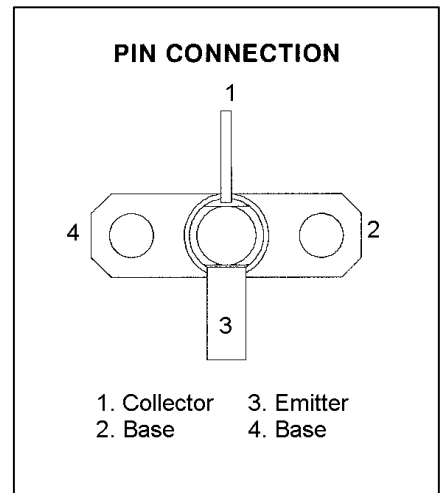
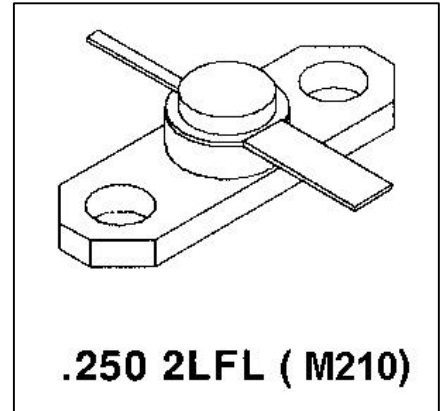


## MS3302

### RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

#### Features

- 3.0 GHz
- GOLD METALIZATION
- EMITTER BALLASTED
- $P_{OUT} = 4.5$  W MINIMUM
- $G_p = 4.5$  dB
- $\infty:1$  VSWR CAPABILITY @ RATED CONDITIONS
- COMMON BASE CONFIGURATION



#### DESCRIPTION:

The MS3302 is a common base silicon NPN microwave transistor designed for general purpose applications over the 1.0 – 3.0 GHz frequency range. The MS3302 utilizes an emitter ballasted die geometry for maximum load VSWR capability under rated conditions.

#### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

| Symbol     | Parameter                | Value       | Unit |
|------------|--------------------------|-------------|------|
| $P_{DISS}$ | Power Dissipation        | 17.6        | W    |
| $V_{CC}$   | Collector-Supply Voltage | 30          | V    |
| $I_C$      | Device Current           | 700         | mA   |
| $T_J$      | Junction Temperature     | 200         | °C   |
| $T_{STG}$  | Storage Temperature      | -65 to +200 | °C   |

#### Thermal Data

|               |                                  |     |      |
|---------------|----------------------------------|-----|------|
| $R_{TH(J-C)}$ | Thermal Resistance Junction-case | 8.5 | °C/W |
|---------------|----------------------------------|-----|------|

\*Applies only to rated RF amplifier operation

**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)**
**STATIC**

| Symbol            | Test Conditions       |                        | Value |      |      | Unit |
|-------------------|-----------------------|------------------------|-------|------|------|------|
|                   |                       |                        | Min.  | Typ. | Max. |      |
| BV <sub>cbo</sub> | I <sub>C</sub> = 1mA  | I <sub>E</sub> = 0mA   | 45    | ---  | ---  | V    |
| BV <sub>cer</sub> | I <sub>C</sub> = 5mA  | R <sub>BE</sub> = 10Ω  | 45    | ---  | ---  | V    |
| BV <sub>ebo</sub> | I <sub>E</sub> = 1mA  | I <sub>C</sub> = 0mA   | 3.5   | ---  | ---  | V    |
| I <sub>cbo</sub>  | V <sub>CE</sub> = 28V |                        | ---   | ---  | 0.5  | mA   |
| H <sub>FE</sub>   | V <sub>CE</sub> = 5V  | I <sub>C</sub> = 500mA | 30    | ---  | 300  | ---  |

