

# MS2204

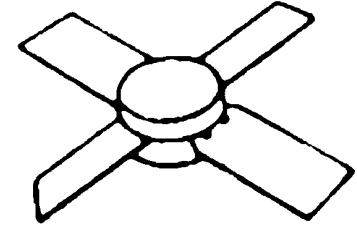
## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

### Features

- 1090 MHz
- 18 VOLTS
- $P_{OUT} = 0.6$  WATTS
- $G_P = 10.8$  dB MINIMUM
- CLASS A OPERATION
- INFINITE VSWR CAPABILITY @ RATED CONDITIONS
- COMMON EMITTER CONFIGURATION

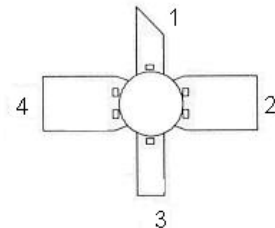
### DESCRIPTION:

The MS2204 is a common emitter, silicon NPN, microwave transistor designed for Class A driver applications under DME or IFF pulse conditions. This device is capable of withstanding an infinite load VSWR at any phase angle under rated conditions.



**.280 4LSL (M115)  
hermetically sealed**

#### PIN CONNECTION



1. COLLECTOR      3. EMITTER  
2. BASE            4. BASE

### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
$P_{DISS}$	Total Power Dissipation* (see Safe Area)		W
$I_C$	Device Current*	300	mA
$V_{CE}$	Collector-Emitter Bias Voltage*	20	V
$T_j$	Junction Temperature (Pulsed RF Operation)	+200	°C
$T_{stg}$	Storage Temperature	-65 to +150	°C

### Thermal Data

$R_{TH(J-C)}$	Junction-case Thermal Resistance	35	°C/W
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**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)**
**STATIC**

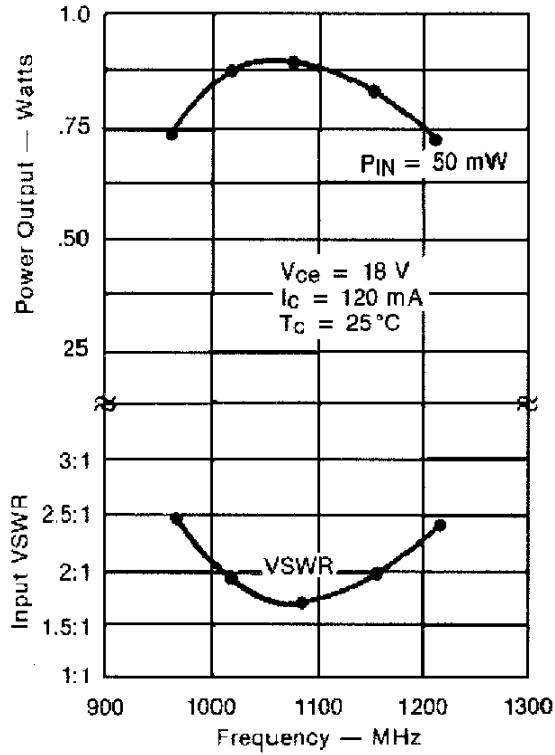
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
<b>BV<sub>CEO</sub></b>	<b>I<sub>C</sub> = 5.0 mA      I<sub>B</sub> = 0 mA</b>	<b>20</b>	<b>---</b>	<b>---</b>	<b>V</b>
<b>BV<sub>CBO</sub></b>	<b>I<sub>C</sub> = 1.0 mA      I<sub>E</sub> = 0 mA</b>	<b>50</b>	<b>---</b>	<b>---</b>	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 1.0 mA      I<sub>C</sub> = 0 mA</b>	<b>3.5</b>	<b>---</b>	<b>---</b>	<b>V</b>
<b>I<sub>CES</sub></b>	<b>V<sub>CB</sub> = 28 V      I<sub>E</sub> = 0 mA</b>	<b>---</b>	<b>---</b>	<b>1.0</b>	<b>mA</b>
<b>h<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5.0 V      I<sub>C</sub> = 100 mA</b>	<b>15</b>	<b>---</b>	<b>120</b>	<b>---</b>

