

## MS1001

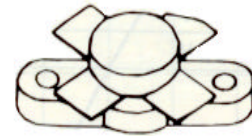
### RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

#### Features

- 30 MHz
- 12.5 VOLTS
- IMD = -32 dBc
- INFINITE VSWR CAPABILITY @ RATED CONDITIONS
- $P_{OUT} = 75$  WATTS
- $G_P = 13$ dB MINIMUM
- COMMON EMITTER CONFIGURATION

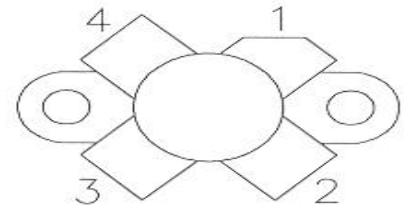
#### DESCRIPTION:

The MS1001 is a 12.5V Class C silicon NPN transistor designed primarily for HF communications. Diffused emitter resistors provide infinite VSWR capability under rated operating conditions.



.500 4LFL  
Epoxy Sealed

#### PIN CONNECTION



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

#### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

| Symbol    | Parameter                 | Value       | Unit |
|-----------|---------------------------|-------------|------|
| $V_{CBO}$ | Collector-Base Voltage    | 36          | V    |
| $V_{CEO}$ | Collector-Emitter Voltage | 18          | V    |
| $V_{EBO}$ | Emitter-Base Voltage      | 4.0         | V    |
| $I_C$     | Device Current            | 20          | A    |
| $P_D$     | Total Dissipation         | 270         | W    |
| $T_j$     | Junction Temperature      | 200         | °C   |
| $T_{STG}$ | Storage Temperature       | -65 to +150 | °C   |

#### Thermal Data

|               |                                  |      |      |
|---------------|----------------------------------|------|------|
| $R_{TH(J-C)}$ | Thermal Resistance Junction-case | 0.65 | °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> | I <sub>C</sub> = 50 mA      I <sub>E</sub> = 0 mA  | 36    | ---  | ---  | V    |
| <b>BV<sub>CES</sub></b> | I <sub>C</sub> = 100 mA      V <sub>BE</sub> = 0 V | 36    | ---  | ---  | V    |
| <b>BV<sub>CEO</sub></b> | I <sub>C</sub> = 100 mA      I <sub>B</sub> = 0 mA | 18    | ---  | ---  | V    |
| <b>BV<sub>EBO</sub></b> | I <sub>E</sub> = 10 mA      I <sub>C</sub> = 0 mA  | 4.0   | ---  | ---  | V    |
| <b>I<sub>CES</sub></b>  | V <sub>CE</sub> = 15 V      I <sub>E</sub> = 0 mA  | ---   | ---  | 15   | mA   |
| <b>h<sub>FE</sub></b>   | V <sub>CE</sub> = 5 V      I <sub>C</sub> = 5 A    | 20    | ---  | 200  | ---  |

### DYNAMIC

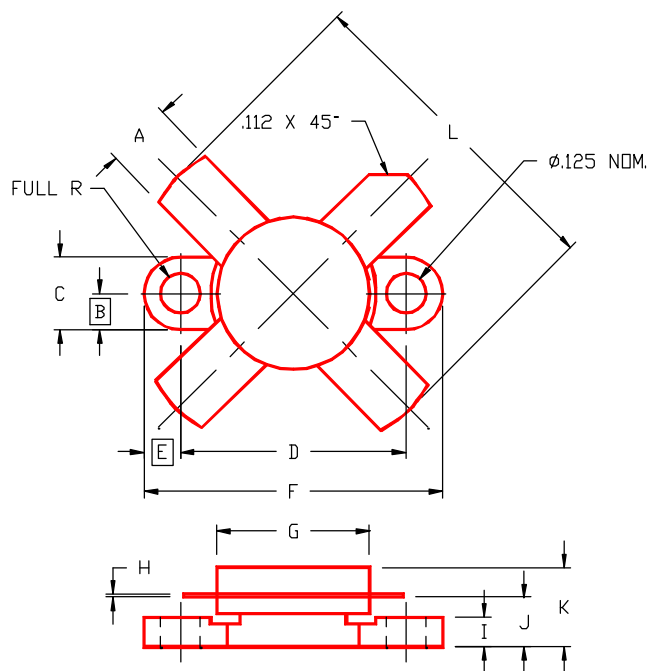
| Symbol                 | Test Conditions                                                     | Value |      |      | Unit            |
|------------------------|---------------------------------------------------------------------|-------|------|------|-----------------|
|                        |                                                                     | Min.  | Typ. | Max. |                 |
| <b>P<sub>OUT</sub></b> | f = 30MHz      P <sub>IN</sub> = 3.8 W      V <sub>CE</sub> = 12.5V | 75    | ---  | ---  | WPEP            |
| <b>G<sub>p</sub></b>   | f = 30MHz      P <sub>IN</sub> = 3.8 W      V <sub>CE</sub> = 12.5V | 13    | ---  | ---  | dB              |
| <b>IMD*</b>            | f = 30MHz      V <sub>CC</sub> = 12.5V      I <sub>CQ</sub> = 100mA | -32   | ---  | ---  | dB <sub>c</sub> |
| <b>C<sub>OB</sub></b>  | f = 1 MHz      V <sub>CB</sub> = 12V                                | ---   | 350  | ---  | pf              |
| <b>Condition</b>       | f1 = 30.000 MHz      f2 = 30.001 MHz                                |       |      |      |                 |

### IMPEDANCE DATA

| FREQ   | Z <sub>IN</sub> (Ω) | Z <sub>CL</sub> (Ω) |
|--------|---------------------|---------------------|
| 30 MHz | 0.7 + j0.75         | 1.2 + j1.0          |

P<sub>IN</sub> = 3.8W  
V<sub>CC</sub> = 12.5V

## PACKAGE MECHANICAL DATA



**PACKAGE STYLE M174**

|   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |
|---|----------------------|----------------------|---|----------------------|----------------------|
| A | .220/5,59            | .230/5,84            | I | .090/2,29            | .110/2,79            |
| B | .125/3,18            |                      | J | .160/4,06            | .175/4,45            |
| C | .245/6,22            | .255/6,48            | K |                      | .280/7,11            |
| D | .720/18,28           | .730/18,54           | L |                      | 1.050/26,67          |
| E | .125/3,18            |                      |   |                      |                      |
| F | .970/24,64           | .980/24,89           |   |                      |                      |
| G | .495/12,57           | .505/12,83           |   |                      |                      |
| H | .003/0,08            | .007/0,18            |   |                      |                      |