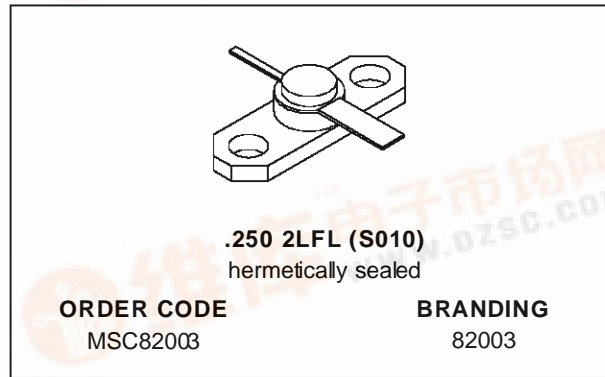




MSC82003

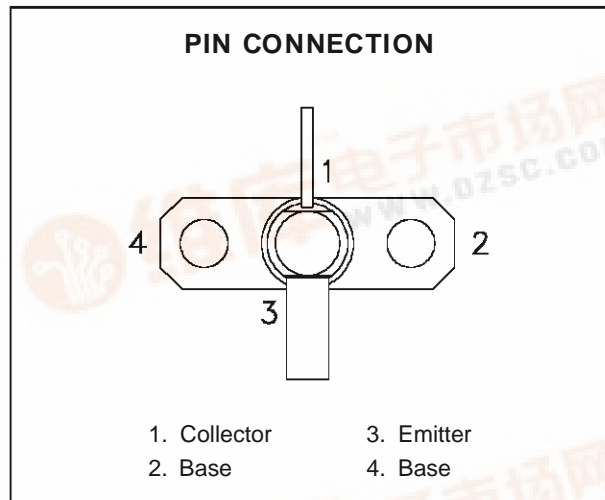
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- REFRACTORY/GOLD METALLIZATION
- HERMETIC STRIPAC[®] PACKAGE
- $P_{OUT} = 3.0$ W MIN. WITH 7.8 dB GAIN @ 2.0 GHz



DESCRIPTION

The MSC82003 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 MSC82003 was designed for Class C amplifier applications in the 1.0 - 2.0 GHz frequency range.



ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
P _{DISS}	Power Dissipation*	21.8	W
I _c	Device Current*	600	mA
V _{CC}	Collector-Supply Voltage*	35	V
T _J	Junction Temperature	200	°C
T _{STG}	Storage Temperature	- 65 to +200	°C

THERMAL DATA

R _{TH(j-c)}	Junction-Case Thermal Resistance*	8.0	°C/W
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*Applies only to rated RF amplifier operation



MSC82003

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

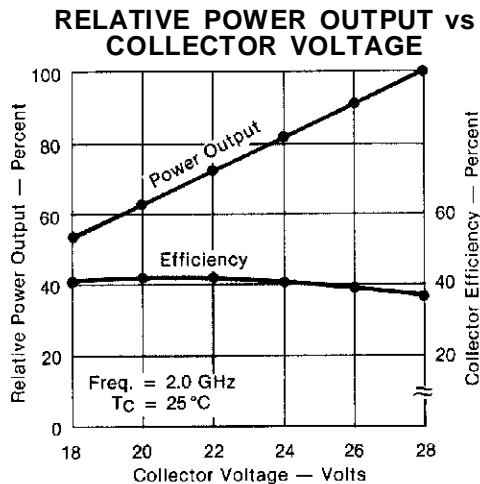
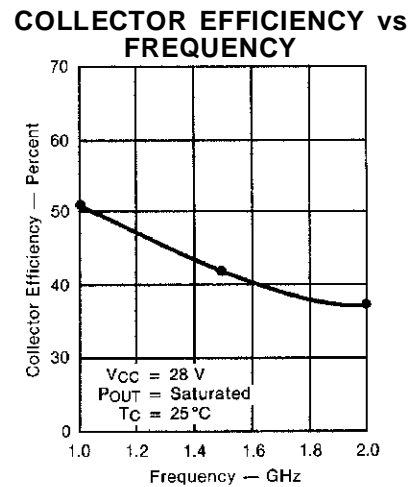
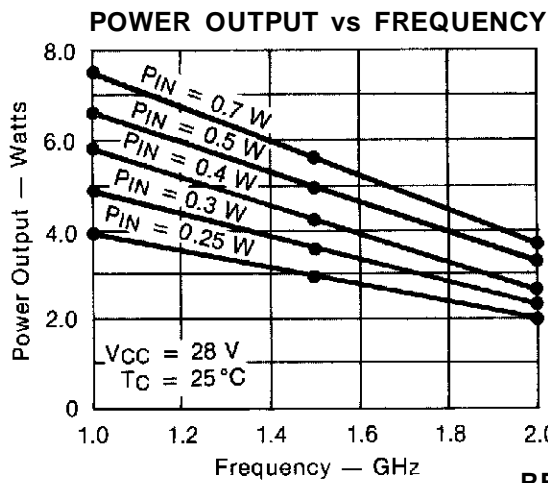
STATIC

