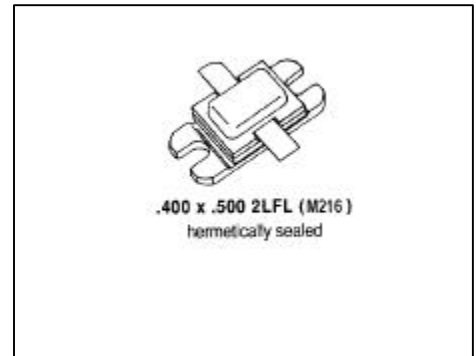


# MS2215

## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

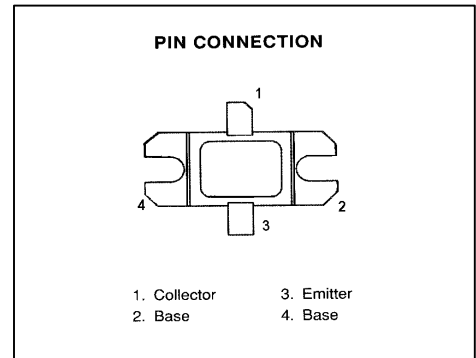
### Features

- 960 – 1215 MHz
- 35 VOLTS
- INPUT/OUTPUT MATCHING
- $P_{OUT} = 150$  WATTS
- $G_P = 7.5$  dB MINIMUM
- COMMON BASE CONFIGURATION



### DESCRIPTION:

The MS2215 is designed for specialized avionics applications, including Mode-S, TCAS and JTIDS where power is provided under pulse formats utilizing short pulse widths and high burst or overall duty cycles.



### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ )

| Symbol     | Parameter                                  | Value       | Unit        |
|------------|--|-------------|-------------|
| $P_{DISS}$ | Power Dissipation                          | 300         | W           |
| $I_C$      | Device Current                             | 16.5        | A           |
| $V_{CC}$   | Collector - Supply Voltage                 | 35          | V           |
| $T_J$      | Junction Temperature (RF Pulsed Operation) | 250         | $^{\circ}C$ |
| $T_{STG}$  | Storage Temperature                        | -65 to +200 | $^{\circ}C$ |

### Thermal Data

|               |                                  |      |               |
|---------------|----------------------------------|------|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 0.57 | $^{\circ}C/W$ |
|---------------|----------------------------------|------|---------------|

