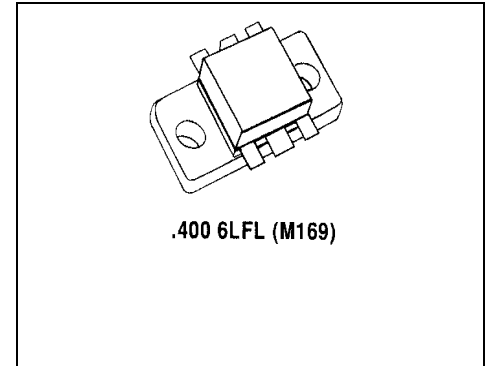
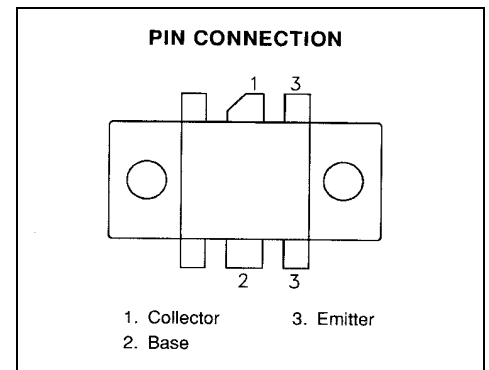


**MS1536**
**F RF & MICROWAVE TRANSISTORS  
800 / 900 MHz APPLICATIONS**
**Features**

- 900 MHz
- 24 VOLTS
- $P_{OUT} = 60$  WATTS
- $G_p = 7.0$  dB MINIMUM
- INPUT AND OUTPUT MATCHED
- COMMON BASE CONFIGURATION


**DESCRIPTION:**

The MS1536 is a 28V Class C epitaxial silicon NPN planar transistor designed primarily for UHF communications. This device utilizes diffused emitter resistors to achieve 10:1 VSWR capability under specified operating conditions. Internal input matching provides optimum power gain and efficiency over the 225 – 400 MHz band.


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

| Symbol     | Parameter                 | Value       | Unit |
|------------|---------------------------|-------------|------|
| $V_{CBO}$  | Collector-Base Voltage    | 55          | V    |
| $V_{CES}$  | Collector-Emitter Voltage | 55          | V    |
| $V_{EBO}$  | Emitter-Base Voltage      | 4.0         | V    |
| $I_C$      | Device Current            | 10          | A    |
| $P_{DISS}$ | Power Dissipation         | 175         | W    |
| $T_{STG}$  | Storage Temperature       | -65 to +150 | °C   |
| $T_J$      | Junction Temperature      | +200        | °C   |

**Thermal Data**

|               |                                  |     |      |
|---------------|----------------------------------|-----|------|
| $R_{TH(J-C)}$ | Thermal Resistance Junction-case | 1.0 | °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> = 50mA</b> | <b>I<sub>E</sub> = 0mA</b>  | <b>55</b>  | ---  | ---        | <b>V</b>  |
| <b>BV<sub>CES</sub></b> | <b>I<sub>C</sub> = 50mA</b> | <b>V<sub>BE</sub> = 0mA</b> | <b>55</b>  | ---  | ---        | <b>V</b>  |
| <b>BV<sub>CEO</sub></b> | <b>I<sub>C</sub> = 50mA</b> | <b>I<sub>B</sub> = 0mA</b>  | <b>28</b>  | ---  | ---        | <b>V</b>  |
| <b>BV<sub>EBO</sub></b> | <b>I<sub>E</sub> = 10mA</b> | <b>I<sub>C</sub> = 0mA</b>  | <b>3.0</b> | ---  | ---        | <b>V</b>  |
| <b>I<sub>CES</sub></b>  | <b>V<sub>CE</sub> = 25V</b> | <b>I<sub>E</sub> = 0mA</b>  | ---        | ---  | <b>10</b>  | <b>mA</b> |
| <b>HFE</b>              | <b>V<sub>CE</sub> = 5V</b>  | <b>I<sub>C</sub> = 2A</b>   | <b>20</b>  | ---  | <b>150</b> | ---       |

