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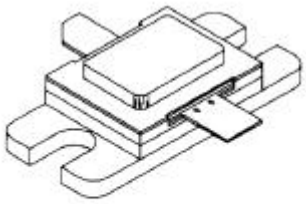
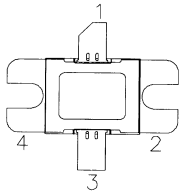
# MS2441

## RF & MICROWAVE TRANSISTORS
## L-BAND AVIONICS APPLICATIONS



.400 x .500 2LFL (M112)
hermetically sealed

PIN CONNECTION




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

## Features

- **DESIGNED FOR HIGH POWER PULSED IFF AND DME APPLICATIONS**
- **400 W (min.) DME 1025 – 1150 MHz**
- **1025 – 1150 MHz**
- **50 VOLTS**
- **$P_{OUT}$ = 400 WATTS**
- **$G_P$ = 6.5 dB MINIMUM**
- **20:1 VSWR CAPABILITY**
- **INPUT/OUTPUT MATCHING**
- **COMMON BASE CONFIGURATION**

## DESCRIPTION:

**The MS2441 is a silicon NPN power transistor designed for high peak power and low duty cycles applications such as DME and IFF. The MS2441 utilizes internal input/output impedance matching, resulting in improved broadband performance and a low thermal resistance.**

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

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 65 | V |
| $V_{CES}$ | Collector-Emitter Voltage | 65 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 3.5 | V |
| $I_C$ | Device Current | 22 | A |
| $P_{DISS}$ | Power Dissipation | 1458 | 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 | 0.12 | °C/W |

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# MS2441

## ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

### STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $BV_{CBO}$ | $I_C$ = 25mA | $I_E$ = 0mA | 65 | --- | --- | V |
| $BV_{CES}$ | $I_C$ = 50mA | $V_{BE}$ = 0mA | 65 | --- | --- | V |
| $BV_{EBO}$ | $I_E$ = 10mA | $I_C$ = 0mA | 3.5 | --- | --- | V |
| $I_{CES}$ | $V_{CE}$ = 50V | $I_E$ = 0mA | --- | --- | 25 | mA |
| $h_{FE}$ | $V_{CE}$ = 5V | $I_C$ = .25A | 5 | --- | 200 | --- |

### DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $P_{OUT}$ | f = 1025 – 1150MHz | $P_{IN}$ = 90W | $V_{CC}$ = 50V | 400 | --- | --- | W |
| $G_P$ | f = 1025 - 1150MHz | $P_{IN}$ = 90W | $V_{CC}$ = 50V | 6.5 | --- | --- | dB |

**Conditions:** Pulse Width = 10μS Duty Cycle = 1%

This device is suitable for use under other pulse width/duty cycle conditions.
Please contact the factory for specific applications assistance.

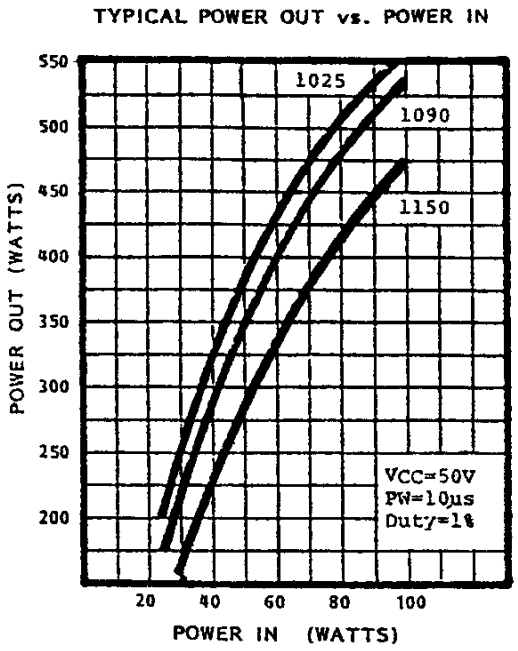
## IMPEDANCE DATA:

| FREQ | $Z_{IN}(\Omega)$ | $Z_{CL}(\Omega)$ |
|---|---|---|
| 1020 MHz | 2.89 + j4.1 | 1.38 – j3.2 |
| 1090 MHz | 2.32 + j3.4 | 1.33 – j2.8 |
| 1150 MHz | 1.99 + j2.8 | 1.26 – j2.5 |

