. The maximum frequency rating is 220 MHz.

GENERAL CHARACTERISTICS

MECHANICAL

Dimensions	see outline drawings
Mounting Position	vertical anode up or down
Control Grid Connection	see note 1
Air Cooling Data	

Plate Dissipation (kw)	Height Above Sea Level (feet)	Inlet Air Temp. (°C)	Min. Air Flow (cu.ft./min.)	Inlet Pressure (inches of water)
1	0	35	65	0.4
1	0	45	80	0.6
1	5,000	35	80	0.5
1	10,000	25	80	0.5
2.5	0	35	160	2.4
2.5	0	45	190	3.4
2.5	5,000	35	190	2.9
2.5	10,000	25	205	3.0
3	0	35	200	3.8

	6076	6076A
Maximum Bulb Temperature	250° C	250° C
Maximum Seal Temperature[2]	180° C	250° C
Accessories		
Grid No. 2 Connector		Amperex #S-3706
Filament Connector & Grid No. 1 Connector		Amperex #S-3707
Air Flow Chamber		Amperex #S-11882
Net Weight (approx.)		5 lbs.

ELECTRICAL

Filament Voltage	6.3 volts	
Filament Current	32.5 amps	
Filament Cold Resistance	0.02 ohm	
Amplification Factor (G_2 - G_1 Mu)	8.5	
Transconductance (I_b = 2 amps)	19,000 μmhos	
Direct Interelectrode Capacitances	6076	6076A
Input	21	22 pf
Output	7	8 pf
Plate to Control Grid	0.2	0.24 pf
Peak Cathode Current (max.)[3]	7 amps	

[1] Both pins must be used to make connection to the control grid at frequencies above 30 MHz.
[2] To keep the temperature of the seals below this value, it may be necessary to direct an air flow of sufficient velocity to the seals.
[3] Represents maximum usable cathode current for any condition of operation.

Amperex

Rev. March 1968

Plate and Screen Grid Modulated, RF Power Amplifier - Class C Telephony

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

Maximum Ratings, Absolute Values
(Frequencies up to 110 MHz)

	CCS
DC Plate Voltage	4000 volts
DC Grid No. 2 Voltage	800 volts
DC Grid No. 1 Voltage	-500 volts
DC Plate Current	0.9 amp
Plate Input	3.7 kW
Plate Dissipation	2 kW
Grid No. 2 Dissipation[4]	100 watts
Grid No. 1 Dissipation	30 watts

Typical Operation
(Screen grid supply via a choke of 60 henrys)

	CCS
DC Plate Voltage	4000 volts
DC Grid No. 2 Voltage	800 volts
DC Grid No. 1 Voltage	-375 volts
Peak RF Grid No. 1 Voltage	625 volts
DC Plate Current	0.9 amp
DC Grid No. 2 Current	120 m A
DC Grid No. 1 Current	85 m A
Driving Power	48 watts
Power Output	2.7 kW

RF Power Amplifier
Class C Telegraphy

Key-down conditions per tube without amplitude modulation[5]

Maximum Ratings, Absolute Values
(Frequencies up to 110 MHz)

	CCS
DC Plate Voltage[6]	5000 volts
DC Grid No. 2 Voltage	800 volts
DC Grid No. 1 Voltage	-500 volts
DC Plate Current	1.1 amps
Plate Input	5.5 kW
Plate Dissipation	3 kW
Grid No. 2 Dissipation	100 watts
Grid No. 1 Dissipation	30 watts

Typical Operation

	CCS	CCS	CCS	CCS
Frequency	75	75	110	220 MHz
DC Plate Voltage	4000	5000	5000	4000 volts
DC Grid No. 2 Voltage	800	800	800	800 volts
DC Grid No. 1 Voltage	-250	-250	-250	-250 volts
DC Plate Current	1.1	1.1	1.1	1.1 amps
DC Grid No. 2 Current	120	100	100	120 m A
DC Grid No. 1 Current	80	70	70	80 m A
Peak RF Grid No. 1 Voltage	500	480	480	500 volts
Driving Power	36	30	30	36 watts
Power Output	3.15	4.1	3.9	2.9 kW

[4] For all other modulation methods the grid No. 2 dissipation is 65 watts maximum.
[5] Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.
[6] At 220 MHz the DC plate voltage = 4000 volts max. For other frequencies see derating curve.

