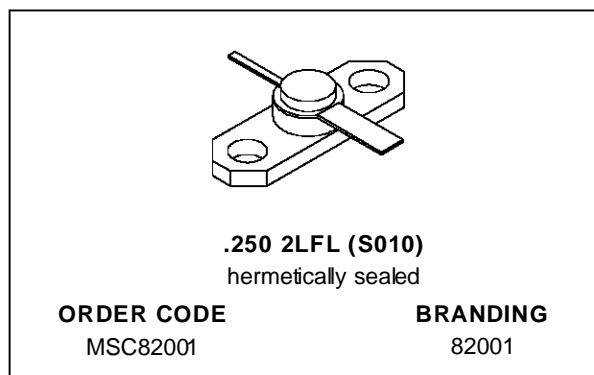


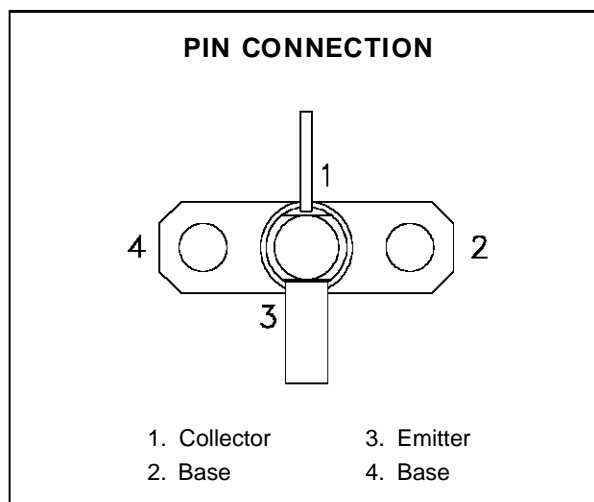
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- REFRACTORY/GOLD METALLIZATION
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 1.0$ W MIN. WITH 7.0 dB GAIN @ 2.0 GHz



DESCRIPTION

The MSC82001 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 MSC82001 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*	7.0	W
I_C	Device Current*	200	mA
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*	20	$^{\circ}C/W$
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*Applies only to rated RF amplifier operation

MSC82001

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

STATIC

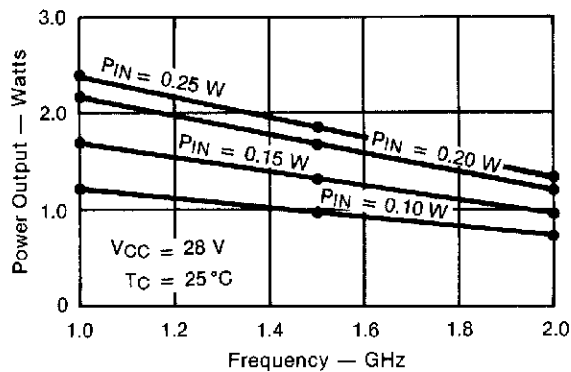
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	$I_C = 1mA$	$I_E = 0mA$	45	—	—	V
BV_{EBO}	$I_E = 1mA$	$I_C = 0mA$	3.5	—	—	V
BV_{CER}	$I_C = 5mA$	$R_{BE} = 10\Omega$	45	—	—	V
I_{CBO}	$V_{CB} = 28V$		—	—	0.5	mA
h_{FE}	$V_{CE} = 5V$	$I_C = 100mA$	15	—	120	—

