ADVANCED POWER TECHNOLOGY RF®

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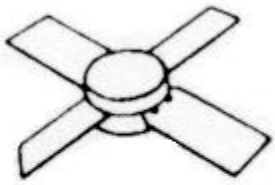
# MS2202

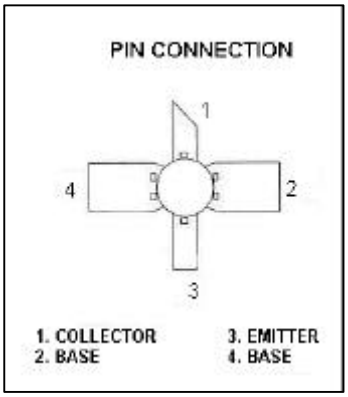
## RF & MICROWAVE TRANSISTORS
## AVIONICS APPLICATIONS



.280 4LSL (M115)
hermetically sealed

## Features

- 1025 - 1150 MHz
- 35 VOLTS
- INPUT MATCHING
- $P_{OUT}$ = 2.0 WATTS
- $G_P$ = 9.0 dB MINIMUM
- LOW THERMAL RESISTANCE
- COMMON BASE CONFIGURATION




## DESCRIPTION:

**The MS2202 is a low power Class C NPN transistor specifically designed for avionics driver applications. This device is capable of withstanding an ∞:1 load VSWR at any phase angle under full rated conditions. Low RF thermal resistance and semi-automatic bonding techniques ensure high reliability and product consistency.**

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

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $P_{DISS}$ | Power Dissipation | 10 | W |
| $I_C$ | Device Current | 250 | mA |
| $V_{CC}$ | Collector Supply Voltage | 37 | V |
| $T_J$ | Junction Temperature | 200 | °C |
| $T_{STG}$ | Storage Temperature | -65 to +200 | °C |

## Thermal Data

| | | | |
|---|---|---|---|
| $R_{TH(J-C)}$ | Junction-case Thermal Resistance | 10.0 | °C/W |

# ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

## STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $BV_{CBO}$ | $I_C$ = 1mA | $I_E$ = 0 mA | 45 | --- | --- | V |
| $BV_{EBO}$ | $I_E$ = 1 mA | $I_C$ = 0 mA | 3.5 | --- | --- | V |
| $BV_{CER}$ | $I_C$ = 5 mA | $R_{BE}$ = 10Ω | 45 | --- | --- | V |
| $I_{CES}$ | $V_{CE}$ = 35 V | | --- | --- | 1.0 | mA |
| HFE | $V_{CE}$ = 5 V | $I_C$ = 100 mA | 30 | --- | 300 | --- |

## DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $P_{OUT}$ | f = 1025 - 1150 MHz | $P_{IN}$ = 0.25W | $V_{CC}$ = 35V | 2.0 | --- | --- | W |
| $\eta_C$ | f = 1025 - 1150 MHz | $P_{IN}$ = 0.25W | $V_{CC}$ = 35V | 35 | --- | --- | % |
| $G_P$ | f = 1025 - 1150 MHz | $P_{IN}$ = 0.25W | $V_{CC}$ = 35V | 9.0 | --- | --- | dB |

