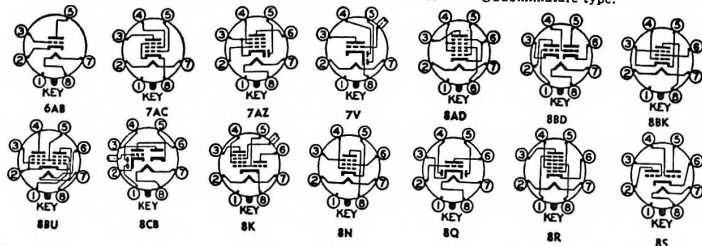


| Tube Type                | Classification by Construction | Base Connections | Out-line Dwg              | Type Cathode | Filament Volts | Filament Amp | Max Plate Volts | Max Screen Volts | Capacitance in Micromicrofarads                  |            |                |
|--------------------------|--------------------------------|------------------|---------------------------|--------------|----------------|--------------|-----------------|------------------|--------------------------------------------------|------------|----------------|
|                          |                                |                  |                           |              |                |              |                 |                  | Input                                            | Out-put    | Grid-plate     |
| <b>12K8</b><br>12K8-GT   | Triode Hexode Converter        | 8K               | 8-2<br>9-24               | Htr          | 12.6           | 0.15         | 300             | 150              | Osc $I_{g1} = 0.15$ ma<br>$R_{g1} = 20,000$ ohms |            |                |
| 12L6-GT                  | Beam Power Amplifier           | 7AC              | 9-11<br>or<br>9-41        | Htr          | 12.6           | 0.6          | 200             | 125              | 15                                               | 10         | 0.8            |
| 12L8-GT                  | Twin-Pentode Power Amplifier   | 8BU              | 9-11                      | Htr          | 12.6           | 0.15         | 180             | 180              | 5.0                                              | 6.0        | 0.7            |
| 12Q7-GT                  | Duplex-Diode High-Mu Triode    | 7V               | 9-18                      | Htr          | 12.6           | 0.15         | 300             | —                | 2.2                                              | 5.0        | 1.6            |
| 12S8-GT                  | Triode-Diode High-Mu Triode    | 8CB              | 9-23                      | Htr          | 12.6           | 0.15         | 300             | —                | 1.2                                              | 5.0        | 2.0            |
| <b>12SA7</b><br>12SA7-GT | Pentagrid Converter            | 8R<br>8AD        | 8-1<br>9-11<br>or<br>9-41 | Htr          | 12.6           | 0.15         | 300             | 100              | Osc $I_{g1} = 0.5$ ma<br>$R_{g1} = 20,000$ ohms  |            |                |
| 12SC7                    | High-Mu Twin Triode            | 8S               | 8-1                       | Htr          | 12.6           | 0.15         | 250             | —                | —                                                | —          | —              |
| 12SF5<br>12SF5-GT        | High-Mu Triode                 | 8AB              | 8-1<br>9-11               | Htr          | 12.6           | 0.15         | 300             | —                | 4.0                                              | 3.8        | 2.4            |
| 12SF7<br>12SF7-GT        | Diode Remote-Cutoff Pentode    | 7AZ              | 8-1<br>9-18               | Htr          | 12.6           | 0.15         | 300             | 150              | 5.5<br>5.5                                       | 6.0<br>6.0 | 0.004<br>0.004 |
| 12SG7                    | Semi-Remote-Cutoff RF Pentode  | 8BK              | 8-1                       | Htr          | 12.6           | 0.15         | 300             | 150              | 8.5                                              | 7.0        | 0.003          |
| 12SH7                    | Sharp-Cutoff RF Pentode        | 8BK              | 8-1                       | Htr          | 12.6           | 0.15         | 300             | 150              | 8.5                                              | 7.0        | 0.003          |
| 12SJ7<br>12SJ7-GT        | Sharp-Cutoff Pentode           | 8N               | 8-1<br>9-12               | Htr          | 12.6           | 0.15         | 300             | 150              | Pentode Connection                               |            |                |
| 12SK7<br>12SK7-GT        | Remote-Cutoff RF Pentode       | 8N               | 8-1<br>9-12               | Htr          | 12.6           | 0.15         | 300             | 150              | 6.0<br>6.5                                       | 7.0<br>7.5 | 0.003<br>0.003 |
| 12SL7-GT                 | High-Mu Twin Triode            | 8BD              | 9-11                      | Htr          | 12.6           | 0.15         | 300             | —                | —                                                | —          | —              |
| 12SN7-GT                 | Medium-Mu Twin Triode          | 8BD              | 9-11<br>or<br>9-41        | Htr          | 12.6           | 0.3          | 300             | —                | 2.8<br>3.0                                       | 0.8<br>1.2 | 3.8<br>4.0     |
| 12SN7-GTA                | Medium-Mu Twin Triode          | 8BD              | 9-11<br>or<br>9-41        | Htr          | 12.6           | 0.3          | 450             | —                | 2.2<br>2.6                                       | 0.7<br>1.2 | 4.0<br>3.8     |
| 12SQ7<br>12SQ7-GT        | Duplex-Diode High-Mu Triode    | 8Q               | 8-1<br>9-12               | Htr          | 12.6           | 0.15         | 300             | —                | 3.2<br>4.2                                       | 3.0<br>3.4 | 1.6<br>1.8     |
| 12SR7<br>12SR7-GT        | Duplex-Diode Medium-Mu Triode  | 8Q               | 8-1<br>9-11               | Htr          | 12.6           | 0.15         | 250             | —                | 3.6<br>3.5                                       | 2.8<br>3.8 | 2.4<br>2.3     |