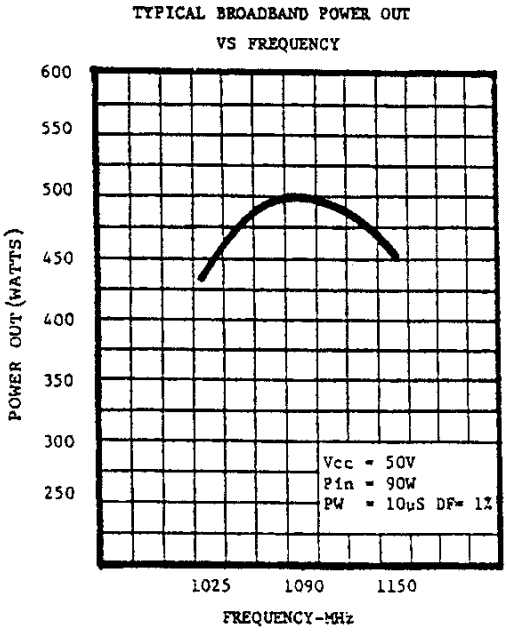
$P_{IN}$ = 90 W
$V_{CE}$ = 50 V

## TYPICAL PERFORMANCE

### POWER OUTPUT vs POWER INPUT




### POWER OUTPUT vs FREQUENCY



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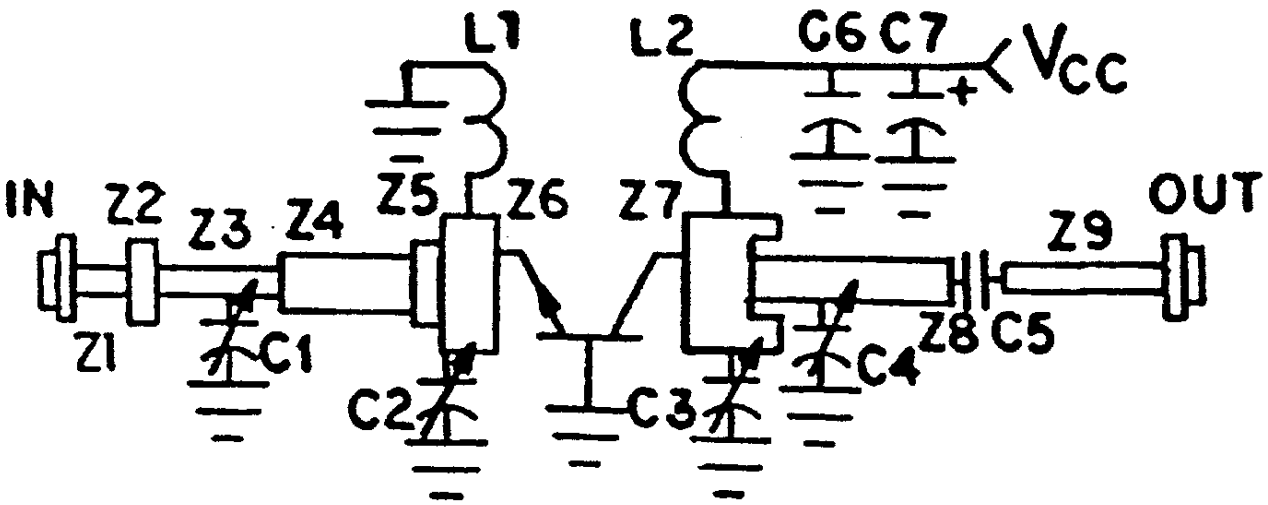
# MS2441

## TEST CIRCUIT




All Dimensions in Inches Unless Otherwise specified

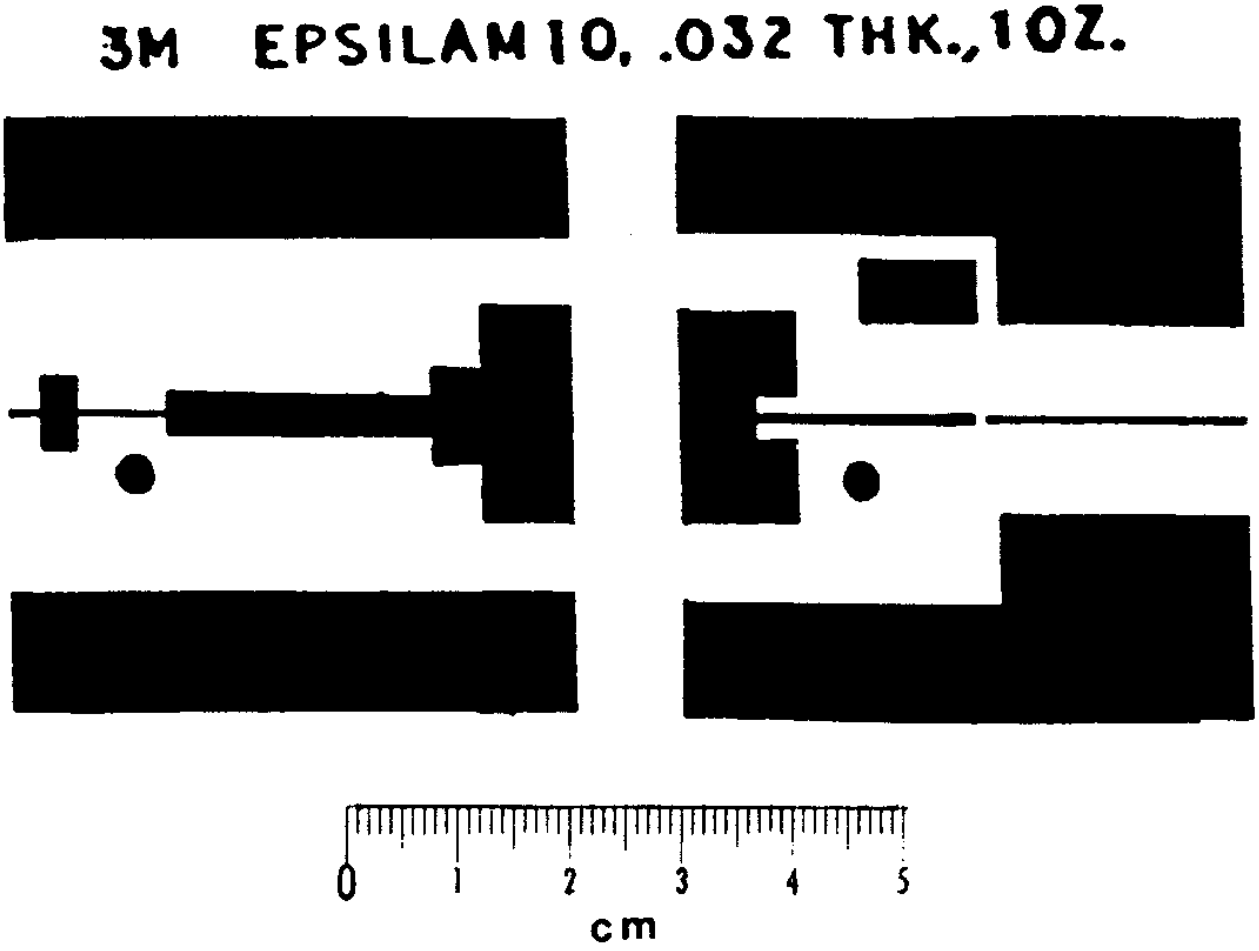
C1 : 0.4 - 2.5pF Johanson Gigatrim
C2, C3,
C4 : 0.6 - 4.5pF Johanson Gigatrim
C5 : 82pF Chip Capacitor, .055 Sq.

