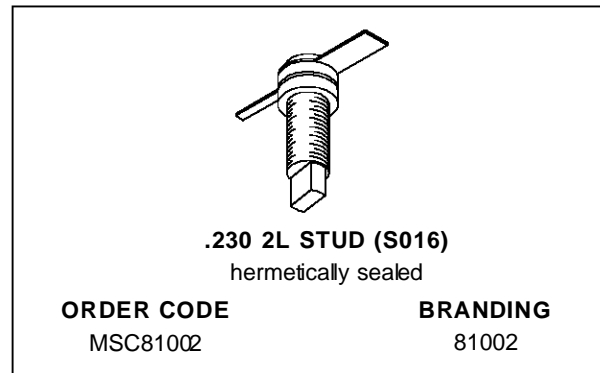


RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

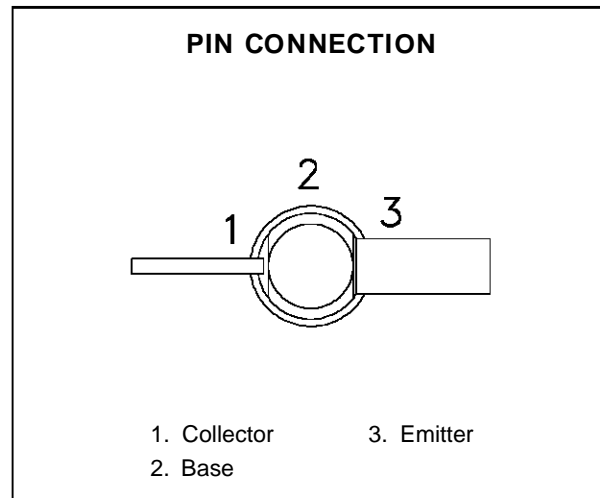
- EMITTER BALLASTED
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 2.0$ W MIN. WITH 10 dB GAIN @ 1 GHz



DESCRIPTION

The MSC81002 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 MSC81002 was designed for Class C amplifier applications in the 0.4 - 1.2 GHz frequency range.



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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 75^{\circ}C$)	6.25	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

MSC81002

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

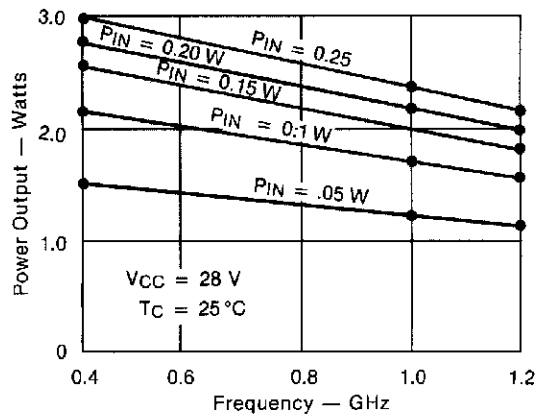
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV _{CBO}	I _C = 1mA	I _E = 0mA	45	—	—	V
BV _{EBO}	I _E = 1mA	I _C = 0mA	3.5	—	—	V
BV _{CER}	I _C = 5mA	R _{BE} = 10Ω	45	—	—	V
I _{CBO}	V _{CB} = 28V		—	—	0.5	mA
h _{FE}	V _{CE} = 5V	I _C = 100mA	15	—	120	—

DYNAMIC

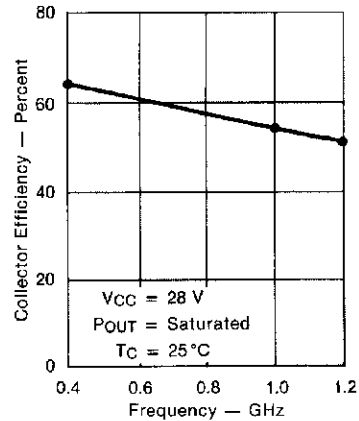
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT}	f = 1.0 GHz	P _{IN} = 0.2 W	V _{CC} = 28 V	2.0	2.2	—	W
η _c	f = 1.0 GHz	P _{IN} = 0.2 W	V _{CC} = 28 V	50	55	—	%
G _P	f = 1.0 GHz	P _{IN} = 0.2 W	V _{CC} = 28 V	10	10.4	—	dB
C _{OB}	f = 1 MHz	V _{CB} = 28 V		—	—	3.2	pF