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



| Service                                                                                                                                                 | Plate Volts | Screen Volts | Neg Grid Volts     | Plate Milli-amperes | Screen Milli-amperes | $R_p$ , Ohms | $G_m$ , $\mu$ mhos | # Factor                                            | Load for Rated Out-put, Ohms | Power Out-put, Watts | Tube Type                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|--------------------|---------------------|----------------------|--------------|--------------------|-----------------------------------------------------|------------------------------|----------------------|--------------------------|
|                                                                                                                                                         |             |              |                    |                     |                      |              |                    |                                                     |                              |                      |                          |
| Converter                                                                                                                                               | 250         | 100          | 3.0                | 2.5                 | 6.0                  | 600,000      | 350 #              | $E_b$ (Triode Osc) = 100<br>$I_b$ (Triode) = 3.8 ma |                              |                      | <b>12K8</b><br>12K8-GT   |
| Class A Amplifier                                                                                                                                       | 200         | 125          | $R_s = 180$<br>7.5 | 46†<br>49†          | 2.2†<br>4.0†         | 28,000       | 8,000              | —                                                   | 4,000                        | 3.8                  | 12L6-GT                  |
| Class A Amplifier                                                                                                                                       | 180         | 180          | 9.0                | 13†                 | 2.8†                 | 160,000      | 2,150              | —                                                   | 10,000                       | 1.0                  | 12L8-GT                  |
| Class A Amplifier                                                                                                                                       | 250         | —            | 3.0                | 1.0                 | —                    | 58,000       | 1,200              | 70                                                  | —                            | —                    | 12Q7-GT                  |
| Class A Amplifier                                                                                                                                       | 250         | —            | 2.0                | 0.9                 | —                    | 91,000       | 1,100              | 100                                                 | —                            | —                    | 12S8-GT                  |
| Converter                                                                                                                                               | 250         | 100          | 2.0                | 3.5                 | 8.5                  | 1,000,000    | 450 #              | —                                                   | —                            | —                    | <b>12SA7</b><br>12SA7-GT |
| Class A Amplifier                                                                                                                                       | 250         | —            | 2.0                | 2.0                 | —                    | 53,000       | 1,325              | 70                                                  | —                            | —                    | 12SC7                    |
| Class A Amplifier                                                                                                                                       | 250         | —            | 2.0                | 0.9                 | —                    | 66,000       | 1,600              | 100                                                 | —                            | —                    | 12SF5<br>12SF5-GT        |
| Class A Amplifier                                                                                                                                       | 250         | 100          | 1.0                | 12.4                | 3.3                  | 700,000      | 2,050              | —                                                   | —                            | —                    | 12SF7<br>12SF7-GT        |
| Class A Amplifier                                                                                                                                       | 250         | 150          | 2.5                | 9.2                 | 3.4                  | 1,000,000    | 4,000              | —                                                   | —                            | —                    | 12SG7                    |
| Class A Amplifier                                                                                                                                       | 250         | 125          | 1.0                | 11.8                | 4.4                  | 900,000      | 4,700              | —                                                   | —                            | —                    |                          |
| Class A Amplifier                                                                                                                                       | 250         | 100          | 1.0                | 8.2                 | 3.2                  | 250,000      | 4,100              | —                                                   | —                            | —                    |                          |
| Class A Amplifier                                                                                                                                       | 250         | 150          | 1.0                | 10.8                | 4.1                  | 900,000      | 4,900              | —                                                   | —                            | —                    | 12SH7                    |
