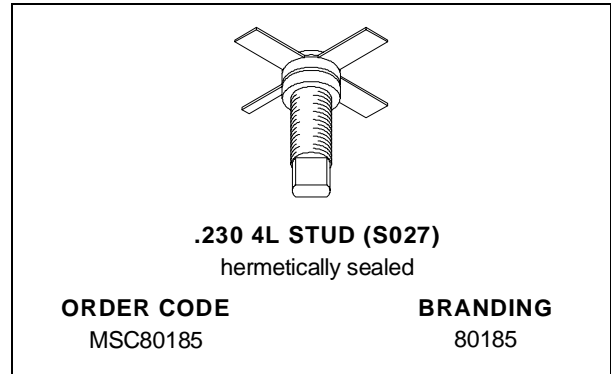


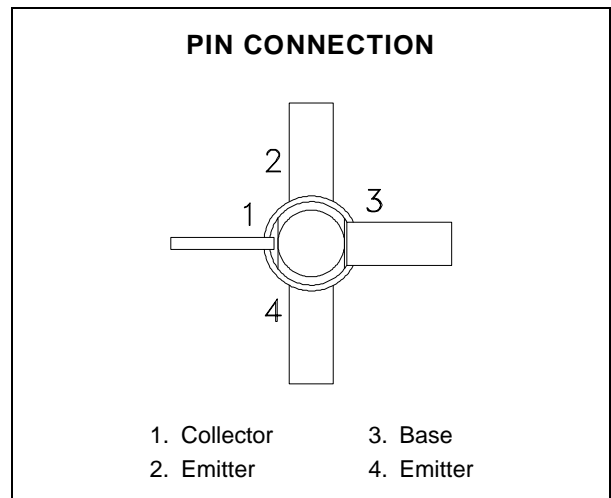
## RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

- EMITTER BALLASTED
- CLASS A LINEAR OPERATION
- COMMON EMITTER
- VSWR CAPABILITY 20:1 @ RATED CONDITIONS
- ft 3.2 GHz TYPICAL
- NOISE FIGURE 12.0 dB @ 2 GHz
- P<sub>OUT</sub> = 28 dBm MIN. @ 2.0 GHz



### DESCRIPTION

The MSC80185 is a hermetically sealed NPN power transistor featuring a unique matrix structure. This device is specifically designed 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	300	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*	35	°C/W
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\*Applies only to rated RF amplifier operation

## MSC80185

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

#### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 1mA$	$I_E = 0mA$	50	—	—	V
$BV_{EBO}$	$I_E = 1mA$	$I_C = 0mA$	3.5	—	—	V
$BV_{CEO}$	$I_C = 5mA$	$I_B = 0mA$	20	—	—	V
$I_{CEO}$	$V_{CE} = 18V$		—	—	0.5	mA
$h_{FE}$	$V_{CE} = 5V$	$I_C = 100mA$	15	—	120	—

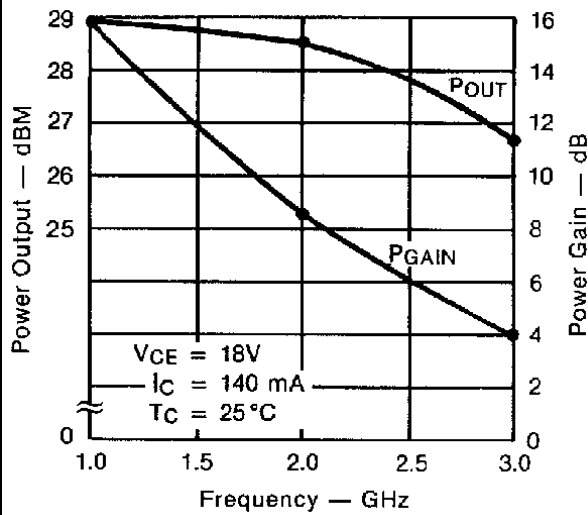
#### DYNAMIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$G_P^*$	$f = 2.0 GHz$	$P_{OUT} = 28 dBm$	7.5	8.5	—	dB
$\Delta G_P^*$	$f = 2.0 GHz$	$P_{OUT} = 28 dBm$	—	—	1	dB
$C_{OB}$	$f = 1 MHz$	$V_{CB} = 28 V$	—	—	3.0	pF

