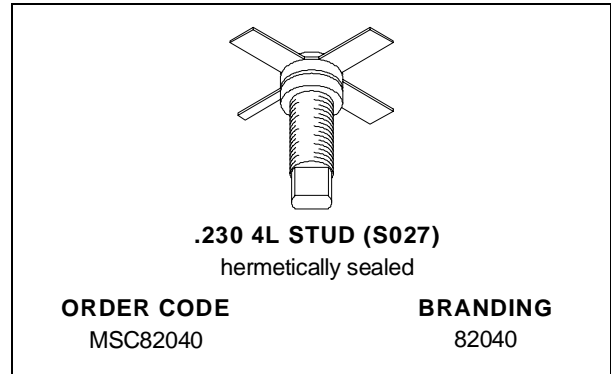


## RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

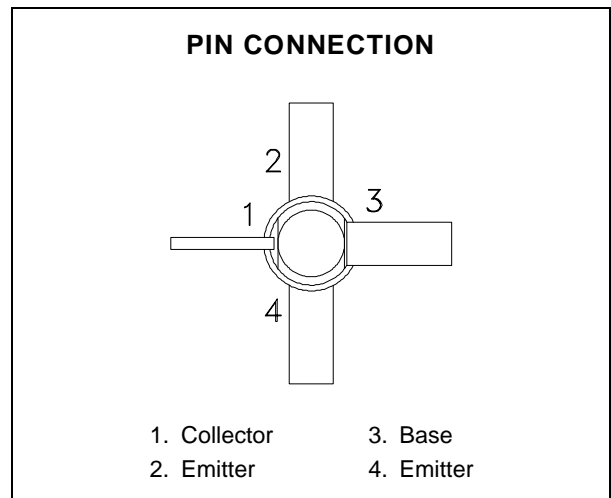
- EMITTER BALLASTED
- CLASS A LINEAR OPERATION
- COMMON EMITTER
- VSWR CAPABILITY  $\infty:1$  @ RATED CONDITIONS
- ft 1.6 GHz TYPICAL
- NOISE FIGURE 15.5 dB @ 2 GHz
- P<sub>OUT</sub> = 27 dBm MIN. @ 1.0 GHz



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### DESCRIPTION

The MSC82040 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
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\*Applies only to rated RF amplifier operation

## MSC82040

### 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	—

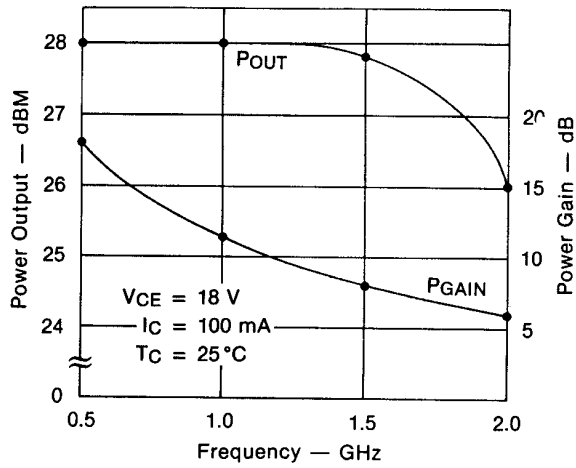
#### DYNAMIC

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

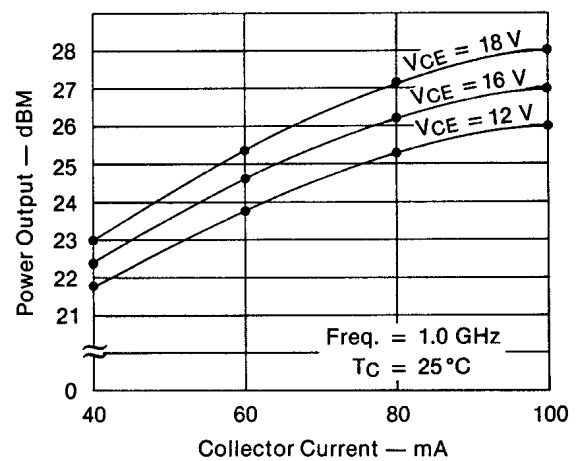
\* Note:  $V_{\text{CE}} = 18\text{V}$   
 $I_{\text{C}} = 100\text{mA}$

