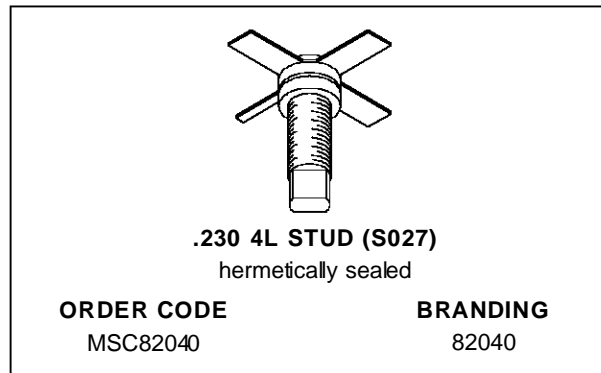


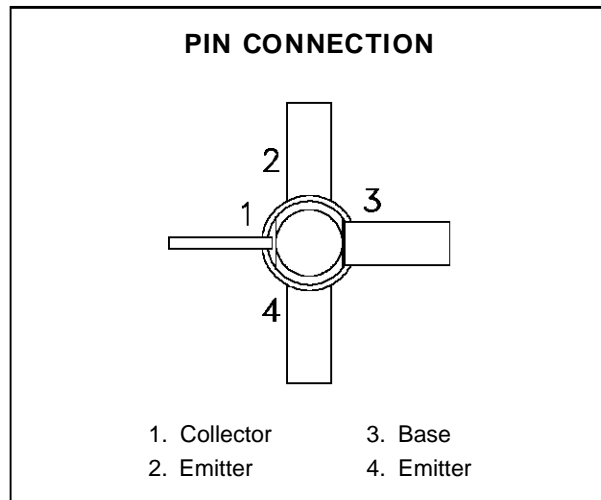
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

- 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 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 ($T_{case} = 25^{\circ}C$)

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	$^{\circ}C/W$
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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_{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	—

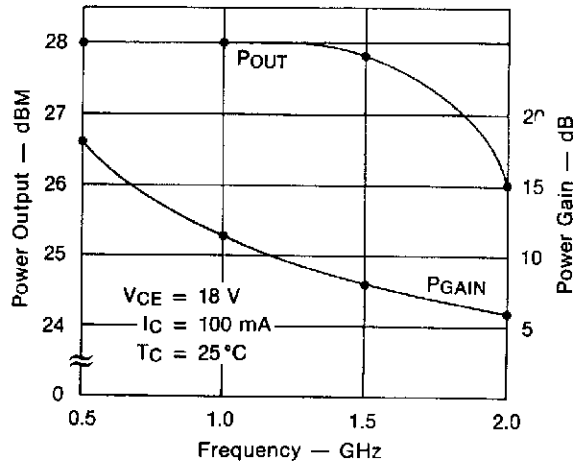
DYNAMIC

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

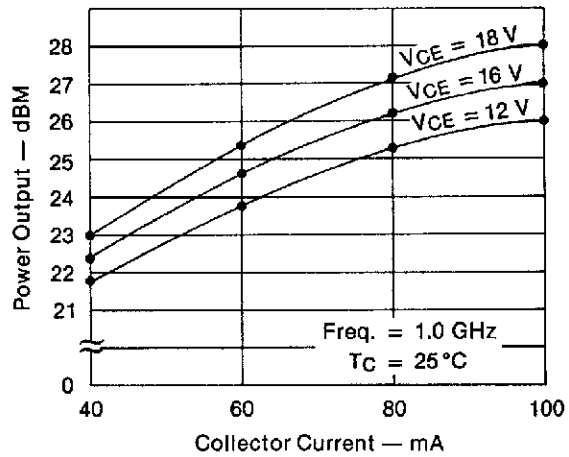
* Note: $V_{\text{CE}} = 18\text{V}$
 $I_{\text{C}} = 100\text{mA}$

