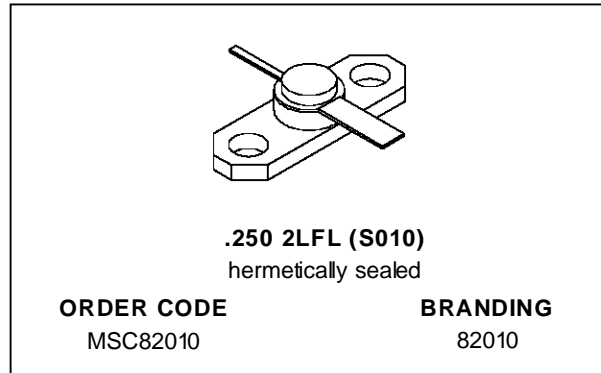


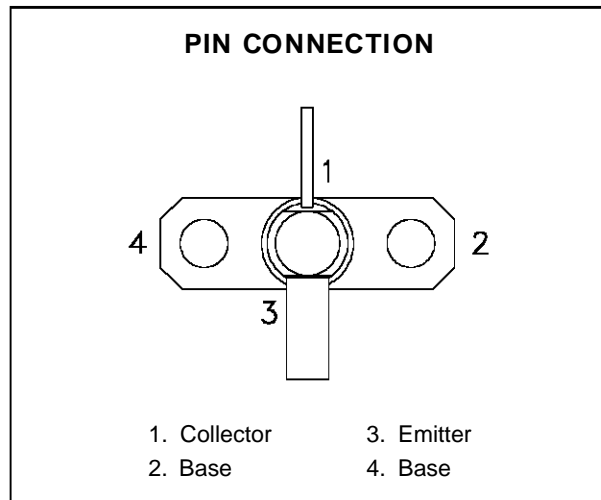
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC[®] PACKAGE
- $P_{OUT} = 10$ W MIN. WITH 5.2 dB GAIN @ 2.0 GHz



DESCRIPTION

The MSC82010 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 MSC82010 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*	35	W
I_C	Device Current*	1.5	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*	5.0	$^{\circ}C/W$
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*Applies only to rated RF amplifier operation

MSC82010

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

STATIC

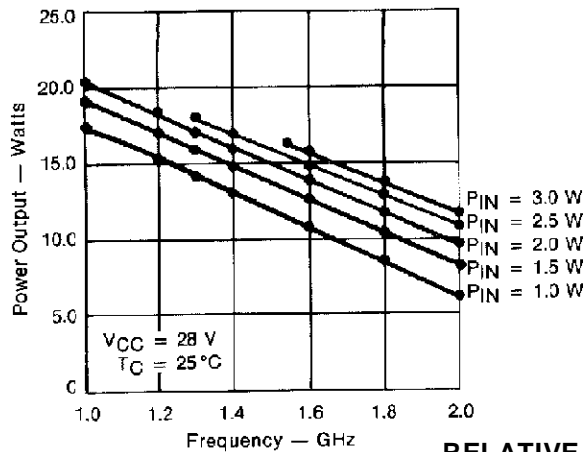
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	$I_C = 5mA$	$I_E = 0mA$	45	—	—	V
BV_{EBO}	$I_E = 1mA$	$I_C = 0mA$	3.5	—	—	V
BV_{CER}	$I_C = 15mA$	$R_{BE} = 10\Omega$	45	—	—	V
I_{CBO}	$V_{CB} = 28V$		—	—	5.0	mA
h_{FE}	$V_{CE} = 5V$	$I_C = 1000mA$	15	—	120	—