**DYNAMIC**

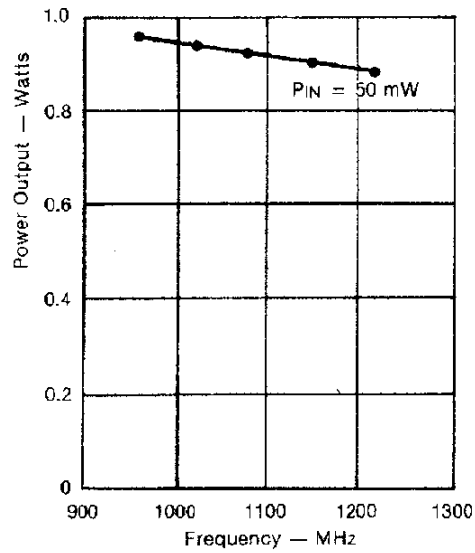
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 1025 – 1150 MHz      P<sub>IN</sub> = 50mW</b>	<b>0.6</b>			<b>W</b>
<b>G<sub>PE</sub></b>	<b>f = 1025 - 1150 MHz      P<sub>IN</sub> = 50 mW</b>	<b>10.8</b>	<b>---</b>	<b>---</b>	<b>dB</b>

**Conditions:**    **V<sub>CE</sub> = 18V**                      **I<sub>CQ</sub> = 120 mA**  
                          **Pulse width = 10mS**    **Duty Cycle = 1%**

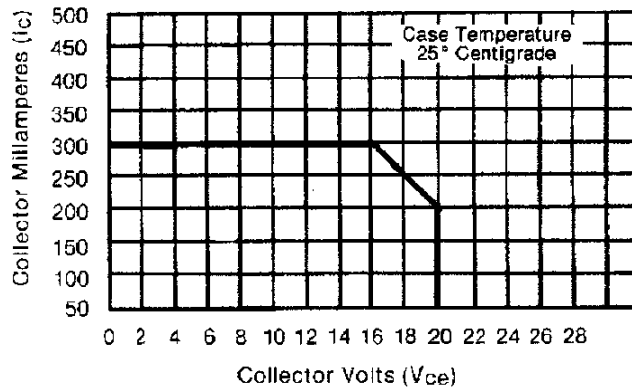
**TYPICAL PERFORMANCE  
BROADBAND POWER AMPLIFIER**



**NARROWBAND POWER  
OUTPUT vs FREQUENCY**



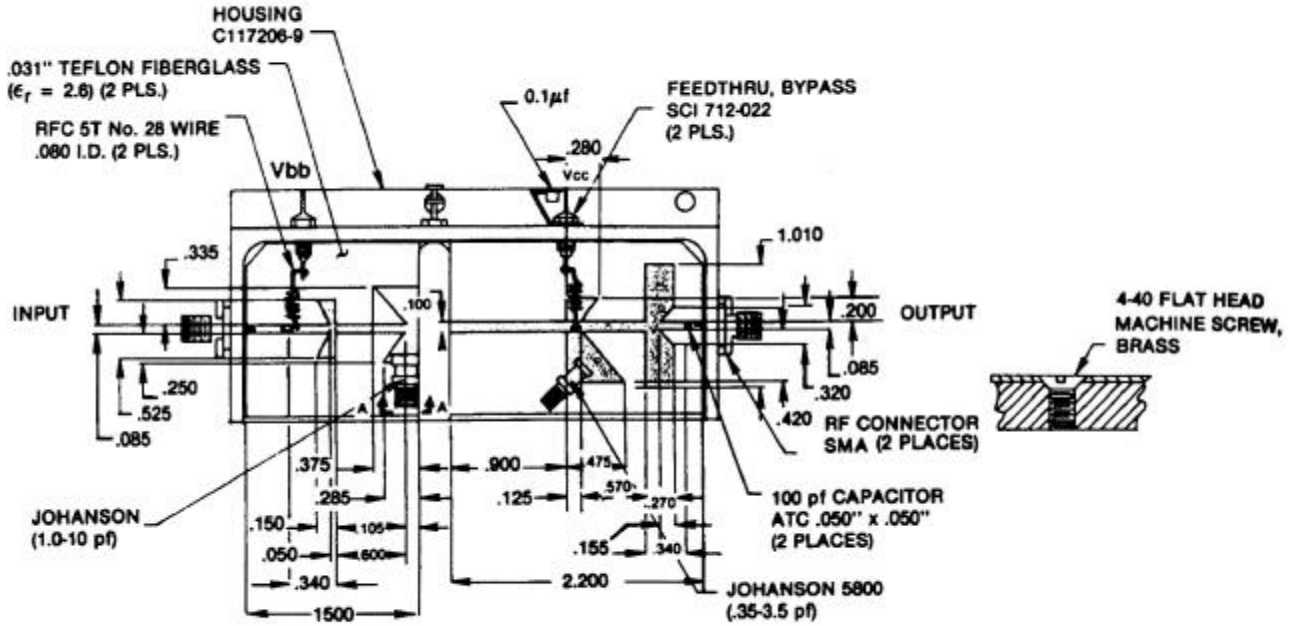
**MAXIMUM OPERATING AREA for  
FORWARD BIAS OPERATION**