**DYNAMIC**

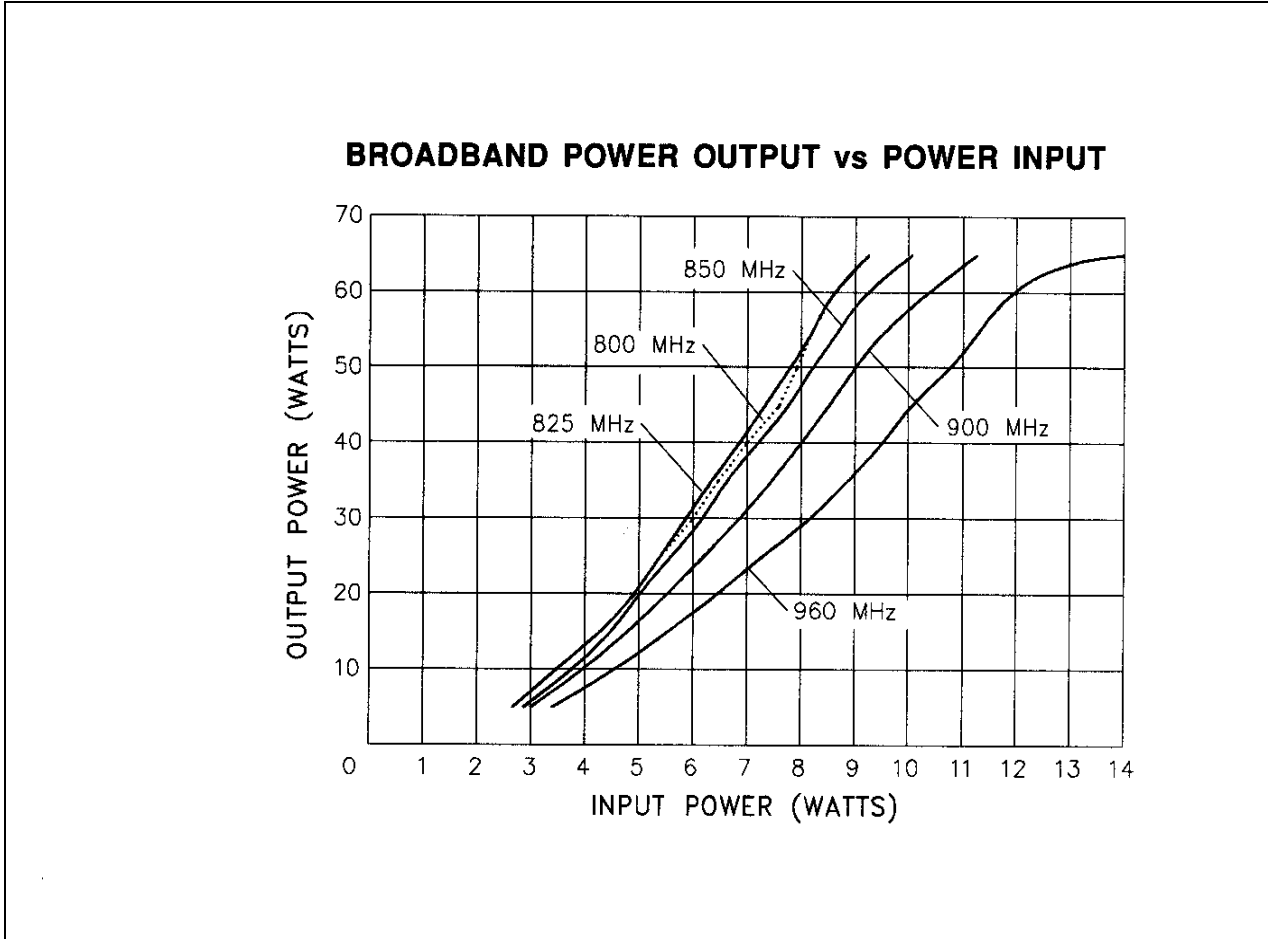
| Symbol                 | Test Conditions    |                              |                             | Value      |      |           | Unit      |
|------------------------|--------------------|------------------------------|-----------------------------|------------|------|-----------|-----------|
|                        |                    |                              |                             | Min.       | Typ. | Max.      |           |
| <b>P<sub>OUT</sub></b> | <b>f = 900 MHz</b> | <b>P<sub>IN</sub> = 12W</b>  | <b>V<sub>CE</sub> = 24V</b> | <b>60</b>  | ---  | ---       | <b>W</b>  |
| <b>G<sub>P</sub></b>   | <b>f = 900 MHz</b> | <b>P<sub>IN</sub> = 12W</b>  | <b>V<sub>CE</sub> = 24V</b> | <b>7.5</b> | ---  | ---       | <b>dB</b> |
| <b>η<sub>C</sub></b>   | <b>f = 900 MHz</b> | <b>P<sub>IN</sub> = 12W</b>  | <b>V<sub>CE</sub> = 24V</b> | <b>55</b>  | ---  | ---       | <b>%</b>  |
| <b>C<sub>OB</sub></b>  | <b>f = 1 MHz</b>   | <b>V<sub>CB</sub> = 24 V</b> |                             | ---        | ---  | <b>70</b> | <b>pf</b> |

**IMPEDANCE DATA**

| FREQ           | Z <sub>IN</sub> (Ω) | Z <sub>CL</sub> (Ω) |
|----------------|---------------------|---------------------|
| <b>960 MHz</b> | <b>3.8 - j3.8</b>   | <b>4.9 + j2.0</b>   |
| <b>900 MHz</b> | <b>7.6 - j3.4</b>   | <b>5.0 + j0.4</b>   |
| <b>870 MHz</b> | <b>9.4 - j2.6</b>   | <b>4.3 + j.06</b>   |
| <b>800 MHz</b> | <b>10.8 + j1.0</b>  | <b>4.3 + j0.5</b>   |

