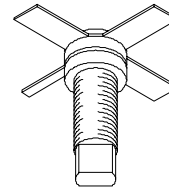


## RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

- 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



**.230 4L STUD (S027)**  
hermetically sealed

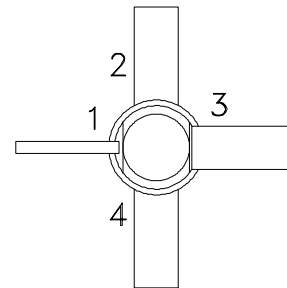
**ORDER CODE**  
MSC82040

**BRANDING**  
82040

### 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.

### PIN CONNECTION



1. Collector      3. Base  
2. Emitter      4. Emitter

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

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	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature	- 65 to +200	$^{\circ}\text{C}$

### THERMAL DATA

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

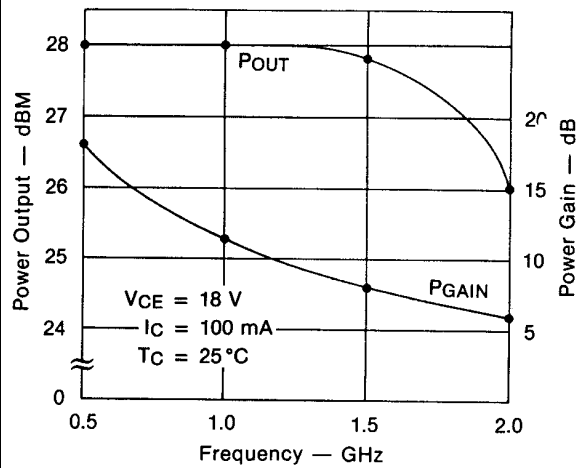
#### DYNAMIC

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
$\Delta G_{\text{P}}^*$	$f = 1.0\text{ GHz}$	$P_{\text{OUT}} = 27\text{ dBm}$ $\Delta P_{\text{OUT}} = 10\text{ dB}$	—	—	1	dB
$C_{\text{OB}}$	$f = 1\text{ MHz}$	$V_{\text{CB}} = 28\text{ V}$	—	—	3.2	pF

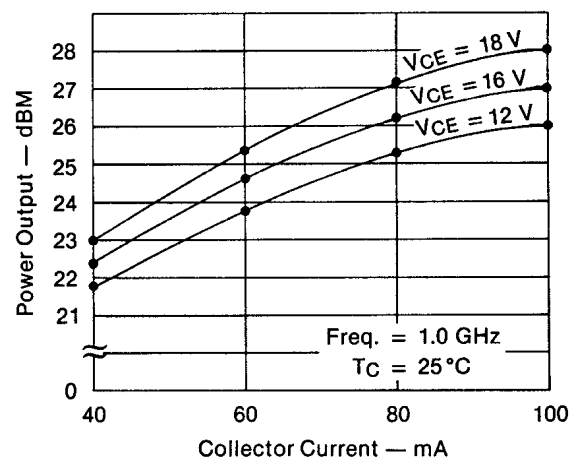
\* Note:  $V_{\text{CE}} = 18\text{V}$   
 $I_{\text{C}} = 100\text{mA}$

TYPICAL PERFORMANCE

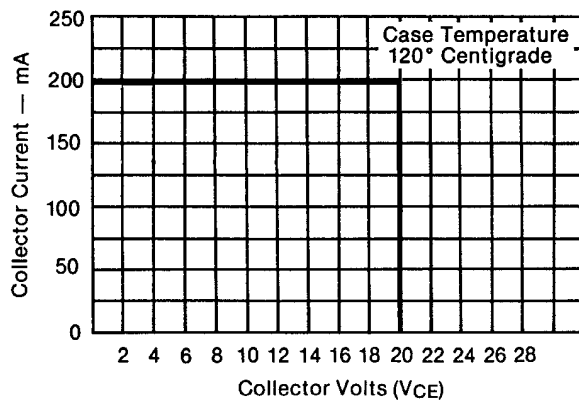
**TYPICAL POWER OUTPUT & GAIN @ 1dB  
COMPRESSION POINT vs FREQUENCY**



