



# HIGH QUALITY TUBES FOR HI-FI APPLICATIONS

| TYPE NO.    | FILAMENT    |              | TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS |                                                                                                                                                          |        |       |                    |                     |                      |                           |                              |                         |
|-------------|-------------|--------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------------------|---------------------|----------------------|---------------------------|------------------------------|-------------------------|
|             | Volts       | Amps         | Circuit Application                              | Applied Voltages                                                                                                                                         |        |       | Plate Current (mA) | Screen Current (mA) | Amplification Factor | Plate Resistance (K ohms) | Transconductance (micromhos) | Max. Pow. 2 Tubes Class |
|             |             |              |                                                  | Plate                                                                                                                                                    | Screen | Grid  |                    |                     |                      |                           |                              |                         |
| EF86/6267   | 6.3         | 0.2          | Voltage Amplifier                                | 250                                                                                                                                                      | 140    | -2.0  | 3.0                | 0.6                 | -                    | 2500                      | 2000                         | -                       |
| ECC81/12AT7 | 12.6<br>6.3 | 0.15<br>0.30 | Voltage Amplifier                                | 250                                                                                                                                                      | -      | -2.0  | 10.0               | -                   | 55                   | -                         | 5500                         | -                       |
| ECC82/12AU7 | 12.6<br>6.3 | 0.15<br>0.30 | Voltage Amplifier                                | 250                                                                                                                                                      | -      | -8.5  | 10.5               | -                   | 17                   | 7.7                       | 2200                         | -                       |
| ECC83/12AX7 | 12.6<br>6.3 | 0.15<br>0.30 | Voltage Amplifier                                | 250                                                                                                                                                      | -      | -2.0  | 1.2                | -                   | 100                  | 62.5                      | 1600                         | -                       |
| ECC85/6AQ8  | 6.3         | 0.435        | RF Amplifier and Mixer                           | RF Amp 230                                                                                                                                               | -      | -2.0  | 10.0               | -                   | 57                   | 9.7                       | 6000                         | -                       |
|             |             |              |                                                  | Mixer 190                                                                                                                                                | -      | **    | 5.2                | -                   | 57                   | 2.2                       | 2300†                        | -                       |
| EL84/6BQ5   | 6.3         | 0.76         | Power Output Tube                                | 300                                                                                                                                                      | 300    | -14.5 | 2 X 46             | 2 X 11              | -                    | -                         | 11,300                       | 17                      |
| 6CA7/EL34   | 6.3         | 1.5          | Power Output Tube                                | 800                                                                                                                                                      | 400    | -39   | 2 X 91             | 2 X 19              | -                    | -                         | 11,300                       | 100                     |
| EZ80/6V4    | 6.3         | 0.6          | Full Wave Rectifier                              | AC Supply (Plate-to-Plate) Voltage (RMS) = 2 X<br>DC Output Current (max.) = 90<br>Max. Capacity Condenser Input Filter = 50<br>DC Output Voltage = 310  |        |       |                    |                     |                      |                           |                              |                         |
| EZ81/6CA4   | 6.3         | 1.0          | Full Wave Rectifier                              | AC Supply (Plate-to-Plate) Voltage (RMS) = 2 X<br>DC Output Current (max.) = 150<br>Max. Capacity Condenser Input Filter = 50<br>DC Output Voltage = 347 |        |       |                    |                     |                      |                           |                              |                         |
| GZ34/5AR4   | 5.0         | 1.9          | Full wave Rectifier                              | AC Supply (Plate-to-Plate) Voltage (RMS) = 2 X<br>DC Output Current (max.) = 250<br>Max. Capacity Condenser Input Filter = 60<br>DC Output Voltage = 610 |        |       |                    |                     |                      |                           |                              |                         |

\*\*Grid leak resistance = 1 megohm

† Conversion conductance



## HYDROGEN THYRATRONS

| TYPE NO.     | Peak Forward Anode Voltage Max. | Peak Anode Current Max. (Amps) | Av. Anode Current Max. (mA) | Pulse Width Max. |
|--------------|---------------------------------|--------------------------------|-----------------------------|------------------|
| 6268/AX-9911 | 8,000                           | 90                             | 100                         | 6 $\mu$ sec      |
| 6279/AX-9912 | 16,000                          | 325                            | 200                         | 6 $\mu$ sec      |



