

## MS2205

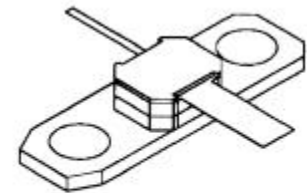
### RF AND MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

#### Features

- DESIGNED FOR HIGH POWER PULSED IFF, DME, TACAN APPLICATIONS
- 6.0 W (typ.) IFF 1030–1090 MHz
- 5.0 W (min.) DME 1025–1150 MHz
- 4.0 W (typ.) TACAN 960–1215 MHz
- GAIN 9 dB (typ.)
- VSWR  $\infty$ :1 AT RATED CONDITIONS
- LOW THERMAL RESISTANCE
- EMITTER BALLASTED
- INPUT MATCHED COMMON-BASE CONFIGURATION

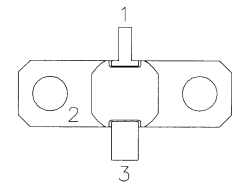
#### DESCRIPTION:

The MS2205 is a gold metallized, silicon NPN power transistor designed for pulsed applications with low duty cycles, such as IFF, DME, and TACAN. It can withstand infinite VSWR under rated conditions. The MS2205 is housed in the .250" input-matched stripline package, resulting in improved broadband performance and low thermal resistance.



**.250 SQ. 2LFL (M105)**  
hermetically sealed

PIN CONNECTION



1. Collector  
2. Base  
3. Emitter

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

| Symbol     | Parameter                                             | Value       | Unit               |
|------------|-------------------------------------------------------|-------------|--------------------|
| $V_{CBO}$  | Collector-Base Voltage                                | 45          | V                  |
| $V_{CES}$  | Collector-Emitter Voltage                             | 45          | V                  |
| $V_{EBO}$  | Emitter-Base Voltage                                  | 3.5         | V                  |
| $I_C$      | Device Current*                                       | 1.0         | A                  |
| $P_{DISS}$ | Total Power Dissipation* ( $T_C = ^{\circ}\text{C}$ ) | 21.9        | W                  |
| $T_j$      | Junction Temperature                                  | +200        | $^{\circ}\text{C}$ |
| $T_{stg}$  | Storage Temperature                                   | -65 to +150 | $^{\circ}\text{C}$ |

#### THERMAL DATA

|               |                                   |     |                      |
|---------------|-----------------------------------|-----|----------------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance* | 8.0 | $^{\circ}\text{C/W}$ |
|---------------|-----------------------------------|-----|----------------------|