DYNAMIC

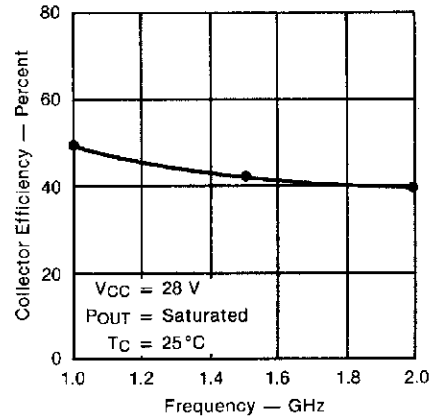
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 2.0 GHz$	$P_{IN} = 0.2 W$	$V_{CC} = 28 V$	1.0	1.2	—	W
η_c	$f = 2.0 GHz$	$P_{IN} = 0.2 W$	$V_{CC} = 28 V$	35	40	—	%
G_P	$f = 2.0 GHz$	$P_{IN} = 0.2 W$	$V_{CC} = 28 V$	7.0	7.8	—	dB
C_{OB}	$f = 1 MHz$	$V_{CB} = 28 V$		—	—	3.2	pF

TYPICAL PERFORMANCE

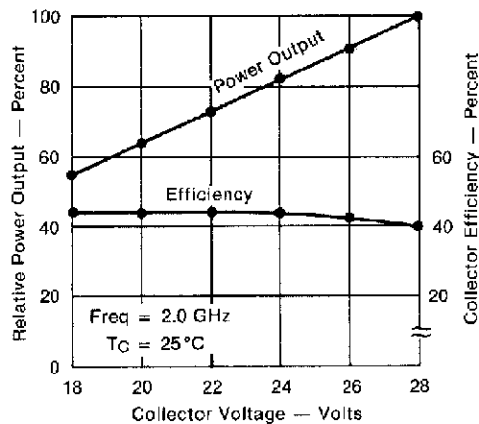
POWER OUTPUT vs FREQUENCY



COLLECTOR EFFICIENCY vs FREQUENCY

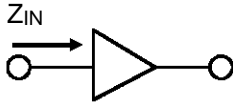


RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

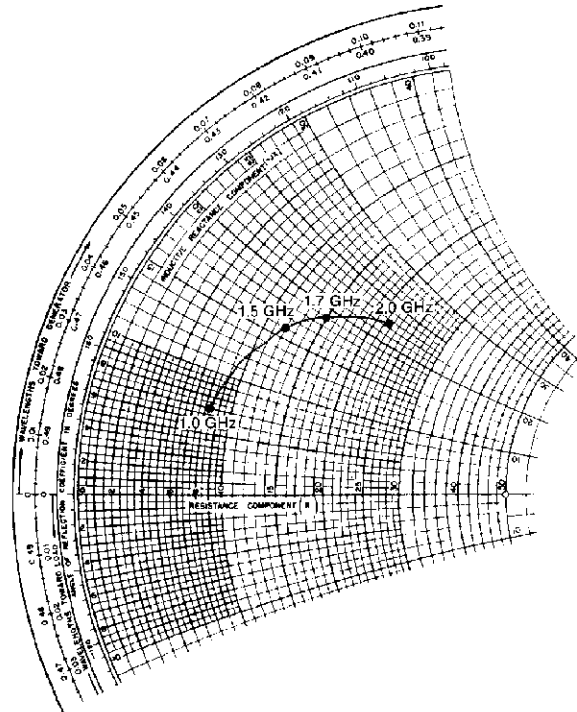


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

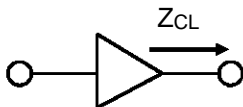


$P_{IN} = 0.2 \text{ W}$
 $V_{CC} = 28 \text{ V}$
 Normalized to 50 ohms

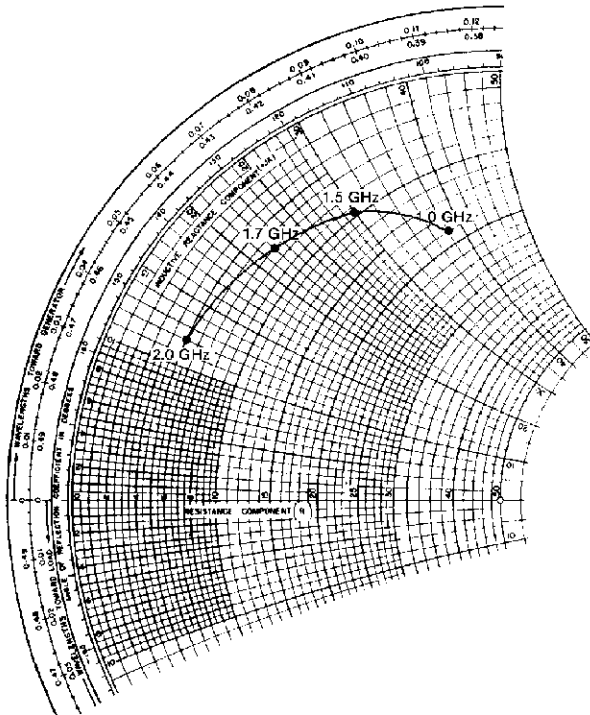


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
1.0 GHz	$8.3 + j 7.0$	$18.0 + j 38.0$
1.5 GHz	$12.0 + j 16.0$	$9.6 + j 30.0$
1.7 GHz	$15.0 + j 14.0$	$7.0 + j 22.0$
2.0 GHz	$21.5 + j 22.5$	$5.0 + j 12.0$

