

# 1U5

## Description and Rating

### DIODE-PENTODE

The 1U5 is a miniature diode sharp-cutoff pentode designed for use as a combined detector, audio-frequency amplifier, and automatic-volume-control tube in compact, battery-operated receivers. The diode section is effectively shielded from the pentode section to reduce feed-through effects.

#### GENERAL

Cathode - Coated Filament  
 Filament Voltage, D-C . . . . . 1.4 Volts  
 Filament Current . . . . . 0.05 Ampere  
 Envelope - T-5½, Glass  
 Base - E7-1, Miniature Button 7-Pin  
 Mounting Position - Any

Direct Interelectrode Capacitance

|                                                 | With Shield* | Without Shield |     |
|-------------------------------------------------|--------------|----------------|-----|
| Diode Plate to Grid-Number 1, maximum . . . . . | 0.04         | 0.04           | μμf |

#### MAXIMUM RATINGS

##### DESIGN-CENTER VALUES

|                                                  |      |              |
|--------------------------------------------------|------|--------------|
| Plate Voltage . . . . .                          | 90   | Volts        |
| Screen Voltage . . . . .                         | 90   | Volts        |
| Positive D-C Grid-Number 1 Voltage . . . . .     | 0    | Volts        |
| Negative D-C Grid-Number 1 Voltage . . . . .     | 50   | Volts        |
| D-C Cathode Current . . . . .                    | 3.0  | Milliamperes |
| Diode Current for Continuous Operation . . . . . | 0.25 | Milliampere  |

#### CHARACTERISTICS AND TYPICAL OPERATION

##### CLASS A<sub>1</sub> AMPLIFIER

|                                                                                   |      |              |
|-----------------------------------------------------------------------------------|------|--------------|
| Plate Voltage . . . . .                                                           | 67.5 | Volts        |
| Screen Voltage . . . . .                                                          | 67.5 | Volts        |
| Grid-Number 1 Voltage . . . . .                                                   | 0    | Volts        |
| Plate Resistance, approximate . . . . .                                           | 0.6  | Megohm       |
| Transconductance . . . . .                                                        | 625  | Micromhos    |
| Plate Current . . . . .                                                           | 1.6  | Milliamperes |
| Screen Current . . . . .                                                          | 0.4  | Milliampere  |
| Grid-Number 1 Voltage, approximate,<br>I <sub>b</sub> = 10 Microamperes . . . . . | -5   | Volts        |

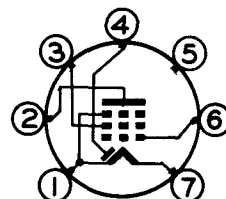
Average Diode Current  
 With 10 Volts D-C Applied . . . . . 1.5 Milliamperes

\* With external shield (RTMA 316) connected to pin 1.

+ The diode is located at the negative end of the filament.

Note: All voltages are referred to the negative terminal of the filament.

#### BASING DIAGRAM

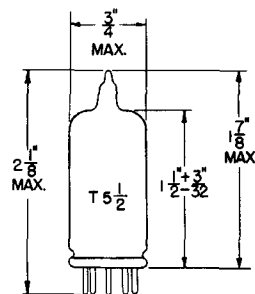


RTMA 6BW  
BOTTOM VIEW

#### TERMINAL CONNECTIONS

Pin 1 - Negative Filament  
 and Grid Number 3  
 Pin 2 - Plate  
 Pin 3 - Grid Number 2 (Screen)  
 Pin 4 - Diode Plate +  
 Pin 5 - No Connection  
 Pin 6 - Grid Number 1  
 Pin 7 - Positive Filament