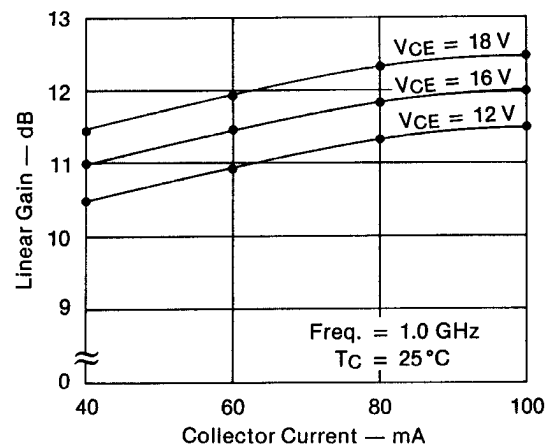
**TYPICAL POWER OUTPUT & GAIN @  
1dB COMPRESSION POINT vs  
COLLECTOR CURRENT**



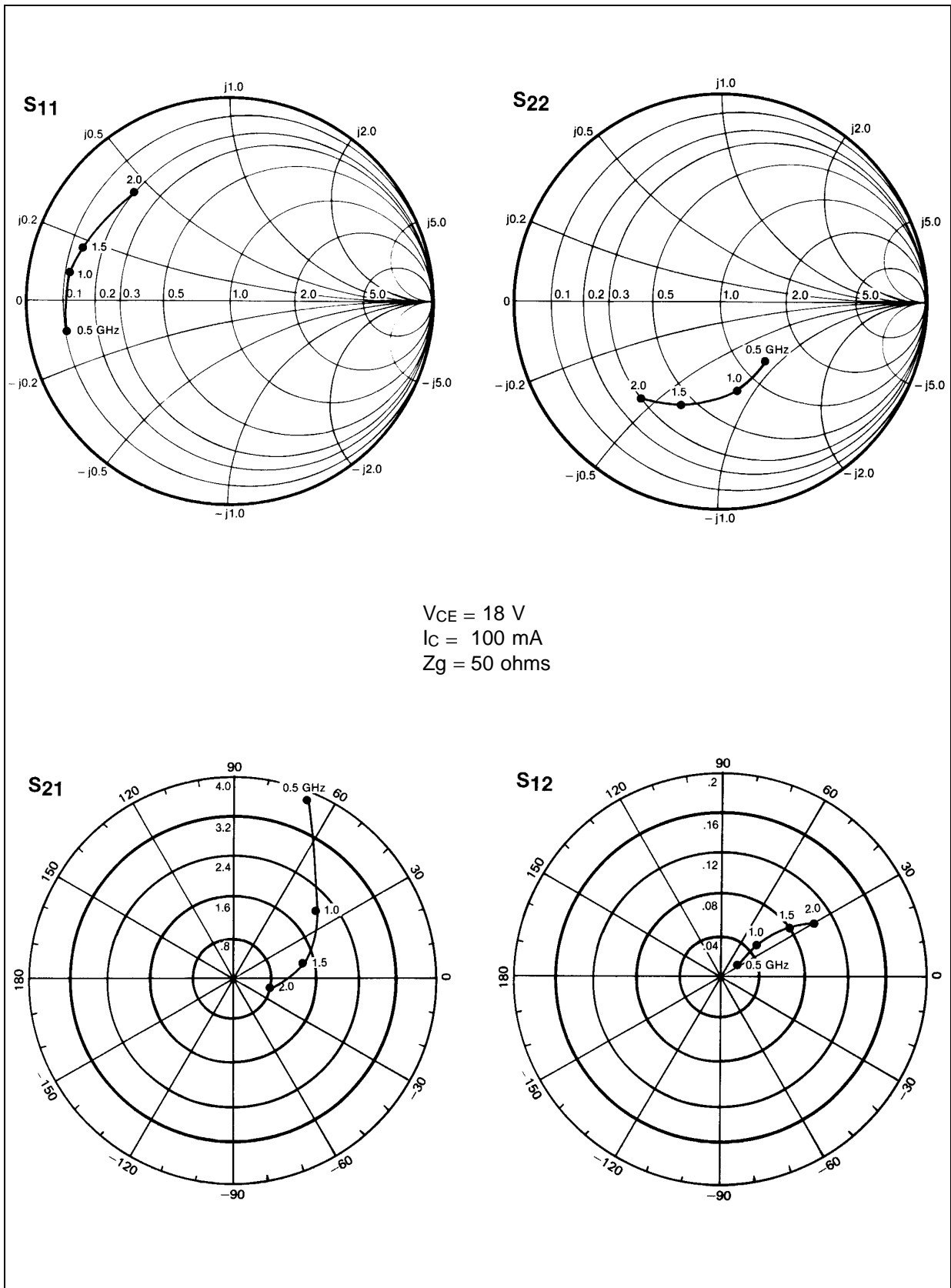
**MAXIMUM OPERATING AREA FOR  
FORWARD BIAS OPERATION**



