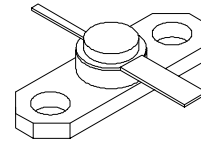


RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- REFRACTORY/GOLD METALLIZATION
- HERMETIC STRIPAC[®] PACKAGE
- $P_{OUT} = 3.0$ W MIN. WITH 7.8 dB GAIN @ 2.0 GHz



.250 2LFL (S010)
hermetically sealed

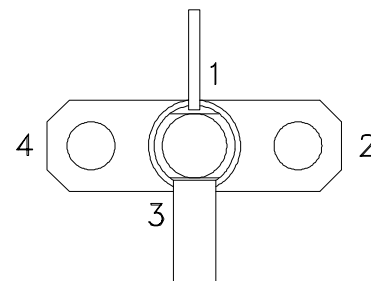
ORDER CODE
MSC82003

BRANDING
82003

DESCRIPTION

The MSC82003 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 MSC82003 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 ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation*	21.8	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	$^{\circ}C/W$
---------------	-----------------------------------	-----	---------------

*Applies only to rated RF amplifier operation

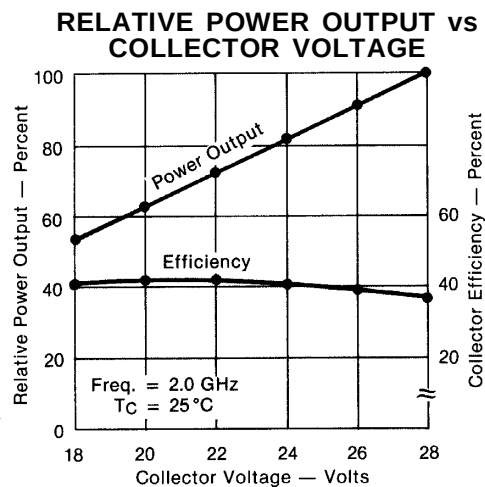
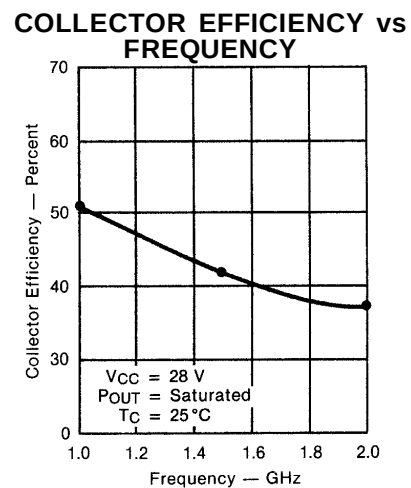
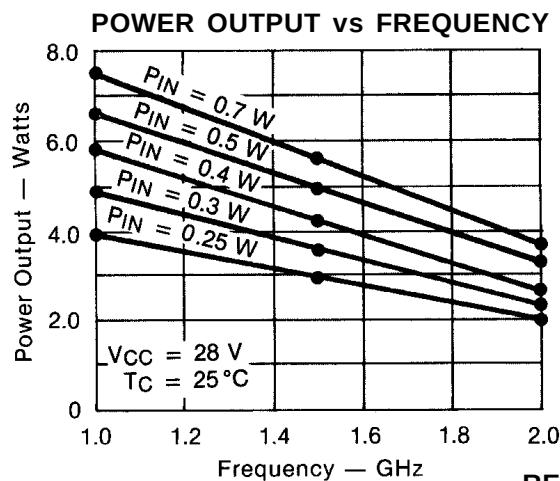
ELECTRICAL SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)

STATIC

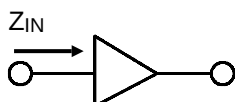
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_{\text{C}} = 1\text{mA}$ $I_{\text{E}} = 0\text{mA}$	45	—	—	V
BV_{EBO}	$I_{\text{E}} = 1\text{mA}$ $I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
BV_{CER}	$I_{\text{C}} = 5\text{mA}$ $R_{\text{BE}} = 10\Omega$	45	—	—	V
I_{CBO}	$V_{\text{CB}} = 28\text{V}$	—	—	1.0	mA
h_{FE}	$V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 200\text{mA}$	15	—	120	—

DYNAMIC

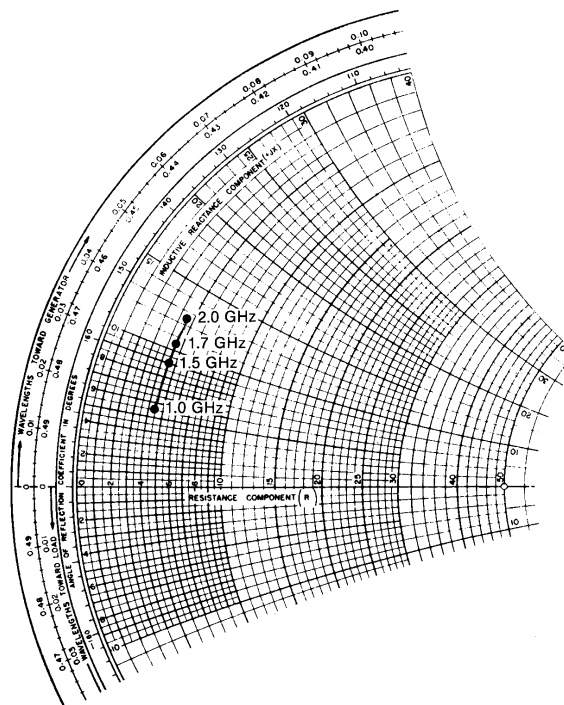
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 2.0\text{ GHz}$ $P_{\text{IN}} = 0.5\text{ W}$ $V_{\text{CC}} = 28\text{ V}$	3.0	3.3	—	W
η_{c}	$f = 2.0\text{ GHz}$ $P_{\text{IN}} = 0.5\text{ W}$ $V_{\text{CC}} = 28\text{ V}$	35	37	—	%
G_{P}	$f = 2.0\text{ GHz}$ $P_{\text{IN}} = 0.5\text{ W}$ $V_{\text{CC}} = 28\text{ V}$	7.8	8.2	—	dB
C_{OB}	$f = 1\text{ MHz}$ $V_{\text{CB}} = 28\text{ V}$	—	—	6.5	pF