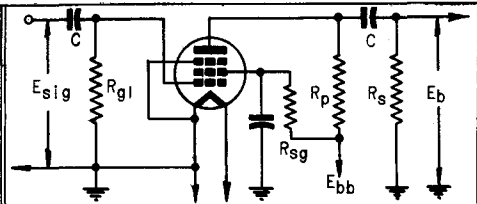
#### PHYSICAL DIMENSIONS



RTMA 5-2

## CLASS A RESISTANCE-COUPLED AMPLIFIER

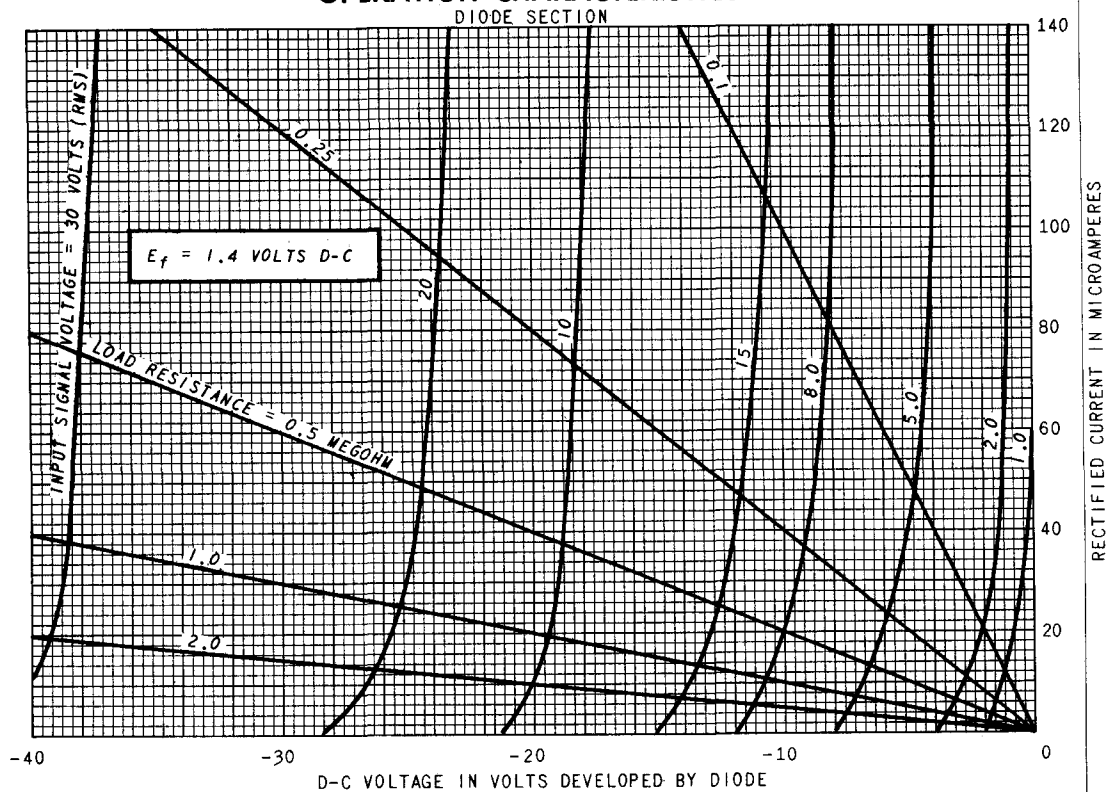
| R <sub>p</sub><br>Meg. | R <sub>s</sub><br>Meg. | R <sub>g1</sub><br>Meg. | E <sub>bb</sub> = 45 Volts |                 |      |                | E <sub>bb</sub> = 90 Volts |                 |      |                | E <sub>bb</sub> = 135 Volts |                 |      |                |
|------------------------|------------------------|-------------------------|----------------------------|-----------------|------|----------------|----------------------------|-----------------|------|----------------|-----------------------------|-----------------|------|----------------|
|                        |                        |                         | R <sub>k</sub>             | R <sub>sg</sub> | Gain | E <sub>o</sub> | R <sub>k</sub>             | R <sub>sg</sub> | Gain | E <sub>o</sub> | R <sub>k</sub>              | R <sub>sg</sub> | Gain | E <sub>o</sub> |
| 0.24                   | 0.24                   | 10                      | -                          | 0.5             | 18   | 6.4            | -                          | 0.8             | 29   | 13             | -                           | 1.0             | 38   | 20             |
| 0.24                   | 0.51                   | 10                      | -                          | 0.5             | 24   | 8.0            | -                          | 0.9             | 38   | 15             | -                           | 1.1             | 40   | 25             |
| 0.24                   | 1.0                    | 10                      | -                          | 0.6             | 28   | 8.4            | -                          | 1.0             | 45   | 17             | -                           | 1.2             | 55   | 28             |
| 0.51                   | 0.51                   | 10                      | -                          | 1.1             | 25   | 5.9            | -                          | 1.9             | 40   | 12             | -                           | 2.3             | 52   | 19             |
| 0.51                   | 0.75                   | 10                      | -                          | 1.2             | 29   | 6.5            | -                          | 2.0             | 46   | 13             | -                           | 2.0             | 61   | 22             |
| 0.51                   | 1.0                    | 10                      | -                          | 1.4             | 32   | 6.6            | -                          | 2.2             | 51   | 14             | -                           | 2.5             | 65   | 22             |
| 0.75                   | 0.75                   | 10                      | -                          | 1.9             | 29   | 5.1            | -                          | 2.9             | 47   | 11             | -                           | 3.2             | 61   | 18             |
| 0.75                   | 1.0                    | 10                      | -                          | 2.0             | 32   | 5.2            | -                          | 3.0             | 52   | 11             | -                           | 3.4             | 67   | 18             |
| 1.0                    | 1.0                    | 10                      | -                          | 2.7             | 31   | 4.3            | -                          | 3.9             | 50   | 9              | -                           | 4.6             | 66   | 15             |

