



**ADVANCE DATA**

**MECHANICAL DATA**

Bulb	T-12
Base	B8-98, B8-86, Large Wafer Octal 8-Pin With Metal Sleeve
	B8-150, B8-159, Small Wafer Octal 8-Pin With Metal Sleeve
Outline	See Drawing
Top Cap	C1-1 or C1-38
Basing	7CK
Cathode	Coated Unipotential
Mounting Position	Any
Bulb Temperature (At Hottest Point)	220°C

**ELECTRICAL DATA**

**HEATER CHARACTERISTICS**

	6146A	6883A	6159A	
Heater Voltage $\pm 10\%$	6.3	12.6	26.5	Volts
Heater Current at Specified Voltage	1250	625	300	Ma.
Heater Current Range at Specified Voltage	1175-1325	588-663	280-320	Ma.
Heater-Cathode Voltage (Absolute Maximum Values)				
Heater Negative with Respect to Cathode			135	Volts
Heater Positive with Respect to Cathode			135	Volts

**MAINTENANCE OF POWER CAPABILITY**

With heater voltage reduced to 5.0 Volts for Type 6146A, 10.0 Volts for Type 6883A and 21.0 Volts for Type 6159A, the power output obtained under the classes of service contained in these defining data will not be reduced by more than ten percent from that obtained at rated heater voltage. Plate input power for the classes of service would be maintained at that obtained using rated heater voltage.

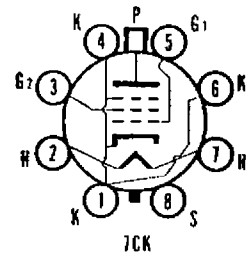
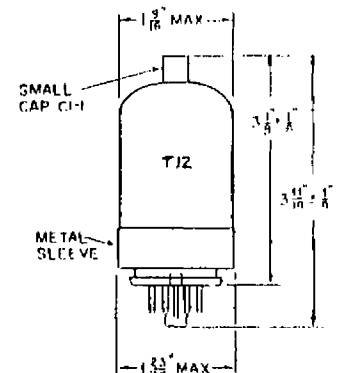
**DIRECT INTERELECTRODE CAPACITANCES (Unshielded)**

Grid No. 1 to Plate	0.24 $\mu\text{f}$ Max.
Input	13.5 $\mu\text{f}$
Output	8.5 $\mu\text{f}$

**QUICK REFERENCE DATA**

Sylvania Types 6146A, 6159A and 6883A are beam power pentodes designed for use at frequencies up to 175 Mc's. In Class "C" Telegraphy Service they can furnish 70 watts of power output under ICAS conditions.

6146A, 6159A and 6883A are designed to provide more stable power output when operating at reduced heater voltage than the prototype versions 6146, 6159 and 6883. An additional feature is a new base (see outline) that offers greater flexibility to the design engineer.



**SYLVANIA ELECTRONIC TUBES**

A Division of Sylvania Electric Products, Inc.

**RECEIVING TUBE OPERATIONS**

EMPORIUM, PENNSYLVANIA

Prepared and Released By The TECHNICAL PUBLICATIONS SECTION EMPORIUM, PENNSYLVANIA

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RATINGS (Absolute Maximum Values)

AF Amplifier Service

	P-P		P-P		
	Class AB1		Class AB2		
	CCS	ICAS	CCS	ICAS	
Plate Voltage	600	750	600	750	Volts
Grid No. 2 Voltage	250	250	250	250	Volts
Plate Current (Max. Signal)	125	135	125	135	Volts
Plate Input (Max. Signal)	60	85	62.5	90	Ma.
Plate Dissipation	20	25	20	25	Watts
Grid No. 2 Input (Max. Signal)	3	3	3	3	Watts
Grid No. 1 Circuit Resistance	0.1	0.1	.03	.03	Megohm

RF Amplifier Service - Class "C"

	Telephony <sup>1</sup>		Telegraphy or F.M. Telephony		
	CCS	ICAS	CCS	ICAS	
Plate Voltage	480	600	600	750	Volts
Grid No. 2 Voltage	250	250	250	250	Volts
Grid No. 1 Voltage	-150	-150	-150	-150	Volts
Plate Current	117	125	140	150	Ma.
Grid No. 1 Current	3.5	4.0	3.5	4.0	Ma.
Plate Input	45	67.5	67.5	90	Watts
Plate Dissipation	13.3	16.7	20	25	Watts
Grid No. 2 Input	2	2	3	3	Watts
Grid No. 1 Circuit Resistance	.03	.03	.03	.03	Megohm

CHARACTERISTICS

Plate Voltage	200	Volts
Grid No. 2 Voltage	200	Volts
Plate Current	100	Ma.
Transconductance	7000	μmhos
Amplification Factor (G1 to G2)	4.5	

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Minimum	Maximum	
Heater Current			
6146A at 6.3 Volts	1175	1325	Ma.
6883A at 12.6 Volts	588	663	Ma.
6159A at 26.5 Volts	280	320	Ma.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN (Cont'd)

Grid No. 1 to Plate <sup>6</sup>	-	0.24	μf
Input: g1 to (k+g3+I.S.+Base Sleeve+g2+h) <sup>6</sup>	11.1	15.9	μf
Output: p to (k+g3+I.S.+Base Sleeve+g2+h) <sup>6</sup>	6.4	10.6	μf
Plate Current (Ef = Rated Value, Eb = 300V, Ec2 = 200V, Ec1 = -33V)	46	94	Ma.
Grid No. 2 Current (Ef = Rated Value, Eb = 300V, Ec2 = 200V, Ec1 = -33V)	-	5.5	Ma.
Useful Power Output - Self Excited Oscillator Circuit (Ef = Rated Value, Eb = 600V, Ec2 = 180V, Rg1 = 30,000 Ohms ± 10%, Ib = 100-112 Ma. and Ic1 = 2 to 2.5 Ma at a Frequency of 15 Mc's.)	47	-	Watts