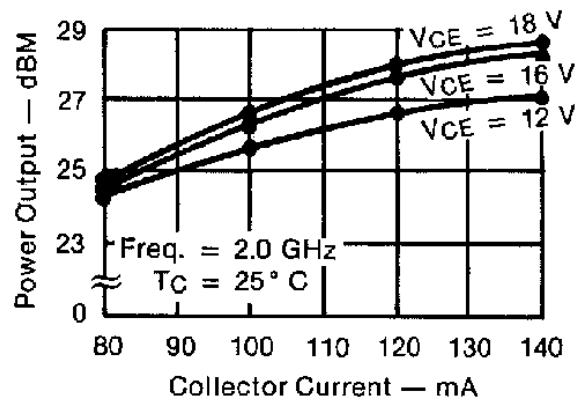
\* Note:  $V_{CE} = 18V$   
 $I_C = 140mA$

TYPICAL PERFORMANCE

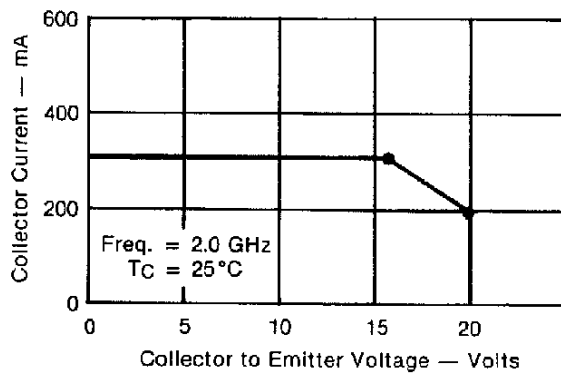
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



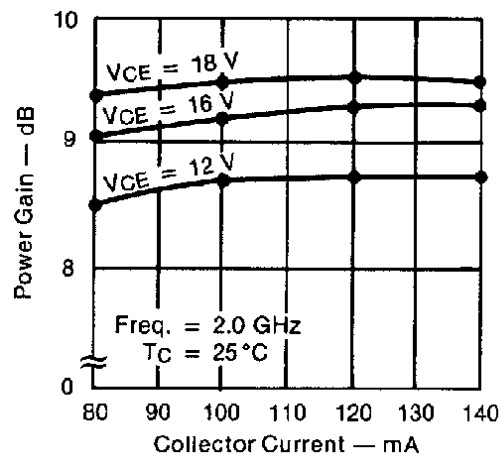
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT



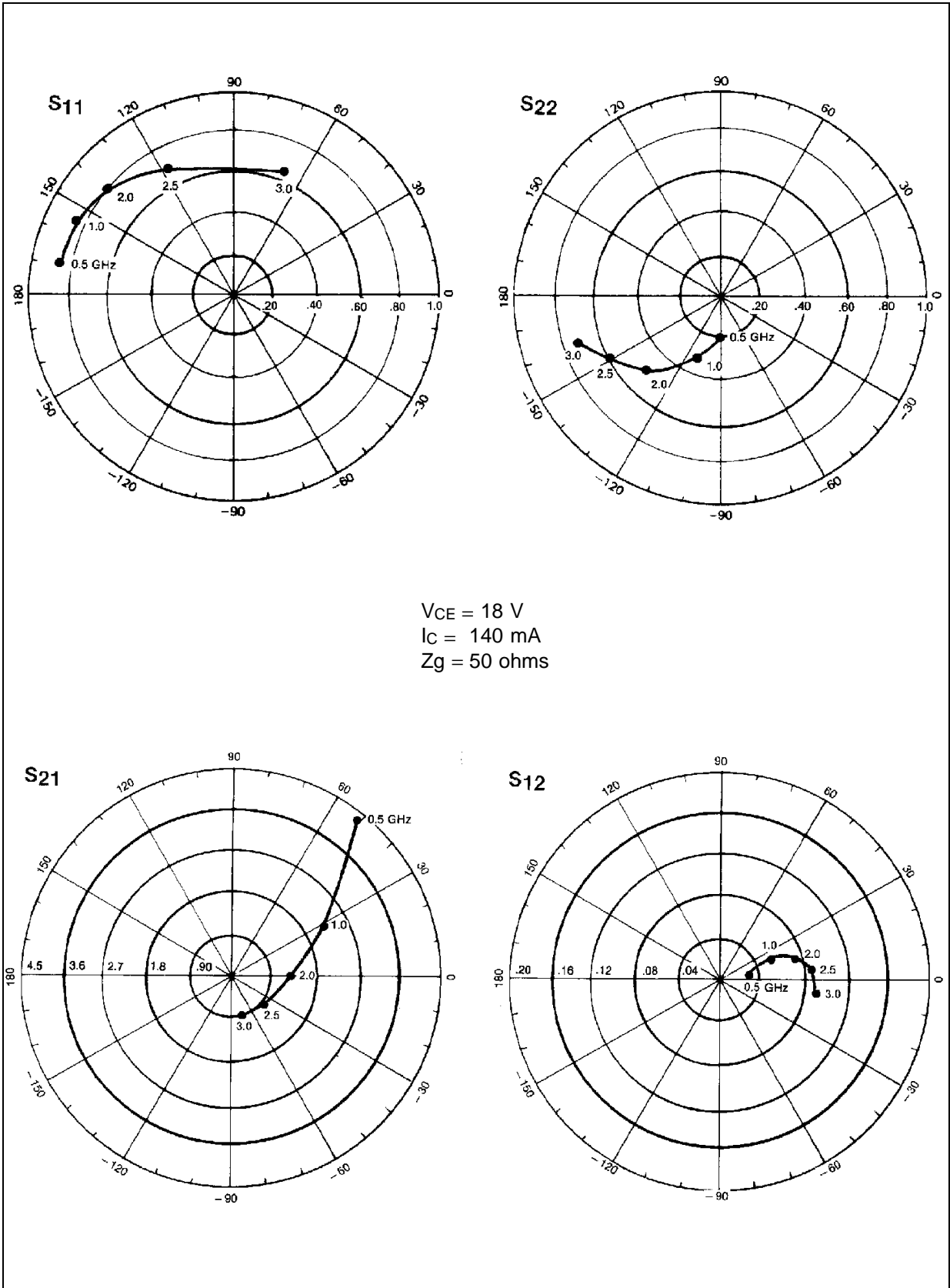
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