DYNAMIC

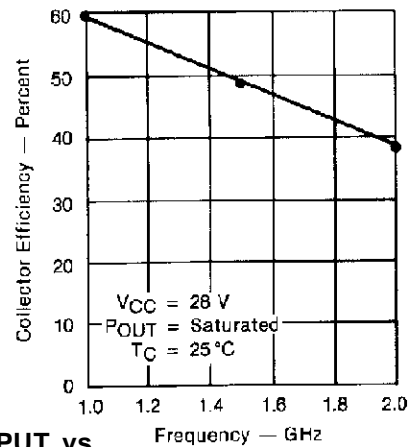
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 2.0\text{ GHz}$	$P_{IN} = 3.0\text{ W}$	$V_{CC} = 28\text{ V}$	10	11.5	—	W
η_c	$f = 2.0\text{ GHz}$	$P_{IN} = 3.0\text{ W}$	$V_{CC} = 28\text{ V}$	35	38	—	%
G_P	$f = 2.0\text{ GHz}$	$P_{IN} = 3.0\text{ W}$	$V_{CC} = 28\text{ V}$	5.2	5.8	—	dB
C_{OB}	$f = 1\text{ MHz}$	$V_{CB} = 28\text{ V}$		—	—	19	pF

TYPICAL PERFORMANCE

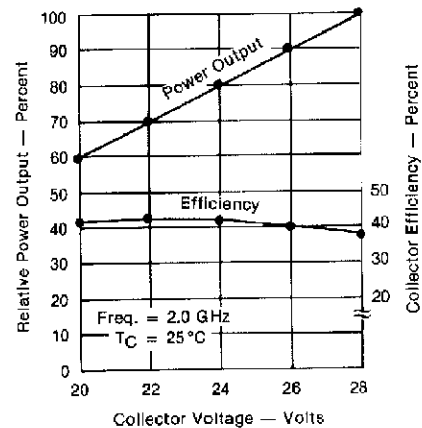
POWER OUTPUT vs FREQUENCY



COLLECTOR EFFICIENCY vs FREQUENCY

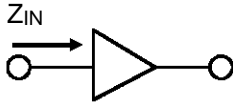


RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

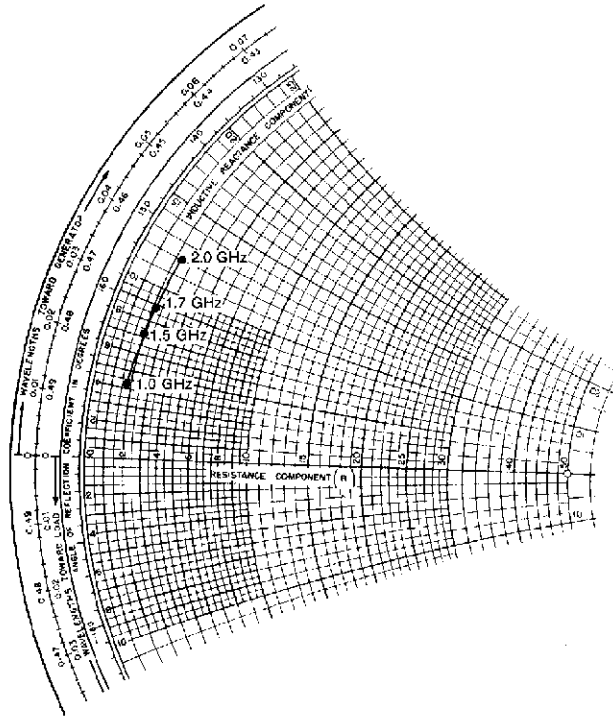


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

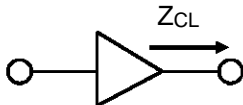


$P_{IN} = 3.0\text{ W}$