R.F. Power Amplifier, Grid Modulated
Class C Television Service

Negative Modulation, Positive Synchronization

Maximum Ratings, Absolute Values
(Frequencies up to 220 MHz)

D.C. Plate Voltage [7]	4000 volts
D.C. Grid No. 2 Voltage	800 volts
D.C. Grid No. 1 Voltage	-500 volts
D.C. Plate Current (sync.)	1.5 amps
Plate Input (sync.)	6 kW
Plate Dissipation (sync.)	3 kW
Grid No. 2 Dissipation (sync.)	100 watts
Grid No. 1 Dissipation (sync.)	30 watts

Typical Operation
Two tubes, Push-Pull

	CCS[8], [10]	CCS[9], [10]	CCS[7], [9]
Frequency	170-220	170-220	88 MHz
D.C. Plate Voltage	4000	4000	5000 volts
D.C. Grid No. 2 Voltage	800	800	800 volts
D.C. Grid No. 1 Voltage			
Synchronization level	-150	-150	-150 volts
Pedestal level	-230	-260	-260 volts
White level	-450	-450	-450 volts
R.F. Grid No. 1 Voltage peak to peak	850	850	900 volts[11]
D.C. Plate Current			
Synchronization level	2.75	2.75	2.7 amps
Pedestal level	2.1	1.5	1.75 amps
D.C. Grid No. 2 Current			
Synchronization level	110	250	145 mA
Pedestal level	50	65	40 mA
D.C. Grid No. 1 Current			
Synchronization level	100	80	82 mA
Pedestal level	50	20	35 mA
Driving Power at Synchronization level	300-400	200-300	200-300 watts [12]
Power Output			
Synchronization level	5	5.9	8 kW
Pedestal level	2.8	3.3	4.5 kW

[7] Up to 88 MHz, a D.C. Plate Voltage of 5000 volts is allowed.
[8] Wide band; 6.5 MHz bandwidth at - 1.5 db or 12 MHz at -3 db.
[9] Narrow band; 7.5 MHz bandwidth at -3 db.
[10] The values of bandwidth are based on measurements on a circuit with a single LC-section.
[11] Measured by slide back method.
[12] Driving Power is accounted for largely by circuit losses. The indicated driving power is required to take care of losses in damping resistors, circuit losses and tube driving power.

Class AB_2 Grounded Grid Linear R.F. Amplifier
Single Sideband Suppressed Carrier Operation

Maximum Ratings, Absolute Values
(Frequencies up to 110 MHz)

	CCS
DC Plate Voltage	5000 volts[6]
DC Grid No. 2 Voltage	600 volts
DC Grid No. 1 Voltage	-500 volts
DC Plate Current	1.8 amps
Plate Input	8.2 kW
Plate Dissipation	3 kW
Grid No. 2 Dissipation	100 watts
Grid No. 1 Dissipation	30 watts

