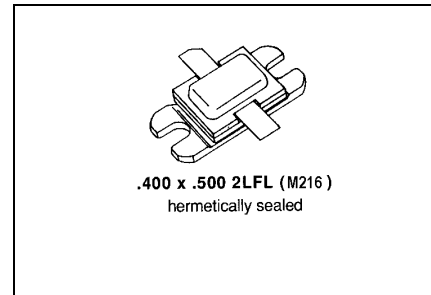


# MS2210

## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

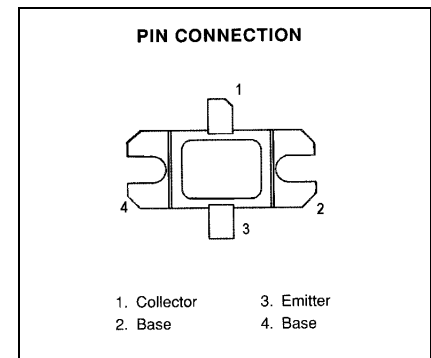
### Features

- 255 MHz BANDWIDTH
- GOLD METALLIZATION
- EMITTER SITE BALLASTED
- Pout = 300W MINIMUM
- Gp = 7.0 dB
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- 15:1 VSWR CAPABILITY



### DESCRIPTION:

The MS2210 avionics power transistor is a broadband, high peak pulse power device specifically designed for avionics applications requiring broad bandwidth with moderate duty cycle and pulse width constraints such as ground/ship DME/TACAN. The MS2210 is also designed for specialized applications where reduced power is provided under pulse formats utilizing short pulse widths and high burst or overall duty cycles



This device is capable of withstanding 15:1 VSWR mismatch load conditions at any phase angle under full rated conditions.

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

| Symbol            | Parameter                 | Value         | Unit |
|-------------------|---------------------------|---------------|------|
| P <sub>DISS</sub> | Power Dissipation*        | 940           | W    |
| I <sub>C</sub>    | Device Current*           | 24            | A    |
| V <sub>CC</sub>   | Collector-Supply Voltage* | 50            |      |
| T <sub>J</sub>    | Junction Temperature      | +200          | °C   |
| T <sub>STG</sub>  | Storage Temperature       | - 65 to + 200 | °C   |

### Thermal Data

|                      |                                   |      |      |
|----------------------|-----------------------------------|------|------|
| R <sub>TH(j-c)</sub> | Junction-Case Thermal Resistance* | 0.16 | °C/W |
|----------------------|-----------------------------------|------|------|

- 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> = 50 mA</b> | <b>I<sub>E</sub> = 0 mA</b>  | <b>65</b>  | ---- | ----      | <b>V</b>  |
| <b>BV<sub>EBO</sub></b> | <b>I<sub>E</sub> = 15 mA</b> | <b>I<sub>C</sub> = 0 mA</b>  | <b>3.0</b> | ---- | ----      | <b>V</b>  |
| <b>BV<sub>CER</sub></b> | <b>I<sub>C</sub> = 50 mA</b> | <b>R<sub>BE</sub> = 10 Ω</b> | <b>65</b>  | ---- | ----      | <b>V</b>  |
| <b>I<sub>CES</sub></b>  | <b>V<sub>CE</sub> = 50 V</b> |                              | ----       | ---- | <b>30</b> | <b>mA</b> |
| <b>h<sub>FE</sub></b>   | <b>V<sub>CE</sub> = 5 V</b>  | <b>I<sub>C</sub> = 5A</b>    | <b>10</b>  | ---- | ---       | ----      |

