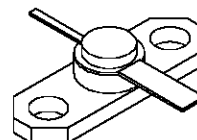


## RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

PRELIMINARY DATA

- REFRACTORY/GOLD METALLIZATION
- VSWR CAPABILITY 20:1 @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 3.8 \text{ W MIN. WITH } 10.0 \text{ dB GAIN}$



**.250 2LFL (S010)**  
hermetically sealed

**ORDER CODE**

MSC82304

**BRANDING**

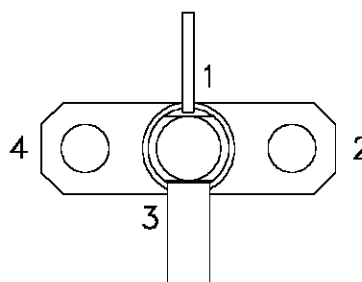
82304

### DESCRIPTION

The MSC82304 is a common base hermetically sealed silicon NPN microwave power transistor utilizing a rugged overlay die geometry. This device is capable of withstanding 20:1 load VSWR at any phase angle under rated conditions.

The MSC82304 was designed for Class C Amplifier/Oscillator applications in the 1.5 - 2.3 GHz frequency range.

### PIN CONNECTION



1. Collector

2. Base

3. Emitter

4. Base

### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}\text{C}$ )

| Symbol     | Parameter                                            | Value        | Unit               |
|------------|------------------------------------------------------|--------------|--------------------|
| $P_{DISS}$ | Power Dissipation* ( $T_C \leq 50^{\circ}\text{C}$ ) | 11.5         | W                  |
| $I_C$      | Device Current*                                      | 600          | mA                 |
| $V_{CC}$   | Collector-Supply Voltage*                            | 26           | V                  |
| $T_J$      | Junction Temperature                                 | 200          | $^{\circ}\text{C}$ |
| $T_{STG}$  | Storage Temperature                                  | - 65 to +200 | $^{\circ}\text{C}$ |

### THERMAL DATA

|               |                                   |    |                      |
|---------------|-----------------------------------|----|----------------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance* | 13 | $^{\circ}\text{C/W}$ |
|---------------|-----------------------------------|----|----------------------|

