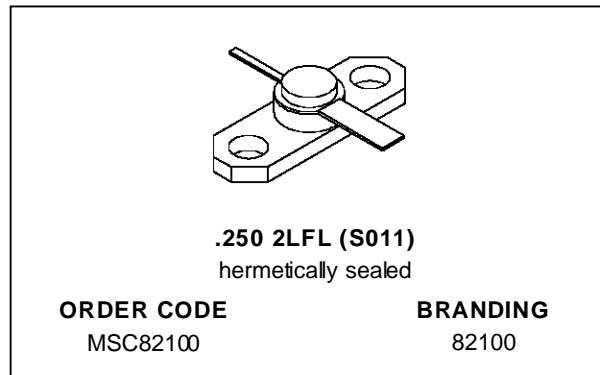


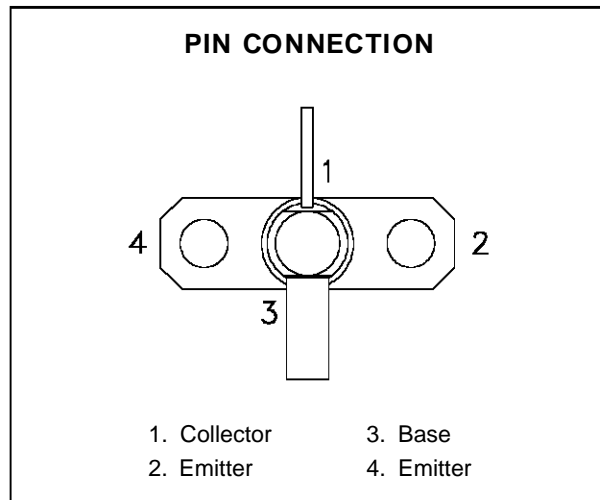
**RF & MICROWAVE TRANSISTORS  
GENERAL PURPOSE LINEAR APPLICATIONS**

- 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<sub>OUT</sub> = 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<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
P <sub>DISS</sub>	Power Dissipation (see Safe Area)	—	W
I <sub>C</sub>	Device Bias Current	200	mA
V <sub>CE</sub>	Collector-Emitter Bias Voltage*	20	V
T <sub>J</sub>	Junction Temperature	200	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +200	°C

**THERMAL DATA**

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance*	20	°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.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 1\text{mA}$	$I_{\text{E}} = 0\text{mA}$	45	—	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 1\text{mA}$	$I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
$BV_{\text{CEO}}$	$I_{\text{C}} = 5\text{mA}$	$I_{\text{B}} = 0\text{mA}$	20	—	—	V
$I_{\text{CEO}}$	$V_{\text{CE}} = 18\text{V}$		—	—	0.5	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5\text{V}$	$I_{\text{C}} = 100\text{mA}$	15	—	120	—

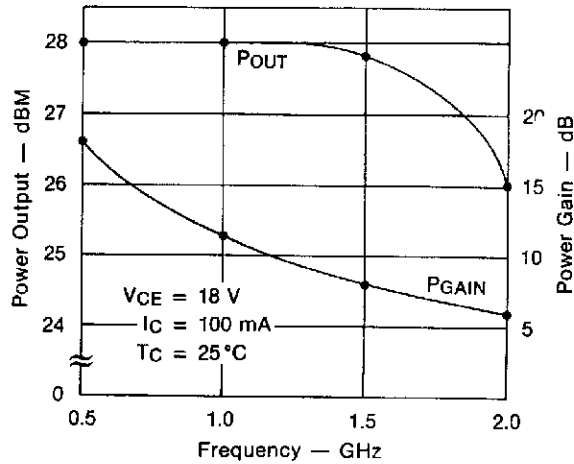
#### DYNAMIC

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

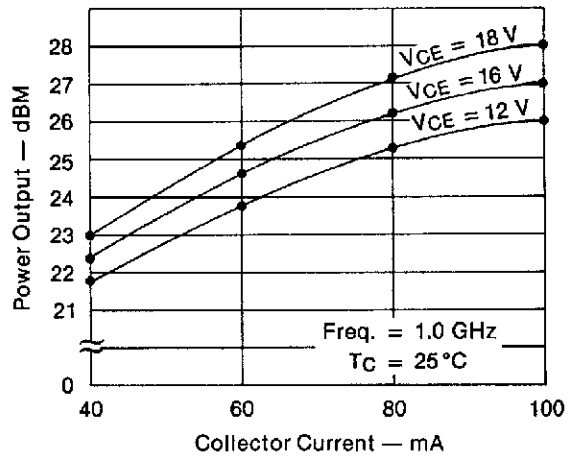
\* Note:  $V_{\text{CE}} = 18\text{V}$   
 $I_{\text{C}} = 100\text{mA}$

