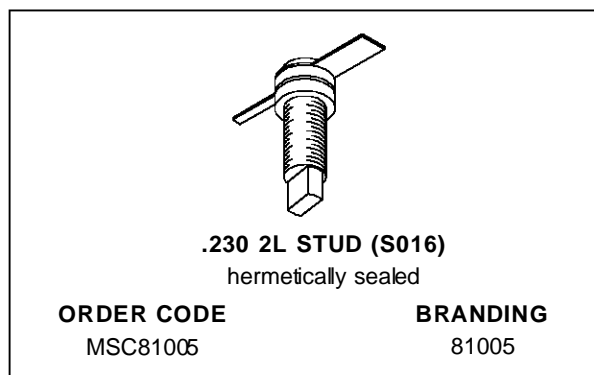


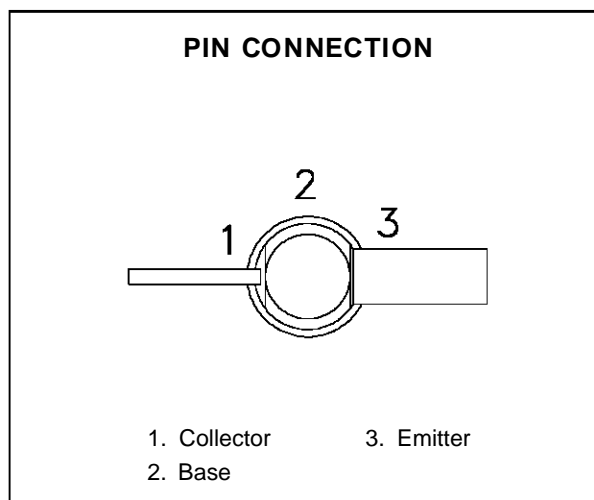
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- REFRACTORY/GOLD METALLIZATION
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC[®] PACKAGE
- $P_{OUT} = 5.0$ W MIN. WITH 10 dB GAIN @ 1 GHz



DESCRIPTION

The MSC81005 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 MSC81005 is 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* ($T_c \leq 50^{\circ}C$)	18.75	W
I_c	Device Current*	600	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*	8.0	$^{\circ}C/W$
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*Applies only to rated RF amplifier operation

MSC81005

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

STATIC

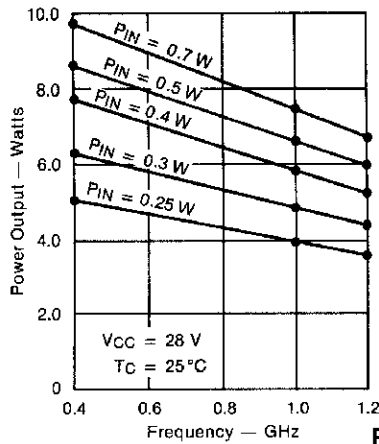
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV _{CBO}	I _C = 1mA	I _E = 0mA	45	—	—	V
BV _{EBO}	I _E = 1mA	I _C = 0mA	3.5	—	—	V
BV _{CER}	I _C = 5mA	R _{BE} = 10Ω	45	—	—	V
I _{CBO}	V _{CB} = 28V		—	—	1.0	mA
h _{FE}	V _{CE} = 5V	I _C = 200mA	15	—	120	—

DYNAMIC

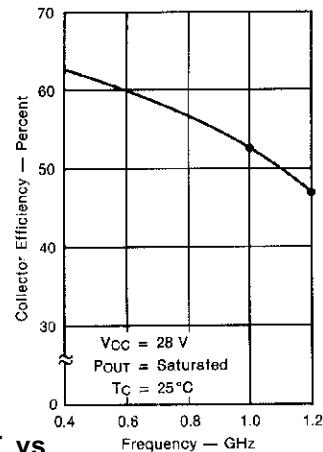
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT}	f = 1.0 GHz	P _{IN} = 0.5 W	V _{CC} = 28 V	5.0	6.6	—	W
η _c	f = 1.0 GHz	P _{IN} = 0.5 W	V _{CC} = 28 V	50	52	—	%
G _P	f = 1.0 GHz	P _{IN} = 0.5 W	V _{CC} = 28 V	10	11.2	—	dB
C _{OB}	f = 1 MHz	V _{CB} = 28 V		—	—	6.5	pF