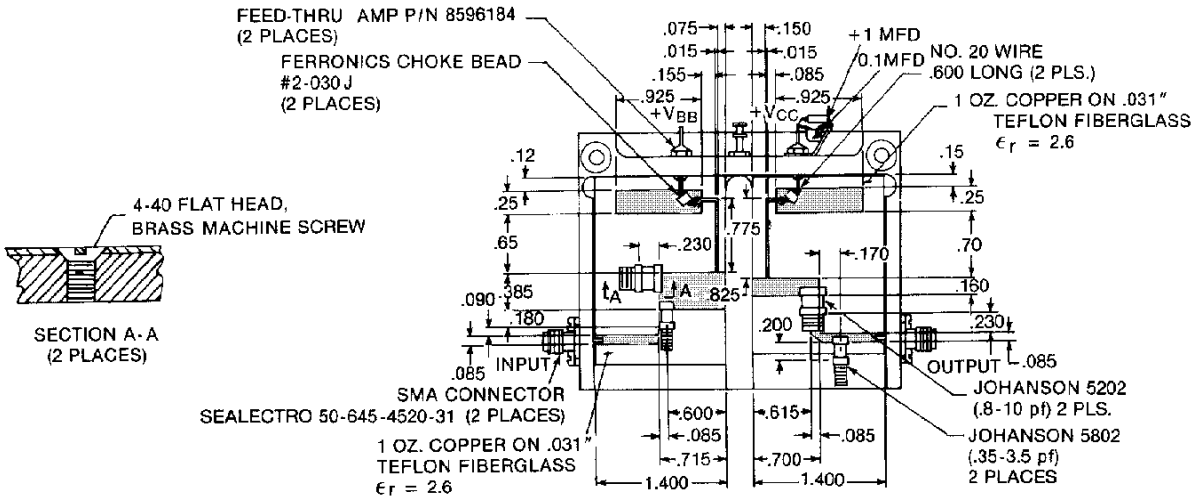


TYPICAL S-PARAMETERS



TEST CIRCUIT

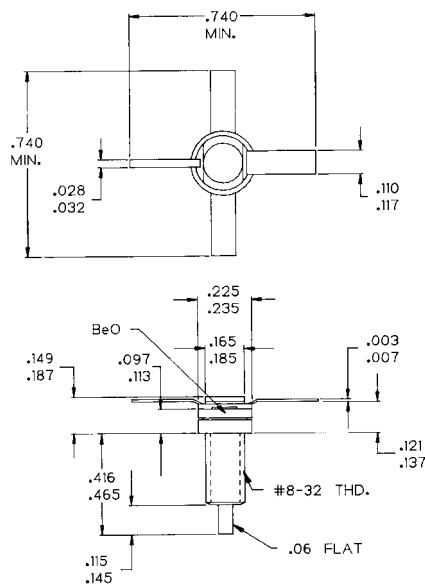
Ref.: Dwg. No. C127304A



All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135023F



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

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