TYPICAL PERFORMANCE

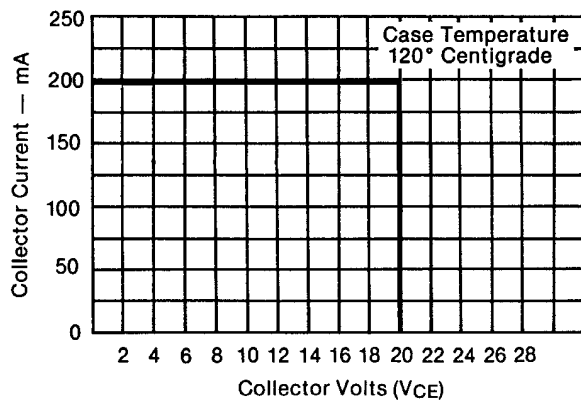
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



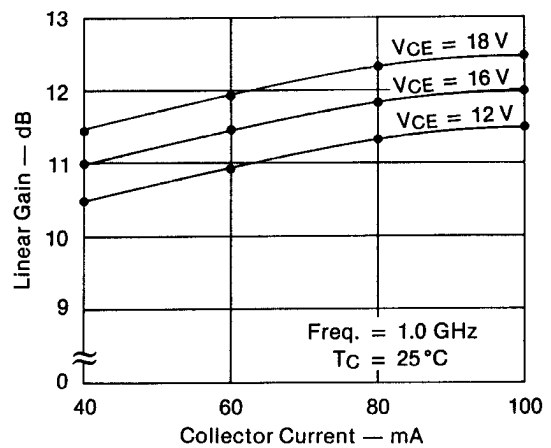
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT



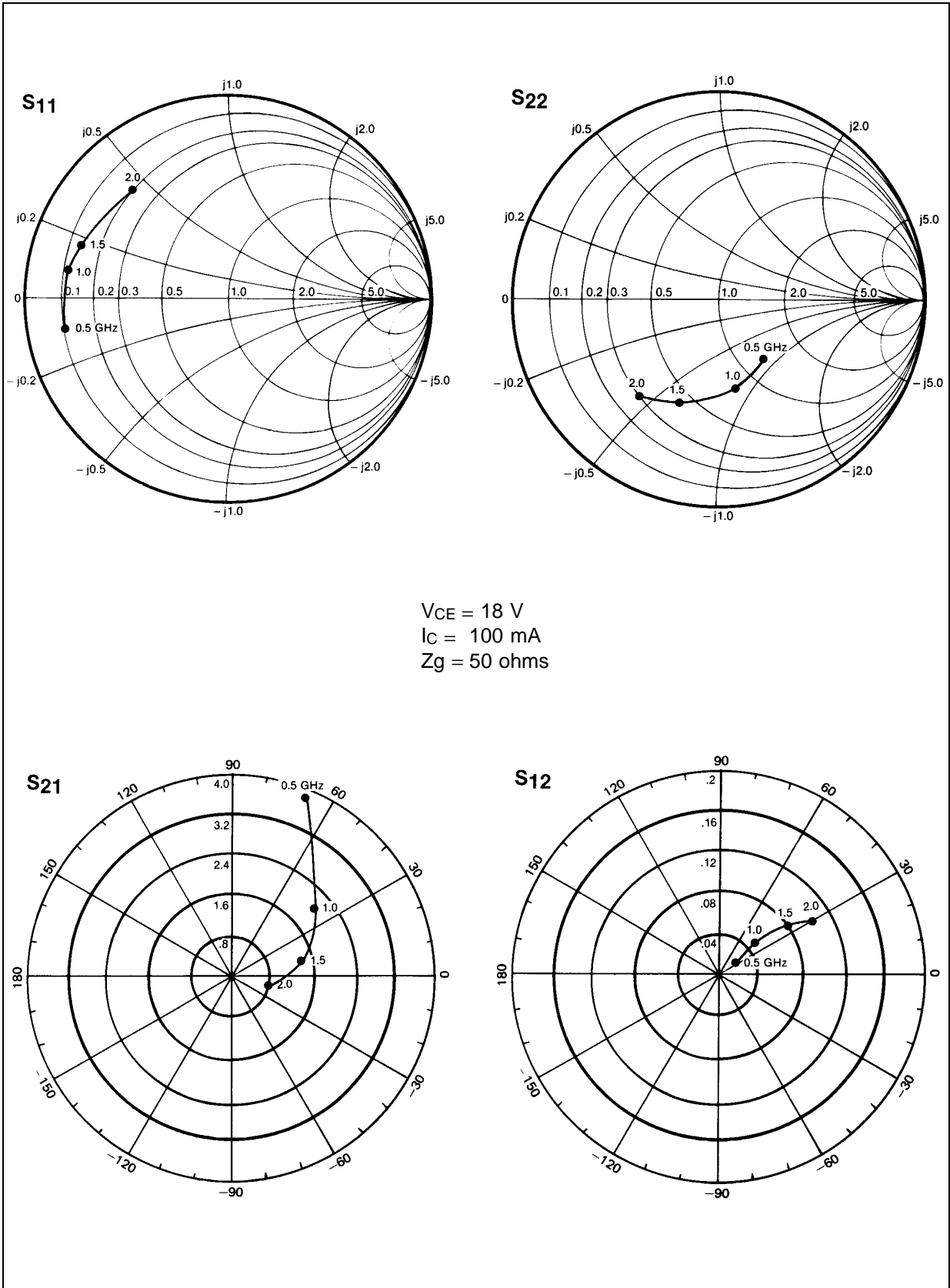
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