 $V_{CC} = 28\text{ V}$
 Normalized to 50 ohms

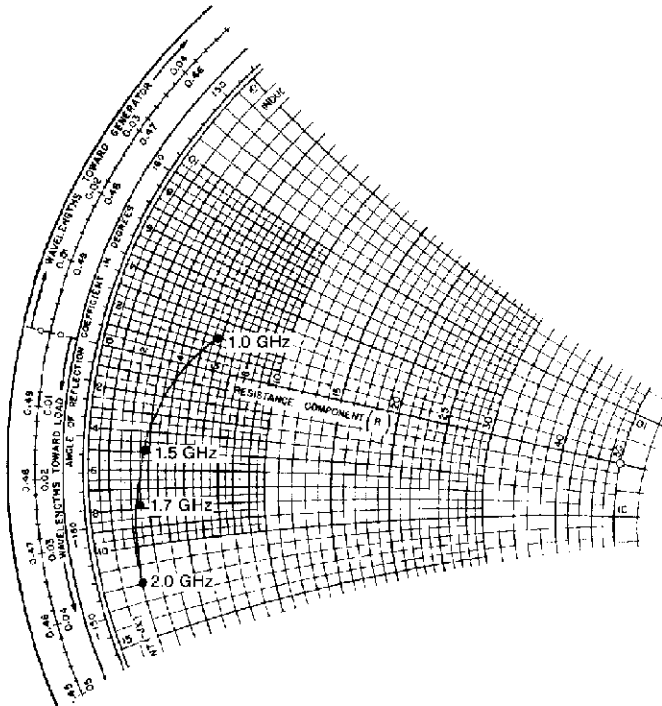


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
1.0 GHz	$1.7 + j 4.2$	$5.7 + j 1.9$
1.5 GHz	$2.0 + j 7.2$	$2.8 - j 5.0$
1.7 GHz	$2.2 + j 8.8$	$2.5 - j 7.8$
2.0 GHz	$2.4 + j 12.0$	$2.0 - j 12.0$

TYPICAL COLLECTOR LOAD IMPEDANCE



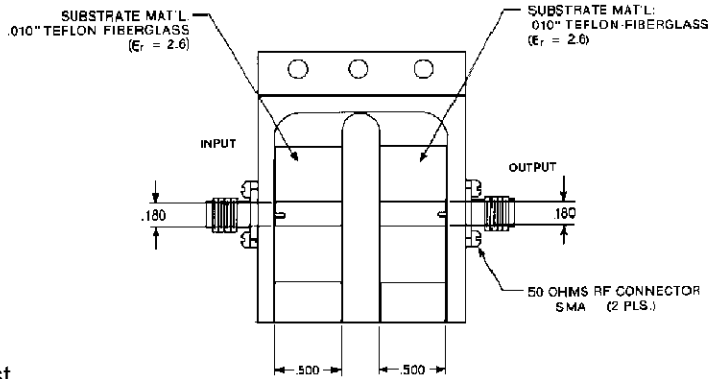
$P_{OUT} = \text{Saturated}$
 $V_{CC} = 28\text{ V}$
 Normalized to 50 ohms



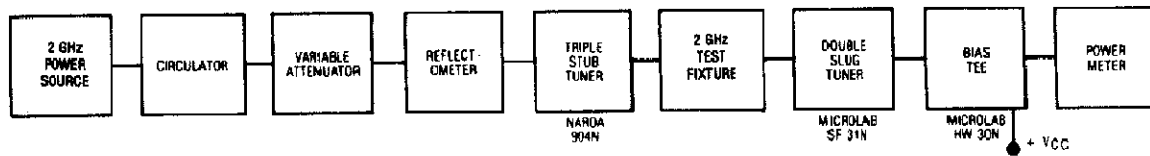
TEST CIRCUIT

Ref.: Dwg. No. C125518

All dimensions are in inches.
Frequency 2.0 GHz

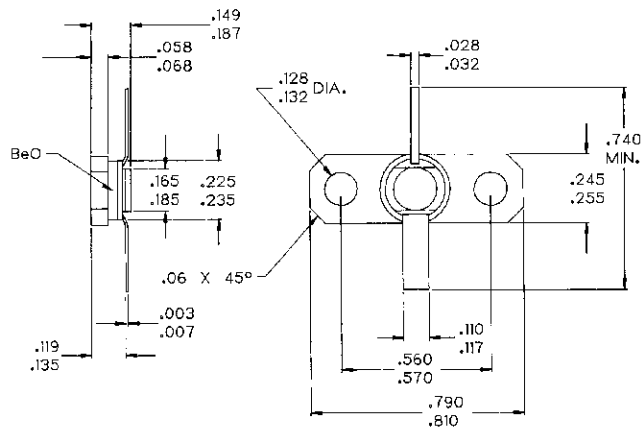


RF Amplifier Power Output Test



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED;
DIMENSIONS IN INCHES.

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