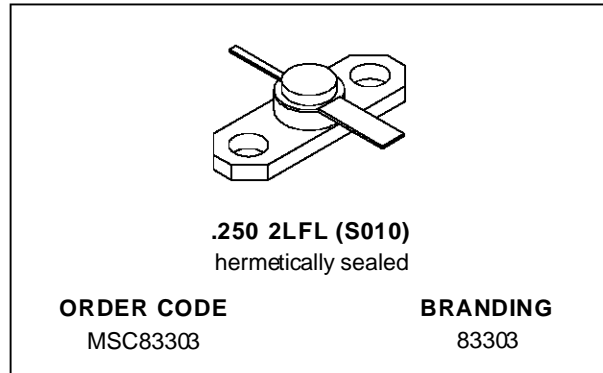


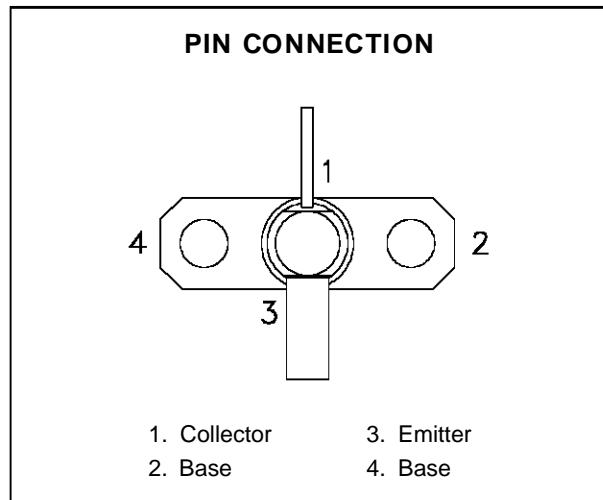
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER BALLASTED
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC[®] PACKAGE
- $P_{OUT} = 3.0$ W MIN. WITH 7.0 dB GAIN @ 3.0 GHz



DESCRIPTION

The MSC83303 is a common base hermetically sealed silicon NPN microwave power transistor utilizing an overlay, emitter site 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 MSC83303 is designed for Class C amplifier/oscillator applications in the 1.0 - 3.0 GHz frequency range.



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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_c \leq 50^{\circ}C$)	10.0	W
I_c	Device Current*	540	mA
V_{CC}	Collector-Supply Voltage*	30	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*	12	$^{\circ}C/W$
---------------	-----------------------------------	----	---------------

*Applies only to rated RF amplifier operation

MSC83303

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

STATIC

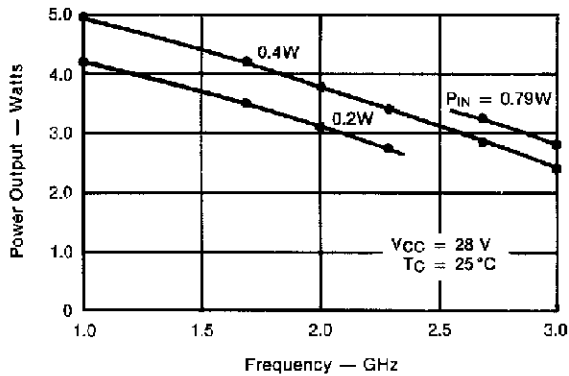
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV _{CBO}	I _C = 1 mA	I _E = 0 mA	45	—	—	V
BV _{EBO}	I _E = 1 mA	I _C = 0 mA	3.5	—	—	V
BV _{CER}	I _C = 5 mA	R _{BE} = 10 Ω	45	—	—	V
I _{CBO}	V _{CB} = 28 V		—	—	0.5	mA
h _{FE}	V _{CE} = 5 V	I _C = 200 mA	30	—	300	—