**DYNAMIC**

| Symbol           | Test Conditions |                         |                       | Value |      |      | Unit |
|------------------|-----------------|-------------------------|-----------------------|-------|------|------|------|
|                  |                 |                         |                       | Min.  | Typ. | Max. |      |
| P <sub>OUT</sub> | f = 3.0GHz      | P <sub>IN</sub> = 1.59W | V <sub>CC</sub> = 28V | 4.5   | ---  | ---  | W    |
| G <sub>P</sub>   | f = 3.0GHz      | P <sub>IN</sub> = 1.59W | V <sub>CC</sub> = 28V | 4.5   | ---  | ---  | dB   |
| η <sub>C</sub>   | f = 3.0GHz      | P <sub>IN</sub> = 1.59W | V <sub>CC</sub> = 28V | 30    | ---  | ---  | %    |
| C <sub>OB</sub>  | f = 1 MHz       | V <sub>CB</sub> = 28V   |                       | ---   | ---  | 7.5  | pf   |

**IMPEDANCE DATA**

| FREQ    | Z <sub>IN</sub> (Ω) | Z <sub>CL</sub> (Ω) |
|---------|---------------------|---------------------|
| 1.0 GHz | 1.7 + j7.2          | 9.5 + j15.5         |
| 1.7 GHz | 2.0 + j11.2         | 4.2 + j6.7          |
| 2.0 GHz | 2.4 + j14.0         | 3.5 + j2.5          |
| 2.3 GHz | 3.6 + j17.4         | 3.1 + j1.2          |
| 2.7 GHz | 6.0 + j21.0         | 3.0 – j3.8          |
| 3.0 GHz | 9.5 + j24.0         | 3.0 – j7.2          |

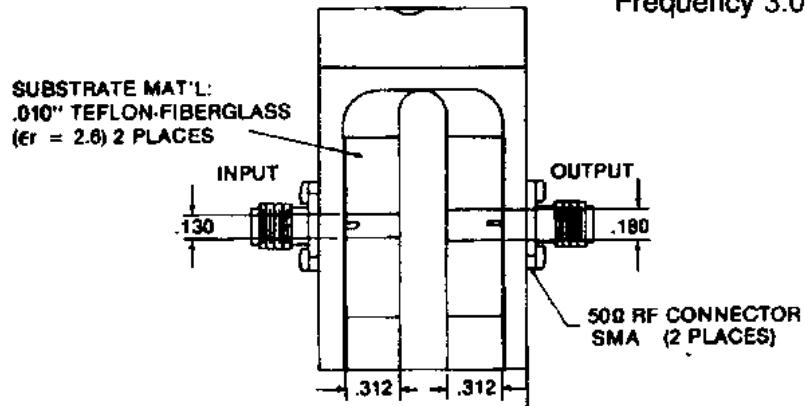
V<sub>CC</sub> = 28V  
P<sub>IN</sub> = 1.6W

**MS3302**

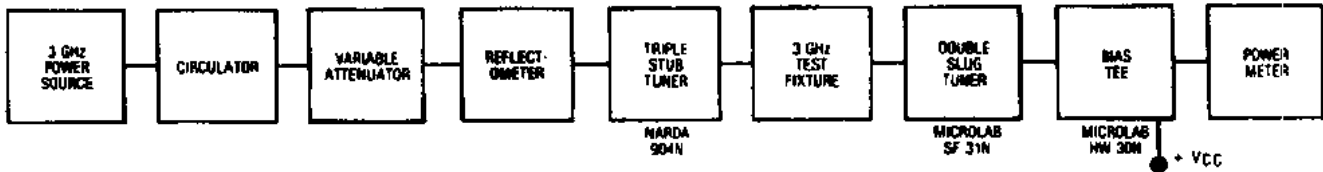
**TEST CIRCUIT**

Ref.: Dwg. No. C125562

All dimensions are in inches.  
Frequency 3.0 GHz



**RF Amplifier Power Output Test**



**PACKAGE MECHANICAL DATA**