## SUB-MINIATURE TUBES (SCREEN GRID TYPES) - MAXIMUM RATINGS

| TYPE NO.  | Filament  |            | Capacitances $\mu\mu f$ |       |        | Plate |                  | Grid #1 Volts | Grid #2 Volts | Plate      |                    |
|-----------|-----------|------------|-------------------------|-------|--------|-------|------------------|---------------|---------------|------------|--------------------|
|           | D-C Volts | Current mA | G-P                     | Input | Output | Volts | Diss. Milliwatts |               |               | Micro-Amps | Resistance Megohms |
| 6007/5913 | 1.25      | 13.3       | 0.2                     | 2.5   | 2.2    | 45    | 25               | -0.2          | 45            | 475        | 0.4                |
| 6008/5911 | 0.625     | 13.3       | 0.2                     |       | 1.5    | 45    | 1.5              | -0.2          | 45            | 50         | 0.4                |

| Output-Push-Pull<br>B                  | Load<br>Resistance<br>(K ohms) | Cut-Off <sup>c</sup><br>Bias<br>(volts) | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                        | TYPE NO.    |
|----------------------------------------|--------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                                        | -                              | -                                       | High gain pentode particularly suitable for preamplifier and input stages in which hum, noise and microphony must be kept to a minimum. Electrode structure rigid. Heater is bifilar, twisted pair of wires with magnetic field of one opposed to that of the other.                                                                                                               | EF86/6267   |
|                                        | -                              | -12.0                                   | Medium-gain dual triode with low hum, noise and microphonics. Replaces the 12AT7 without circuit changes.                                                                                                                                                                                                                                                                          | ECC81/12AT7 |
|                                        | -                              | -                                       | Low noise dual triode with low hum, noise and microphonics. Replaces the 12AU7 without circuit changes.                                                                                                                                                                                                                                                                            | ECC82/12AU7 |
|                                        | -                              | -                                       | High-gain dual triode with low hum, noise and microphonics. Replaces the 12AX7 without circuit changes.                                                                                                                                                                                                                                                                            | ECC83/12AX7 |
|                                        | -                              | -                                       | Twin triode specifically designed for use in "front-end" stages of FM receivers as a combined RF Amplifier and self-oscillating additive mixer. Features extensive internal screening between the two triodes which reduces oscillator radiation. The high mutual conductance, input resistance and amplification factor make possible an average overall "front-end" gain of 350. | ECC85/6AQ8  |
|                                        | -                              | -                                       |                                                                                                                                                                                                                                                                                                                                                                                    |             |
|                                        | 8<br>Plate-to-Plate            | -                                       | High quality pentodes designed especially for high fidelity audio systems. High efficiency with low distortion. High sensitivity. Exceedingly small spread in characteristics between individual tubes so that maximum rated output is obtained with all tubes.                                                                                                                    | EL84/6BQ5   |
|                                        | 11<br>Plate-to-Plate           | -                                       |                                                                                                                                                                                                                                                                                                                                                                                    | 6CA7/EL34   |
| 300 volts<br>mA<br>$\mu$ f<br>Volts dc |                                |                                         | Indirectly heated, full-wave rectifier with 90 mA output capacity and 9 pin miniature construction.                                                                                                                                                                                                                                                                                | EZ80/6V4    |
| 350 volts<br>mA<br>$\mu$ f<br>Volts dc |                                |                                         | Indirectly heated, full-wave rectifier with 6.3 volt, 1 amp heater, 150 mA output capacity and 9 pin miniature construction.                                                                                                                                                                                                                                                       | EZ81/6CA4   |
| 550 volts<br>mA<br>$\mu$ f<br>Volts dc |                                |                                         | Indirectly heated, full-wave rectifier with 5.0 volt, 1.9 amp heater and 250 mA output capacity. Octal base.                                                                                                                                                                                                                                                                       | GZ34/5AR4   |

| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                   | TYPE NO.     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| These tubes are used as drivers for pulsing magnetrons and other oscillators and as high speed switches. Hydrogen-filled, they have extremely low de-ionization time. They are zero bias tubes, triggered by a positive grid pulse. Maximum pulse repetition frequency (prf in pulses per second) will depend on the peak forward anode voltage (epy in volts) according to formula: $(epy)^2 \times (prf) = 2.6 \times 10^{11} \text{ max.}$ |              |
| Completely interchangeable with 4C35 in every respect except that it has self-contained source of hydrogen providing life expectancy of minimum 1000 hours.                                                                                                                                                                                                                                                                                   | 6268/AX-9911 |
| Completely interchangeable with 5C22 in every respect except that it has self-contained source of hydrogen providing life expectancy of minimum 1000 hours.                                                                                                                                                                                                                                                                                   | 6279/AX-9912 |

| Trans-conductance<br>Micromhos | Output<br>Milliwatts | DESCRIPTION                                                                                                                                                                          | TYPE NO.  |
|--------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 420                            | 6                    | Radiation-cooled pentode output amplifier for hearing aids and other purposes, where small size, light weight and low battery drain are important. An ideal tube for receivers, etc. | 6007/5913 |
| 100                            | 2.25                 | Same as above except this tube is a voltage amplifier.                                                                                                                               | 6008/5911 |