DYNAMIC

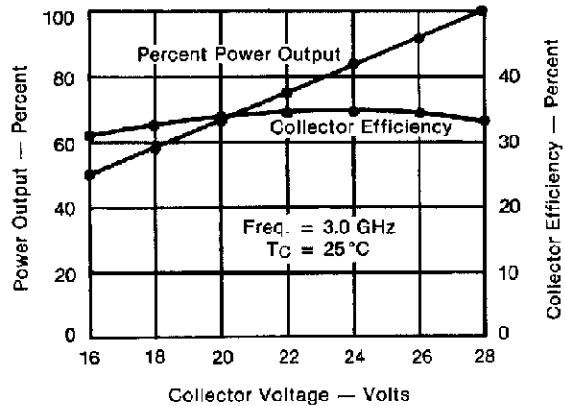
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT}	f = 3.0 GHz	P _{IN} = 0.79 W	V _{CC} = 28 V	2.5	2.8	—	W
η _C	f = 3.0 GHz	P _{IN} = 0.79 W	V _{CC} = 28 V	30	33	—	%
P _G	f = 3.0 GHz	P _{IN} = 0.79 W	V _{CC} = 28 V	5.0	5.5	—	dB
C _{OB}	f = 1 MHz	V _{CB} = 28 V		—	—	5	pF

TYPICAL PERFORMANCE

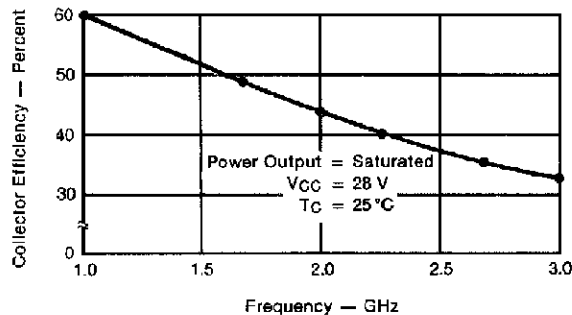
TYPICAL POWER OUTPUT vs FREQUENCY



PERCENT POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

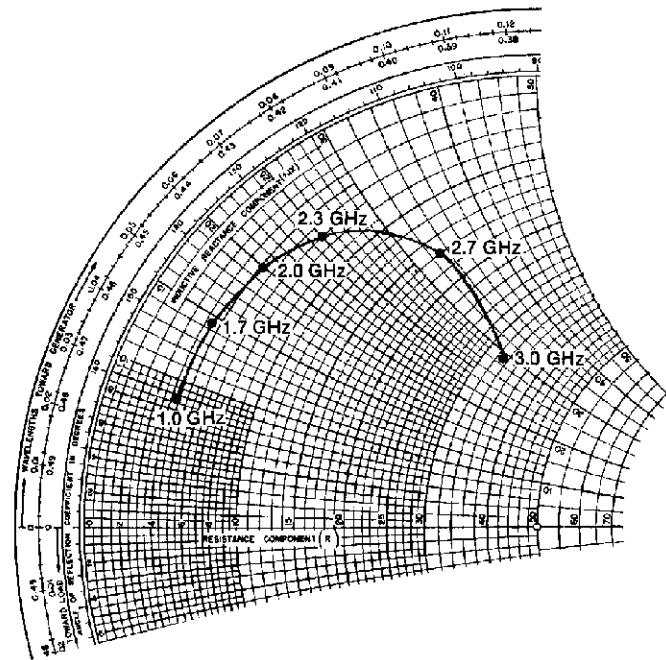
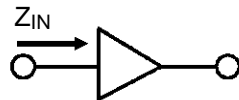


TYPICAL COLLECTOR EFFICIENCY vs FREQUENCY



IMPEDANCE DATA

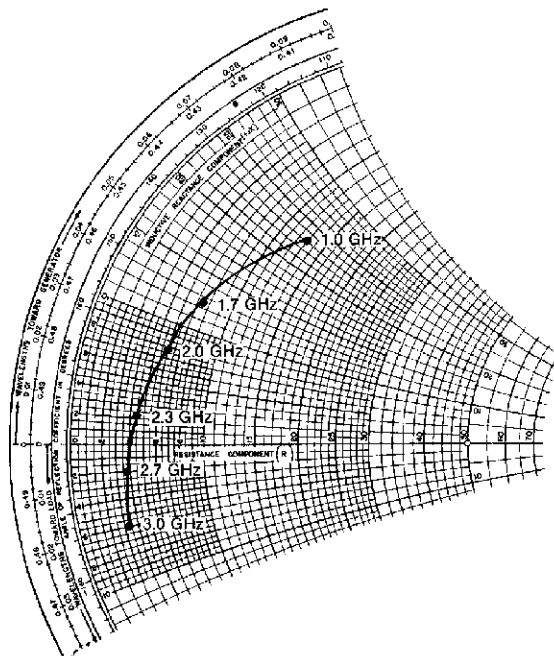
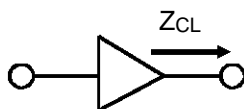
TYPICAL INPUT IMPEDANCE



