ADVANCED POWER TECHNOLOGY RF®

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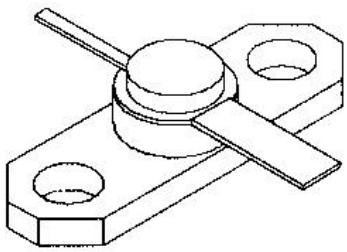
MSC4001

RF AND MICROWAVE TRANSISTORS
GENERAL PURPOSE AMPLIFIER APPLICATIONS



.250 2LFL (M210)

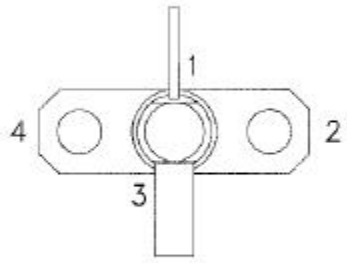
Features

- **3:1 VSWR AT RATED CONDITIONS**
- **HERMETIC STRIPAC® PACKAGE**
- **P_{OUT} = 1.0 W MIN. WITH 5.0 dB GAIN AT 4.0 GHz**

DESCRIPTION:

The MSC4001 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.

PIN CONNECTION



1. Collector
2. Emitter
3. Base
4. Emitter

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation*	7.0	W
I_C	Device Current*	0.25	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*	25	°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 = 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_{BE} = 28 V		---	---	0.5	mA
h_{FE}	V_{CE} = 5 V	I_C = 100 mA	15	---	120	---

DYNAMIC

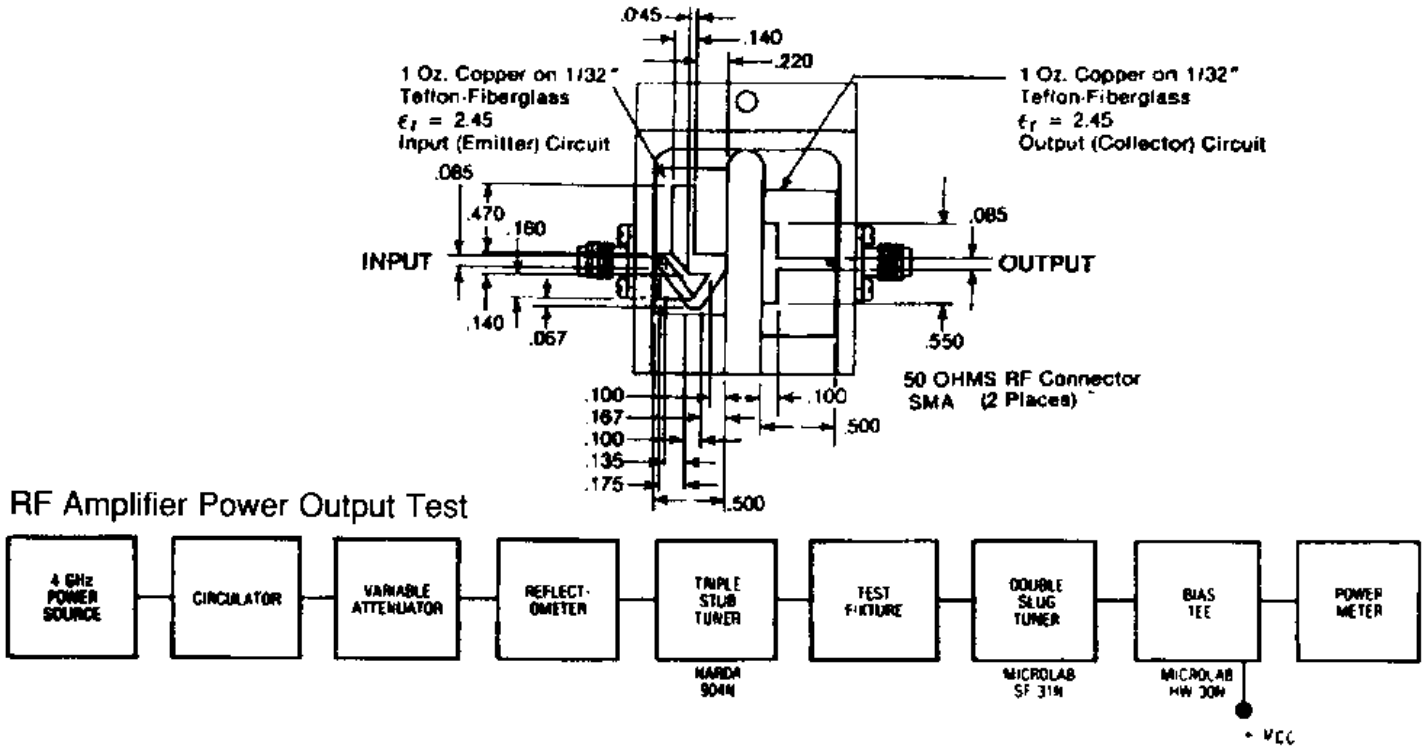
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 4.0 GHz	P_{IN} = 0.32 W	V_{CC} = 28 V	1.0	1.2	---	W
η_C	f = 4.0 GHz	P_{IN} = 0.32 W	V_{CC} = 28 V	25	27	---	%
G_P	f = 4.0 GHz	P_{IN} = 0.32 W	V_{CC} = 28 V	5.0	5.8	---	dB
C_{OB}	f = 1 MHz	V_{CB} = 28 V		---	---	3.6	pF

IMPEDANCE DATA

Freq.	Z_{IN} (Ω)	Z_{CL} (Ω)
2.0 GHz	7.5 + j 15.0	10.0 + j 18.0
2.3 GHz	11.0 + j 29.0	8.5 + j 13.0
3.0 GHz	65.0 + j 42.5	6.0 + j 0.0
3.5 GHz	65.0 – j 27.5	5.0 – j 8.5
4.0 GHz	53.0 – j 42.5	5.0 – j 10.0
4.4 GHz	33.0 – j 48.0	9.0 – j 22.0

TEST CIRCUIT

Ref.: Dwg. No. C125505B



All dimensions are in inches.

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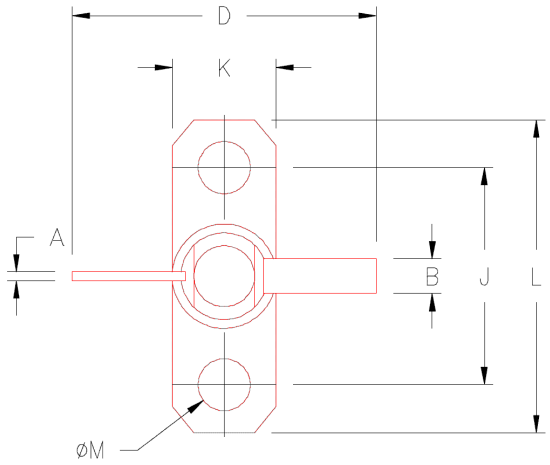
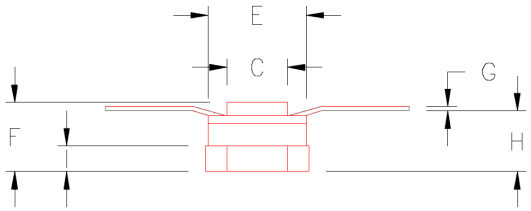
MSC4001

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			