TYPICAL PERFORMANCE

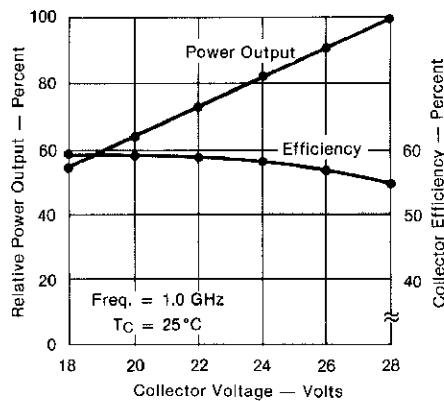
POWER OUTPUT vs FREQUENCY



COLLECTOR EFFICIENCY vs FREQUENCY

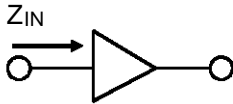


RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

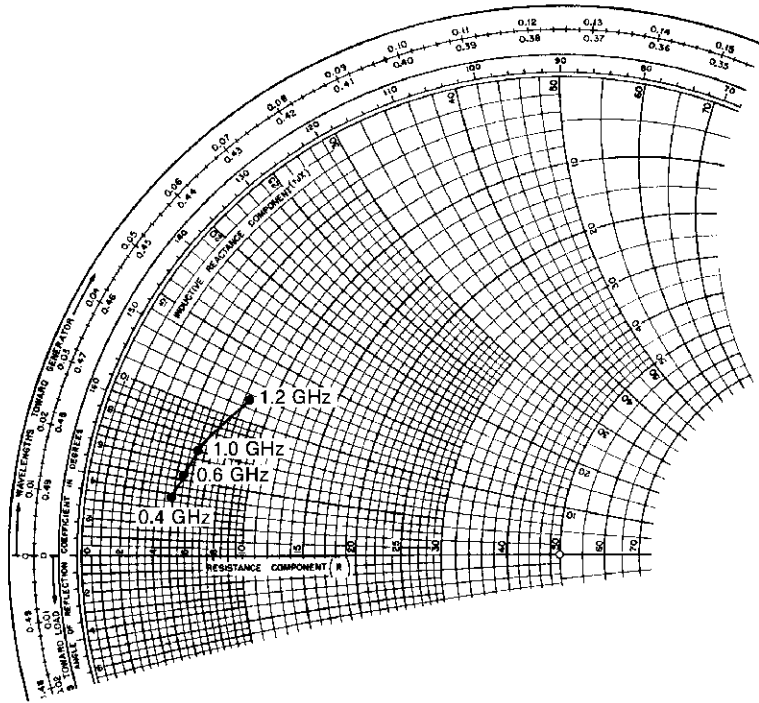


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

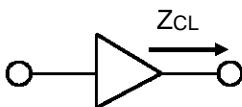


$P_{IN} = 0.2\text{ W}$
 $V_{CC} = 28\text{ V}$
 Normalized to 50 ohms

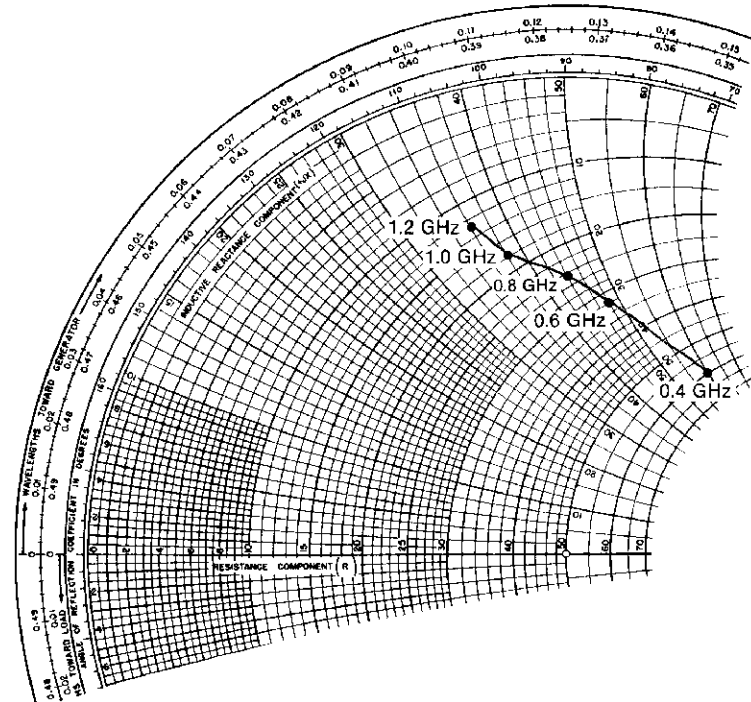


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
0.4 GHz	$4.8 + j 3.7$	$60.0 + j 60.0$