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}	$V_{CB} = 28V$		—	—	1.0	mA
h_{FE}	$V_{CE} = 5V$	$I_C = 200mA$	15	—	120	—

DYNAMIC

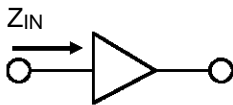
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 2.0\text{ GHz}$	$P_{IN} = 0.5\text{ W}$	$V_{CC} = 28\text{ V}$	3.0	3.3	—	W
η_c	$f = 2.0\text{ GHz}$	$P_{IN} = 0.5\text{ W}$	$V_{CC} = 28\text{ V}$	35	37	—	%
G_P	$f = 2.0\text{ GHz}$	$P_{IN} = 0.5\text{ W}$	$V_{CC} = 28\text{ V}$	7.8	8.2	—	dB
C_{OB}	$f = 1\text{ MHz}$	$V_{CB} = 28\text{ V}$		—	—	6.5	pF

TYPICAL PERFORMANCE

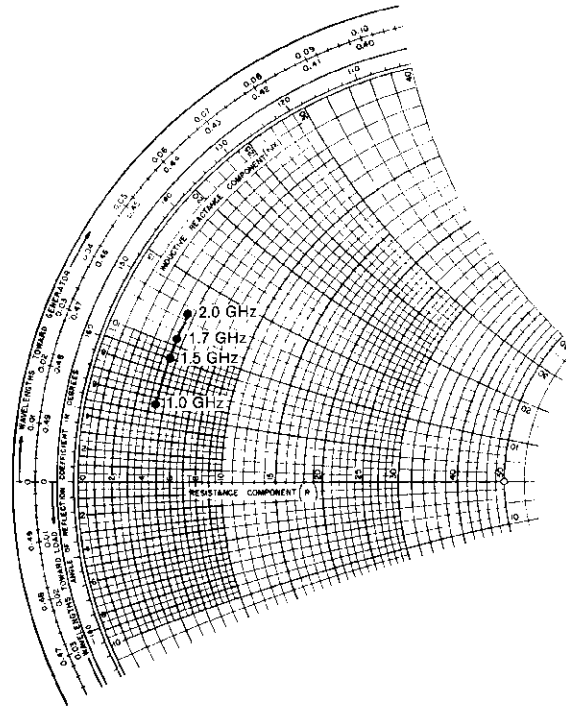


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

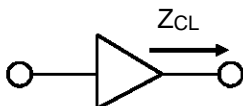


$P_{IN} = 0.5\text{ W}$
 $V_{CC} = 28\text{ V}$
 Normalized to 50 ohms

