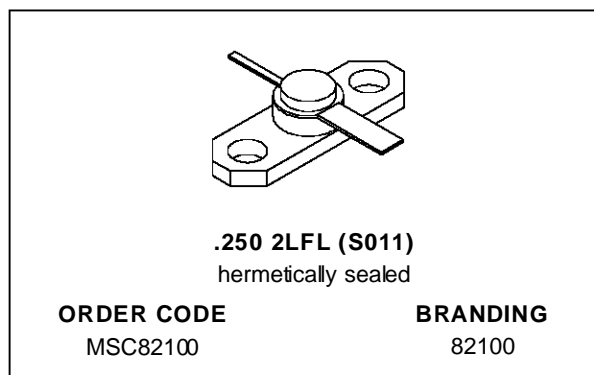


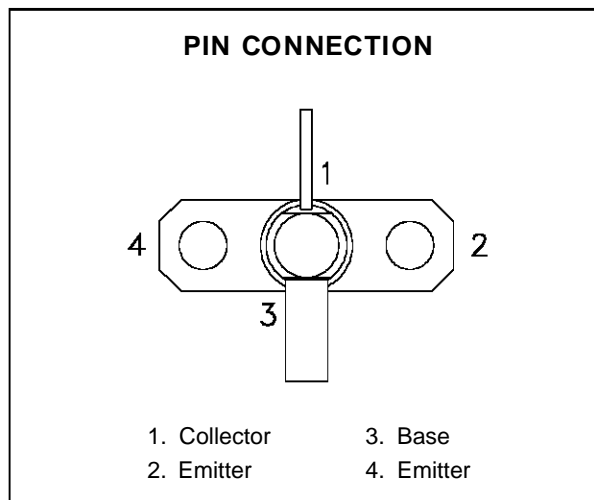
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

- EMITTER BALLASTED
- CLASS A LINEAR OPERATION
- COMMON EMITTER
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- ft 1.6 GHz TYPICAL
- NOISE FIGURE 15.5 dB @ 2 GHz
- $P_{OUT} = 27$ dBm MIN. @ 1.0 GHz



DESCRIPTION

The MSC82100 is a hermetically sealed NPN power transistor with a fishbone, emitter finger ballasted geometry utilizing a refractory/gold metallization system. The device is designed specifically for Class A linear applications to provide high gain and high output power at the 1.0 dB compression point.



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

| Symbol | Parameter | Value | Unit |
|------------|-----------------------------------|--------------|-------------|
| P_{DISS} | Power Dissipation (see Safe Area) | — | W |
| I_C | Device Bias Current | 200 | mA |
| V_{CE} | Collector-Emitter Bias Voltage* | 20 | V |
| T_J | Junction Temperature | 200 | $^{\circ}C$ |
| T_{STG} | Storage Temperature | - 65 to +200 | $^{\circ}C$ |

THERMAL DATA

| | | | |
|---------------|-----------------------------------|----|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance* | 20 | $^{\circ}C/W$ |
|---------------|-----------------------------------|----|---------------|

*Applies only to rated RF amplifier operation

MSC82100

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

STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|-------------------|------------------------------|-------------------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| BV_{CBO} | $I_{\text{C}} = 1\text{mA}$ | $I_{\text{E}} = 0\text{mA}$ | 45 | — | — | V |
| BV_{EBO} | $I_{\text{E}} = 1\text{mA}$ | $I_{\text{C}} = 0\text{mA}$ | 3.5 | — | — | V |
| BV_{CEO} | $I_{\text{C}} = 5\text{mA}$ | $I_{\text{B}} = 0\text{mA}$ | 20 | — | — | V |
| I_{CEO} | $V_{\text{CE}} = 18\text{V}$ | | — | — | 0.5 | mA |
| h_{FE} | $V_{\text{CE}} = 5\text{V}$ | $I_{\text{C}} = 100\text{mA}$ | 15 | — | 120 | — |

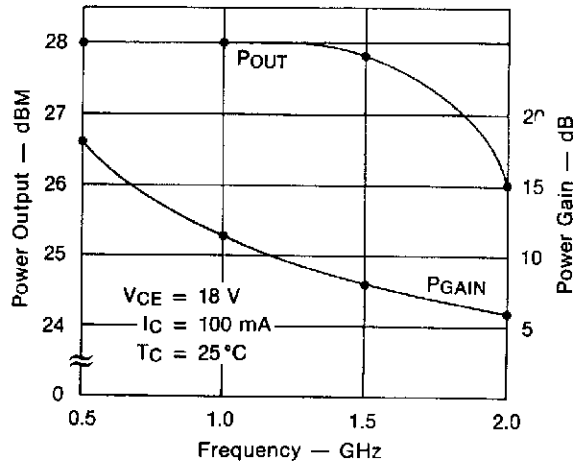
DYNAMIC

| Symbol | Test Conditions | | Value | | | Unit |
|-------------------------|----------------------|----------------------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| G_{P}^* | $f = 1.0\text{ GHz}$ | $P_{\text{OUT}} = 27\text{ dBm}$ | 10.5 | 11.5 | — | dB |
| ΔG_{P}^* | $f = 1.0\text{ GHz}$ | $P_{\text{OUT}} = 27\text{ dBm}$ | — | — | 1 | dB |
| C_{OB} | $f = 1\text{ MHz}$ | $V_{\text{CB}} = 28\text{ V}$ | — | — | 3.2 | pF |

