

# Traveling-Wave Tubes

## Technical Information

ZM-3291 thru ZM-3299  
ZM-3306 thru ZM-3311  
ZM-3365 thru ZM-3376  
ZM-3404 thru ZM-3427  
ZM-3436 thru ZM-3438

### RF PERFORMANCE

| TUBE TYPE           |                            |                               | Frequency Range (Gc) | Max. Noise Figure (db) | Min. Small Signal Gain (db) | Min. Sat. Power Output (mw) | Data Group |
|---------------------|----------------------------|-------------------------------|----------------------|------------------------|-----------------------------|-----------------------------|------------|
| 28 vdc Power Supply | 115 v 400 cps Power Supply | 115 v 60-400 cps Power Supply |                      |                        |                             |                             |            |
| ZM-3365             | ZM-3366                    | ZM-3367                       | 2.0-4.0              | 8                      | 30                          | 5                           | 1          |
| ZM-3368             | ZM-3369                    | ZM-3370                       | 2.2-2.3              | 5.5                    | 30                          | 5                           | 1          |
| ZM-3371             | ZM-3372                    | ZM-3373                       | 2.7-3.3              | 6.0                    | 30                          | 7                           | 1          |
| ZM-3291             | ZM-3292                    | ZM-3293                       | 4.0-8.0              | 8                      | 25                          | 5                           | 1          |
| ZM-3416             | ZM-3417                    | ZM-3418                       | 4.3-7.35             | 7                      | 30                          | 10                          | 1          |
| ZM-3419             | ZM-3420                    | ZM-3421                       | 4.4-5.0              | 6                      | 30                          | 10                          | 1          |
| ZM-3422             | ZM-3423                    | ZM-3424                       | 5.4-5.9              | 6                      | 30                          | 10                          | 1          |
| ZM-3425             | ZM-3426                    | ZM-3427                       | 5.9-6.5              | 6                      | 30                          | 10                          | 1          |
| ZM-3404             | ZM-3405                    | ZM-3406                       | 7.0-8.5              | 7                      | 30                          | 10                          | 1          |
| ZM-3294             | ZM-3295                    | ZM-3296                       | 7.0-11.0             | 8                      | 25                          | 5                           | 1          |
| ZM-3306             | ZM-3307                    | ZM-3308                       | 7.0-11.0             | 9                      | 25                          | 5                           | 1          |
| ZM-3407             | ZM-3408                    | ZM-3409                       | 7.5-8.5              | 6.5                    | 30                          | 10                          | 1          |
| ZM-3309             | ZM-3310                    | ZM-3311                       | 8.0-12.0             | 8                      | 25                          | 5                           | 1          |
| ZM-3297             | ZM-3298                    | ZM-3299                       | 8.0-12.0             | 9                      | 25                          | 5                           | 1          |
| ZM-3410             | ZM-3411                    | ZM-3412                       | 8.5-9.6              | 7                      | 30                          | 10                          | 1          |
| ZM-3413             | ZM-3414                    | ZM-3415                       | 9.0-10.0             | 7                      | 30                          | 10                          | 1          |
| ZM-3374             | ZM-3375                    | ZM-3376                       | 9.75-15.0            | 11                     | 30                          | 5                           | 3          |
| ZM-3436             | ZM-3437                    | ZM-3438                       | 12.0-16.0            | 10                     | 30                          | 5                           | 2          |

- LOW NOISE
- S, C, X, & Ku BANDS
- SRPM FOCUSING
- INTEGRAL POWER SUPPLY

### FEATURES

low noise  
broad bandwidth  
single-reversal permanent-magnet focusing †  
metal-ceramic construction  
military environment  
light weight  
crystal mixer protection  
integral power supply  
solid state  
line surge protection  
long term stability

