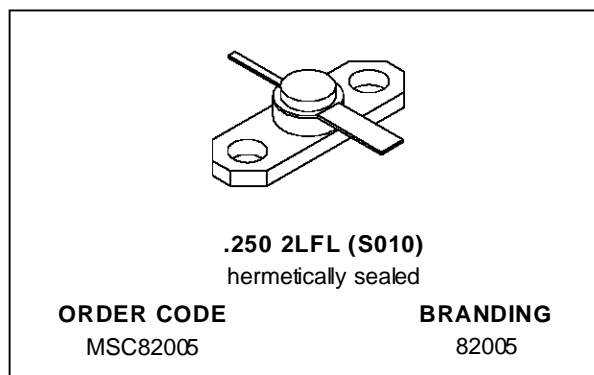


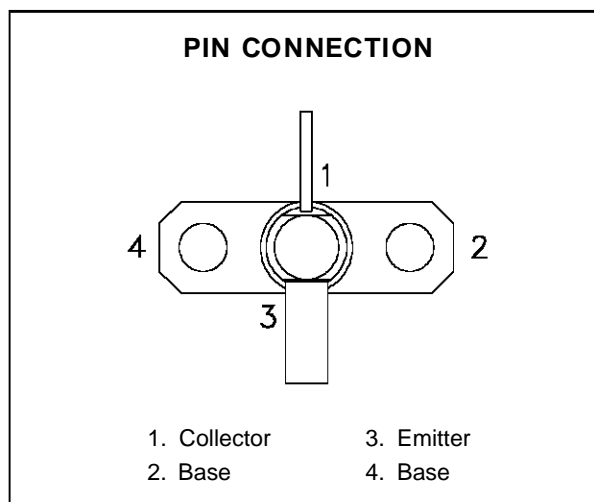
## RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- VSWR CAPABILITY  $\infty:1$  @ RATED CONDITIONS
- REFRACTORY/GOLD METALLIZATION
- HERMETIC STRIPAC<sup>®</sup> PACKAGE
- $P_{OUT} = 5.0$  W MIN. WITH 7.0 dB GAIN @ 2.0 GHz



### DESCRIPTION

The MSC82005 is a common base hermetically sealed silicon NPN microwave transistor utilizing a fishbone emitter ballasted geometry with a refractory/gold metallization system. This device is capable of withstanding an infinite load VSWR at any phase angle under rated conditions. The MSC82005 was designed for Class C amplifier applications in the 1.0 - 2.0 GHz frequency range.



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

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation*	29	W
$I_C$	Device Current*	1.0	A
$V_{CC}$	Collector-Supply Voltage*	35	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*	6.0	$^{\circ}C/W$
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\*Applies only to rated RF amplifier operation

# MSC82005

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

### STATIC

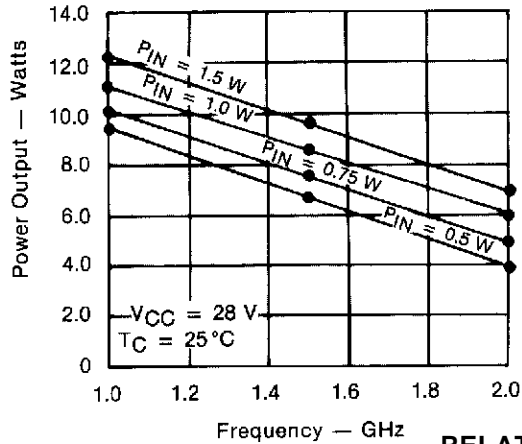
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 1mA$	$I_E = 0mA$	45	—	—	V
$BV_{EBO}$	$I_E = 1mA$	$I_C = 0mA$	3.5	—	—	V
$BV_{CER}$	$I_C = 5mA$	$R_{BE} = 10\Omega$	45	—	—	V
$I_{CBO}$	$V_{CB} = 28V$		—	—	2.5	mA
$h_{FE}$	$V_{CE} = 5V$	$I_C = 500mA$	15	—	120	—