Conditions Pulse Width = 10μSec Duty Cycle = 1%

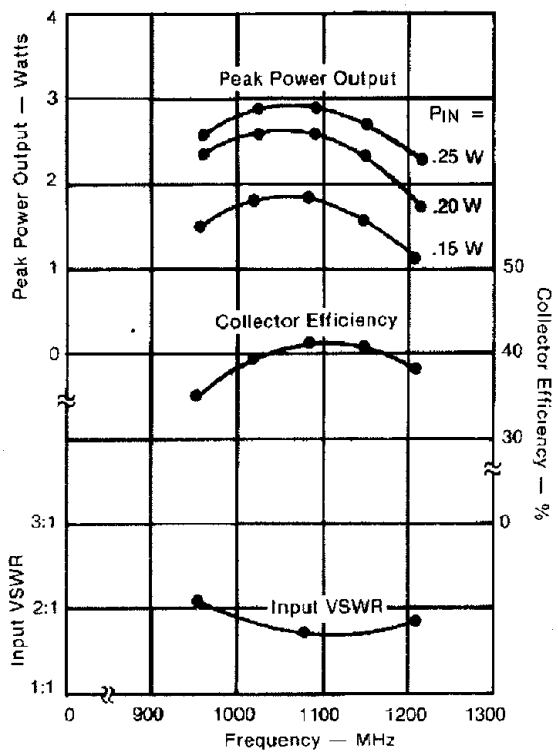
## IMPEDANCE DATA

| FREQ | $Z_{IN}(\Omega)$ | $Z_{CL}(\Omega)$ |
|---|---|---|
| 960 MHz | 10.7 + j7.0 | 26.5 + j41.0 |
| 1025 MHz | 15.3 + j10.0 | 26.0 + j43.5 |
| 1090 MHz | 17.8 + j10.2 | 23.5 + j44.0 |
| 1150 MHz | 16.8 + j15.0 | 20.5 + j41.5 |
| 1215 MHz | 14.4 + j13.0 | 17.5 + j37.5 |