**TYPICAL LINEAR GAIN vs  
COLLECTOR CURRENT**

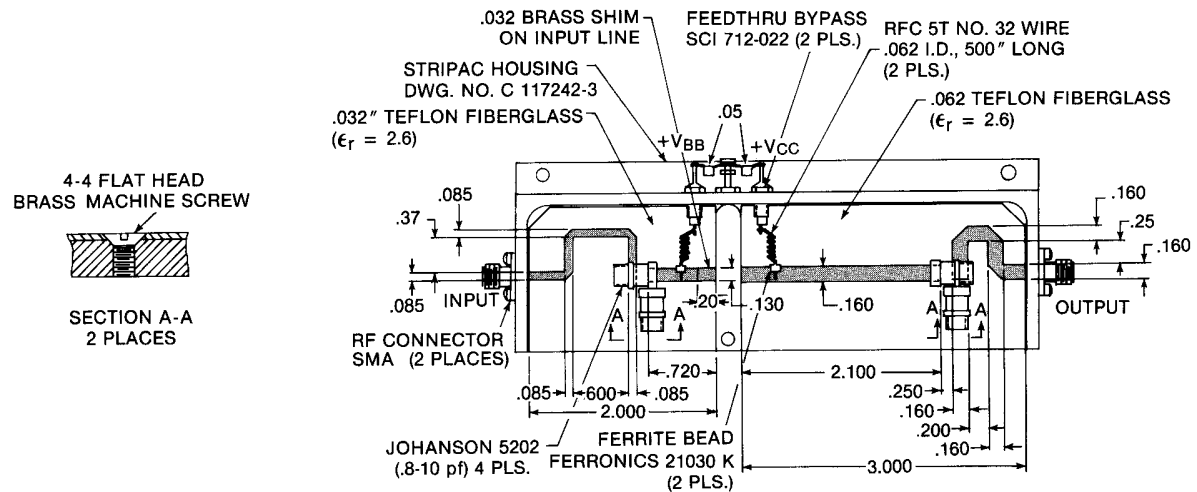


TYPICAL S-PARAMETERS



## TEST CIRCUIT

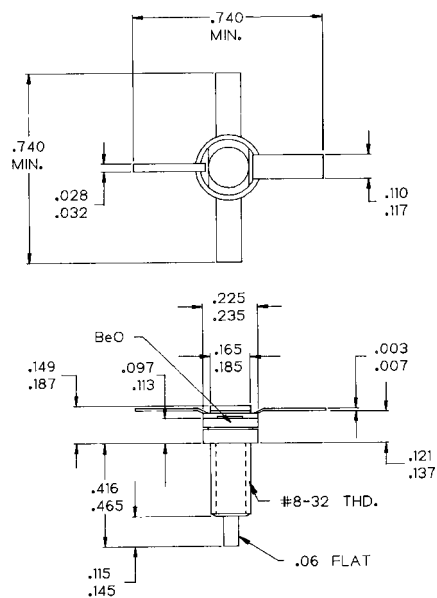
Ref.: Dwg. No. C127323



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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