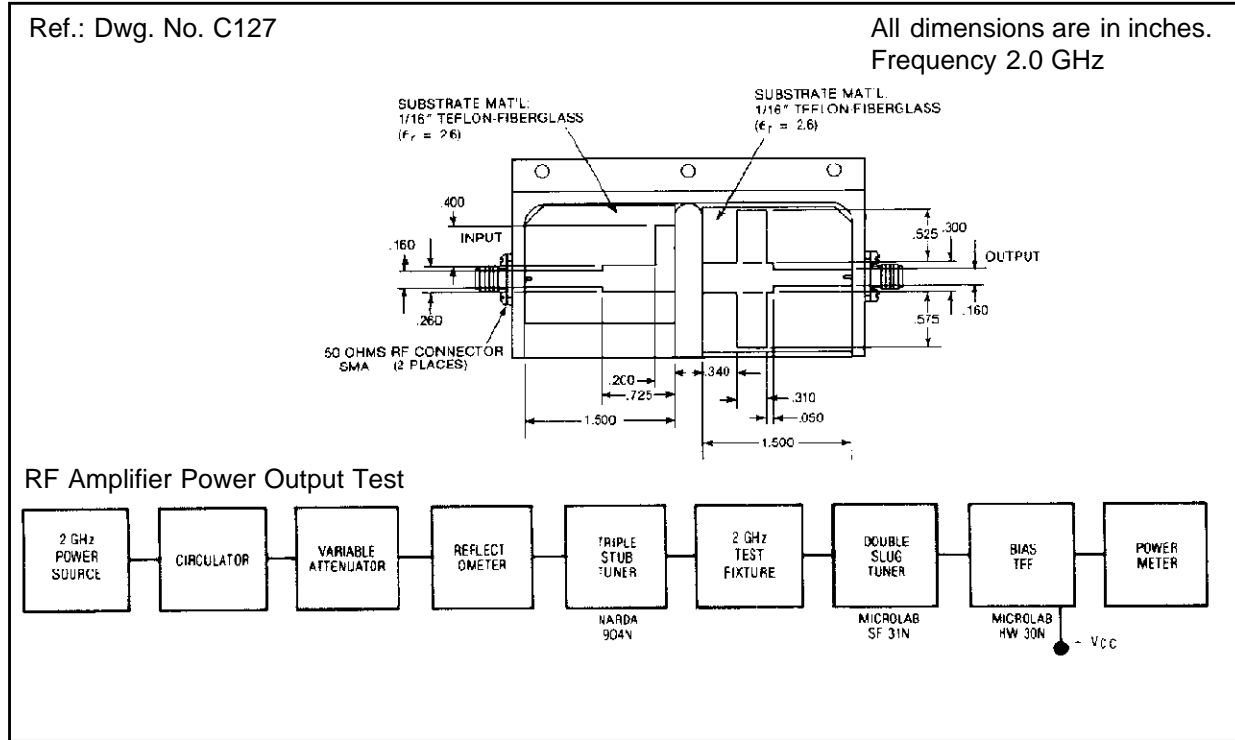
TYPICAL COLLECTOR LOAD IMPEDANCE



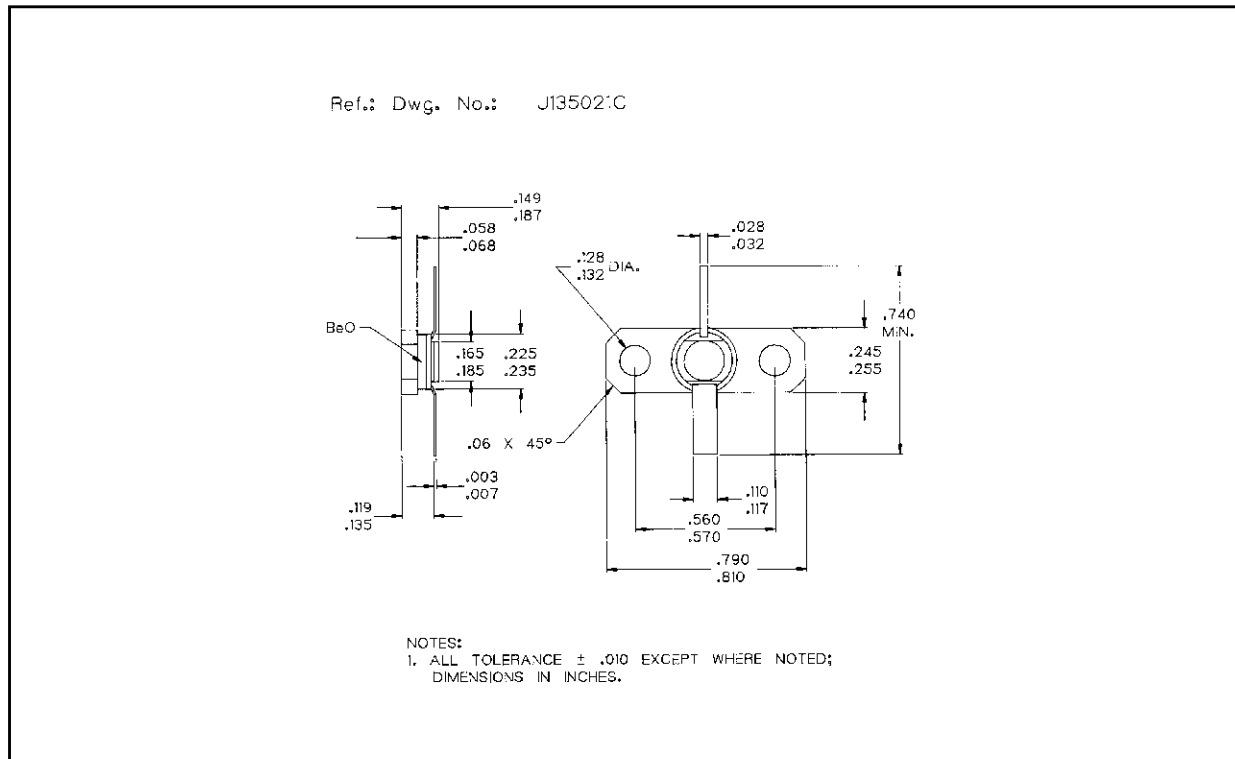
$P_{OUT} = \text{Saturated}$
 $V_{CC} = 28 \text{ V}$
 Normalized to 50 ohms



TEST CIRCUIT



PACKAGE MECHANICAL DATA



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