

*Excellence in Electronics***TYPE****2G21**

The 2G21 is a filament type triode heptode of subminiature construction designed for use as a combined oscillator and mixer in radio receivers or other portable equipment requiring economy of space, weight and battery drain. The flexible terminal leads may be soldered or welded directly to the terminals of circuit components without the use of sockets. Standard inline subminiature sockets may be used by cutting the leads to a suitable length.

**MECHANICAL DATA****ENVELOPE:** T-2X3 Glass**BASE:** None (0.016" tinned flexible leads. Length: 1.50" min.  
Spacing: 0.04" center-to-center)**TERMINAL CONNECTIONS:** (*Red Dot is adjacent to Lead 1*)

|                           |                                    |
|---------------------------|------------------------------------|
| Lead 1 Plate, triode      | Lead 5 Grid #3, heptode            |
| Lead 2 Plate, heptode     | Lead 6 Grids #2 and #4, heptode    |
| Lead 3 Grid #1, triode    | Lead 7 Filament, positive; Grid #5 |
| Lead 4 Filament, negative |                                    |

**MOUNTING POSITION:** Any**ELECTRICAL DATA****DIRECT INTERELECTRODE CAPACITANCES:** ( $\mu\text{fds.}$ ) \*

|                                                         |       |
|---------------------------------------------------------|-------|
| Signal Grid to Mixer Plate: (g3h to ph)                 | 0.065 |
| Signal Grid to Oscillator Plate: (g3h to pt)            | 0.022 |
| Signal Grid to Oscillator Grid: (g3h to gt)             | 0.14  |
| Oscillator Grid to Oscillator Plate: (gt to pt)         | 1.3   |
| Signal Input: g3h to (f&g5h+gt+g2h&g4h+pt+ph+shd)       | 3.5   |
| Oscillator Input: gt to (f&g5h+g3h+g2h&g4h+ph+shd)      | 3.8   |
| Oscillator Output: gt to (f&g5h+g3h+g3h+g2h&g4h+ph+shd) | 3.7   |
| Mixer Output: ph to (f&g5h+gt+g2h&g4h+pt+g3h+shd)       | 3.6   |

**DESIGN CENTER MAXIMUM RATINGS:**

|                         |                |
|-------------------------|----------------|
| Filament Voltage (dc) ● | 1.25 volts     |
| Plate Voltage, heptode  | 45 volts       |
| Grids #2 and #4 Voltage | 45 volts       |
| Plate Voltage, triode   | 45 volts       |
| Grid #3 Voltage ▲       | Never Positive |
| Total Cathode Current   | 2.0 ma.        |

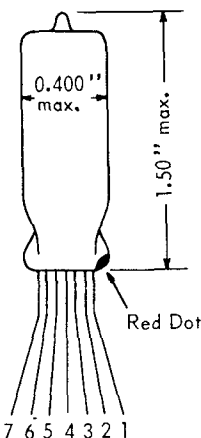
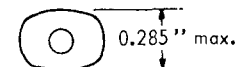
**CHARACTERISTICS AND TYPICAL OPERATION - FREQUENCY CONVERTER:**

|                                                                           |                     |
|---------------------------------------------------------------------------|---------------------|
| Filament Voltage (dc) ●                                                   | 1.25 volts          |
| Filament Current                                                          | 50 ma.              |
| Plate Voltage, heptode                                                    | 22.5 volts          |
| Grids #2 and #4 Voltage                                                   | 22.5 volts          |
| Plate Voltage, triode                                                     | 22.5 volts          |
| Grid #3 Voltage ▲                                                         | 0 volts             |
| Oscillator Grid (Grid #1) Resistor                                        | 50000 ohms          |
| Plate Current, heptode                                                    | 200 $\mu\text{a.}$  |
| Grids #2 and #4 Current                                                   | 300 $\mu\text{a.}$  |
| Conversion Plate Resistance (approx.)                                     | 0.5 megohms         |
| Plate Current, triode                                                     | 1.0 ma.             |
| Oscillator Grid (Grid #1) Current                                         | 30 $\mu\text{a.}$   |
| Conversion Transconductance                                               | 60 $\mu\text{mhos}$ |
| Grid #3 Voltage (approx.) for<br>Conversion Transcond.=2 $\mu\text{mhos}$ | -3.5 volts          |

\* With shield connected to Lead 4.

▲ Grid #3 resistor=5 megohms.

● Do not use in series filament circuits. Filament voltage must never exceed 1.55 volts.



Tentative Data

**RAYTHEON MANUFACTURING COMPANY**

RECEIVING AND CATHODE RAY TUBE OPERATIONS