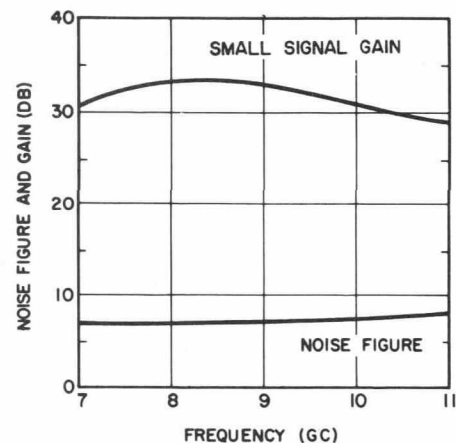
### APPLICATIONS

radar  
ecm  
instrumentation  
communications  
radiometry

### MECHANICAL AND MISCELLANEOUS

| DATA GROUP               | 1                             | 2 & 3                         |
|--------------------------|-------------------------------|-------------------------------|
| VSWR, max                | .                             | .                             |
| Input .....              | 2.5                           | 2.5                           |
| Output .....             | 2.5                           | 2.5                           |
| Mounting position .....  | Any                           | Any                           |
| Weight, lb. ....         | 15.5                          | 16.0                          |
| Overall length, in ..... | 13.85                         | 12.11                         |
| Cooling. ....            | Convec-                       | Convec-                       |
| Connectors               |                               |                               |
| RF input .....           | Type N, female                | See outline                   |
| RF output .....          | Type N, female                | See outline                   |
| Power .....              | Deutsch DM9601-3P (or equiv.) | Deutsch DM9601-3P (or equiv.) |

### TYPICAL CHARACTERISTICS



## POWER SUPPLY REQUIREMENTS

| Nominal Rating     | 115 v<br>60-400 cps | 115 v<br>400 cps | 28 vdc    |
|--------------------|---------------------|------------------|-----------|
| Voltage range      | 100-135 vac         | 100-135 vac      | 24-29 vdc |
| Voltage transients | *                   | *                | **        |
| Freq. range        | 48-420 cps          | 380-420 cps      | —         |
| Power, max.        | 30 w                | 30 w             | 30 w      |

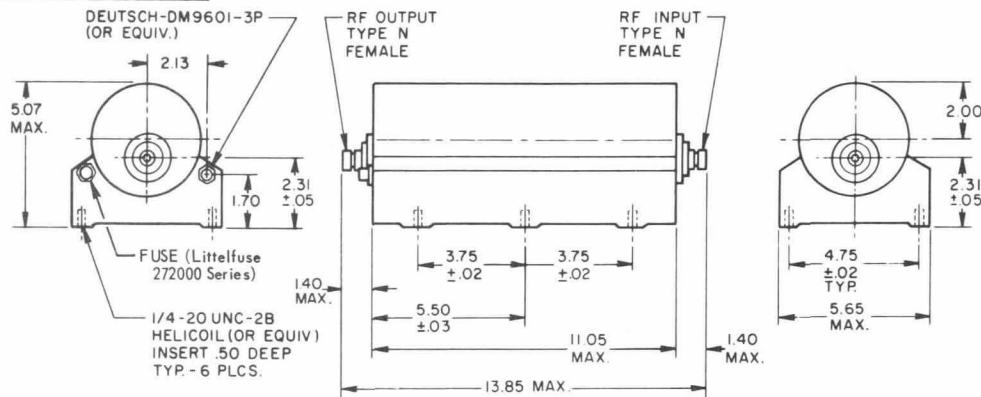
\* Transients per MIL-STD-704 par. 5.1.4.2. If voltage exceeds 175 volts for 3 sec, the fuse will blow.

\*\* Transients per MIL-STD-704 par. 5.2.3.2.