FREQ.	Z _{IN} (Ω)	Z _{CL} (Ω)
1.0 GHz	4.4 + j 8.7	13.0 + j 23.0
1.7 GHz	4.5 + j 14.5	7.5 + j 12.5
2.0 GHz	5.1 + j 20.0	6.0 + j 7.8
2.3 GHz	7.0 + j 25.0	4.5 + j 2.2
2.7 GHz	16.0 + j 33.0	3.8 - j 2.0
3.0 GHz	33.0 + j 29.0	3.3 - j 6.0

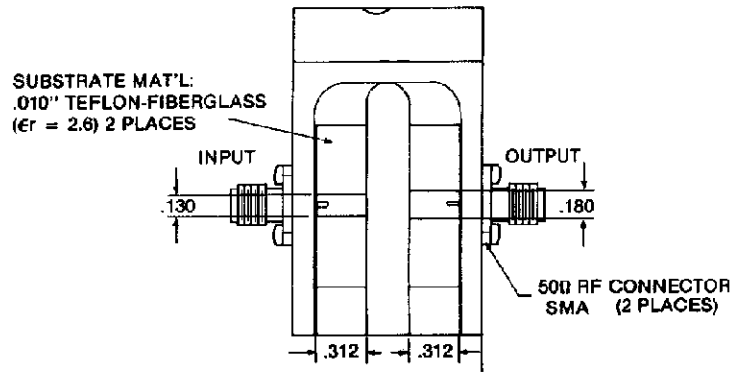
P_{OUT} = Saturated
 V_{CC} = 28 V
 Normalized to 50 ohms

TYPICAL COLLECTOR LOAD IMPEDANCE

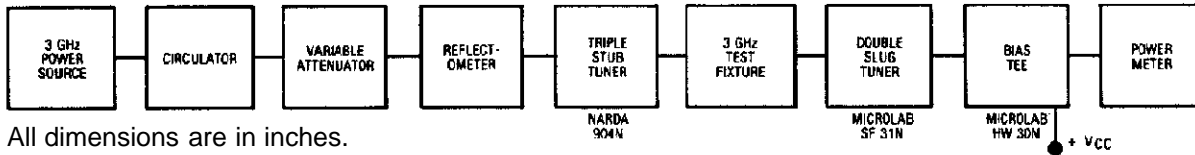


TEST CIRCUIT

Ref.: Dwg. No. C125562



RF Amplifier Power Output Test

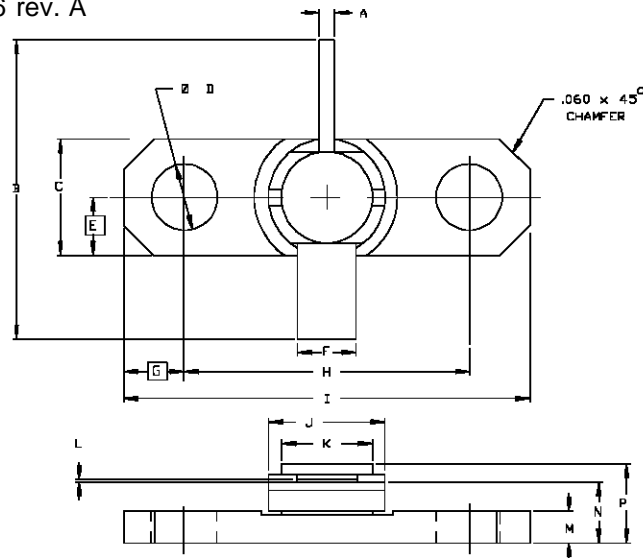


All dimensions are in inches.

Frequency 3.0 GHz

PACKAGE MECHANICAL DATA

Ref. Dwg. No. 12-0216 rev. A



SGS-THOMSON MICROELECTRONICS		CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.028/0,71	.032/0,81	K	.165/4,19
B	.740/18,80		L	.003/0,08
C	.245/6,22	.255/6,48	M	.058/1,47
D	.128/3,25	.132/3,35	N	.119/3,02
E	.125/3,18		P	.149/3,78
F	.110/2,79	.117/2,97		
G	.117/2,97			
H	.560/14,22	.570/14,48		
I	.795/20,19	.805/20,45		
J	.225/5,72	.235/5,97		

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.

www.s-manuals.com