### DYNAMIC

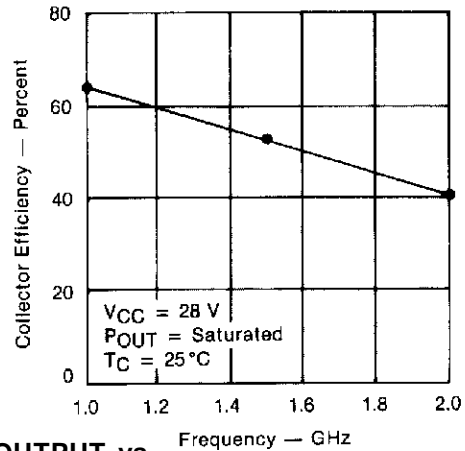
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{OUT}$	$f = 2.0\text{ GHz}$	$P_{IN} = 1.0\text{ W}$	$V_{CC} = 28\text{ V}$	5.0	6.0	—	W
$\eta_C$	$f = 2.0\text{ GHz}$	$P_{IN} = 1.0\text{ W}$	$V_{CC} = 28\text{ V}$	35	40	—	%
$G_P$	$f = 2.0\text{ GHz}$	$P_{IN} = 1.0\text{ W}$	$V_{CC} = 28\text{ V}$	7.0	7.8	—	dB
$C_{OB}$	$f = 1\text{ MHz}$	$V_{CB} = 28\text{ V}$		—	—	10	pF

