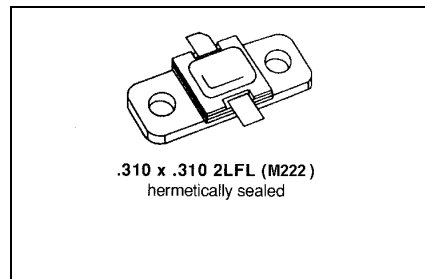


# MS2212

## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

### Features

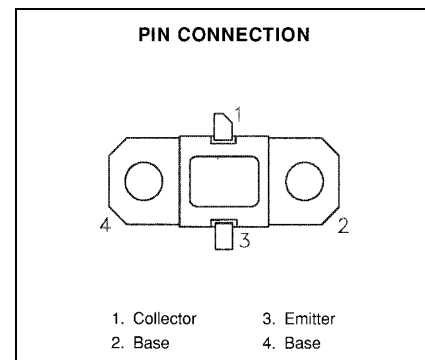
- 960-1215 MHz
- GOLD METALLIZATION
- EMITTER SITE BALLASTED
- Pout = 15W
- Gp = 8.1 dB MINIMUM
- INTERNAL IMPEDANCE MATCHING
- INFINITE VSWR CAPABILITY @ RATED CONDITIONS
- COMMON BASE CONFIGURATION



### DESCRIPTION:

The MS2212 is designed for specialized avionics applications, such as JTIDS, where maximum performance is required under a variety of pulse formats. Internal impedance matching provides superior broad band performance.

The MS2212 utilizes gold metallization and emitter ballasting to provide superior reliability and consistent performance under the most rugged pulse conditions.



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

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Collector-Supply Voltage*	32	V
I <sub>C</sub>	Device Current*	1.8	A
P <sub>DISS</sub>	Power Dissipation*	50	W
T <sub>J</sub>	Junction Temperature	+250	°C
T <sub>STG</sub>	Storage Temperature	- 65 to + 200	°C

### Thermal Data

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance*	3.0	°C/W
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\* Applies only to rated RF 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> = 10 mA      I<sub>E</sub> = 0 mA</b>	<b>55</b>	<b>----</b>	<b>----</b>	<b>V</b>
<b>BV<sub>CER</sub></b>	<b>I<sub>C</sub> = 10 mA      R<sub>BE</sub> = 10 Ω</b>	<b>55</b>	<b>----</b>	<b>----</b>	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 1 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>CE</sub> = 28 V      V<sub>BE</sub> = 0 V</b>	<b>----</b>	<b>----</b>	<b>2.0</b>	<b>mA</b>
<b>h<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5 V      I<sub>C</sub> = 500mA</b>	<b>15</b>	<b>----</b>	<b>150</b>	<b>----</b>

**DYNAMIC**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 960 - 1215 MHz    P<sub>IN</sub> = 2.3 W    V<sub>CC</sub> = 28 V</b>	<b>15</b>	<b>----</b>	<b>----</b>	<b>W</b>
<b>η<sub>C</sub></b>	<b>f = 960 - 1215 MHz    P<sub>IN</sub> = 2.3 W    V<sub>CC</sub> = 28 V</b>	<b>45</b>	<b>49</b>	<b>----</b>	<b>%</b>
<b>G<sub>P</sub></b>	<b>f = 960 - 1215 MHz    P<sub>IN</sub> = 2.3 W    V<sub>CC</sub> = 28 V</b>	<b>8.1</b>	<b>8.9</b>	<b>----</b>	<b>dB</b>

Note: Pulse Format: 6.4 μS on 6.6 μS off, repeat for 3.3 ms.  
Duty Cycle: Burst 49.2%, overall 20.8%

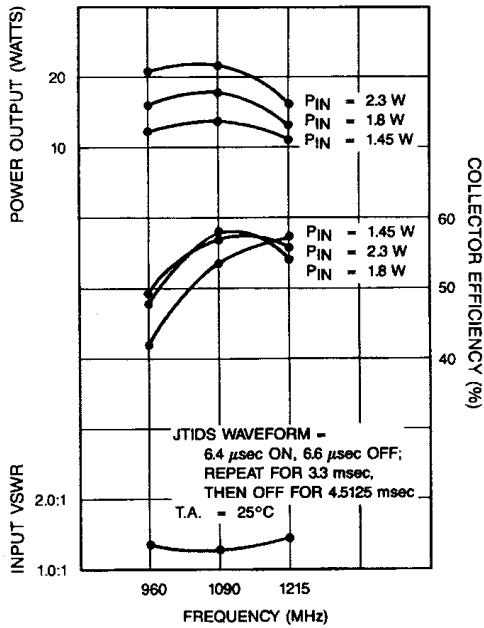
**IMPEDANCE DATA:**

FREQUENCY	Z <sub>in</sub>	Z <sub>cl</sub>
960 MHz	5.7 + j4.3	5.7 + j7.7
1090 MHz	5.8 + j2.5	4.3 + j6.5
1215 MHz	5.0 + j3.0	4.0 + j4.8