TYPICAL PERFORMANCE

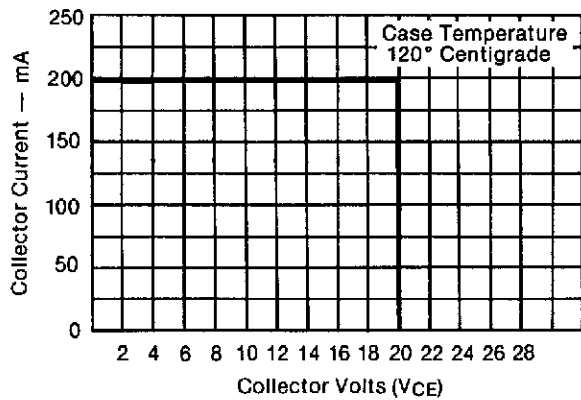
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



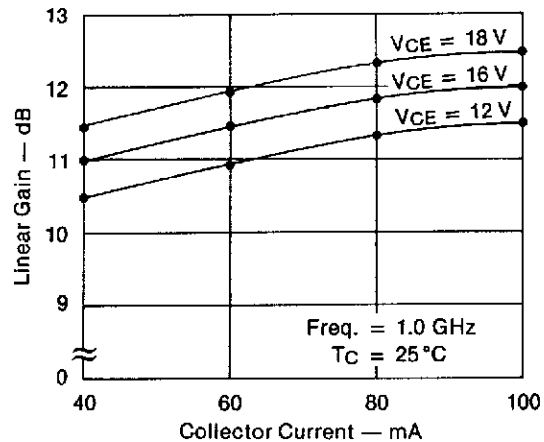
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT



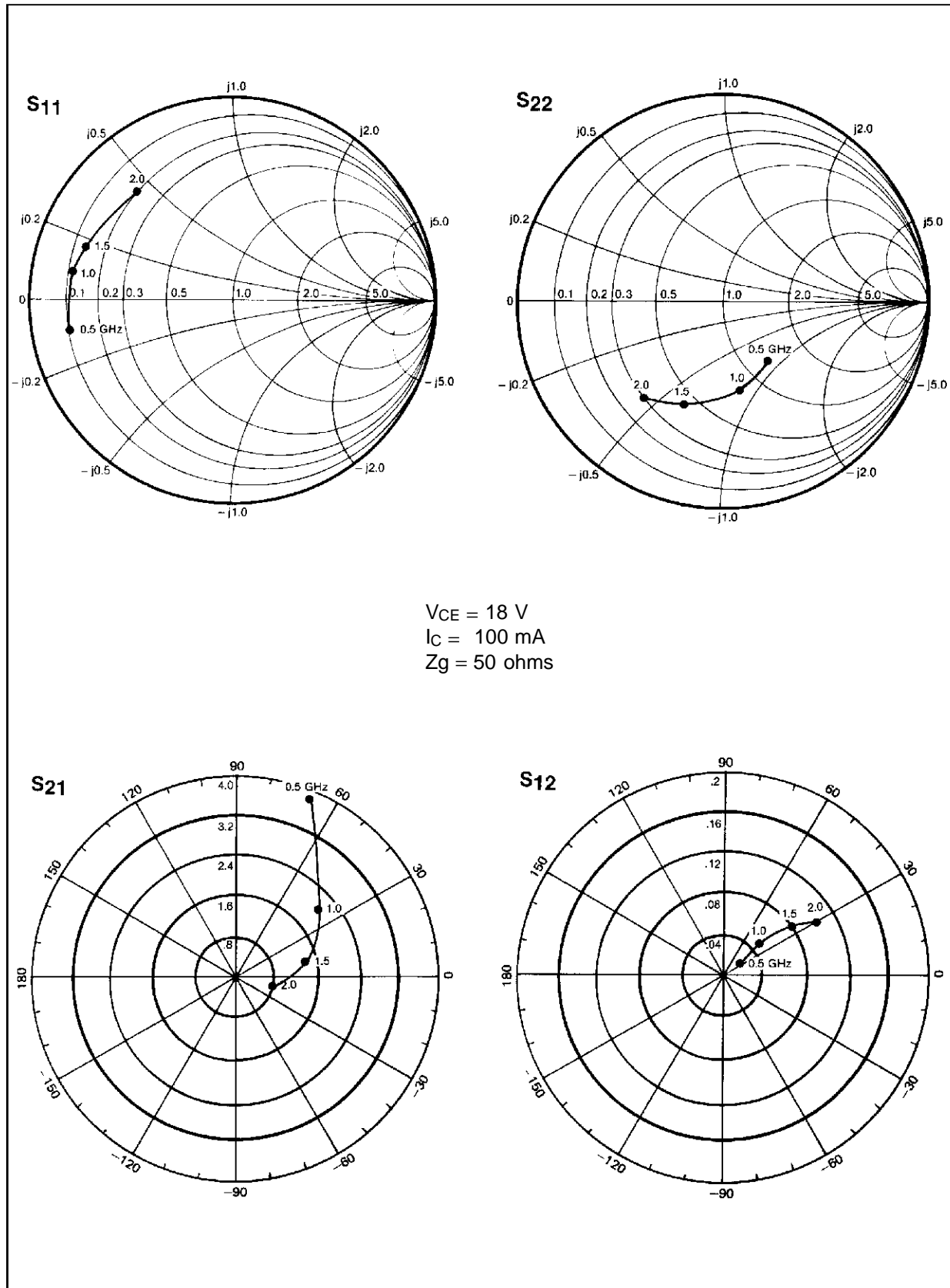
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