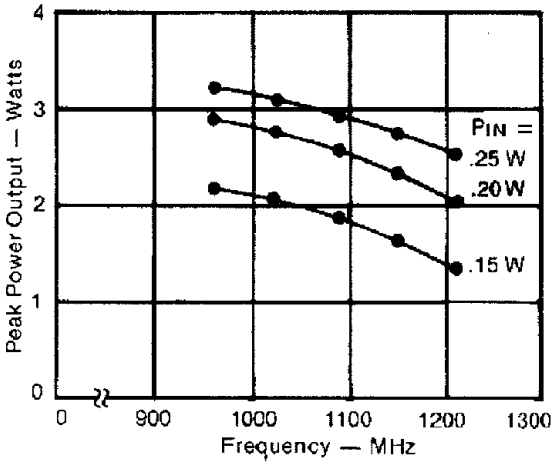
$P_{IN}$ = 0.25 W
$V_{CC}$ = 35 V

# TYPICAL PERFROMANCE

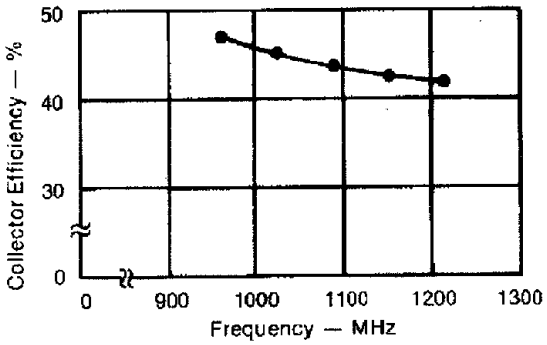
### BROADBAND POWER AMPLIFIER



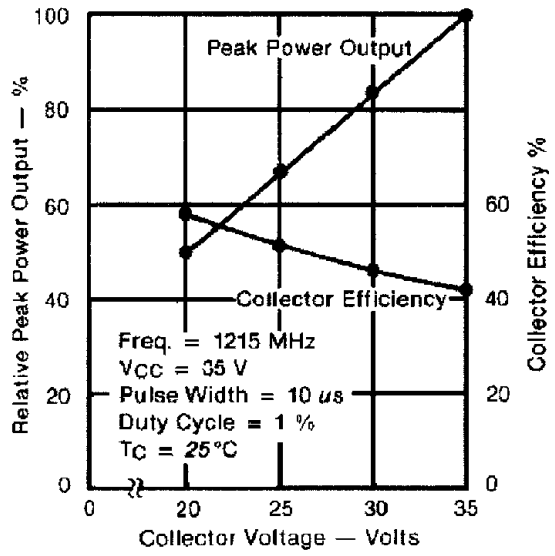

### NARROWBAND PEAK POWER OUTPUT vs FREQUENCY




### NARROWBAND COLLECTOR EFFICIENCY vs FREQUENCY

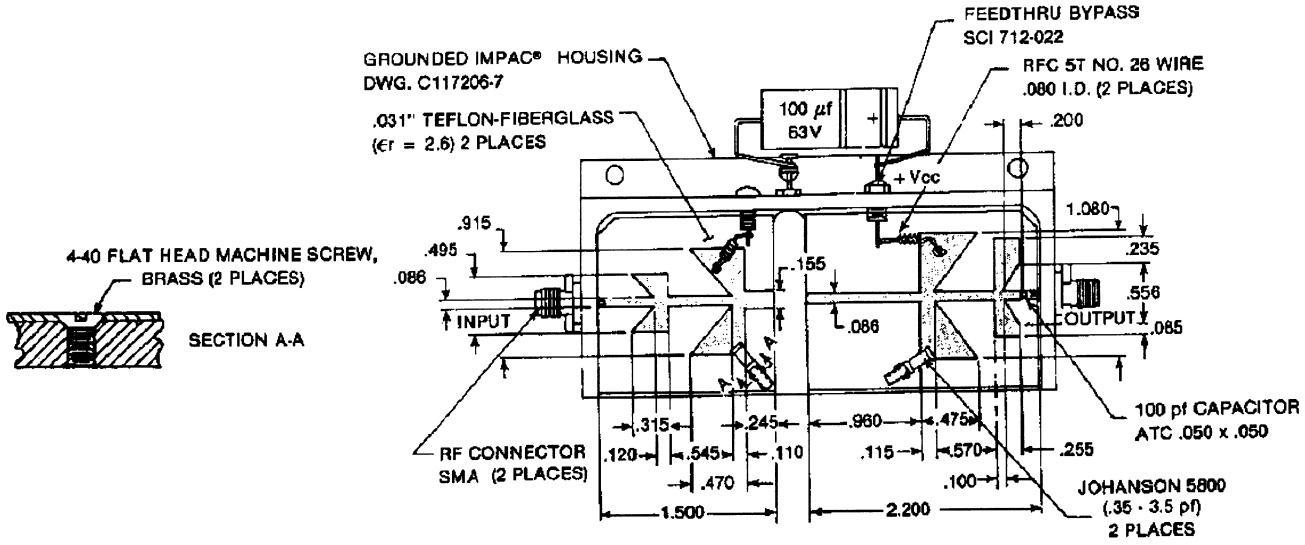



### RELATIVE PEAK POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE



## TEST CIRCUIT

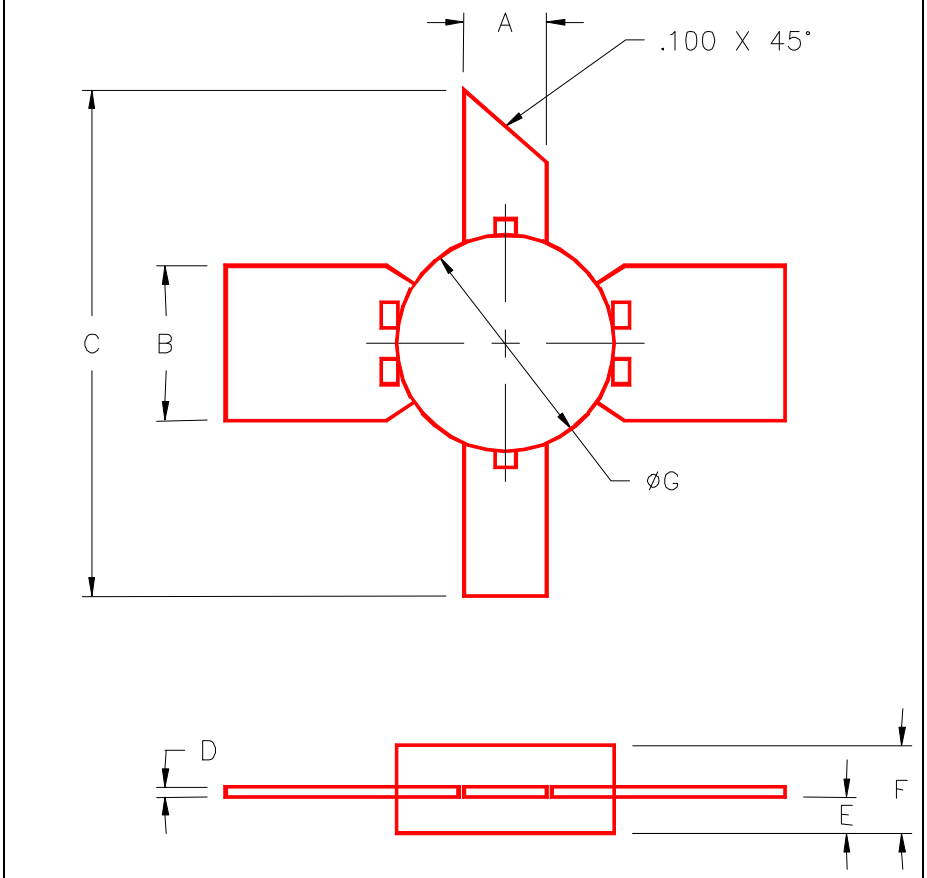
Ref.: Dwg. No. C127298




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 | | | |
| | | | | | |