**DYNAMIC**

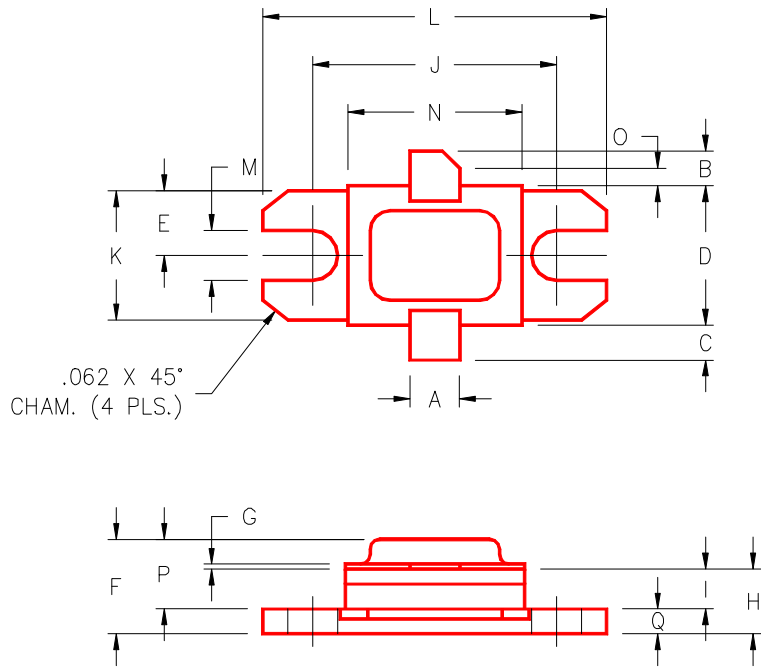
| Symbol                 | Test Conditions                        |                              |                              | Value      |            |      | Unit      |
|------------------------|--|------------------------------|------------------------------|------------|------------|------|-----------|
|                        |  |                              |                              | Min.       | Typ.       | Max. |           |
| <b>P<sub>OUT</sub></b> | <b>f = 960 - 1215 MHz</b>              | <b>P<sub>IN</sub> = 60 W</b> | <b>V<sub>CC</sub> = 50 V</b> | <b>300</b> | <b>330</b> | ---- | <b>W</b>  |
| <b>η<sub>C</sub></b>   | <b>f = 960 - 1215 MHz</b>              | <b>P<sub>IN</sub> = 60 W</b> | <b>V<sub>CC</sub> = 50 V</b> | <b>38</b>  | <b>45</b>  | ---- | <b>%</b>  |
| <b>G<sub>P</sub></b>   | <b>f = 960 - 1215 MHz</b>              | <b>P<sub>IN</sub> = 60 W</b> | <b>V<sub>CC</sub> = 50 V</b> | <b>7.0</b> | <b>7.4</b> | ---- | <b>dB</b> |
| Note:                  | Pulse Format: 10 μS<br>Duty Cycle: 10% |                              |                              |            |            |      |           |

**IMPEDANCE DATA**

| FREQ     | Z <sub>IN</sub> (Ω) | Z <sub>CL</sub> (Ω) |
|----------|---------------------|---------------------|
| 960 MHz  | 2.0 + j3.6          | 1.7 - j2.2          |
| 1090 MHz | 3.5 + j1.7          | 2.0 - j1.7          |
| 1215 MHz | 1.6 + j0.5          | 1.8 - j2.0          |

**PACKAGE MECHANICAL DATA**

PACKAGE STYLE M216



|   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |
|---|----------------------|----------------------|---|----------------------|----------------------|
| A | .140/3,56            |                      | J | .700/17,78           |                      |
| B | .110/2,80            |                      | K | .386/9,80            |                      |
| C | .110/2,80            |                      | L | .900/22,86           |                      |
| D | .395/10,03           | .407/10,34           | M | .120/3,05            |                      |
| E | .193/4,90            |                      | N | .500/12,70           |                      |
| F |                      | .230/5,84            | O | .050/1,27            |                      |
| G | .003/0,08            | .006/0,15            | P |                      | .170/4,32            |
| H | .118/3,00            | .131/3,33            | Q | .062/1,58            |                      |
| I | .063/1,60            |                      |   |                      |                      |