TYPICAL OPERATION

AF Power Amplifier - Class AB1

	CCS	CCS	CCS	ICAS	ICAS	
Plate Voltage	400	500	600	600	750	Volts
Grid No. 2 Voltage	190	185	180	200	195	Volts
Grid No. 1 Voltage	-40	-40	-45	-50	-50	Volts
Peak AF G1 to G1 Voltage	80	80	90	100	100	Volts
Plate Current (Zero Signal)	63	57	26	28	23	Ma.
Plate Current (Max. Signal)	228	215	200	229	220	Ma.
Grid No. 2 Current (Zero Signal)	2.5	2.0	1.0	1.0	1.0	Ma.
Grid No. 2 Current (Max. Signal)	25	25	23	27	26	Ma.
Load Resistance (Pl. to Pl.)	4K	5.5K	7K	6K	8K	Ohms
Power Output	55	70	82	95	120	Watts

AF Power Amplifier - Class AB2

Plate Voltage	400	500	600	600	750	Volts
Grid No. 2 Voltage <sup>2</sup>	175	175	165	190	165	Volts
Grid No. 1 Voltage	-41	-44	-44	-48	-46	Volts
Peak AF G1 to G1 Voltage	95	102	97	109	108	Volts
Plate Current (Zero Signal)	33	27	22	28	22	Ma.
Plate Current (Max. Signal)	232	242	207	270	240	Ma.
Grid No. 2 Current (Zero Signal)	1.1	0.7	0.6	1.2	0.3	Ma.
Grid No. 2 Current (Max. Signal)	18	18	17	20	20	Ma.
Grid No. 1 Current (Max. Signal)	1.6	1.9	1.1	2.0	2.6	Ma.
Load Resistance (Pl. to Pl.)	3.7K	4.6K	6.8K	5.0K	7.4K	Ohms
Driving Power (Max. Signal) <sup>3</sup>	0.2	0.3	0.2	0.3	0.4	Watts
Power Output (Max. Signal)	62	83	90	113	131	Watts

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TYPICAL OPERATION (Cont'd)

RF Power Amplifier - Class "C"

Telephony (Up to 60 Mc)

	CCS	CCS	ICAS	
Plate Voltage	400	475	600	Volts
For Grid No. 2 Voltage Use <sup>4</sup>	150	135	150	Volts
Grid No. 2 Dropping Resistor	33K	51K	56K	Ohms
For Grid No. 1 Voltages <sup>5</sup>	-87	-77	-87	Volts
Use Grid No. 1 Resistor	27K	27K	27K	Ohms
Peak RF Grid No. 1 Voltage	107	95	107	Volts
Grid No. 1 Current	3.4	2.8	3.4	Ma.
Plate Current	112	94	112	Ma.
Grid No. 2 Current	7.8	6.4	7.8	Ma.
Driving Power (Approx.)	0.4	0.3	0.4	Watts
Power Output (Approx.)	32	34	52	Watts

RF Power Amplifier - Class "C"

Telegraphy - F.M. Telephony

	CCS	Up to 60 Mc		ICAS	Up to 175 Mc		
		CCS	ICAS		CCS	ICAS	
Plate Voltage	500	600	600	750	320	400	Volts
For Grid No. 2 Voltage of Use Grid No. 2 Dropping Resistor	170	150	180	160	180	190	Volts
For Grid No. 1 Voltage of <sup>5</sup> Use Grid No. 1 Resistor or Use Cathode Resistor	36K	51K	43K	56K	13K	20K	Ohms
Peak RF Grid No. 1 Voltage	-66	-58	-71	-62	-51	-54	Volts
Grid No. 1 Current	27K	20K	24K	20K	27K	24K	Ohms
Plate Current	470	470	430	470	330	330	Ohms
Grid No. 2 Current	84	73	91	79	64	68	Volts
Driving Power (Approx.)	2.5	2.8	2.8	3.1	2	2.2	Ma.
Power Output	135	112	150	120	140	150	Ma.
	9	9	10	11	10	10.4	Ma.
	0.2	0.2	0.3	0.2	3.0	3.0	Watts
	48	52	66	70	25	35	Watts

NOTES:

1. Carrier conditions per tube with a maximum modulation factor of 1.0.
2. Preferably obtained from a separate source or from the plate-voltage supply with a voltage divider.

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## NOTES: (Cont'd).

3. The driver stage should be capable of supplying the specified driving power at low distortion to the No. 1 grids of the AB2 stage. To minimize distortion, the effective resistance per Grid No. 1 Circuit should be held to a low value. For this purpose use of transformer coupling is recommended. In no case, however, should the total DC grid circuit resistance exceed 30,000 ohms when the tube is operated at maximum ratings. For operation at less than maximum ratings, the DC grid circuit resistance may be as high as 100,000 ohms.
4. Obtained preferably from a separate source modulated with the plate supply, or from the modulated plate supply through a series resistor.
5. Grid No. 1 voltage obtained from Grid No. 1 resistor or from a combination of Grid No. 1 resistor with the fixed supply or cathode resistor.
6. Unshielded bulb.