TYPICAL PERFORMANCE


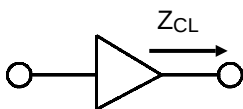
IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCE

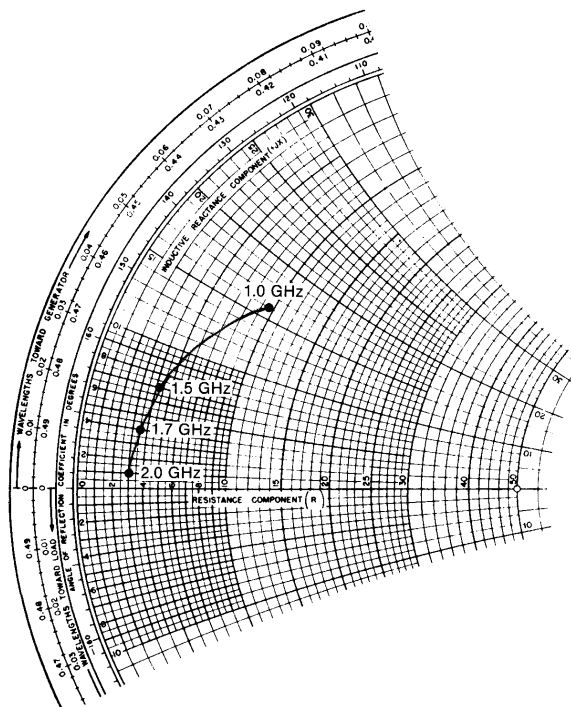
$P_{IN} = 0.5 \text{ W}$
 $V_{CC} = 28 \text{ V}$
 Normalized to 50 ohms



FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
1.0 GHz	$4.4 + j 5.5$	$9.6 + j 16.0$
1.5 GHz	$4.5 + j 9.0$	$4.3 + j 7.0$
1.7 GHz	$4.5 + j 10.5$	$3.5 + j 4.0$
2.0 GHz	$4.6 + j 12.5$	$3.0 + j 1.0$

TYPICAL COLLECTOR
LOAD IMPEDANCE

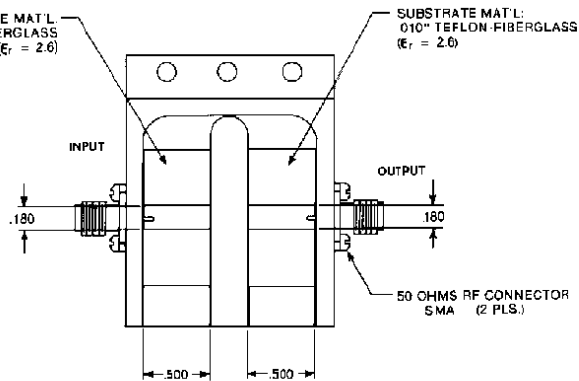
$P_{OUT} = \text{Saturated}$
 $V_{CC} = 28 \text{ V}$
 Normalized to 50 ohms



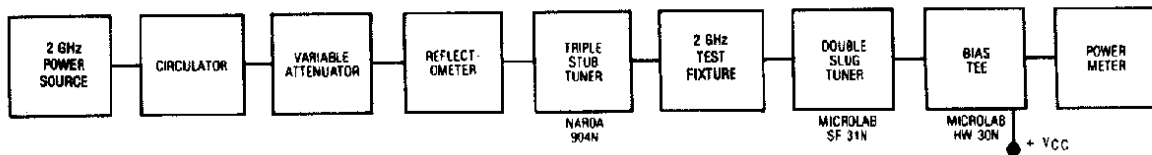
TEST CIRCUIT

Ref.: Dwg. No. C125518

All dimensions are in inches.
Frequency 2.0 GHz

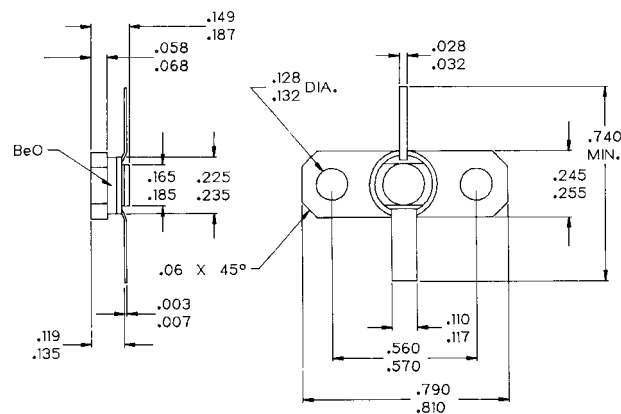


RF Amplifier Power Output Test



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: JI35021C



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

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result 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 Microelectronics.

© 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