TYPICAL PERFORMANCE

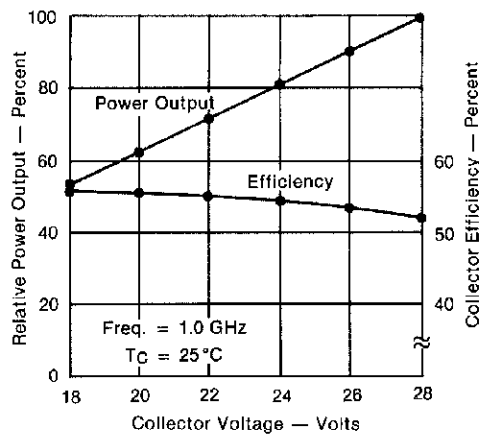
POWER OUTPUT vs FREQUENCY



COLLECTOR EFFICIENCY vs FREQUENCY

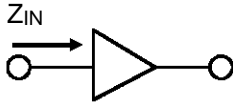


RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

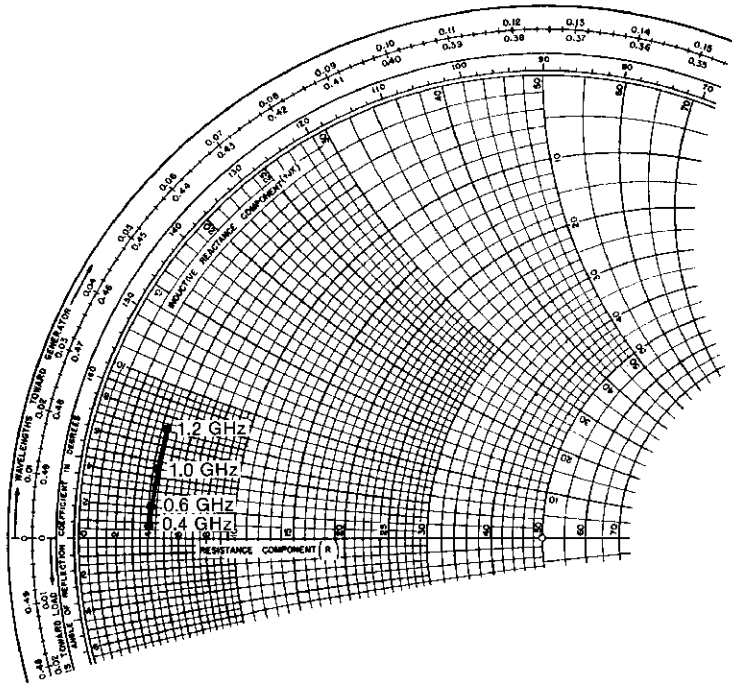


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

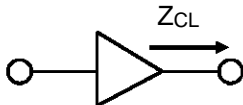


$P_{IN} = 0.5\text{ W}$
 $V_{CC} = 35\text{ V}$
 Normalized to 50 ohms

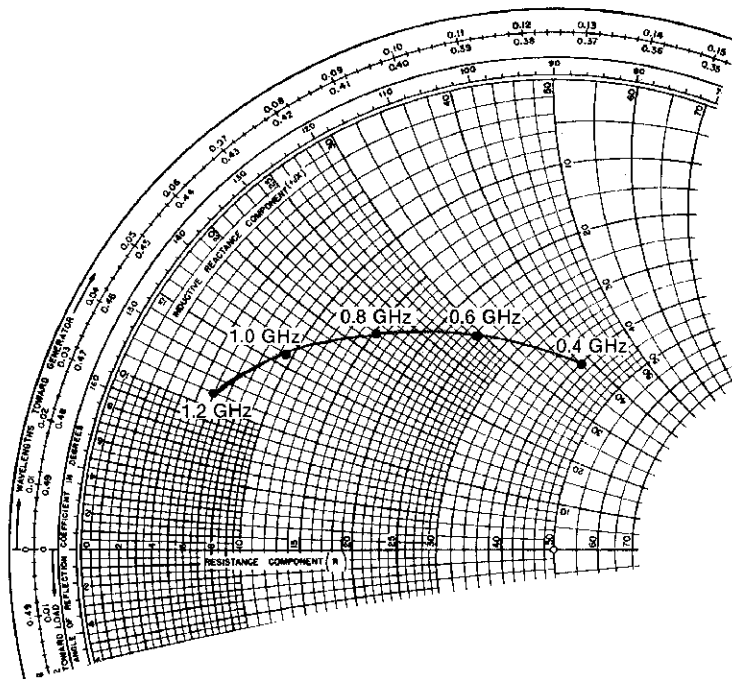


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
0.4 GHz	$4.0 + j 0.8$	$40.0 + j 38.0$
0.6 GHz	$4.1 + j 2.0$	$24.0 + j 29.5$
0.8 GHz	$4.2 + j 3.2$	$15.0 + j 22.0$
1.0 GHz	$4.3 + j 4.5$	$9.4 + j 16.0$
1.2 GHz	$4.4 + j 7.1$	$6.0 + j 11.0$