## ENVIRONMENTAL

|                    |                                          |            |
|--------------------|------------------------------------------|------------|
| Shock .....        | 30 G, 11 ms,<br>(energized)              | 3 axes     |
| Vibration .....    | 15 G, 90 to<br>(operating)               | 2000 cps   |
| Temp. Ambient ..   | -54 to +71 C <sup>#</sup><br>(operating) |            |
| Altitude .....     | 100,000 ft<br>(operating)                |            |
| Acoustic Noise ... | 150 db, 25 to<br>(operating)             | 12,000 cps |

## OUTLINE (Data Group 1)



DIMENSIONS ARE IN INCHES; THOSE WITHOUT TOLERANCES ARE APPROXIMATE.

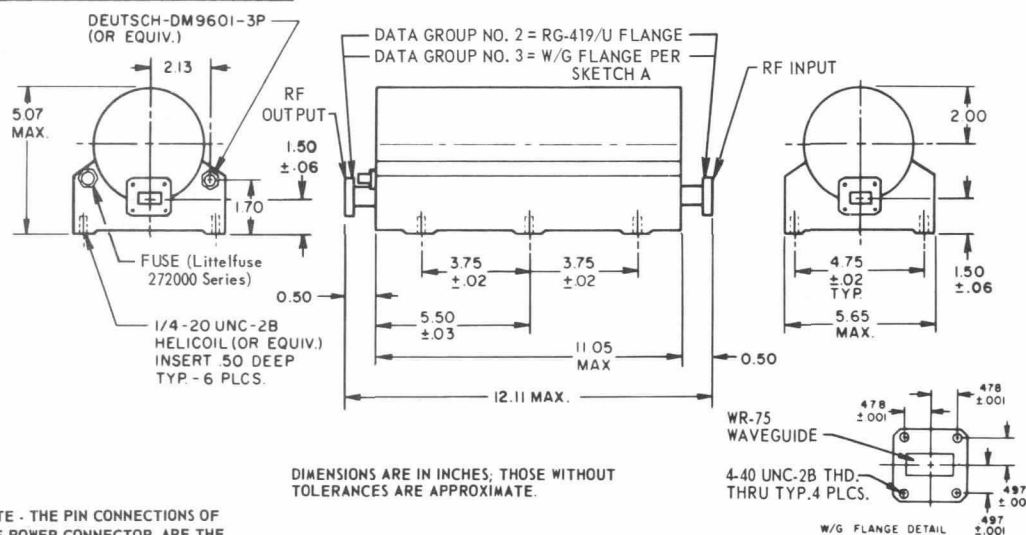
### PIN CONNECTIONS

|       | 115V, 60-400 CPS<br>POWER SUPPLY |
|-------|----------------------------------|
| PIN 1 | 115V LINE                        |
| PIN 2 | CHASSIS GND.                     |
| PIN 3 | 115V LINE                        |

|       | 115V, 400 CPS<br>POWER SUPPLY |
|-------|-------------------------------|
| PIN 1 | 115V LINE                     |
| PIN 2 | CHASSIS GND.                  |
| PIN 3 | 115V LINE                     |

|       | 28 VDC<br>POWER SUPPLY   |
|-------|--------------------------|
| PIN 1 | 28 VDC LINE              |
| PIN 2 | GND. (CHASSIS & CIRCUIT) |
| PIN 3 | GND. (CHASSIS & CIRCUIT) |

## OUTLINE (Data Groups 2 and 3)



DIMENSIONS ARE IN INCHES; THOSE WITHOUT TOLERANCES ARE APPROXIMATE.

NOTE - THE PIN CONNECTIONS OF THE POWER CONNECTOR ARE THE SAME AS IN OUTLINE GROUP 1 ABOVE

SKETCH A  
(FOR DATA GROUP NO. 3)

## NOTES

‡ Since these tubes are single-reversal permanent-magnet focused and magnetically shielded, they are well suited for applications requiring close physical spacing with other tubes or magnetic materials.

# This tube is capable of operating to +85°C with approximately 0.5 db degradation in noise figure.

These data are subject to change without notice.

TUBE DEPARTMENT  
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