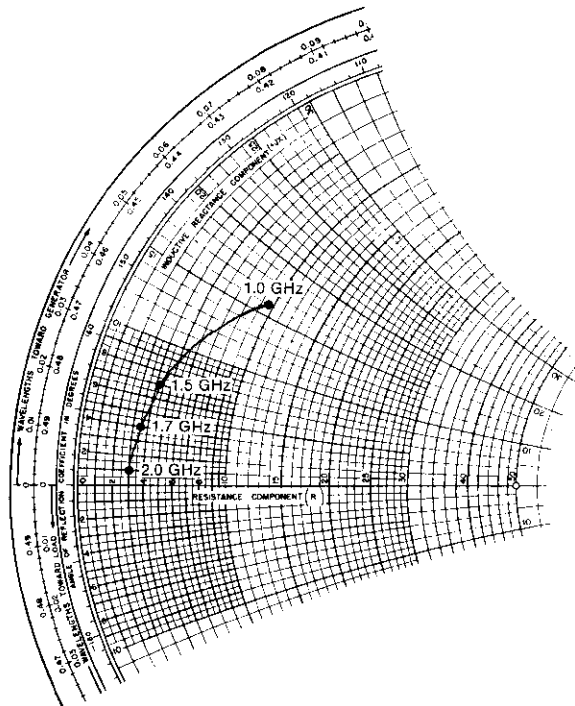


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
1.0 GHz	$4.4 + j 5.5$	$9.6 + j 16.0$
1.5 GHz	$4.5 + j 9.0$	$4.3 + j 7.0$
1.7 GHz	$4.5 + j 10.5$	$3.5 + j 4.0$
2.0 GHz	$4.6 + j 12.5$	$3.0 + j 1.0$

TYPICAL COLLECTOR LOAD IMPEDANCE



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

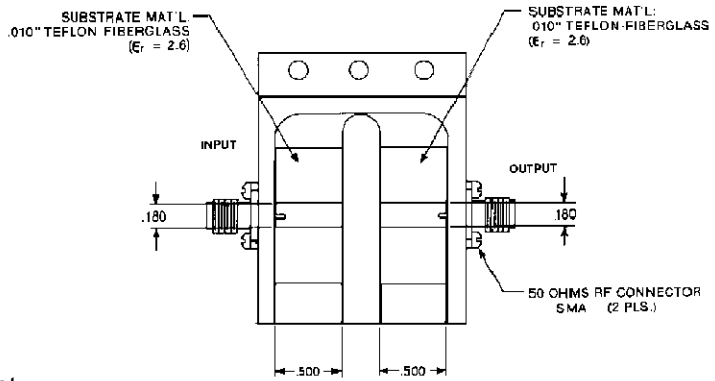


MSC82003

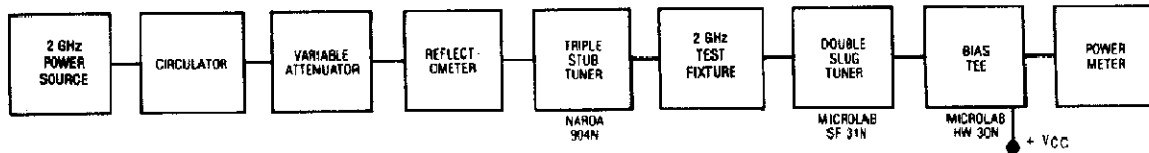
TEST CIRCUIT

Ref.: Dwg. No. C125518

All dimensions are in inches.
Frequency 2.0 GHz

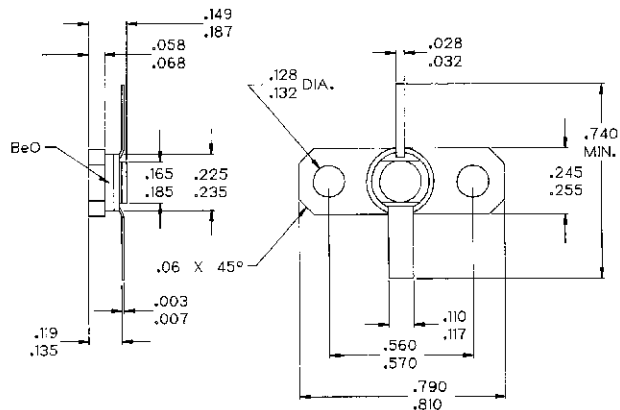


RF Amplifier Power Output Test



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



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

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