\*Applies only to rated RF amplifier operation

**ELECTRICAL SPECIFICATIONS ( $T_{CASE} = 25^{\circ}C$ )**
**STATIC**

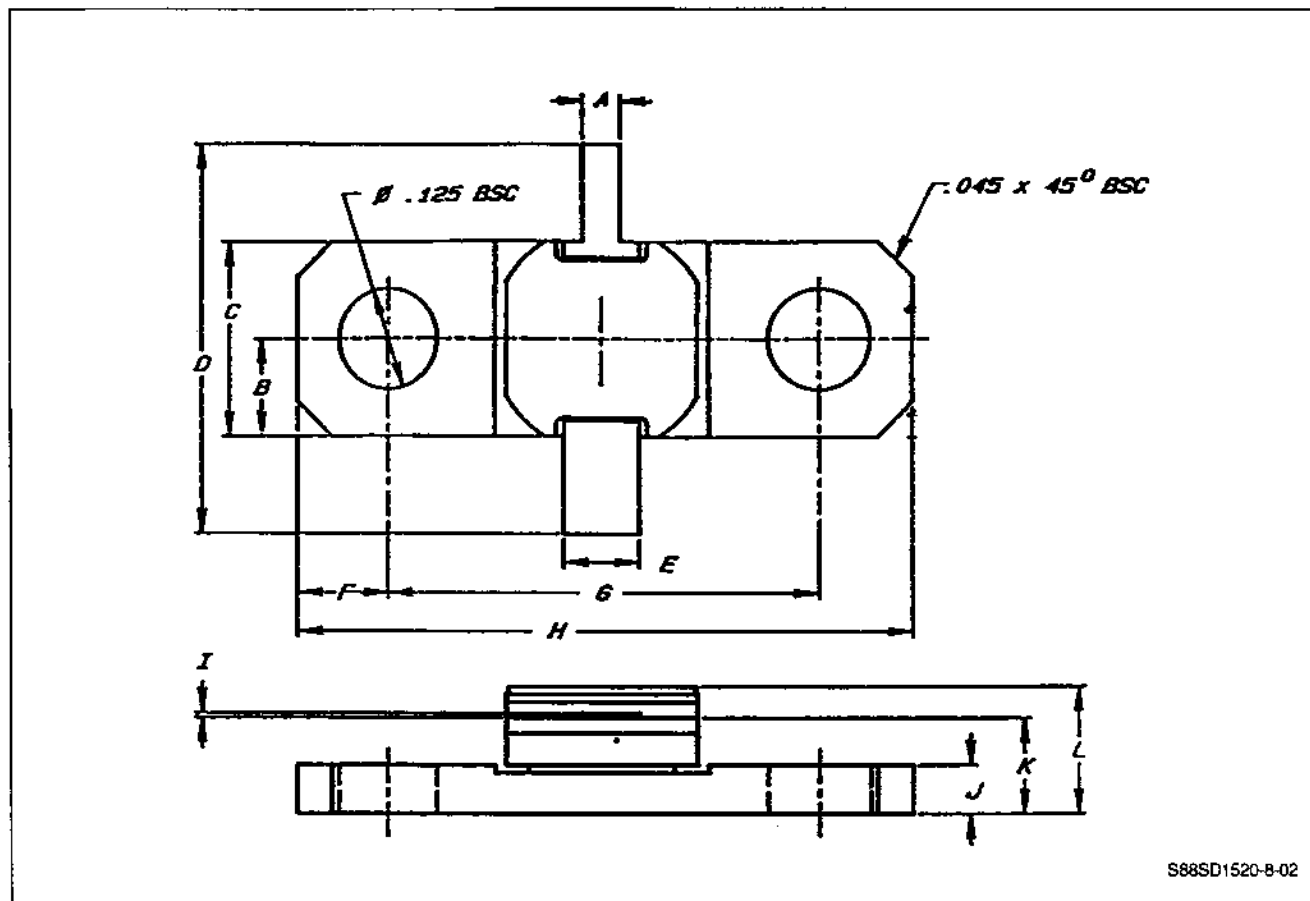
| Symbol     | Test Conditions                             | Value |      |      | Unit |
|------------|---------------------------------------------|-------|------|------|------|
|            |                                             | Min.  | Typ. | Max. |      |
| $BV_{CBO}$ | $I_C = 1\text{ mA}$ $I_E = 0$               | 45    | ---  | ---  | V    |
| $BV_{CEO}$ | $I_C = 5\text{ mA}$ $I_B = 0$               | 45    | ---  | ---  | V    |
| $BV_{CES}$ | $I_C = 5\text{ mA}$ $V_{BE} = 0$            | 45    | ---  | ---  | V    |
| $BV_{EBO}$ | $I_E = 1\text{ mA}$ $I_C = 0$               | 3.5   | ---  | ---  | V    |
| $I_{CES}$  | $V_{CE} = 28\text{ V}$ $I_E = 0\text{ mA}$  | ---   | ---  | 1    | mA   |
| $h_{FE}$   | $V_{CE} = 5\text{ V}$ $I_C = 100\text{ mA}$ | 10    | ---  | 200  | ---  |

**DYNAMIC**

| Symbol    | Test Conditions                                                                   | Value |      |      | Unit |
|-----------|-----------------------------------------------------------------------------------|-------|------|------|------|
|           |                                                                                   | Min.  | Typ. | Max. |      |
| $P_{OUT}$ | $f = 1025\text{--}1150\text{ MHz}$ $P_{IN} = .55\text{ W}$ $V_{CE} = 28\text{ V}$ | 5     |      |      | W    |
| $G_P$     | $f = 1025\text{--}1150\text{ MHz}$ $P_{IN} = .55\text{ W}$ $V_{CE} = 28\text{ V}$ | 9.5   |      |      | DB   |

**Note:**    Pulse width = 10  $\mu\text{Sec}$ , Duty Cycle = 1%  
This device is suitable for use under other pulse widths/duty cycle conditions.  
Please contact the factory for specific applications assistance.

**PACKAGE MECHANICAL DATA**



|   | Minimum<br>Inches/mm | Maximum<br>Inches/mm |
|---|----------------------|----------------------|
| A | .045/1.14            | .055/1.40            |
| B | .125/3.18 BSC        |                      |
| C | .245/6.22            | .255/6.48            |
| D | 1.235/31.37          |                      |
| E | .095/2.41            | .105/2.67            |
| F | .119/3.02 BSC        |                      |

|   | Minimum<br>Inches/mm | Maximum<br>Inches/mm |
|---|----------------------|----------------------|
| G | .557/14.15           | .567/14.40           |
| H | .795/20.19           | .805/20.45           |
| I | .002/0.05            | .006/0.15            |
| J | .057/1.45            | .067/1.70            |
| K | .112/2.84            | .132/3.35            |
| L |                      | .175/4.45            |