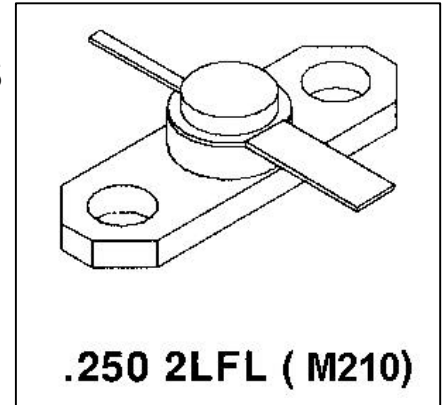


MSC4000

RF AND MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

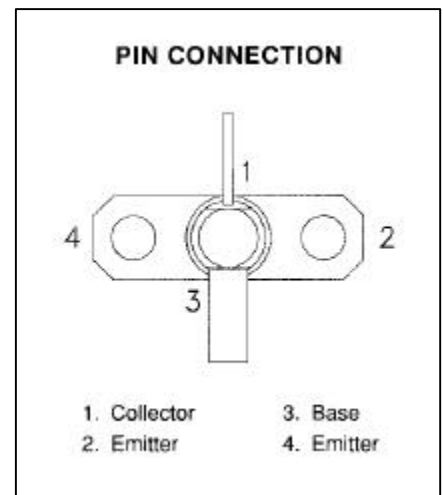
Features

- 3:1 VSWR AT RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 0.5 \text{ W MIN. WITH } 5.0 \text{ dB GAIN AT } 4.0 \text{ GHz}$



DESCRIPTION:

The MSC4000 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 ($T_{CASE} = 25^{\circ}\text{C}$)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation*	3.89	W
I_C	Device Current*	0.15	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*	45	°C/W
---------------	-----------------------------------	----	------

*Applies only to rated RF amplifier operation

MSC4000

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

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 1\text{ mA}$ $I_E = 0\text{ mA}$	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}	$V_{CE} = 5\text{ V}$ $I_C = 100\text{ mA}$	15	---	120	---

DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 4.0\text{ GHz}$ $P_{IN} = 0.16\text{ W}$ $V_{CC} = 28\text{ V}$	0.5	0.6	---	W
η_C	$f = 4.0\text{ GHz}$ $P_{IN} = 0.16\text{ W}$ $V_{CC} = 28\text{ V}$	25	27	---	%
G_P	$f = 4.0\text{ GHz}$ $P_{IN} = 0.16\text{ W}$ $V_{CC} = 28\text{ V}$	5.0	5.8	---	dB
C_{OB}	$f = 1\text{ MHz}$ $V_{CB} = 28\text{ V}$	---	---	2.5	pF

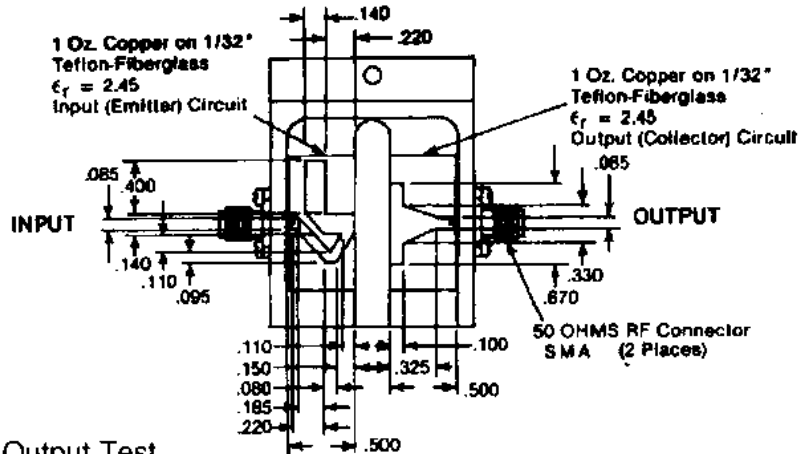
MSC4000

IMPEDANCE DATA

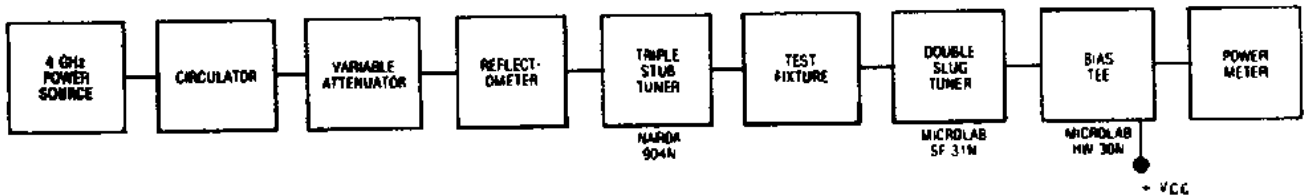
Freq.	Z _{IN} (Ω)	Z _{CL} (Ω)
2.0 GHz	60.0 – j 85.0	6.0 + j 22.0
2.3 GHz	42.0 – j 60.0	4.5 + j 18.0
3.0 GHz	24.0 – j 17.5	2.0 + j 5.5
3.5 GHz	24.0 + j 42.0	2.0 + j 1.3
4.0 GHz	33.0 + j 90.0	2.0 – j 10.0
4.4 GHz	50.0 + j 150.0	5.0 – j 17.5

TEST CIRCUIT

Ref.: Dwg. No. C125504B



RF Amplifier Power Output Test

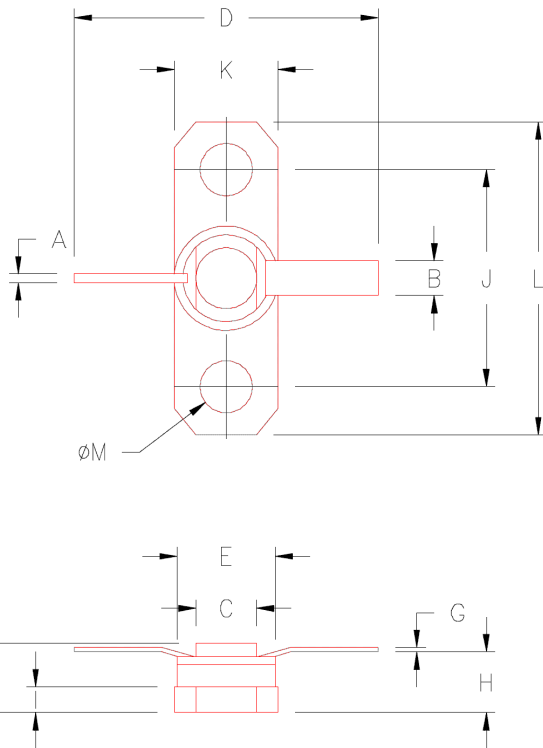


All dimensions are in inches.

MSC4000

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	