0.6 GHz	$5.4 + j 5.3$	$32.0 + j 48.0$
1.0 GHz	$6.0 + j 7.0$	$18.0 + j 38.0$
1.2 GHz	$8.2 + j 11.6$	$12.8 + j 36.0$

TYPICAL COLLECTOR LOAD IMPEDANCE

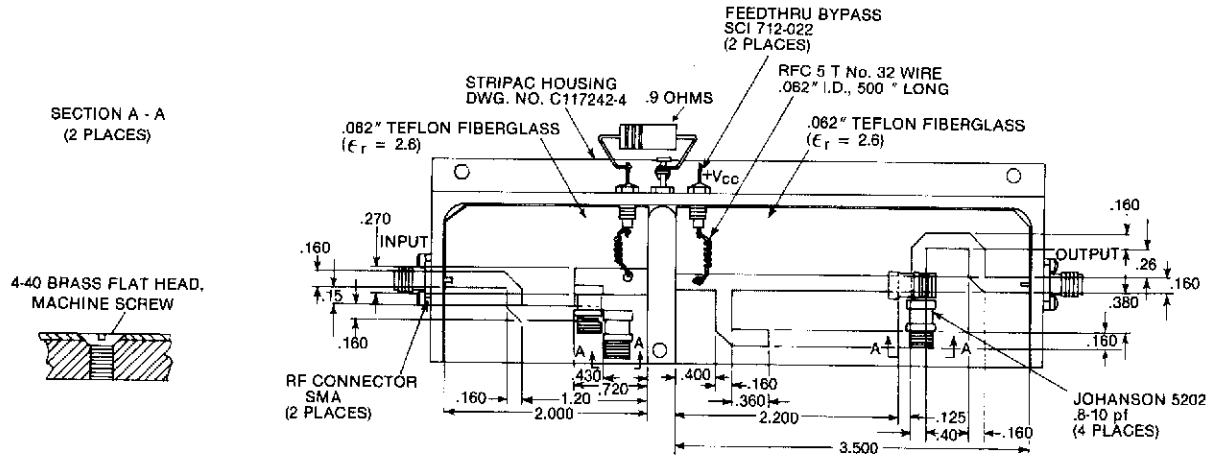


$P_{OUT} = \text{Saturated}$
 $V_{CC} = 28\text{ V}$
 Normalized to 50 ohms



TEST CIRCUIT

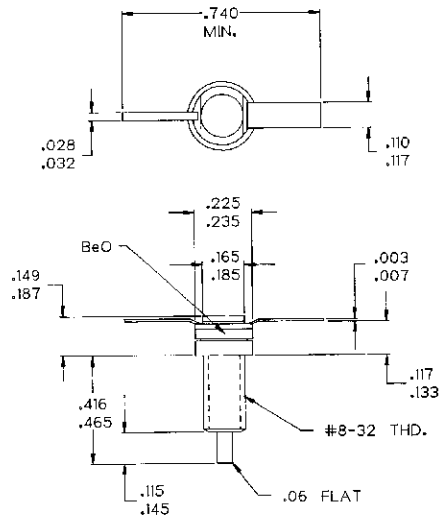
Ref.: Dwg. No. C127317



All dimensions are in inches.
Frequency 1.0 GHz

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135022C



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

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