**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)  
STATIC**

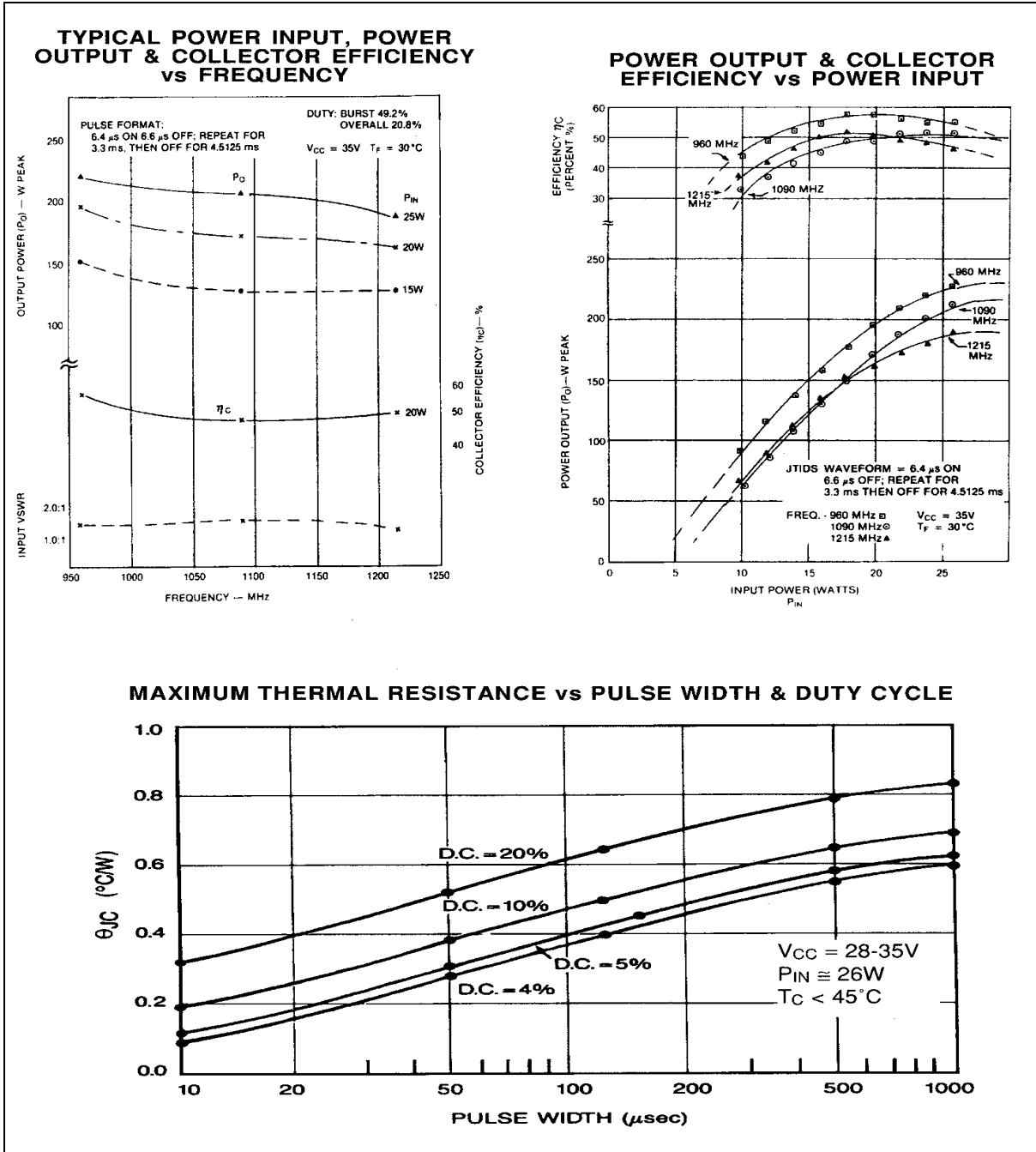
| Symbol                  | Test Conditions               |                             | Value      |      |            | Unit      |
|-------------------------|-------------------------------|-----------------------------|------------|------|------------|-----------|
|                         |                               |                             | Min.       | Typ. | Max.       |           |
| <b>BV<sub>CBO</sub></b> | <b>I<sub>C</sub> = 60 mA</b>  | <b>I<sub>E</sub> = 0 mA</b> | <b>55</b>  | ---- | ----       | <b>V</b>  |
| <b>BV<sub>EBO</sub></b> | <b>I<sub>E</sub> = 10 mA</b>  | <b>I<sub>C</sub> = 0 mA</b> | <b>3.5</b> | ---- | ----       | <b>V</b>  |
| <b>BV<sub>CES</sub></b> | <b>I<sub>C</sub> = 100 mA</b> |                             | <b>55</b>  | ---- | ----       | <b>V</b>  |
| <b>I<sub>CES</sub></b>  | <b>V<sub>CE</sub> = 35 V</b>  |                             | ----       | ---- | <b>25</b>  | <b>mA</b> |
| <b>h<sub>FE</sub></b>   | <b>V<sub>CE</sub> = 5V</b>    | <b>I<sub>C</sub> = 5 A</b>  | <b>20</b>  | ---- | <b>200</b> | ----      |

**DYNAMIC**

| Symbol                 | Test Conditions           |                                |                              | Value      |      |      | Unit      |
|------------------------|---------------------------|--------------------------------|------------------------------|------------|------|------|-----------|
|                        |                           |                                |                              | Min.       | Typ. | Max. |           |
| <b>P<sub>OUT</sub></b> | <b>f = 960 - 1215 MHz</b> | <b>P<sub>IN</sub> = 26.7 W</b> | <b>V<sub>CC</sub> = 35 V</b> | <b>150</b> | ---- | ---- | <b>W</b>  |
| <b>η<sub>C</sub></b>   | <b>f = 960 - 1215 MHz</b> | <b>P<sub>IN</sub> = 26.7 W</b> | <b>V<sub>CC</sub> = 35 V</b> | <b>45</b>  | ---- | ---- | <b>%</b>  |
| <b>G<sub>P</sub></b>   | <b>f = 960 - 1215 MHz</b> | <b>P<sub>IN</sub> = 26.7 W</b> | <b>V<sub>CC</sub> = 35 V</b> | <b>7.5</b> | ---- | ---- | <b>dB</b> |

**Conditions:**    **Pulse Format:**    6.4 μs on 6.6 μs off, repeat for 3.3 μs, then off for 4.5125 μs.  
**Duty Cycle:**        **Burst 49.2%, Overall 20.8%**