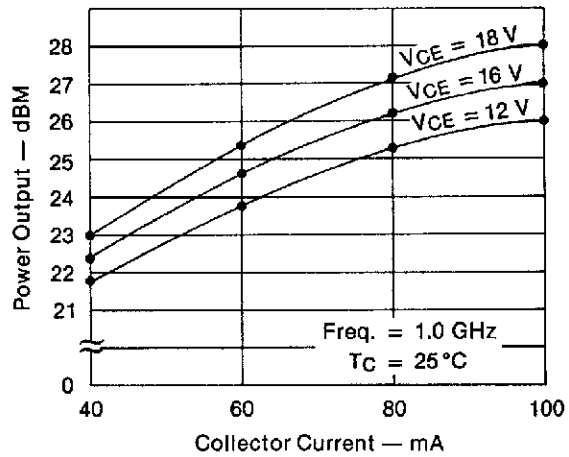
* Note: $V_{\text{CE}} = 18\text{V}$
 $I_{\text{C}} = 100\text{mA}$

TYPICAL PERFORMANCE

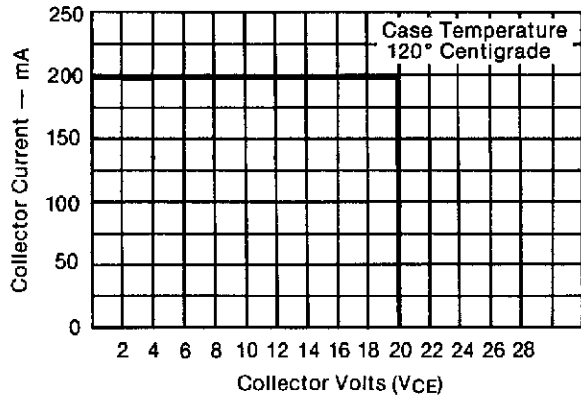
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



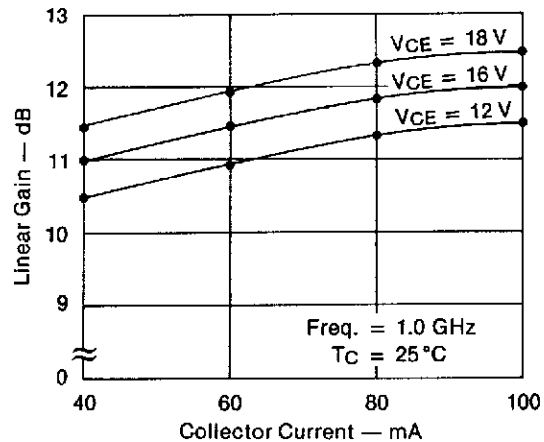
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT



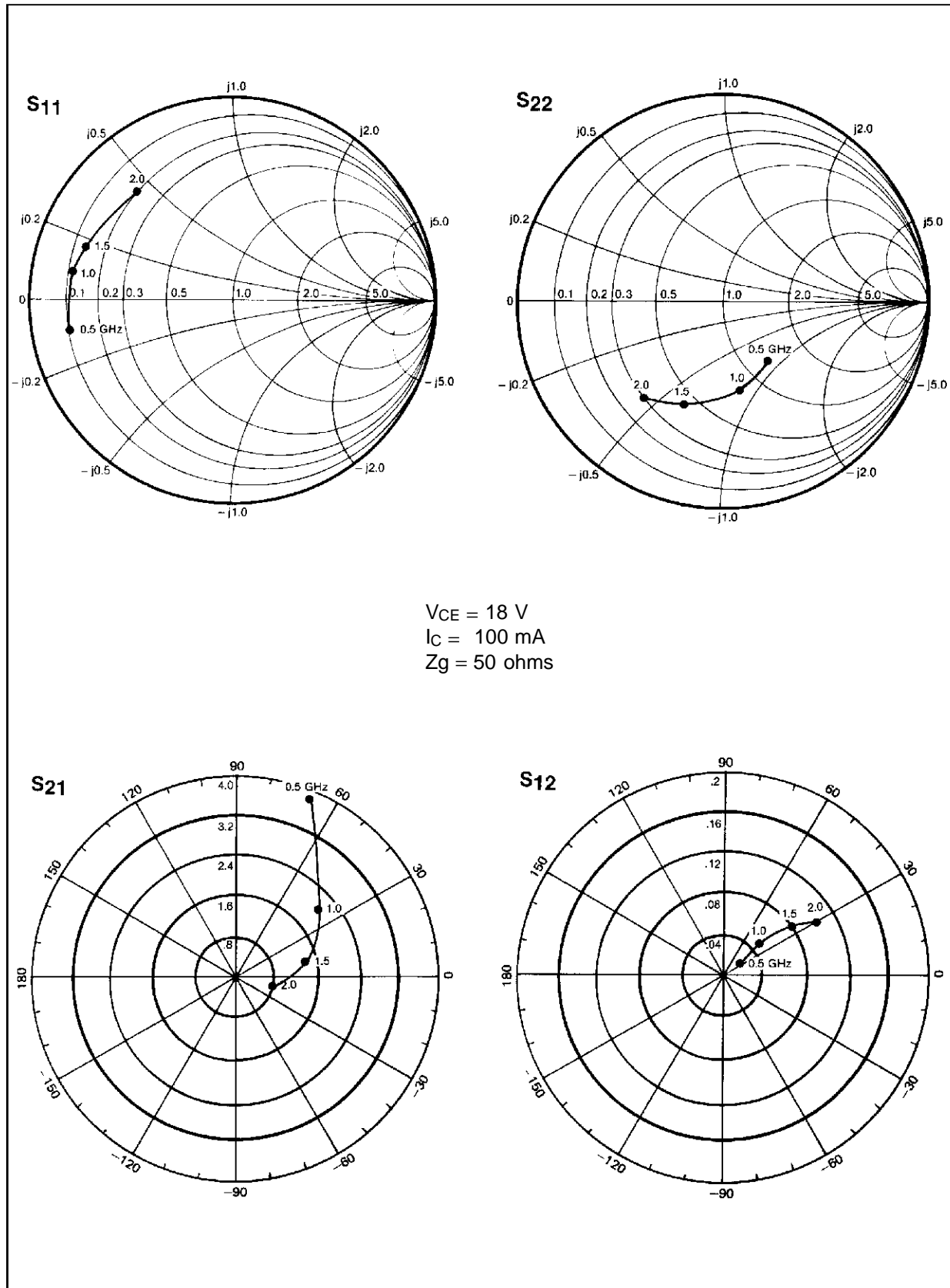
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

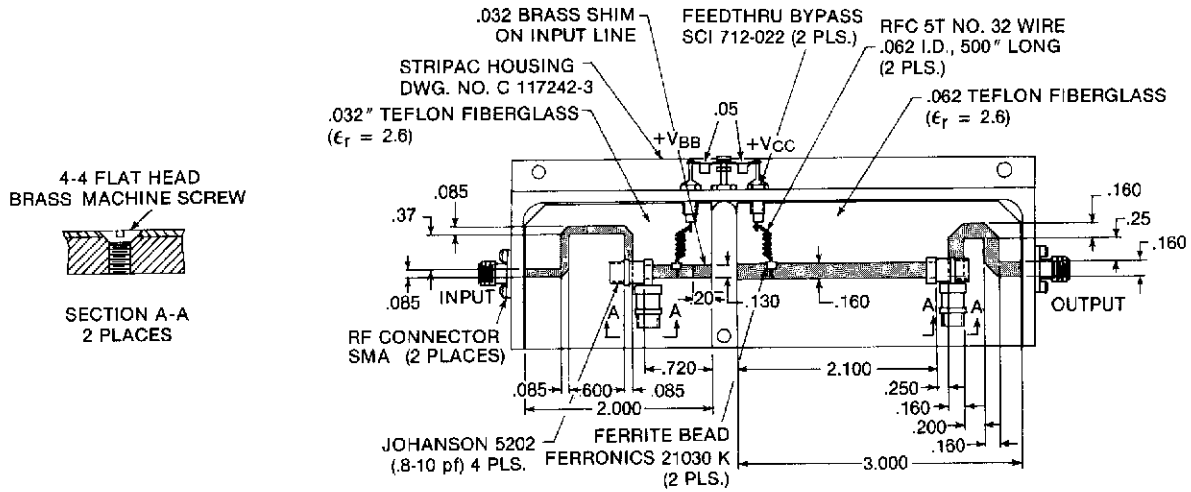


TYPICAL S-PARAMETERS



TEST CIRCUIT

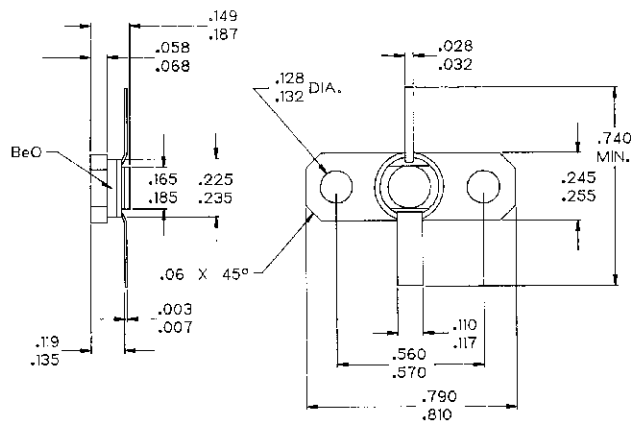
Ref.: Dwg. No. C127323



All dimensions are in inches.
Frequency 1.0 GHz

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



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

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