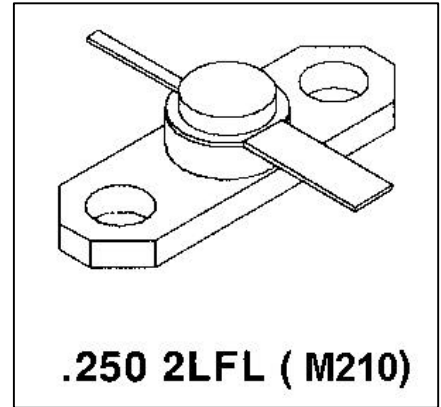


MSC4003

**RF AND MICROWAVE TRANSISTORS
GENERAL PURPOSE AMPLIFIER APPLICATIONS**

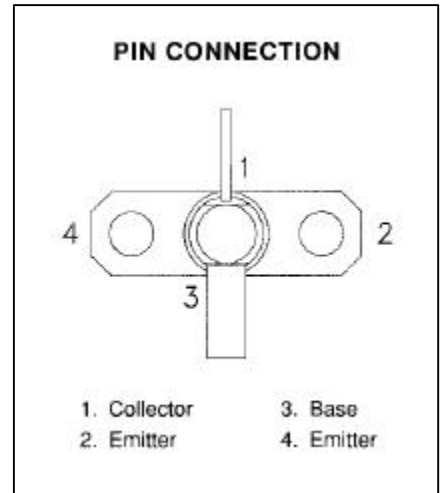
Features

- 3:1 VSWR AT RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- P_{OUT} = 2.5 W MIN. WITH 5.0 dB GAIN AT 4.0 GHz



DESCRIPTION:

The MSC4003 common-base, hermetically sealed silicon NPN microwave power transistor features a unique Microgrid™ structure and can withstand 3:1 VSWR at any phase angle under rated conditions. It is designed for Class C amplifier applications in the 2.0 – 4.4 GHz frequency range.



ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25°C)

Symbol	Parameter	Value	Unit
P _{DISS}	Power Dissipation*	14.0	W
I _C	Device Current*	0.5	A
V _{CC}	Collector Supply Voltage*	30	V
T _J	Junction Temperature (Pulsed RF Operation)	+200	°C
T _{STG}	Storage Temperature	-65 to +200	°C

THERMAL DATA

R _{TH(j-c)}	Junction-Case Thermal Resistance*	12.5	°C/W
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*Applies only to rated RF amplifier operation

ELECTRICAL SPECIFICATIONS ($T_{CASE} = 25^{\circ}C$)
STATIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
BV_{CBO}	$I_C = 2.5 \text{ mA}$	$I_E = 0 \text{ mA}$		45	---	---	V
BV_{EBO}	$I_E = 1 \text{ mA}$	$I_C = 0 \text{ mA}$		3.5	---	---	V
BV_{CER}	$I_C = 5 \text{ mA}$	$R_{BE} = 10 \Omega$		45	---	---	V
I_{CBO}	$V_{BE} = 28 \text{ V}$			---	---	0.5	mA
h_{FE}	$V_{CE} = 5 \text{ V}$	$I_C = 250 \text{ mA}$		15	---	120	---

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 4.0 \text{ GHz}$	$P_{IN} = 0.79 \text{ W}$	$V_{CC} = 28 \text{ V}$	2.5	2.7	---	W
η_C	$f = 4.0 \text{ GHz}$	$P_{IN} = 0.79 \text{ W}$	$V_{CC} = 28 \text{ V}$	25	27	---	%
G_P	$f = 4.0 \text{ GHz}$	$P_{IN} = 0.79 \text{ W}$	$V_{CC} = 28 \text{ V}$	5.0	5.3	---	dB
C_{OB}	$f = 1 \text{ MHz}$	$V_{CB} = 28 \text{ V}$		---	---	5.0	pF