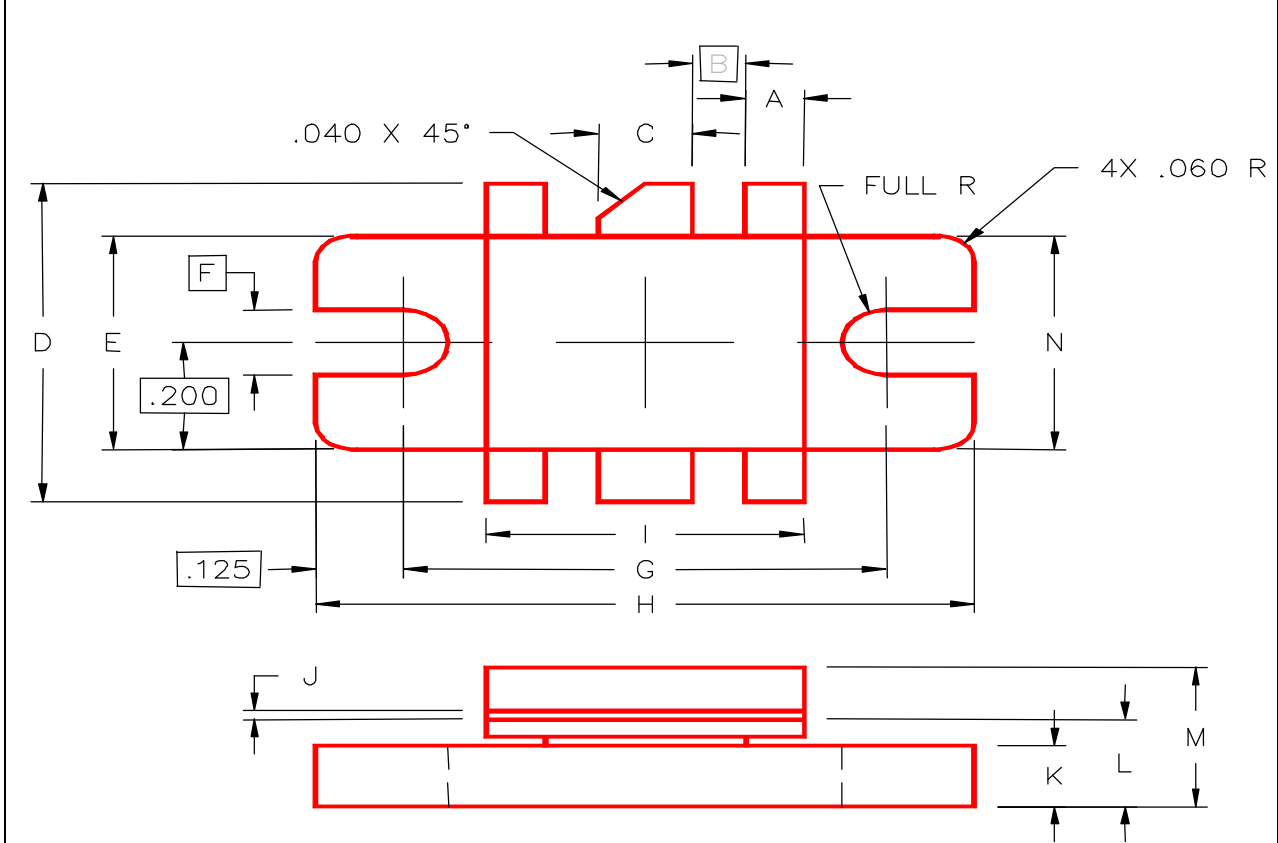
**P<sub>OUT</sub> = 60W**
**V<sub>CE</sub> = 24V**

**TYPICAL PERFORMANCE**



**PACKAGE MECHANICAL DATA**

PACKAGE STYLE M169



|   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |
|---|----------------------|----------------------|---|----------------------|----------------------|
| A | .077/1,96            | .087/2,21            | I | .419/10,64           | .429/10,90           |
| B | .120/3,05            |                      | J | .002/0,05            | .007/0,18            |
| C | .115/2,92            | .125/3,18            | K | .102/2,59            | .112/2,84            |
| D | .585/14,86           | .615/15,62           | L | .162/4,11            | .175/4,45            |
| E | .395/10,03           | .405/10,29           | M |                      | .280/7,11            |
| F | .130/3,30            |                      | N | .395/10,03           | .405/10,29           |
| G | .720/18,29           | .730/18,54           |   |                      |                      |
| H | .970/24,64           | .980/24,89           |   |                      |                      |