### TYPICAL PERFORMANCE

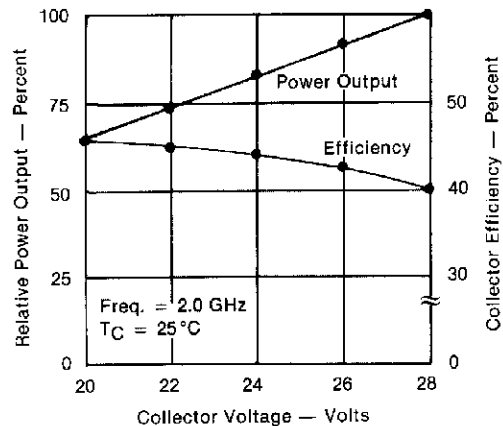
#### POWER OUTPUT vs FREQUENCY



#### COLLECTOR EFFICIENCY vs FREQUENCY



#### RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

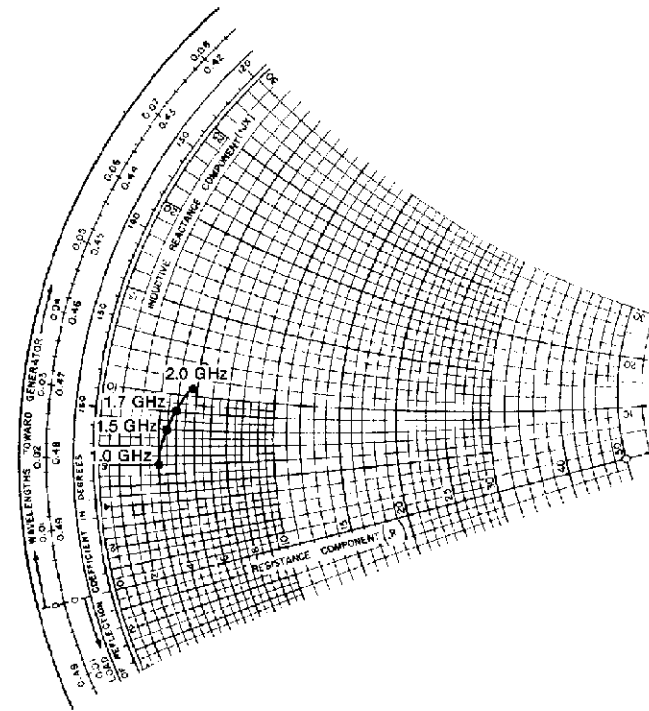


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

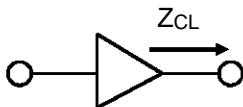


$P_{IN} = 1.0\text{ W}$   
 $V_{CC} = 28\text{ V}$   
 Normalized to 50 ohms

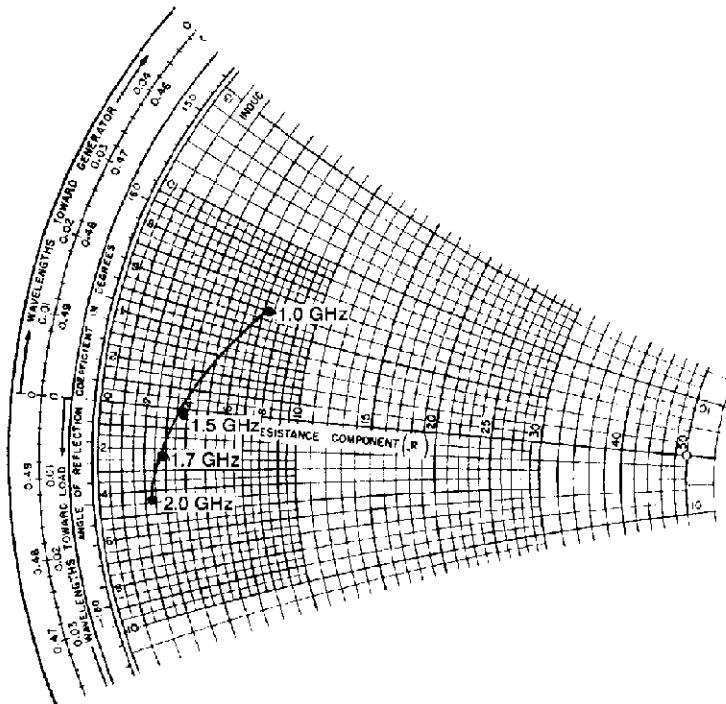


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
1.0 GHz	$3.0 + j 6.0$	$7.2 + j 6.0$
1.5 GHz	$3.5 + j 8.0$	$3.7 - j 0.2$
1.7 GHz	$4.0 + j 9.0$	$2.8 - j 2.3$
2.0 GHz	$4.8 + j 10.5$	$2.3 - j 4.5$

TYPICAL COLLECTOR LOAD IMPEDANCE



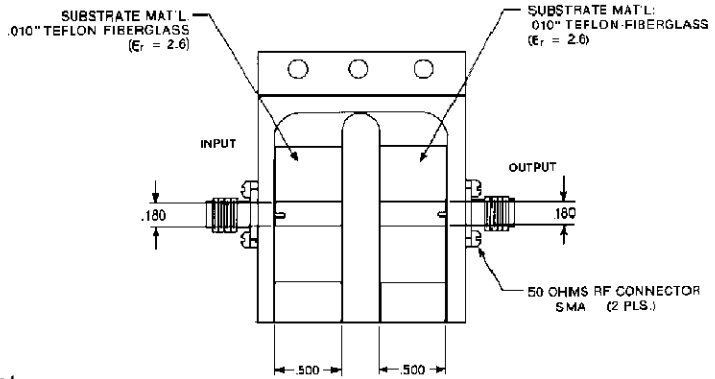
$P_{OUT} = \text{Saturated}$   
 $V_{CC} = 28\text{ V}$   
 Normalized to 50 ohms



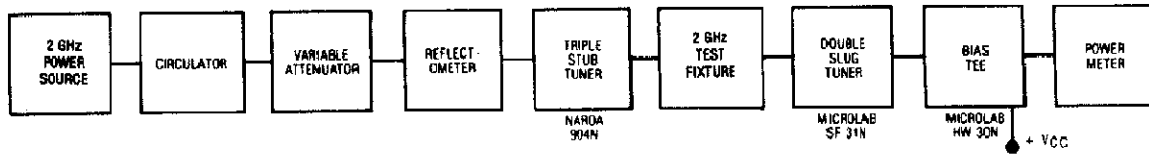
TEST CIRCUIT

Ref.: Dwg. No. C125518

All dimensions are in inches.  
Frequency 2.0 GHz

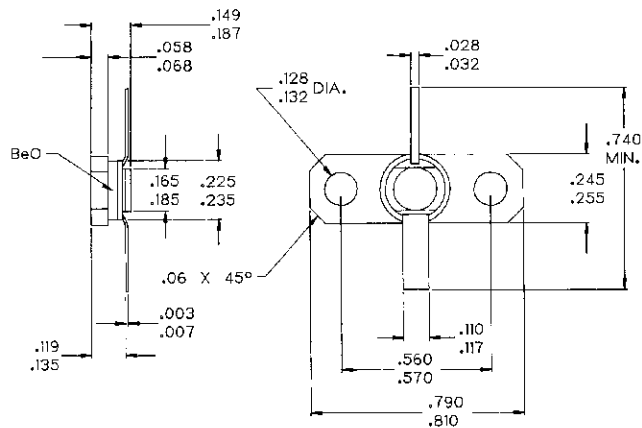


RF Amplifier Power Output Test



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



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

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