TYPICAL COLLECTOR LOAD IMPEDANCE

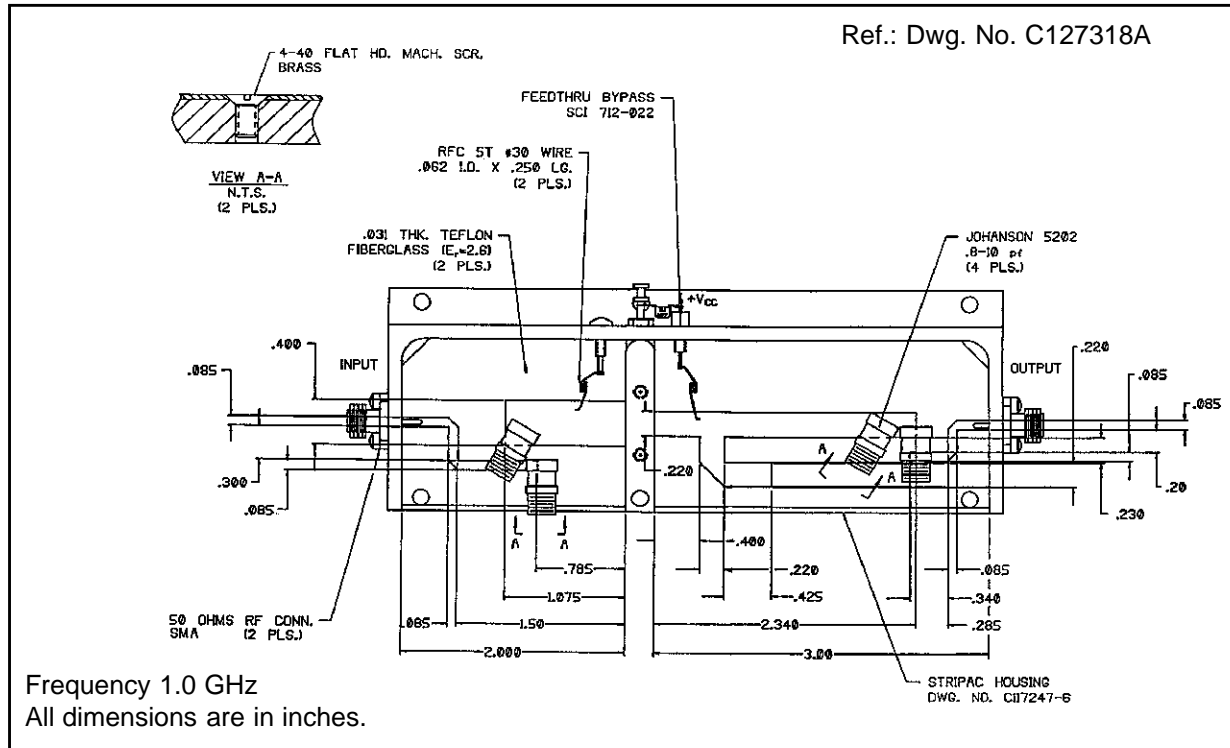


$P_{OUT} = \text{Saturated}$
 $V_{CC} = 35\text{ V}$
 Normalized to 50 ohms

