

MS2321

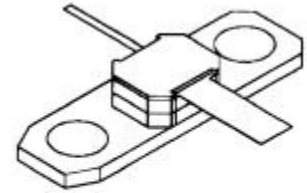
RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

Features

- DESIGNED FOR HIGH POWER PULSED IFF, DME, AND TACAN APPLICATIONS
- 20 W (typ.) IFF 1030–1090 MHz
- 15 W (min.) DME 1025–1150 MHz
- 15 W (typ.) TACAN 960–1215 MHz
- 1025 - 1150 MHz
- 50 VOLT OPERATION
- $P_{OUT} = 15$ WATTS
- $G_P = 10$ dB MINIMUM
- 20:1 VSWR CAPABILITY @ RATED CONDITIONS
- COMMON BASE CONFIGURATION

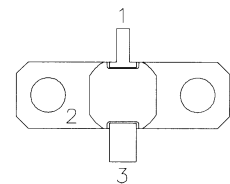
DESCRIPTION:

The MS2321 is a gold metallized, silicon NPN power transistor designed for pulsed applications with low duty cycles such as IFF, DME and TACAN. Internal impedance matching is utilized for maximum broadband performance and simplified external matching.



.250 SQ. 2LFL (M105)
hermetically sealed

PIN CONNECTION



1. Collector
2. Base
3. Emitter

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

| Symbol | Parameter | Value | Unit |
|-------------------|---------------------------|-------------|------|
| V _{CBO} | Collector-Base Voltage | 65 | V |
| V _{CEO} | Collector-Emitter Voltage | 65 | V |
| V _{EBO} | Emitter-Base Voltage | 3.5 | V |
| I _C | Device Current | 1.5 | A |
| P _{DISS} | Power Dissipation | 87.5 | W |
| T _J | Junction Temperature | +200 | °C |
| T _{STG} | Storage Temperature | -65 to +150 | °C |

Thermal Data

| | | | |
|----------------------|----------------------------------|-----|------|
| R _{TH(J-C)} | Junction-case Thermal Resistance | 2.0 | °C/W |
|----------------------|----------------------------------|-----|------|

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)
STATIC

| Symbol | Test Conditions | Value | | | Unit |
|-------------------------|--|------------|------|----------|-----------|
| | | Min. | Typ. | Max. | |
| BV_{CBO} | I_C = 10mA I_E = 0mA | 65 | --- | --- | V |
| BV_{CES} | I_C = 25mA V_{BE} = 0V | 65 | --- | --- | V |
| BV_{EBO} | I_E = 1mA I_C = 0mA | 3.5 | --- | --- | V |
| I_{CES} | V_{CE} = 50V I_E = 0mA | --- | --- | 2 | mA |

DYNAMIC

| Symbol | Test Conditions | Value | | | Unit |
|------------------------|---|-----------|------|------|-----------|
| | | Min. | Typ. | Max. | |
| P_{OUT} | f = 1025 - 1150 MHz P_{IN} = 1.5W V_{CC} = 50V | 15 | --- | --- | W |
| G_P | f = 1025 - 1150 MHz P_{IN} = 1.5W V_{CC} = 50V | 10 | --- | --- | dB |
| η_C | f = 1025 - 1150 MHz P_{IN} = 1.5W V_{CC} = 50V | 30 | --- | --- | % |

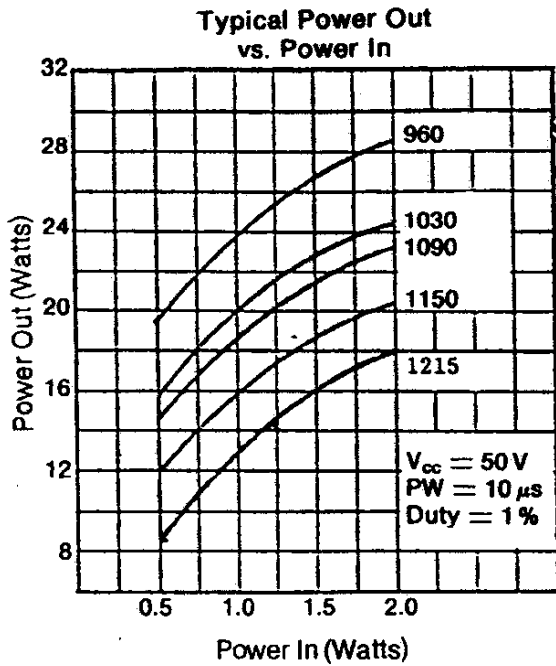
Conditions: **Pulse Width = 10 μSec** **Duty Cycle = 1%**
IMPEDANCE DATA

| FREQ | Z _{IN} (Ω) | Z _{CL} (Ω) |
|-----------------|---------------------|---------------------|
| 1025 MHz | 3.0 + j5.0 | 5.8 + j7.5 |
| 1090 MHz | 3.8 + j7.5 | 3.3 + j8.5 |
| 1150 MHz | 2.5 + j20.0 | 6.0 + j8.9 |