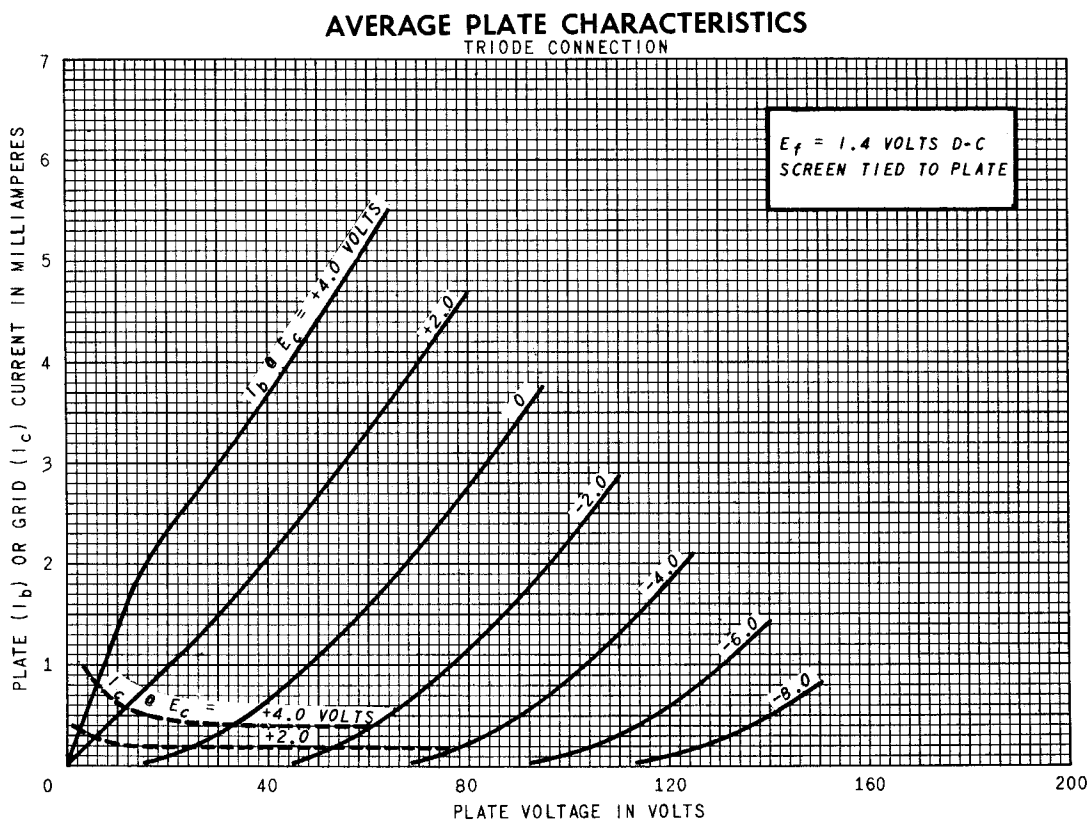
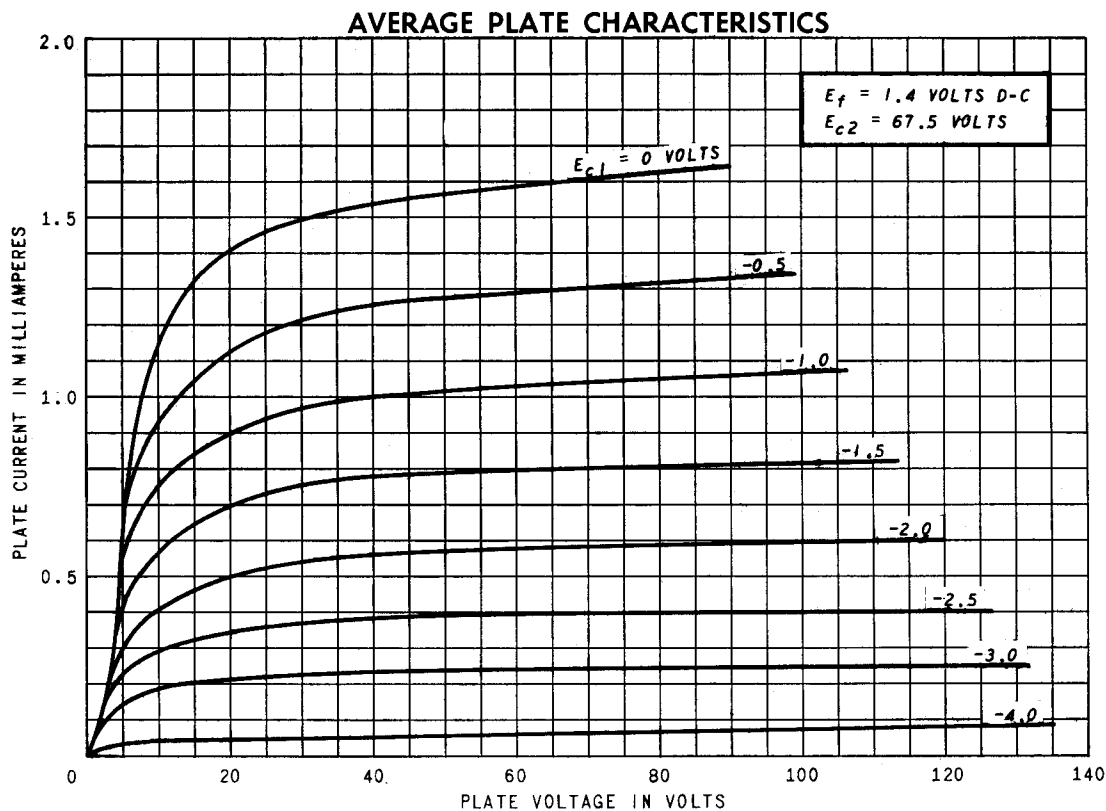