TYPICAL PERFORMANCE

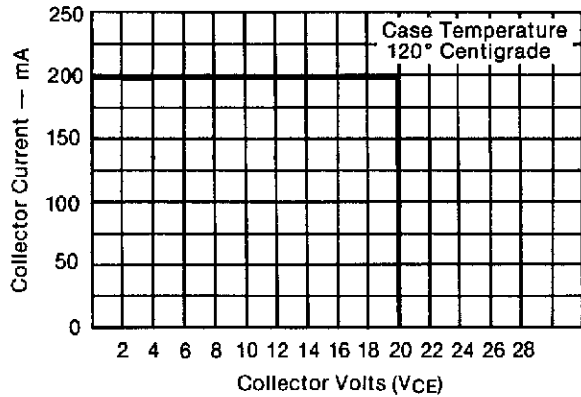
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



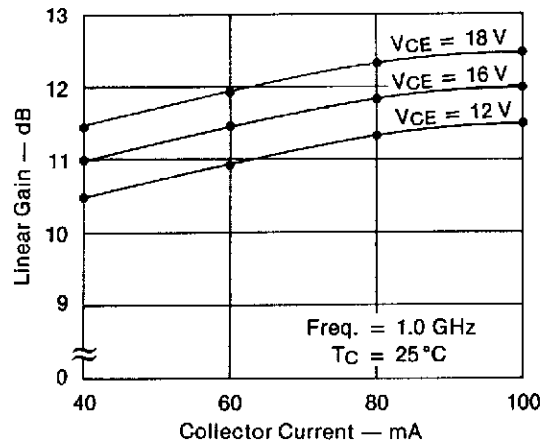
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT



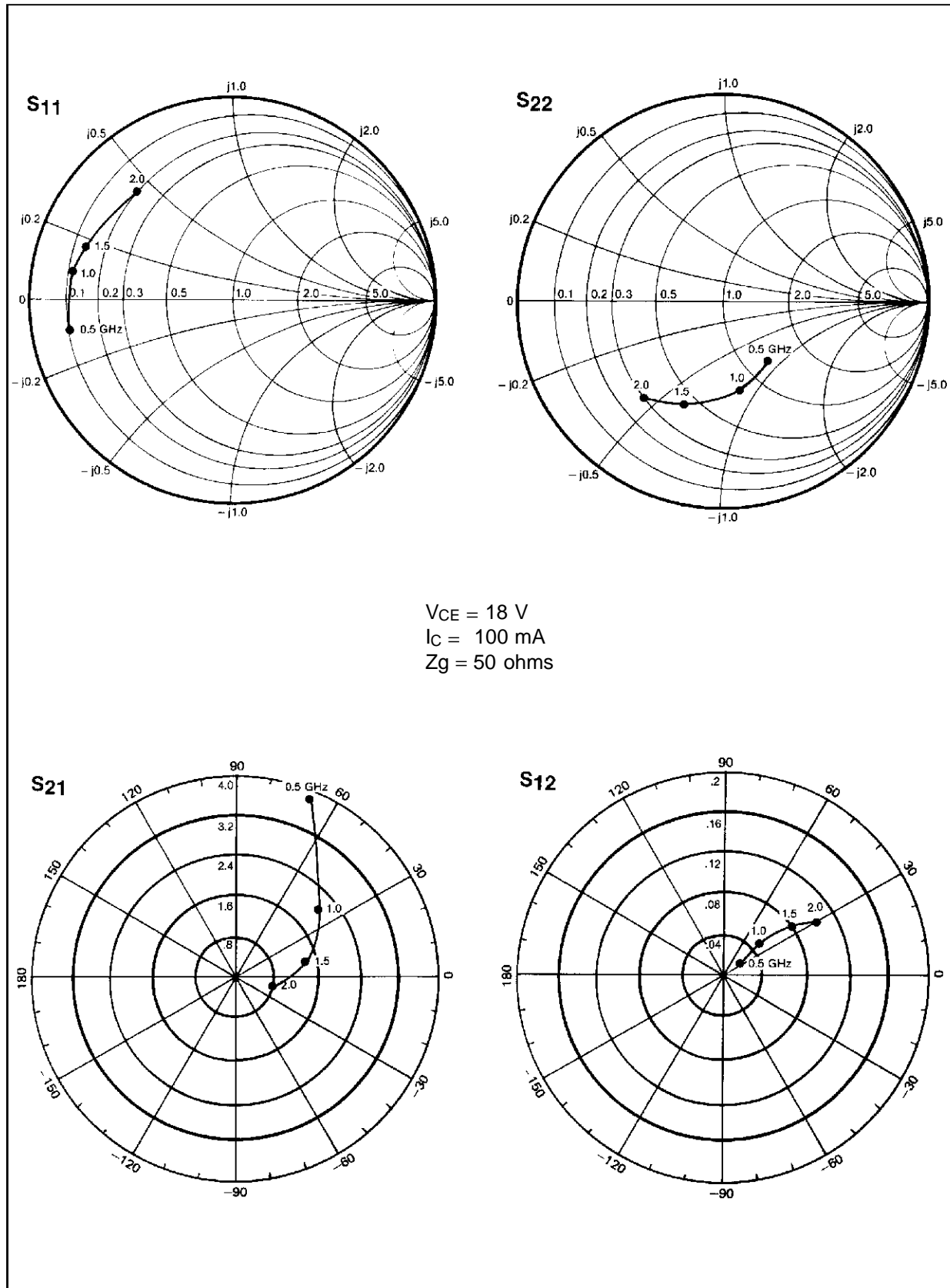
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