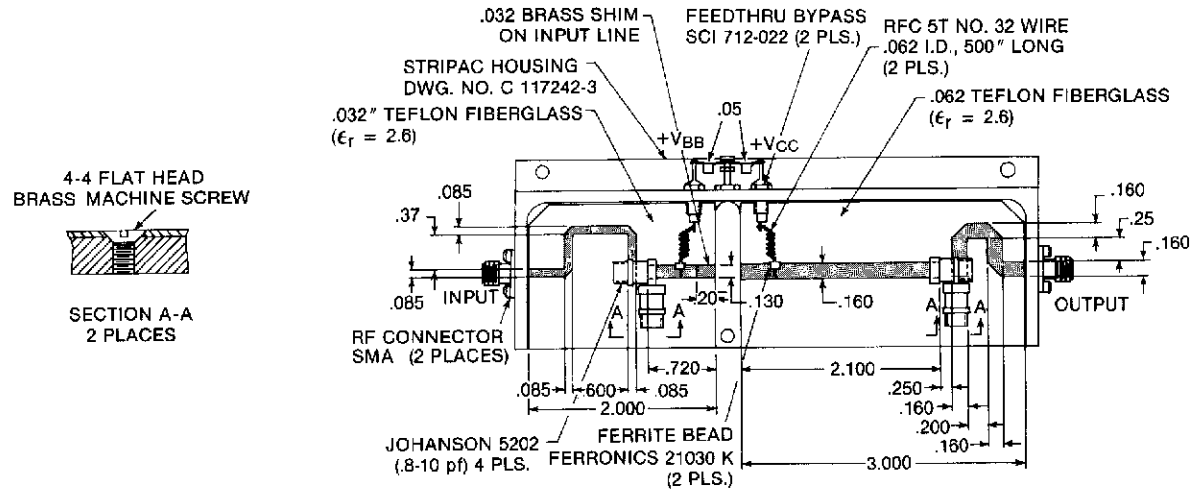


TYPICAL S-PARAMETERS



TEST CIRCUIT

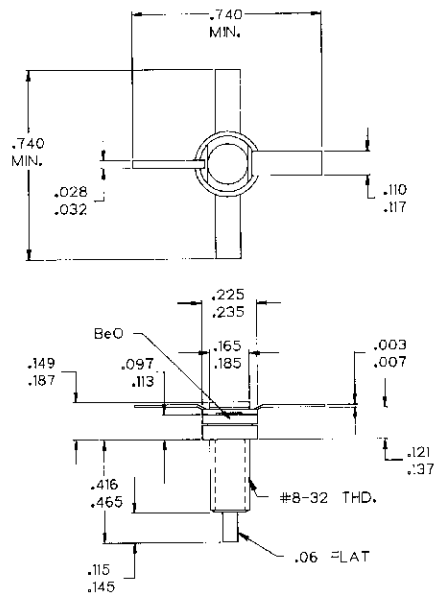
Ref.: Dwg. No. C127323



All dimensions are in inches.
Frequency 1.0 GHz

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135023F



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

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