L1 : Loop, #18 Tinned, .36 Wide x .27 above Circuit
L2 : 4 3/4 Turns, #24 En., C.W., .075 I.D.

Z1 : 50Ω(.02 Wide)
Z2 : .250 x .120
Z3 : 50Ω .020 x .330; C1 tapped .15 from Load
Z4 : .145 x .920
Z5 : .325 x .180
Z6 : .730 x .315
Z7 : .710 x .425 with .140 x .150 cutout
Z8 : .35 x .780; C4 Tapped .36 from Cen
Z9 : 50Ω

C1, C4 : Cold End Terminated Through Eyelet.

## PC BOARD LAYOUT



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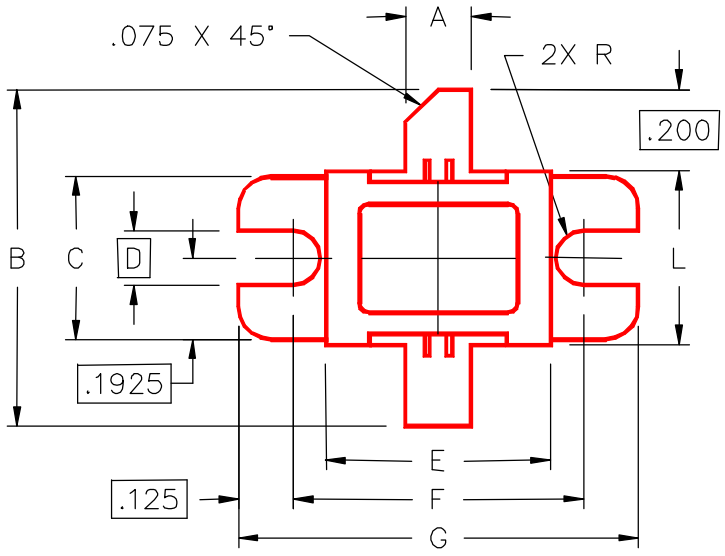
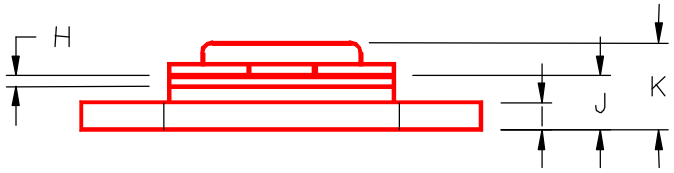
## PACKAGE MECHANICAL DATA

PACKAGE STYLE M112




| | MINIMUM INCHES/MM | MAXIMUM INCHES/MM | | MINIMUM INCHES/MM | MAXIMUM INCHES/MM |
|---|---|---|---|---|---|
| A | .145/3,68 | .155/3,93 | I | .055/1,40 | .065/1,65 |
| B | .750/19,05 | | J | .115/2,92 | .135/3,43 |
| C | .380/9,.65 | .390/9,91 | K | | .230/5,64 |
| D | .130/3,30 | | L | .395/10,03 | .410/10,41 |
| E | .495/12,57 | .505/12,83 | | | |
| F | .640/16,26 | .655/16,64 | | | |
| G | .890/22,61 | .910/23,11 | | | |
| H | .002/0,05 | .006/0,15 | | | |