



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.

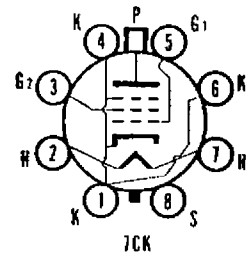
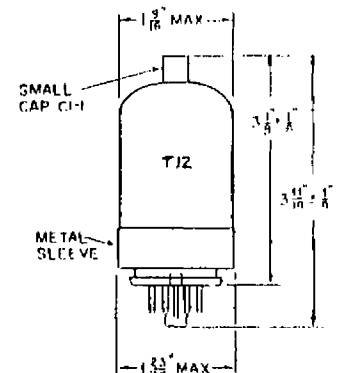
DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

| | |
|---------------------|-------------------------|
| Grid No. 1 to Plate | 0.24 μf Max. |
| Input | 13.5 μf |
| Output | 8.5 μf |

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 ¹ | | 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 ⁶ | - | 0.24 | μf |
| Input: g1 to (k+g3+I.S.+Base Sleeve+g2+h) ⁶ | 11.1 | 15.9 | μf |
| Output: p to (k+g3+I.S.+Base Sleeve+g2+h) ⁶ | 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 ² | 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) ³ | 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 ⁴ | 150 | 135 | 150 | Volts |
| Grid No. 2 Dropping Resistor | 33K | 51K | 56K | Ohms |
| For Grid No. 1 Voltages ⁵ | -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 ⁵ | 36K | 51K | 43K | 56K | 13K | 20K | Ohms |
| Use Grid No. 1 Resistor or Use Cathode Resistor | -66 | -58 | -71 | -62 | -51 | -54 | Volts |
| Peak RF Grid No. 1 Voltage | 27K | 20K | 24K | 20K | 27K | 24K | Ohms |
| Grid No. 1 Current | 470 | 470 | 430 | 470 | 330 | 330 | Ohms |
| Plate Current | 84 | 73 | 91 | 79 | 64 | 68 | Volts |
| Grid No. 2 Current | 2.5 | 2.8 | 2.8 | 3.1 | 2 | 2.2 | Ma. |
| Driving Power (Approx.) | 135 | 112 | 150 | 120 | 140 | 150 | Ma. |
| Power Output | 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.