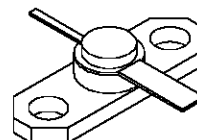


RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

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



.250 2LFL (S010)
hermetically sealed

ORDER CODE

MSC82001

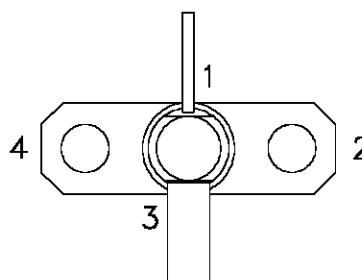
BRANDING

82001

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.

PIN CONNECTION



1. Collector

2. Base

3. Emitter

4. Base

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

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	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	20	$^{\circ}\text{C/W}$
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*Applies only to rated RF amplifier operation

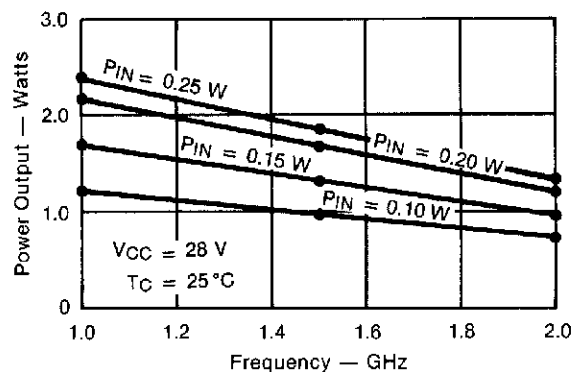
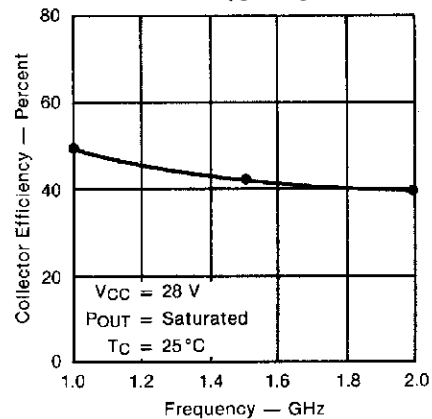
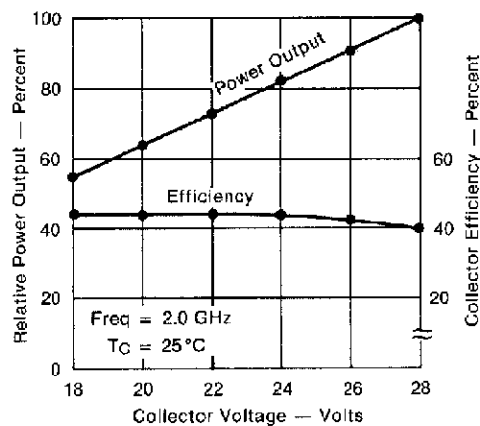
ELECTRICAL SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)

STATIC

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

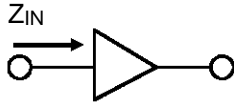
DYNAMIC

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

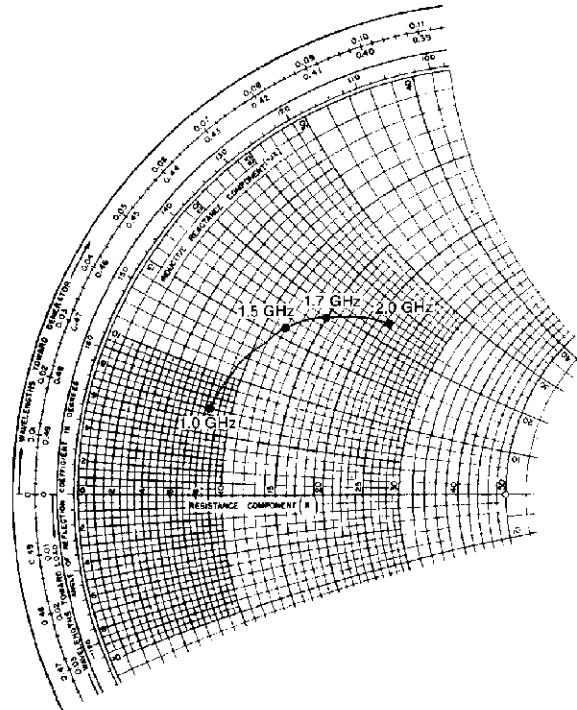
TYPICAL PERFORMANCE
POWER OUTPUT vs FREQUENCY