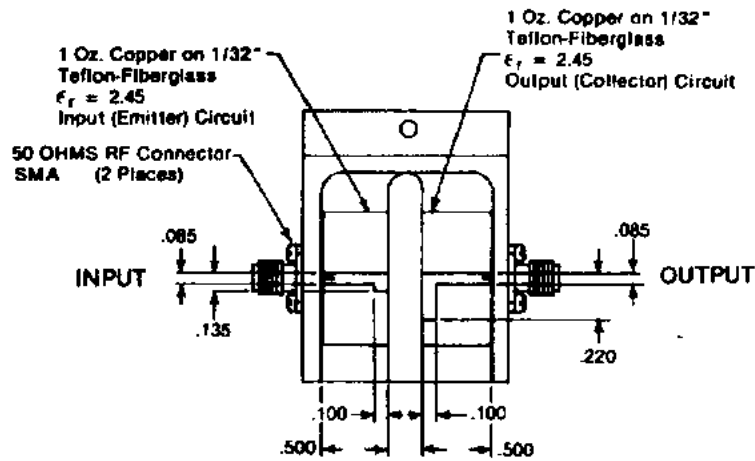
IMPEDANCE DATA

Freq.	Z _{IN} (Ω)	Z _{CL} (Ω)
2.3 GHz	.30 + j 14.0	6.5 + j 5.5
2.5 GHz	4.0 + j 20.0	5.3 + j 2.5
3.0 GHz	8.0 + j 32.0	4.5 - j 4.0
3.5 GHz	20.0 + j 47.0	4.5 - j 10.0
4.0 GHz	27.0 + j 57.0	4.5 - j 20.0
4.4 GHz	50.0 + j 75.0	7.0 - j 26.0

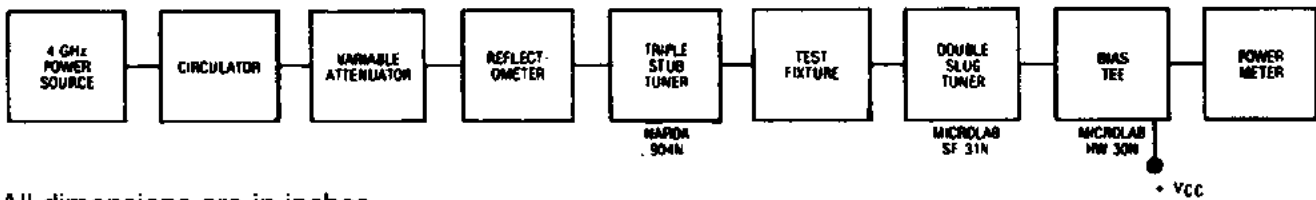
Normalized to 50 Ω

TEST CIRCUIT

Ref.: Dwg. No. C125506B



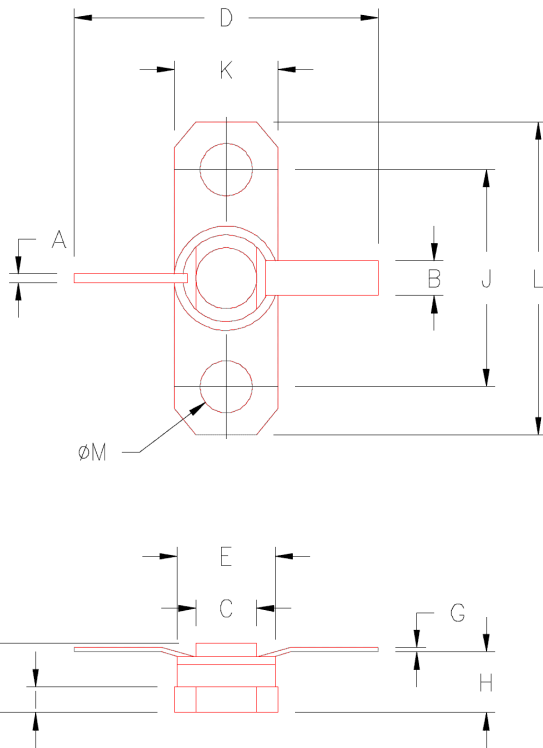
RF Amplifier Power Output Test



All dimensions are in inches.

PACKAGE MECHANICAL DATA

PACKAGE STYLE M210



INCHES/MM			
.028/0,71			
.110/2,80	K	.245/6,22	.255/6,48
.165/4,19	L	.790/20,07	.810/20,57
.740/18,80	M	.128/3,25	.132/3,35
.225/5,72			
.149/2,30			
.003/0,08			
.117/2,97			
.058/1,47			