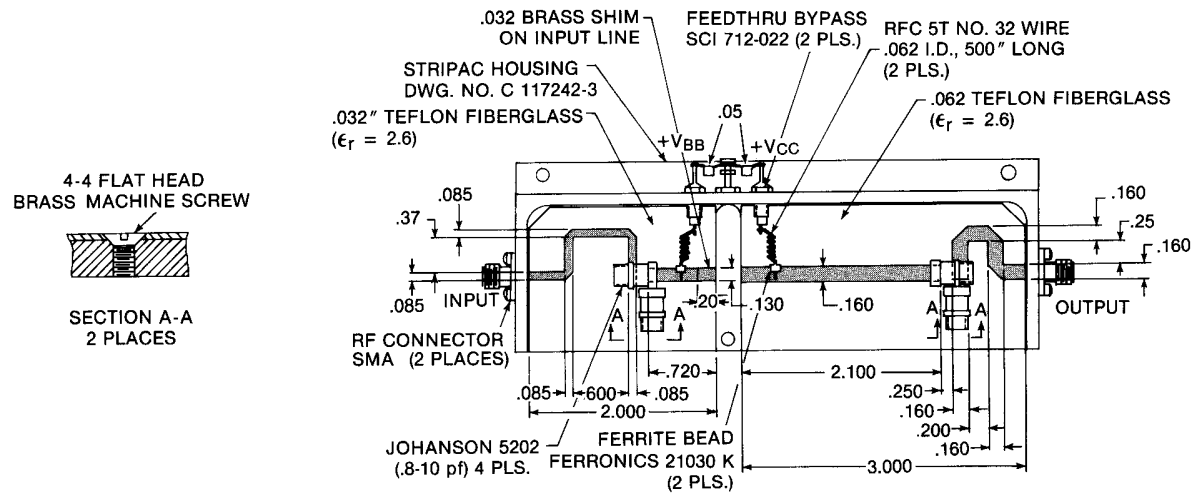


TYPICAL S-PARAMETERS



TEST CIRCUIT

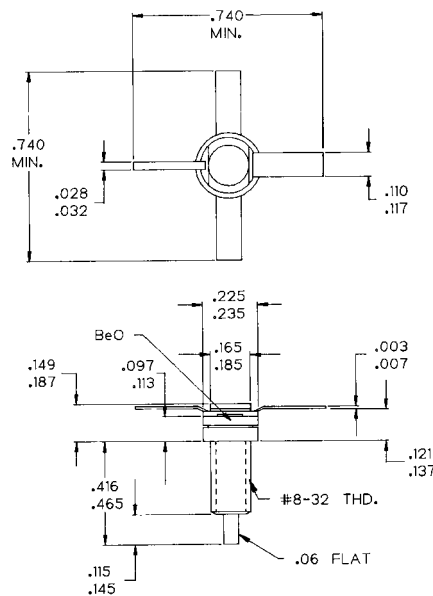
Ref.: Dwg. No. C127323



All dimensions are in inches.  
Frequency 1.0 GHz

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135023F



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

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