Typical Operation
Single Tone and/or Two Tone Modulation

	CCS	CCS	CCS	CCS	CCS
DC Plate Voltage	5000	4500	4000	3500	3000 volts
DC Grid No. 2 Voltage	600	600	600	600	600 volts
DC Grid No. 1 Voltage	-50	-50	-50	-50	-50 volts
Zero Signal DC Plate Current	350	330	310	300	280 mA
Zero Signal DC Grid No. 2 Current	2	2	2	3	3 mA
Effective RF Load Resistance	1600	1600	1300	1400	1500 ohms
Single Tone Modulation					
Max Signal DC Plate Current	1.63	1.43	1.45	1.25	1.06 amps
Max Signal DC Grid No. 2 Current	110	95	95	93	103 mA
Max Signal DC Grid No. 1 Current	95	71	76	57	41 mA
Max Signal Peak RF Cathode Voltage	275	250	240	220	190 volts
Max Signal Driving Power Output	475	374	365	298	211 watts
Max Signal Plate Power	5350+428	4100+340	3500+320	2700+260	1975+186 watts
Max Signal Driver Feedthru Power	428	340	320	260	186 watts
Cathode Impedance	80	82	83	85	88 ohms
Two Tone Modulation					
Average DC Plate Current	1110	990	1000	830	710 mA
Average DC Grid No. 2 Current	42	37	30	29	29 mA
Average DC Grid No. 1 Current	44	34	32	24	19 mA
Max Resultant Peak RF Cathode Voltage	275	250	240	220	190 volts
Average Plate Power Output	2675+214	2050+170	1750+160	1350+130	988+93 watts
Peak Envelope Plate Power Output	5350+428	4100+340	3500+320	2700+260	1975+186 watts
Average Driver Feedthru Power	214	170	160	130	93 watts
Peak Envelope Feedthru Power	428	340	320	260	186 watts
3rd Order Intermodulation Distortion	-37	-38	-40	-40	-40 db

R.F. Power Amplifier
Class B - Television Service [13]

Maximum Ratings, Absolute Values
(Frequencies up to 220 MHz)

	CCS
D.C. Plate Voltage [7]	4000 volts
D.C. Grid No. 2 Voltage	800 volts
D.C. Plate Current (sync.)	1.5 amps
Plate Input (sync.)	6 kW
Plate Dissipation (sync.)	3 kW
Grid No. 2 Dissipation (sync.)	100 watts
Grid No. 1 Dissipation (sync.)	30 watts

Typical Operation
Two Tubes Push-Pull

	CCS
Frequency	170-220 MHz
D.C. Plate Voltage	4000 volts
D.C. Grid No. 2 Voltage	800 volts
D.C. Grid No. 1 Voltage	-150 volts
R.F. Grid No. 1 Voltage peak to peak	
Synchronization level [14]	850 volts
Pedestal level [14]	700 volts
D.C. Plate Current	
Synchronization level	2.75 amps
Pedestal level	2.1 amps
D.C. Grid No. 2 Current	
Synchronization level	110 mA
Pedestal level	50 mA
D.C. Grid No. 1 Current	
Synchronization level	100 mA
Pedestal level	50 mA
Driving Power at	
Synchronization level [12]	300-400 watts
Power Output	
Synchronization level	5 kW
Pedestal level	2.8 kW

[13] Bandwidth; 6.5 MHz at -1.5 db or 12 MHz at -3 db.
[14] Measured by increasing fixed bias until no grid current flows.

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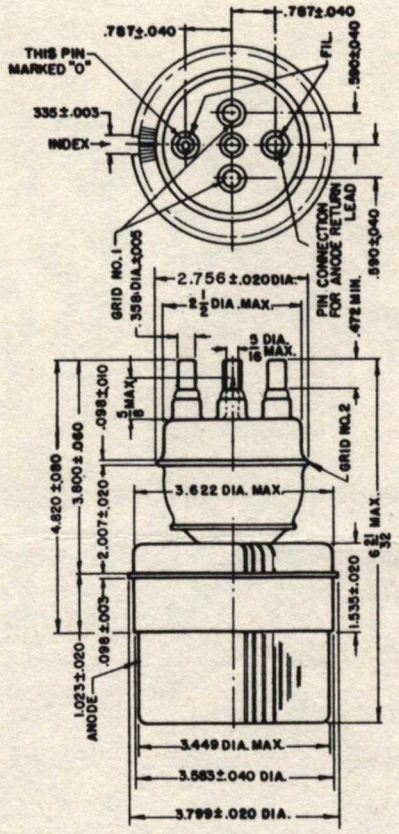

