

## MS3023

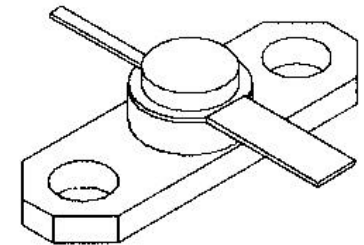
### RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

#### Features

- GOLD METALIZATION
- Pout = 3.0 W MINIMUM
- 2.0 GHz
- Gp = 7.8 dB
- INFINITE VSWR CAPABLE @ RATED CONDITIONS
- HERMETIC PACKAGE
- COMMON BASE CONFIGURATION

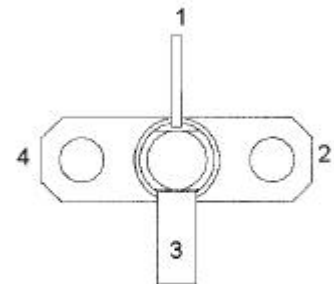
#### DESCRIPTION:

The MS3023 is a common base, hermetically sealed silicon NPN microwave power transistor. This device is designed for Class C applications in the 1 - 2 GHz frequency range. Gold metalization and emitter ballasting provide long-term reliability and superior ruggedness.



**.250 2LFL ( M210)**

#### PIN CONNECTION



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

#### ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
P <sub>DISS</sub>	Power Dissipation*	21.8	W
V <sub>CC</sub>	Collector-Supply Voltage*	35	V
I <sub>C</sub>	Device Current*	600	mA
T <sub>J</sub>	Junction Temperature	200	°C
T <sub>STG</sub>	Storage Temperature	-65 to +200	°C

#### THERMAL DATA

R <sub>TH(J-C)</sub>	Thermal Resistance Junction-case	8.0	°C/W
----------------------	----------------------------------	-----	------

\*Applies only to rated RF amplifier operation

**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)**
**STATIC**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
<b>BV<sub>CBO</sub></b>	<b>I<sub>C</sub> = 1 mA</b> <b>I<sub>E</sub> = 0 mA</b>	<b>45</b>	---	---	<b>V</b>
<b>BV<sub>CER</sub></b>	<b>I<sub>C</sub> = 5 mA</b> <b>R<sub>BE</sub> = 10 Ω</b>	<b>45</b>	---	---	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 1 mA</b> <b>I<sub>C</sub> = 0 mA</b>	<b>3.5</b>	---	---	<b>V</b>
<b>I<sub>CBO</sub></b>	<b>V<sub>CE</sub> = 28 V</b>	---	---	<b>1.0</b>	<b>mA</b>
<b>H<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5 V</b> <b>I<sub>C</sub> = 200 mA</b>	<b>15</b>	---	<b>120</b>	---

**DYNAMIC**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 2.0 GHz</b> <b>P<sub>IN</sub> = 0.5 W</b> <b>V<sub>CC</sub> = 28V</b>	<b>3.0</b>	---	---	<b>W</b>
<b>G<sub>P</sub></b>	<b>f = 2.0 GHz</b> <b>P<sub>IN</sub> = 0.5 W</b> <b>V<sub>CC</sub> = 28V</b>	<b>7.8</b>	---	---	<b>dB</b>
<b>η<sub>C</sub></b>	<b>f = 2.0 GHz</b> <b>P<sub>IN</sub> = 0.5 W</b> <b>V<sub>CC</sub> = 28V</b>	<b>35</b>	---	---	<b>%</b>
<b>C<sub>OB</sub></b>	<b>f = 1 MHz</b> <b>V<sub>CB</sub> = 28V</b>	---	---	<b>6.5</b>	<b>pF</b>

