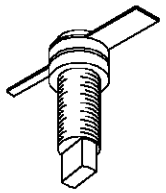
SGS-THOMSON MICROELECTRONICS

MSC81005

RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

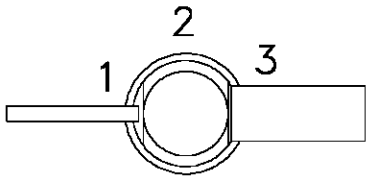
- EMITTER BALLASTED
- REFRACTORY/GOLD METALLIZATION
- VSWR CAPABILITY ∞:1 @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- P_{OUT} = 5.0 W MIN. WITH 10 dB GAIN @ 1 GHz



.230 2L STUD (S016)
hermetically sealed

ORDER CODE	BRANDING
MSC81005	81005

PIN CONNECTION



1. Collector
2. Base
3. Emitter

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 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°C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 50°C$)	18.75	W
I_C	Device Current*	600	mA
V_{CC}	Collector-Supply Voltage*	35	V
T_J	Junction Temperature	200	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	8.0	°C/W

*Applies only to rated RF amplifier operation

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

STATIC

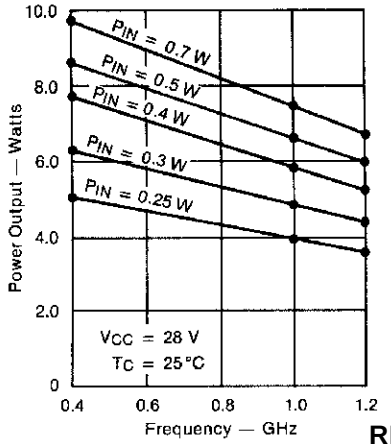
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 1mA	I_E = 0mA	45	—	—	V
BV_{EBO}	I_E = 1mA	I_C = 0mA	3.5	—	—	V
BV_{CER}	IC = 5mA	R_{BE} = 10Ω	45	—	—	V
I_{CBO}	V_{CB} = 28V		—	—	1.0	mA
h_{FE}	V_{CE} = 5V	I_C = 200mA	15	—	120	—

DYNAMIC

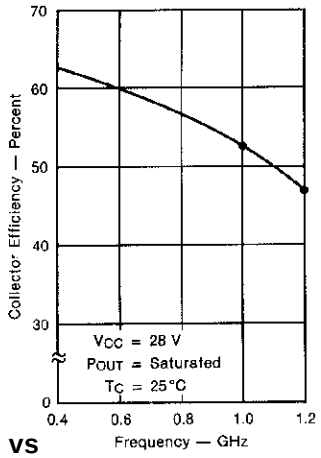
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1.0 GHz	P_{IN} = 0.5 W	V_{CC} = 28 V	5.0	6.6	—	W
ηc	f = 1.0 GHz	P_{IN} = 0.5 W	V_{CC} = 28 V	50	52	—	%
G_P	f = 1.0 GHz	P_{IN} = 0.5 W	V_{CC} = 28 V	10	11.2	—	dB
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	—	6.5	pF

TYPICAL PERFORMANCE

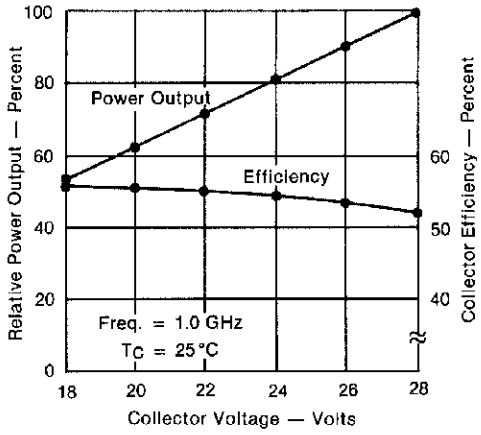
POWER OUTPUT vs FREQUENCY



COLLECTOR EFFICIENCY vs FREQUENCY

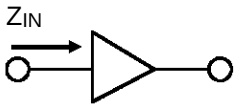


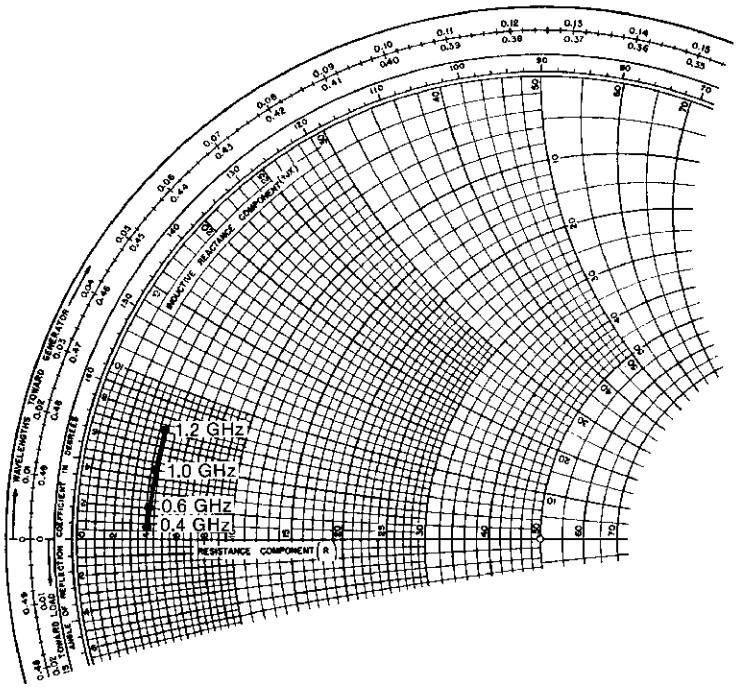
RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE



IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

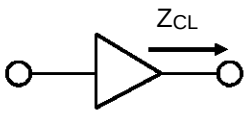


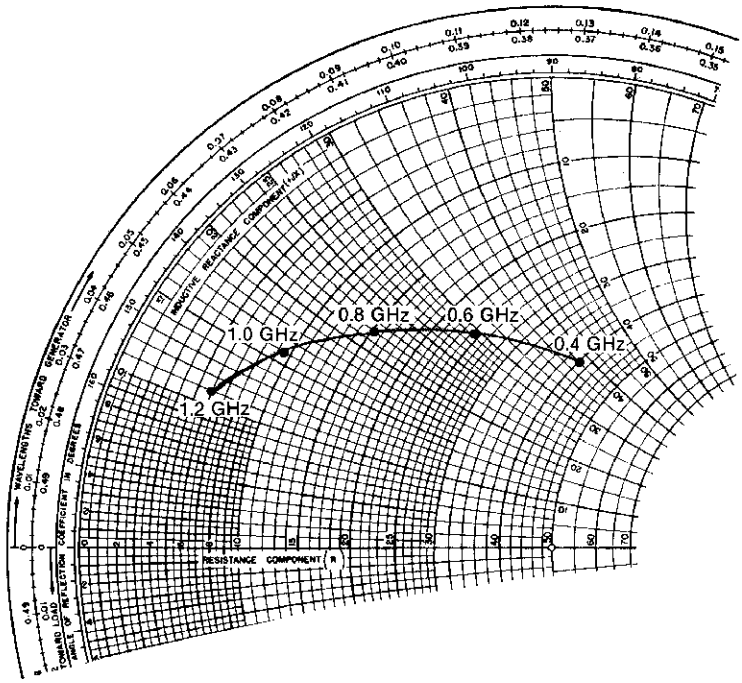


P_{IN} = 0.5 W
V_{CC} = 35 V
Normalized to 50 ohms

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
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

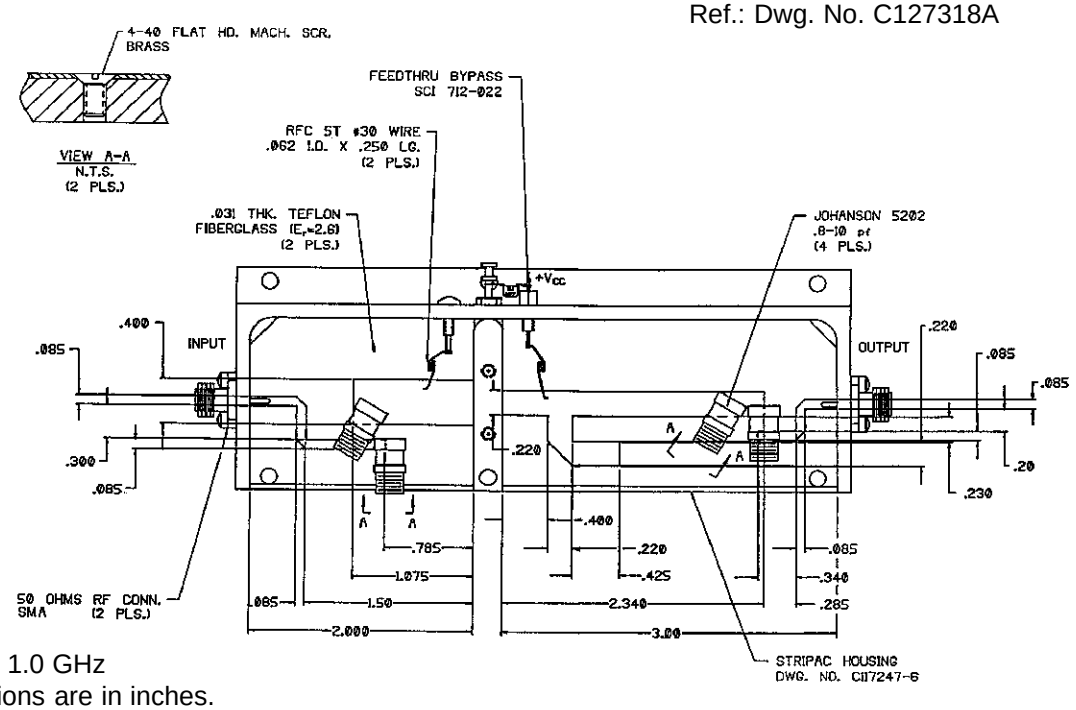




P_{OUT} = Saturated
V_{CC} = 35 V
Normalized to 50 ohms

TEST CIRCUIT

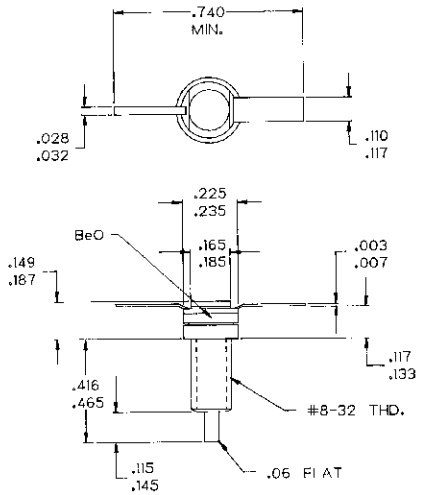
Ref.: Dwg. No. C127318A



Frequency 1.0 GHz
All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135022C



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

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsability for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may results from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.
SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectonics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A