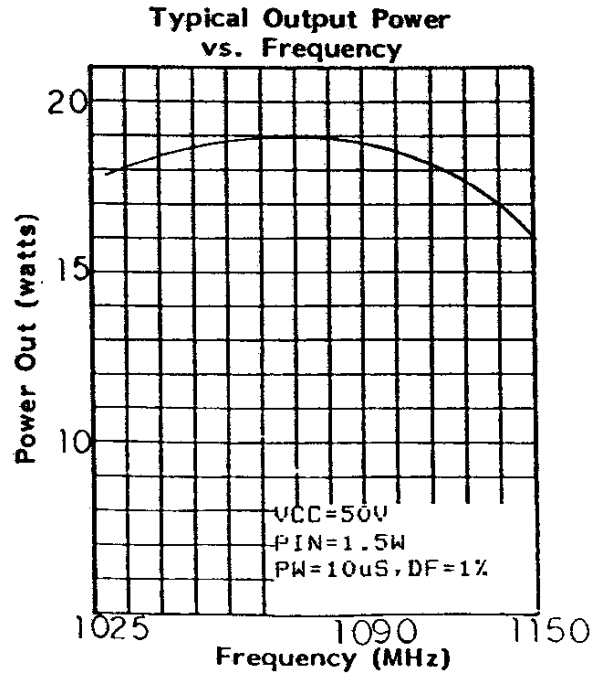
V_{CC} = 50V
P_{IN} = 1.5W

TYPICAL PERFORMANCE

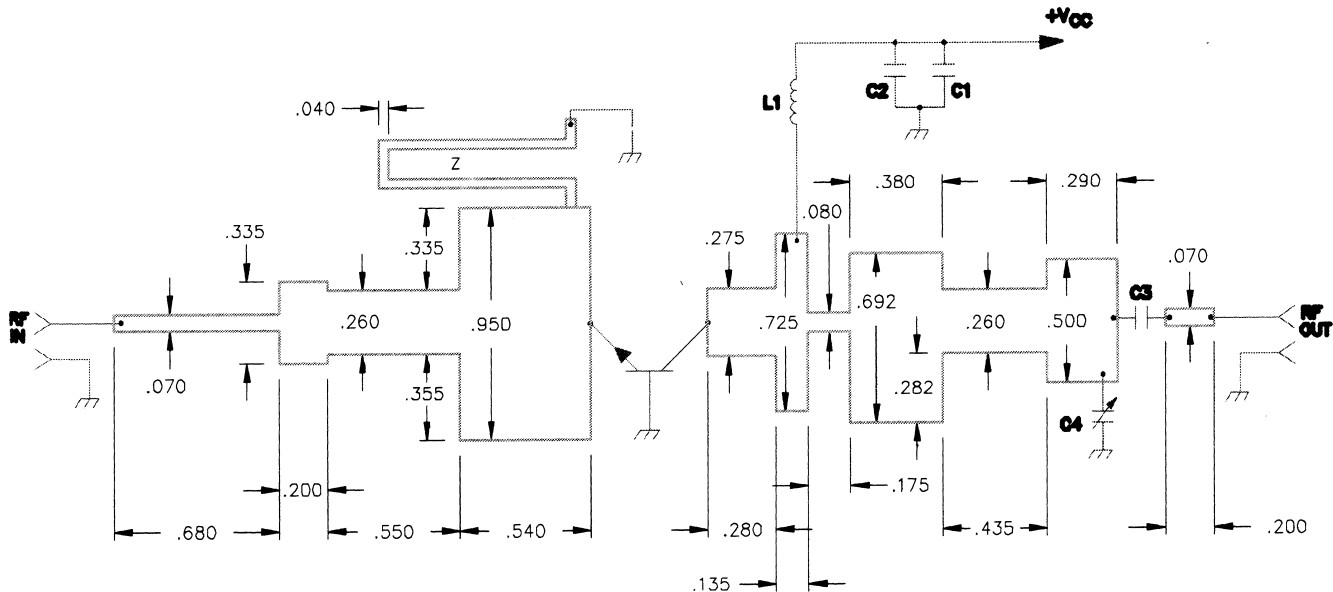
POWER OUTPUT vs POWER INPUT



POWER OUTPUT vs FREQUENCY



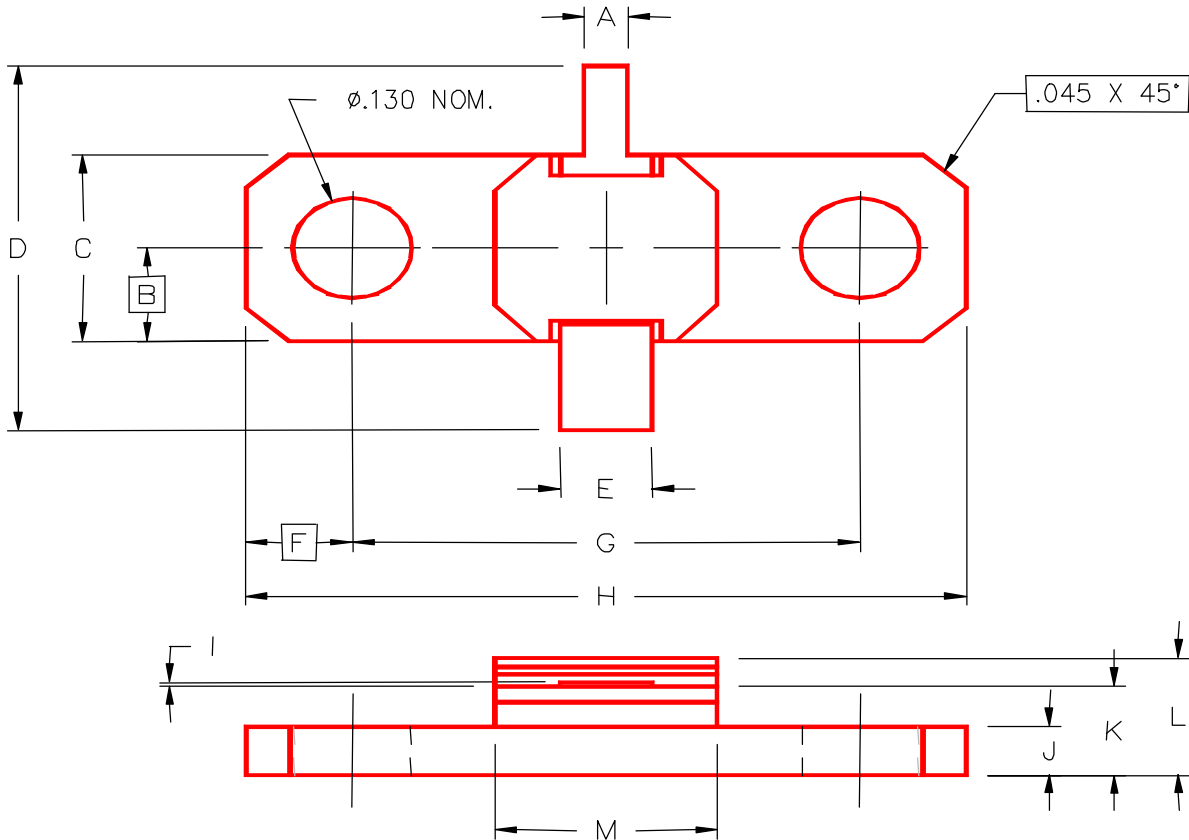
TEST CIRCUIT



- C1 : 1000 μ F Electrolytic
 C2 : 680pF Chip Capacitor
 C3 : 120pF Chip Capacitor
 C4 : 0.6 - 4.5pF Johanson Gigatrim
- L1 : 6 1/2 Turns, #22 AWG on a #30 Drill Bit
 Z : Printed Transmission Line, Length = 1.91"
- Board : Er = 2.5, .034" Thick
 All Dimensions are in Inches.

PACKAGE MECHANICAL DATA

PACKAGE STYLE M105



| | MINIMUM INCHES/MM | MAXIMUM INCHES/MM | | MINIMUM INCHES/MM | MAXIMUM INCHES/MM |
|---|----------------------|----------------------|---|----------------------|----------------------|
| A | .045/1,14 | .055/1,40 | I | .002/0,05 | .006/0,15 |
| B | .125/3,18 | | J | .057/1,45 | .067/1,70 |
| C | .245/6,22 | .255/6,48 | K | .112/2,84 | .132/3,35 |
| D | 1.235/31,37 | | L | | .175/4,45 |
| E | .095/2,41 | .105/2,67 | M | .245/6,48 | .405/10,29 |
| F | .120/3,05 | | | | |
| G | .557/14,15 | .567/14,40 | | | |
| H | .795/20,19 | .805/20,45 | | | |