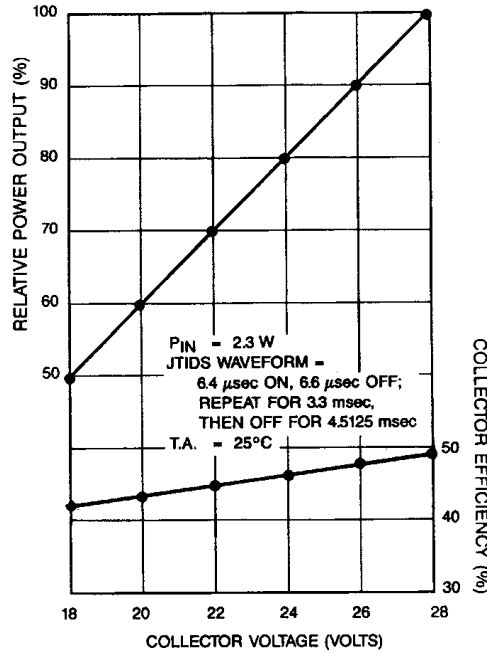
P<sub>IN</sub> = 2.3W    V<sub>CC</sub> = 28V

**TYPICAL PERFORMANCE**

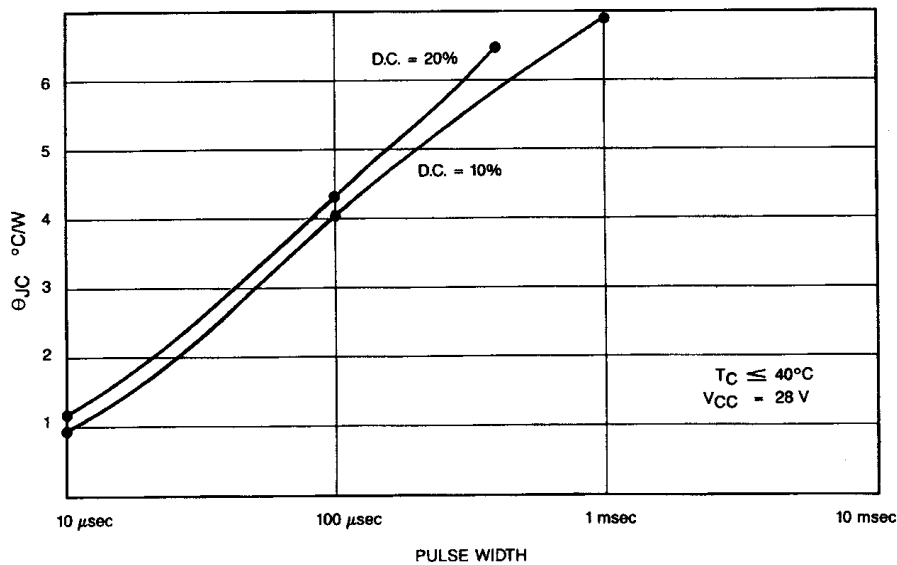
**TYPICAL BROADBAND  
POWER AMPLIFIER**



**RELATIVE POWER OUTPUT &  
COLLECTOR EFFICIENCY vs  
COLLECTOR VOLTAGE**

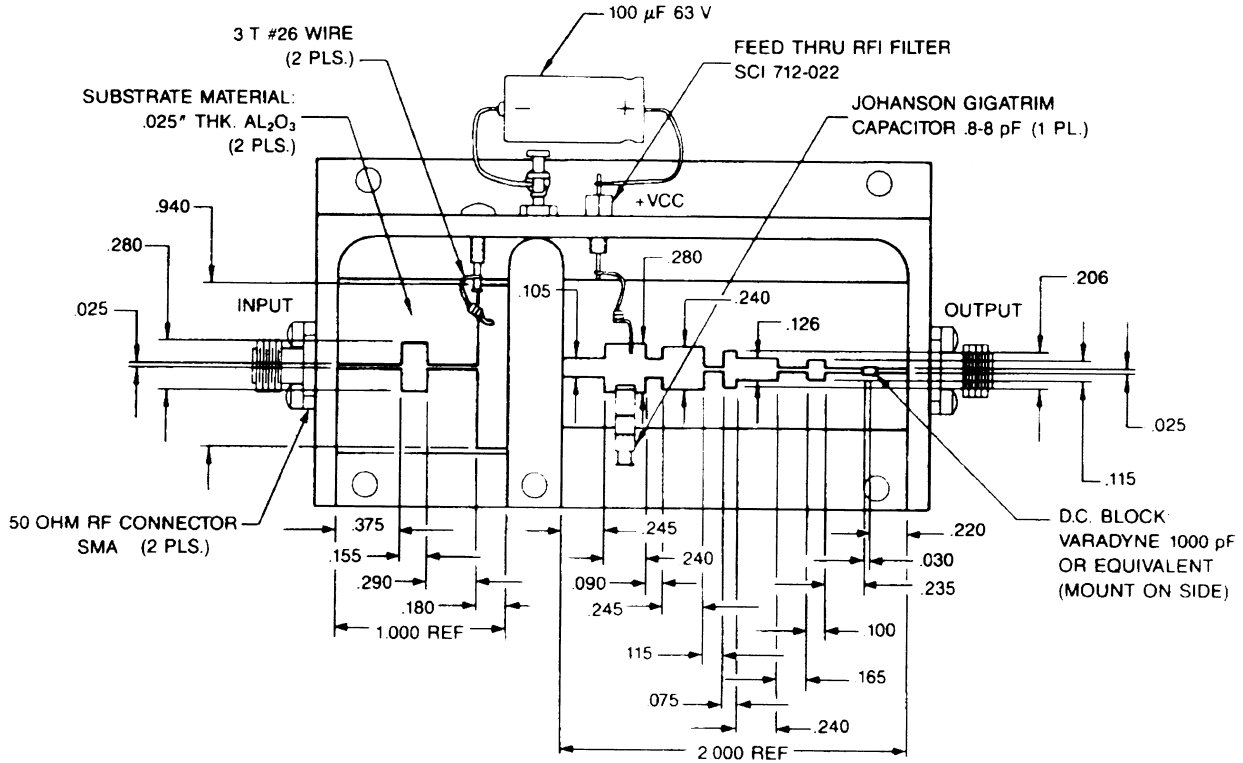


**MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & DUTY CYCLE**



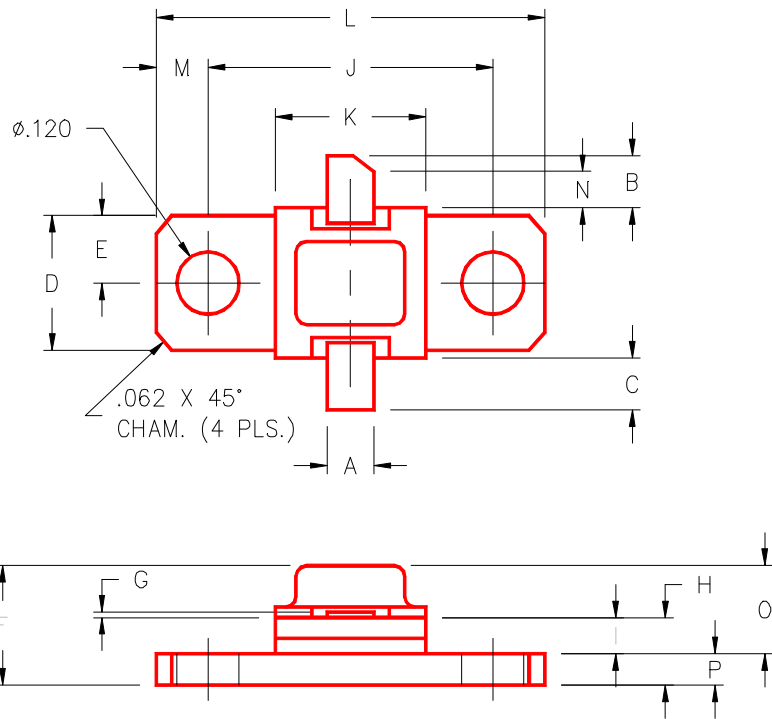
**TEST CIRCUIT**

Ref.: Dwg. No. 104-000284



**PACKAGE MECHANICAL DATA**

PACKAGE STYLE M222



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.100/2,54		J	.562/14,28	
B	.110/2,80		K	.310/7,87	
C	.110/2,80		L	.800/20,32	
D	.296/7,52		M	.119/3,02	
E	.148/3,76		N	.050/1,27	
F		.230/5,84	O		.170/4,32
G	.003/0,08	.006/0,15	P	.062/1,58	
H	.118/3,00	.131/3,33			
I	.059/1,50				