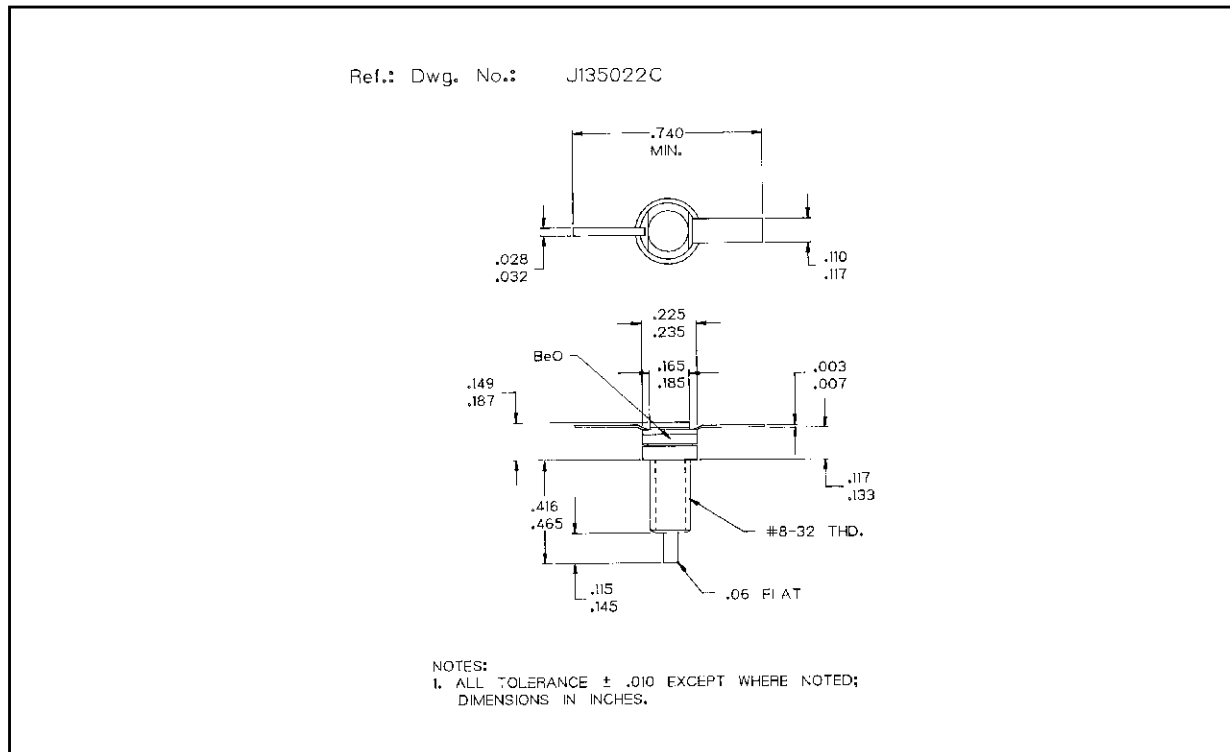


MSC81005

TEST CIRCUIT



PACKAGE MECHANICAL DATA



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