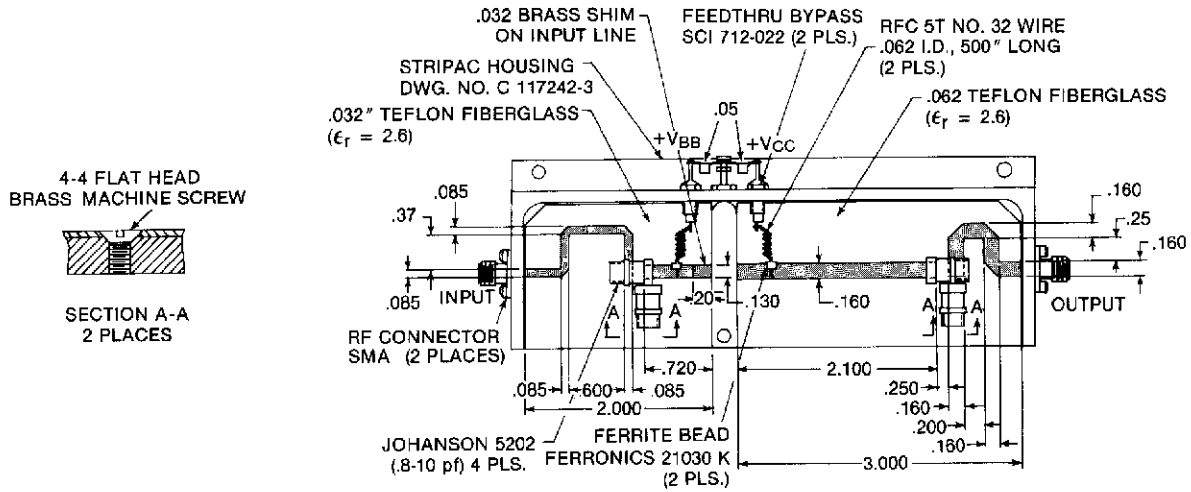


TYPICAL S-PARAMETERS



TEST CIRCUIT

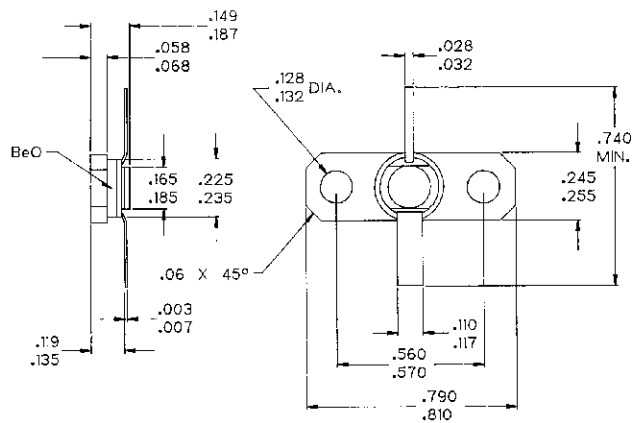
Ref.: Dwg. No. C127323



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.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES  
Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A