\*Applies only to rated RF amplifier operation

## MSC82304

### ELECTRICAL SPECIFICATIONS ( $T_{\text{case}} = 25^{\circ}\text{C}$ )

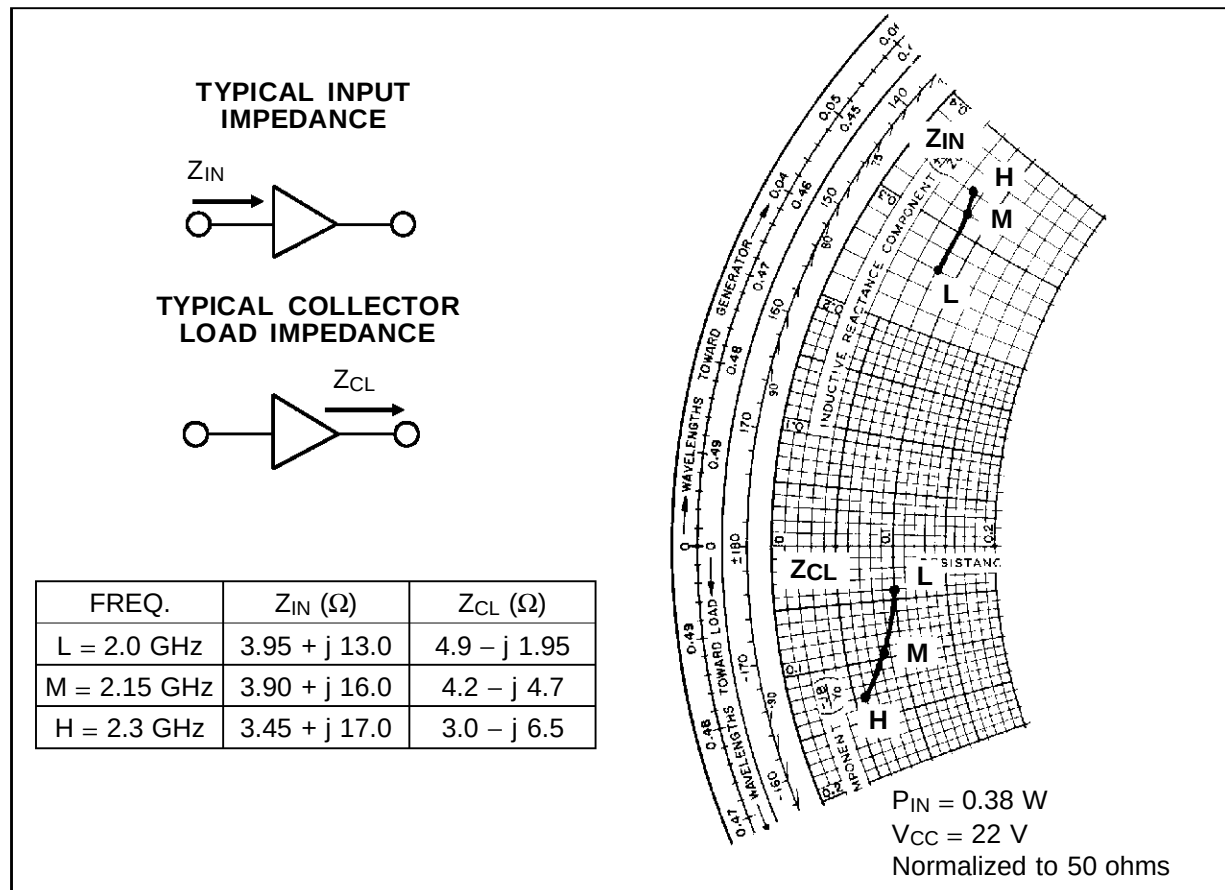
#### STATIC

| Symbol            | Test Conditions              |                               | Value |      |      | Unit |
|-------------------|------------------------------|-------------------------------|-------|------|------|------|
|                   |                              |                               | Min.  | Typ. | Max. |      |
| $BV_{\text{CBO}}$ | $I_{\text{C}} = 1\text{mA}$  | $I_{\text{E}} = 0\text{mA}$   | 44    | —    | —    | V    |
| $BV_{\text{EBO}}$ | $I_{\text{E}} = 1\text{mA}$  | $I_{\text{C}} = 0\text{mA}$   | 3.5   | —    | —    | V    |
| $BV_{\text{CER}}$ | $I_{\text{C}} = 5\text{mA}$  | $R_{\text{BE}} = 10\Omega$    | 44    | —    | —    | V    |
| $I_{\text{CBO}}$  | $V_{\text{CB}} = 22\text{V}$ |                               | —     | —    | 0.5  | mA   |
| $h_{\text{FE}}$   | $V_{\text{CE}} = 5\text{V}$  | $I_{\text{C}} = 250\text{mA}$ | 30    | —    | 300  | —    |

#### DYNAMIC

| Symbol            | Test Conditions      |                                 |                               | Value |      |      | Unit |
|-------------------|----------------------|---------------------------------|-------------------------------|-------|------|------|------|
|                   |                      |                                 |                               | Min.  | Typ. | Max. |      |
| $P_{\text{OUT}}$  | $f = 2.3\text{ GHz}$ | $P_{\text{IN}} = 0.38\text{ W}$ | $V_{\text{CC}} = 22\text{ V}$ | 3.8   | —    | —    | W    |
| $\eta_{\text{C}}$ | $f = 2.3\text{ GHz}$ | $P_{\text{IN}} = 0.38\text{ W}$ | $V_{\text{CC}} = 22\text{ V}$ | 40    | —    | —    | %    |
| $G_{\text{P}}$    | $f = 2.3\text{ GHz}$ | $P_{\text{IN}} = 0.38\text{ W}$ | $V_{\text{CC}} = 22\text{ V}$ | 10.0  | —    | —    | dB   |
| $C_{\text{OB}}$   | $f = 1\text{ MHz}$   | $V_{\text{CB}} = 22\text{ V}$   |                               | —     | —    | 5.0  | pF   |

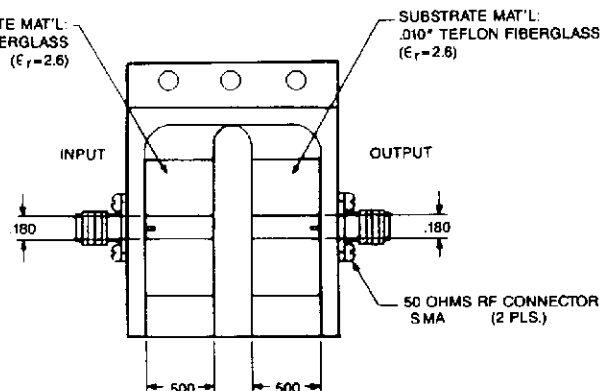
## IMPEDANCE DATA



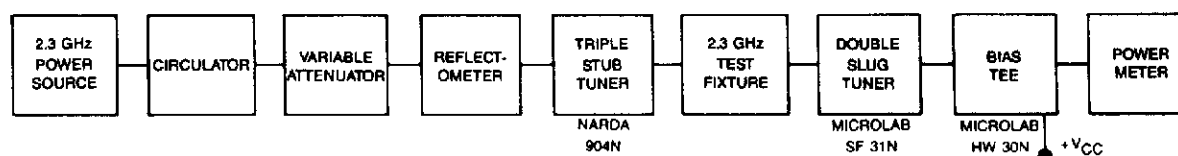
## TEST CIRCUIT

Ref.: Dwg. No. C125518

All dimensions are in inches.  
 Frequency 2.3 GHz

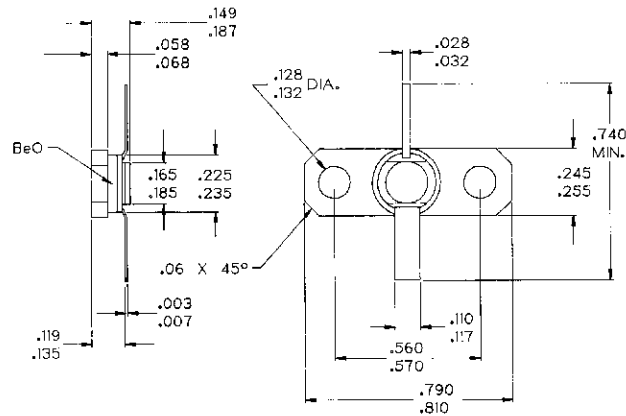


## RF Amplifier Power Output Test



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



NOTES:

1. ALL TOLERANCE  $\pm .010$  EXCEPT WHERE NOTED;  
DIMENSIONS IN INCHES.

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