**TYPICAL PERFORMANCE**



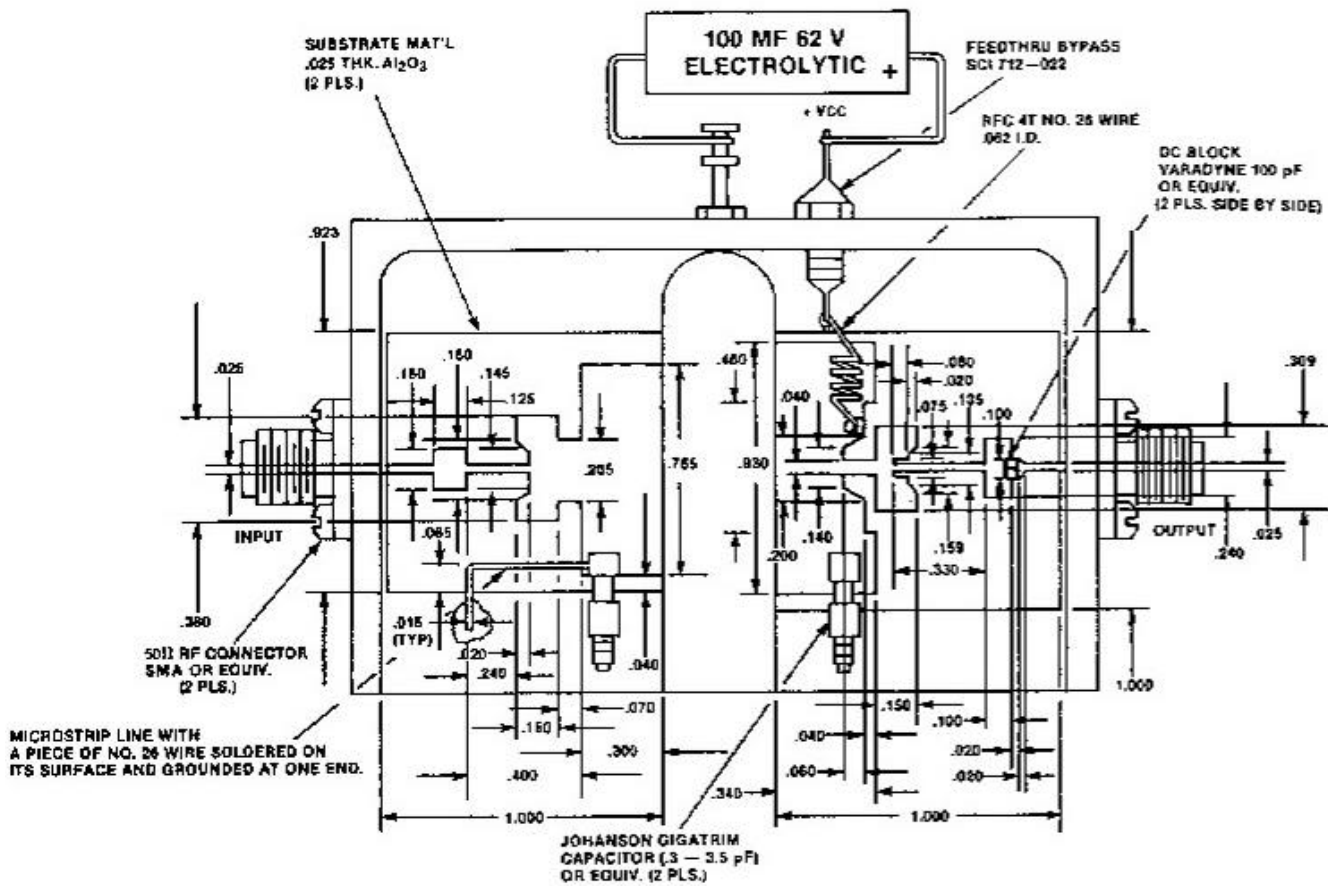
**MS2215**

**IMPEDANCE DATA:**

| FREQUENCY | Z <sub>IN</sub> | Z <sub>CL</sub> |
|-----------|-----------------|-----------------|
| 960 MHz   | 2.1 + j3.8      | 3.8 - j3.6      |
| 1050 MHz  | 1.2 + j2.5      | 2.5 - j2.0      |
| 1215 MHz  | 1.7 + j2.4      | 2.0 - j2.5      |

Pin = 26.7 W  
Vcc = 35V

**TEST CIRCUIT**



**MS2215**

**PACKAGE MECHANICAL DATA**