| Class A Amplifier                                                                                                                                       | 250         | 100          | 3.0                | 3.0                 | 0.8                  | 1,000,000    | 1,650              | —                                                   | —                            | —                    | 12SJ7                    |
| Class A Amplifier                                                                                                                                       | 250         | —            | 8.5                | 9.2                 | —                    | 7,600        | 2,500              | 19                                                  | —                            | —                    | 12SJ7-GT                 |
| Class A Amplifier                                                                                                                                       | 250         | 100          | 3.0                | 9.2                 | 2.6                  | 800,000      | 2,000              | —                                                   | —                            | —                    | 12SK7<br>12SK7-GT        |
| Class A Amplifier                                                                                                                                       | 250         | 100          | 1.0                | 13                  | 4.0                  | 120,000      | 2,350              | —                                                   | —                            | —                    |                          |
| Class A Amplifier                                                                                                                                       | 250         | —            | 2.0                | 2.3                 | —                    | 44,000       | 1,600              | 70                                                  | —                            | —                    | 12SL7-GT                 |
| Class A Amplifier                                                                                                                                       | 250         | —            | 8.0                | 9.0                 | —                    | 7,700        | 2,600              | 20                                                  | —                            | —                    | 12SN7-GT                 |
| Class A Amplifier                                                                                                                                       | 90          | —            | 0                  | 10                  | —                    | 6,700        | 3,000              | 20                                                  | —                            | —                    |                          |
| Class A Amplifier                                                                                                                                       | 250         | —            | 8.0                | 9.0                 | —                    | 7,700        | 2,600              | 20                                                  | —                            | —                    | 12SN7-GTA                |
| Class A Amplifier                                                                                                                                       | 90          | —            | 0                  | 10                  | —                    | 6,700        | 3,000              | 20                                                  | —                            | —                    |                          |
| Vertical Deflection Amplifier                                                                                                                           |             |              |                    |                     |                      |              |                    |                                                     |                              |                      |                          |
| Max positive pulse plate voltage = 1,500 volts; max plate dissipation = 5.0 watts; max plate dissipation @ = 7.5 watts; max d-c cathode current = 20 ma |             |              |                    |                     |                      |              |                    |                                                     |                              |                      |                          |
| Class A Amplifier                                                                                                                                       | 250         | —            | 2.0                | 1.1                 | —                    | 85,000       | 1,175              | 100                                                 | —                            | —                    | 12SQ7<br>12SQ7-GT        |
| Class A Amplifier                                                                                                                                       | 100         | —            | 1.0                | 0.5                 | —                    | 110,000      | 925                | 100                                                 | —                            | —                    |                          |
| Class A Amplifier                                                                                                                                       | 250         | —            | 9.0                | 9.5†                | —                    | 8,500        | 1,900              | 16                                                  | 10,000                       | 0.3                  | 12SR7<br>12SR7-GT        |

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

‡ Grid 4 is signal.

‡ Conversion transconductance.

‡ Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal.

‡ Grid 3 is signal.

‡ Screen supply voltage.

‡ Absolute maximum rating.

‡ Plate-to-plate.

‡ Per section.

③ For both sections.

‡ Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

‡ Section 2.

‡ A resistor of 3 ohms must be put in series with heater.