COLLECTOR EFFICIENCY vs FREQUENCY

RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

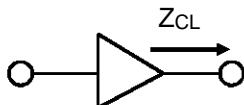


$P_{IN} = 0.2 \text{ W}$
 $V_{CC} = 28 \text{ V}$
 Normalized to 50 ohms

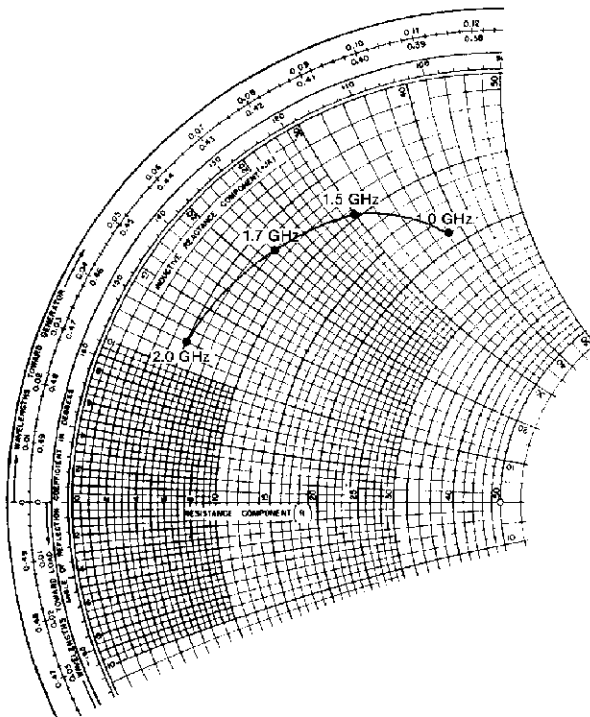


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
1.0 GHz	$8.3 + j 7.0$	$18.0 + j 38.0$
1.5 GHz	$12.0 + j 16.0$	$9.6 + j 30.0$
1.7 GHz	$15.0 + j 14.0$	$7.0 + j 22.0$
2.0 GHz	$21.5 + j 22.5$	$5.0 + j 12.0$

TYPICAL COLLECTOR LOAD IMPEDANCE



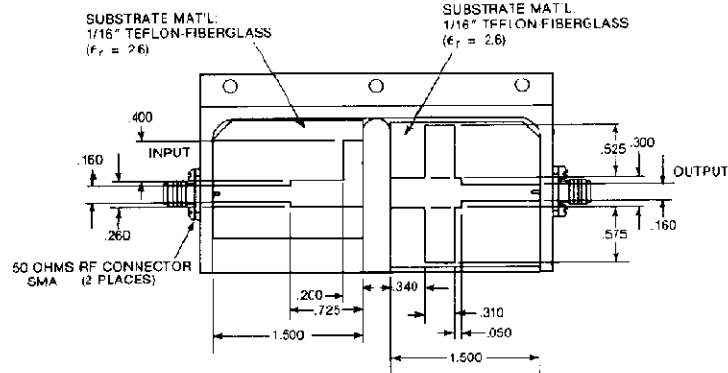
$P_{OUT} = \text{Saturated}$
 $V_{CC} = 28 \text{ V}$
 Normalized to 50 ohms



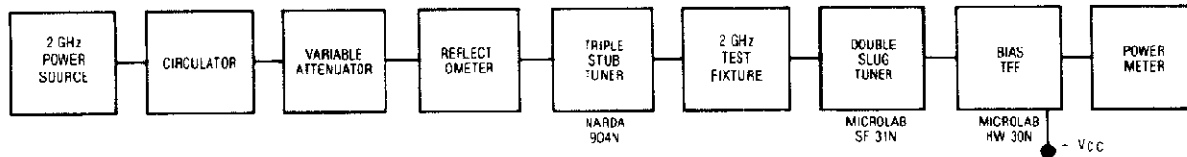
TEST CIRCUIT

Ref.: Dwg. No. C127

All dimensions are in inches.
Frequency 2.0 GHz

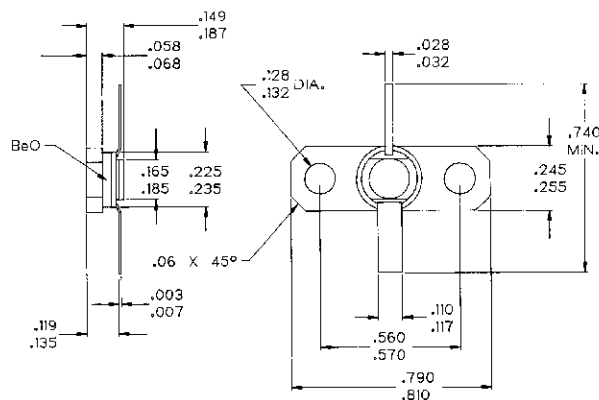


RF Amplifier Power Output Test



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



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

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