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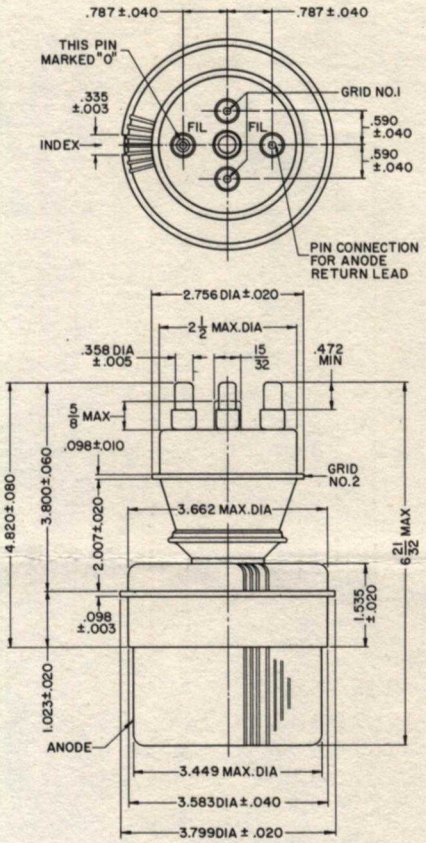

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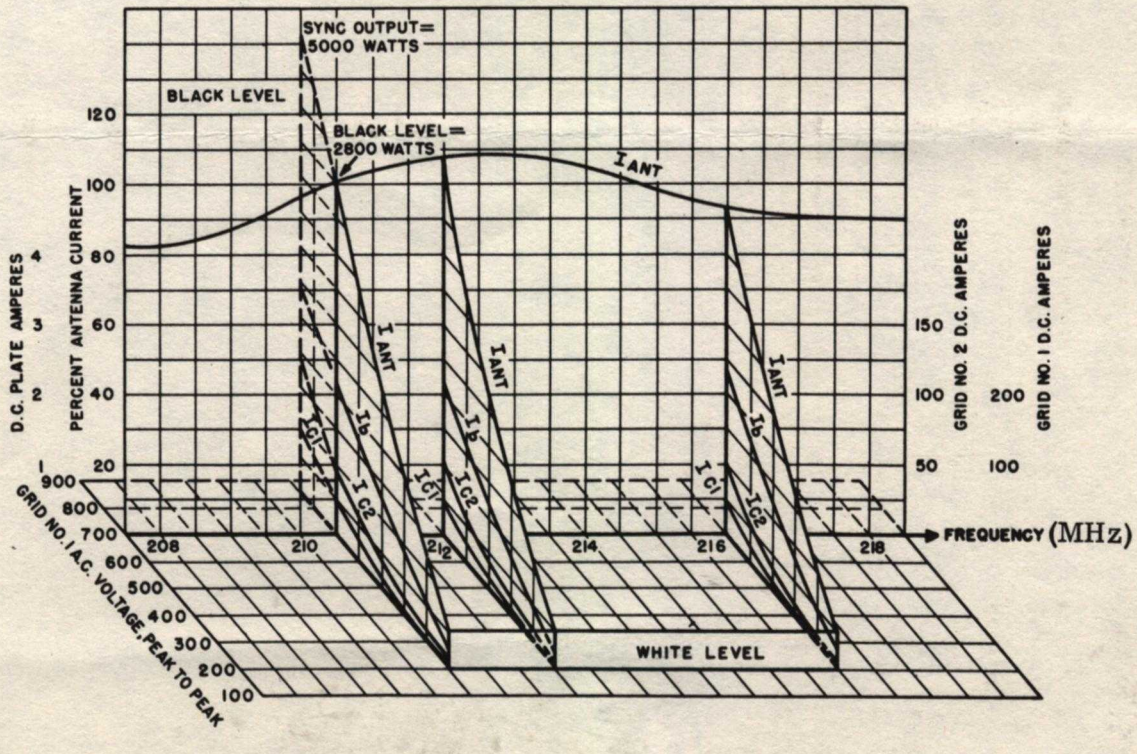
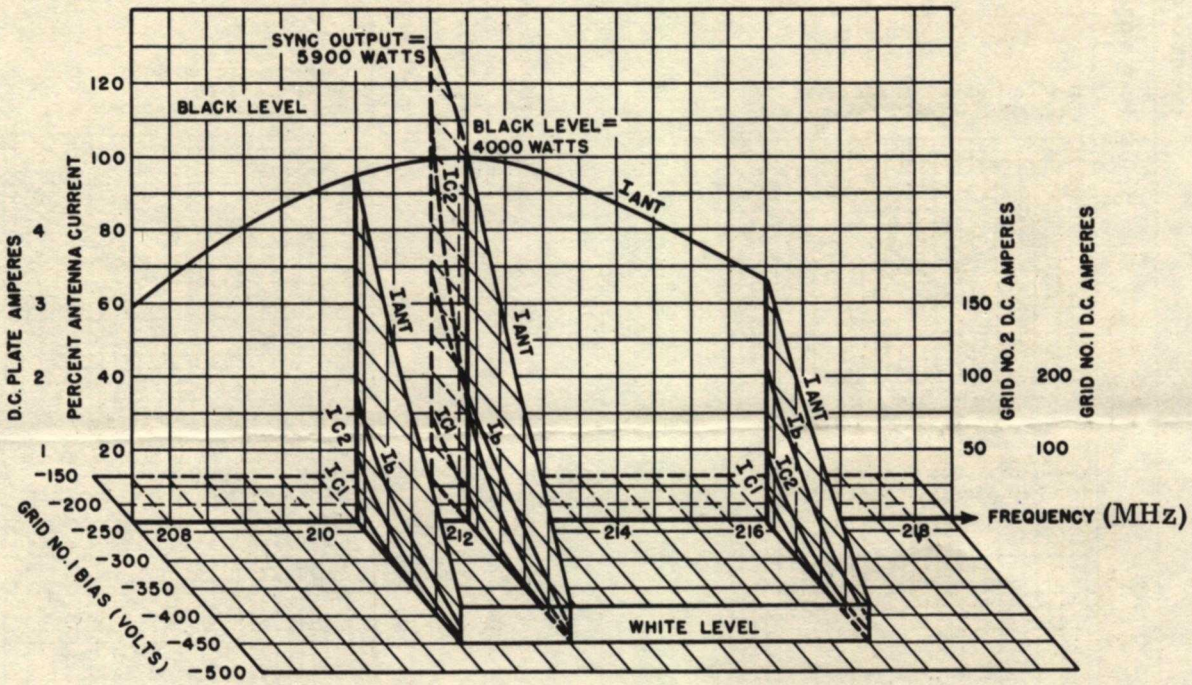
GRID MODULATED H.F. CLASS B AMPLIFIER—T.V. SERVICE (2 TUBES, PUSH—PULL)

PLATE VOLTAGE = 4000 VOLTS
GRID NO. 2 VOLTAGE = 800 VOLTS
GRID NO. 1 BIAS = 150 VOLTS



GRID MODULATED H.F. CLASS C AMPLIFIER—T.V. SERVICE (2 TUBES, PUSH—PULL)

PLATE VOLTAGE = 4000 VOLTS
GRID NO. 2 VOLTAGE = 800 VOLTS
GRID NO. 1 A.C. VOLTAGE = 850 VOLTS, PEAK TO PEAK



GRID MODULATED H.F. CLASS C AMPLIFIER—T.V. SERVICE (2 TUBES, PUSH—PULL)

PLATE VOLTAGE = 4000 VOLTS
GRID NO. 2 VOLTAGE = 800 VOLTS
GRID NO. 1 A.C. VOLTAGE = 850 VOLTS, PEAK TO PEAK