**MS2204**

**TEST CIRCUIT**

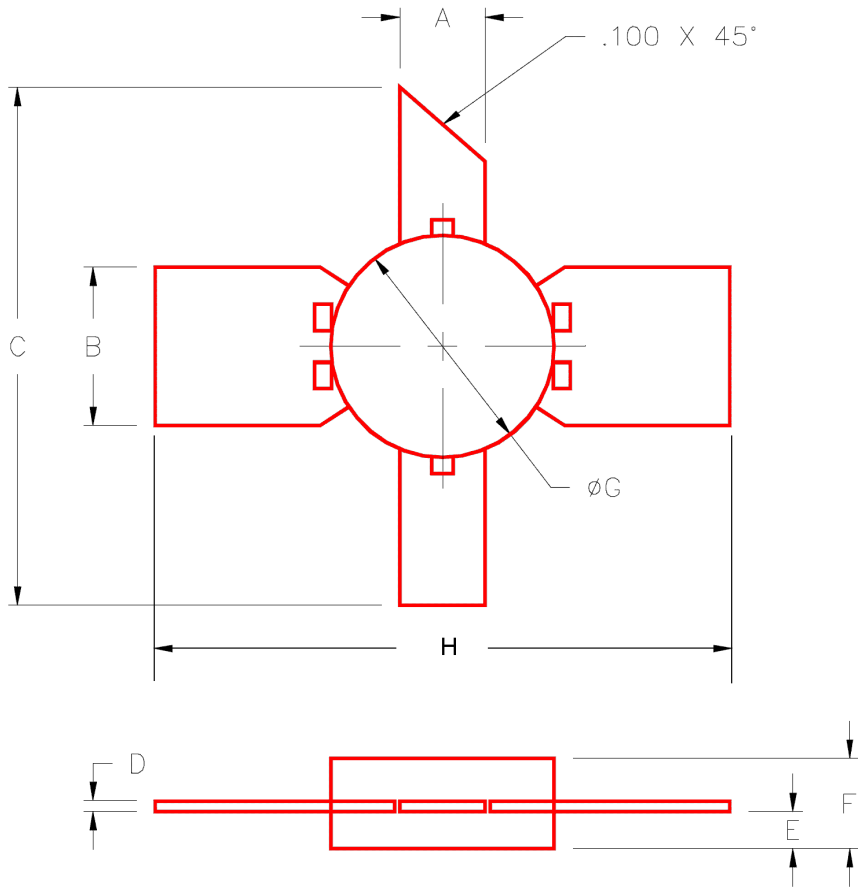
Ref.: Dwg. No. C127297



All dimensions are in inches.

**PACKAGE MECHANICAL DATA**

PACKAGE STYLE M115



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.095/2,41	.105/2,67			
B	.195/4,95	.205/5,21			
C	1.000/25,40				
D	.004/0,10	.007/0,18			
E	.050/1,27	.065/1,65			
F	.120/3,05	.135/3,43			
G	.275/6,99	.285/7,21			
H	<b>1.000/25,40</b>				