**IMPEDANCE DATA**

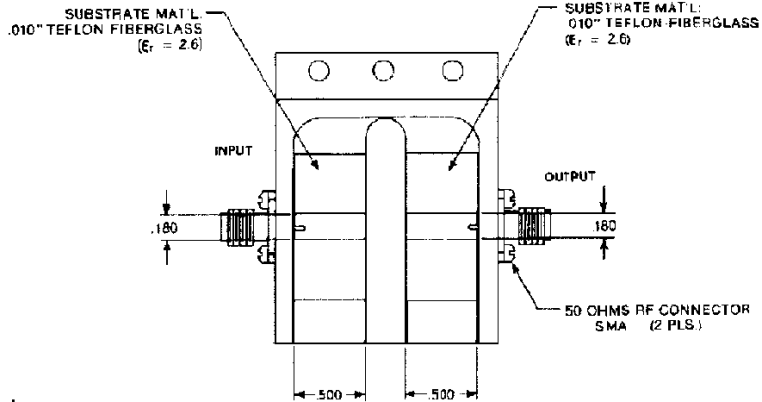
FREQ	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
<b>1.0 GHz</b>	<b>4.4 + j5.5</b>	<b>9.6 + j16.0</b>
<b>1.5 GHz</b>	<b>4.5 + j9.0</b>	<b>4.3 + j7.0</b>
<b>2.0 GHz</b>	<b>4.6 + j12.5</b>	<b>3.0 + j1.0</b>

**P<sub>IN</sub> = 0.5W    V<sub>CC</sub> = 28V**

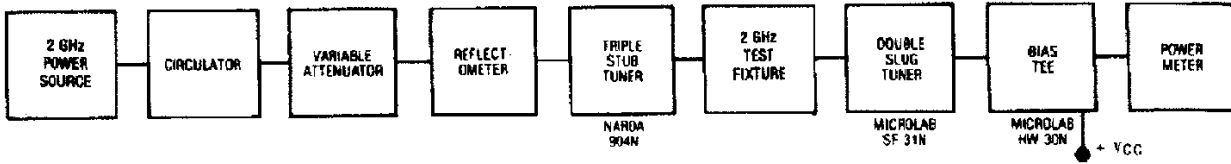
**TEST CIRCUIT**

Ref.: Dwg. No. C125518

All dimensions are in inches.  
Frequency 2.0 GHz

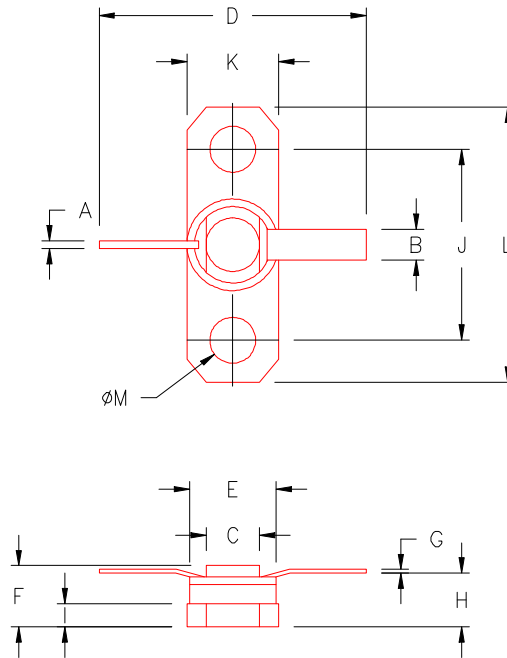


**RF Amplifier Power Output Test**



**PACKAGE MECHANICAL DATA**

**PACKAGE STYLE M210**



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.028/0,71	.032/0,81	J	.560/14,22	.570/14,48
B	.110/2,80	.117/2,97	K	.245/6,22	.255/6,48
C	.165/4,19	.185/4,70	L	.790/20,07	.810/20,57
D	.740/18,80		M	.128/3,25	.132/3,35
E	.225/5,72	.235/5,97			
F	.149/2,30	.187/4,75			
G	.003/0,08	.007/0,18			
H	.117/2,97	.133/3,38			
I	.058/1,47	.068/1,73			