Note: Coupling capacitors (C) should be adjusted to give desired frequency response. R<sub>sg</sub> should be adequately by-passed.

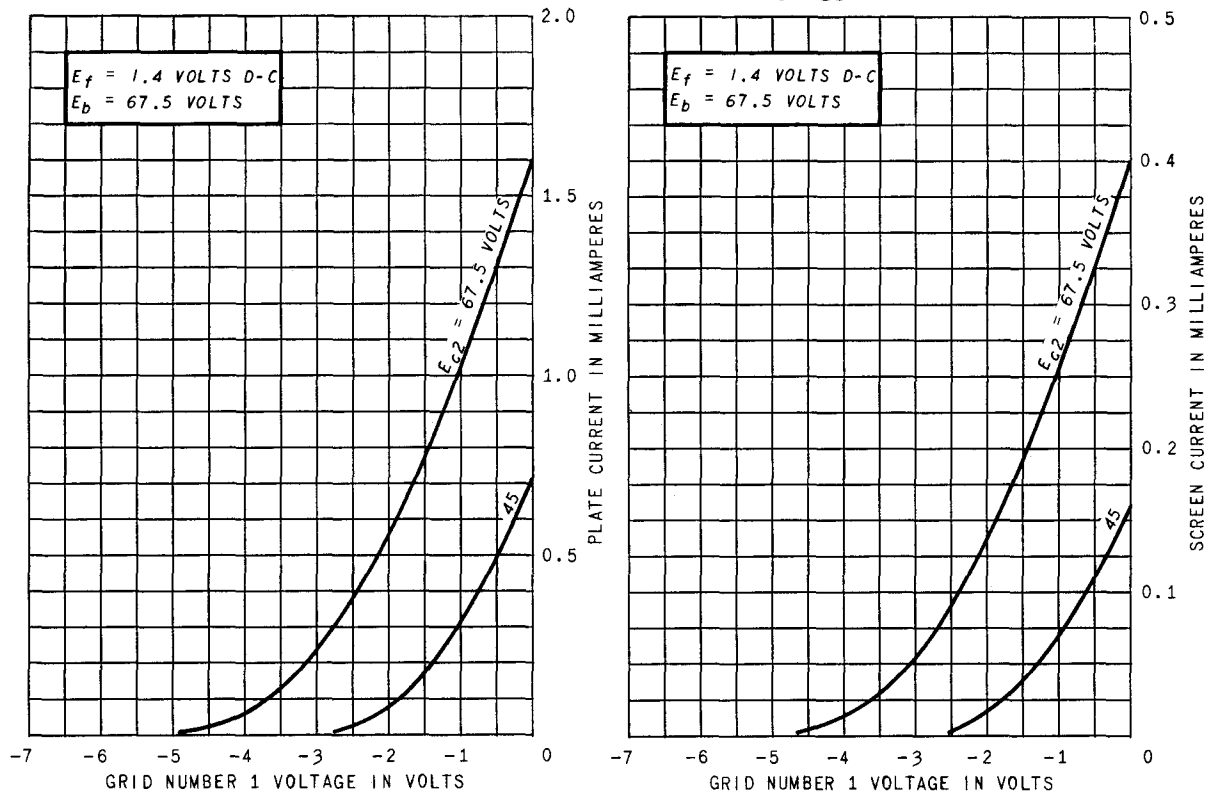
Notes: 1. E<sub>o</sub> is maximum RMS voltage output for five percent (5%) total harmonic distortion. 2. Gain measured at 2.0 volts RMS output. 3. For zero-bias data, generator impedance is negligible.

## OPERATION CHARACTERISTICS

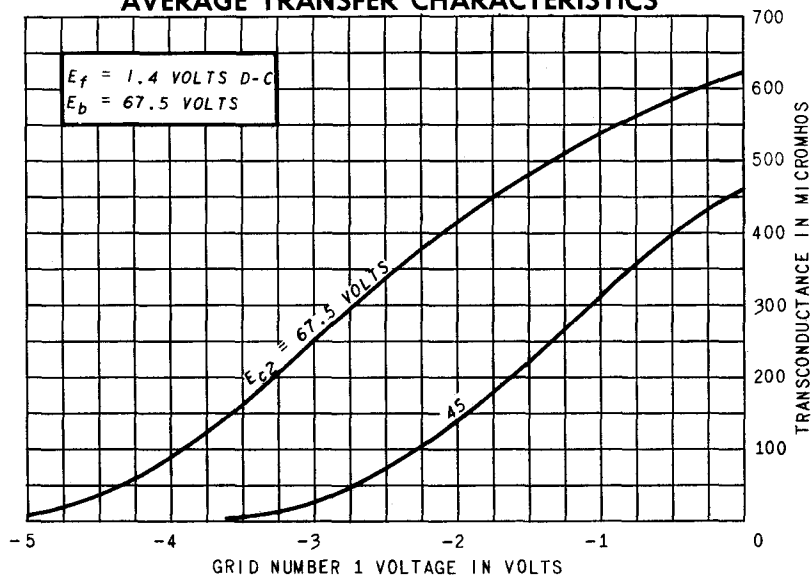




### AVERAGE TRANSFER CHARACTERISTICS



### AVERAGE TRANSFER CHARACTERISTICS



TUBE DEPARTMENT  
**GENERAL  ELECTRIC**  
 Schenectady 5, N. Y.