

**GENERAL DESCRIPTION**

The 2301 is a common base transistor capable of providing 1.5 watts of CW RF output power at 2300 MHz. This hermetically sealed transistor is specifically designed for telemetry and telecommunications applications. It utilizes gold metallization and diffused ballasting to provide high reliability and supreme ruggedness.

**2301**  
**1.5 WATTS - 20 VOLTS**  
**2300 MHz**

**MICROWAVE CW BIPOLAR**

**ABSOLUTE MAXIMUM RATINGS**

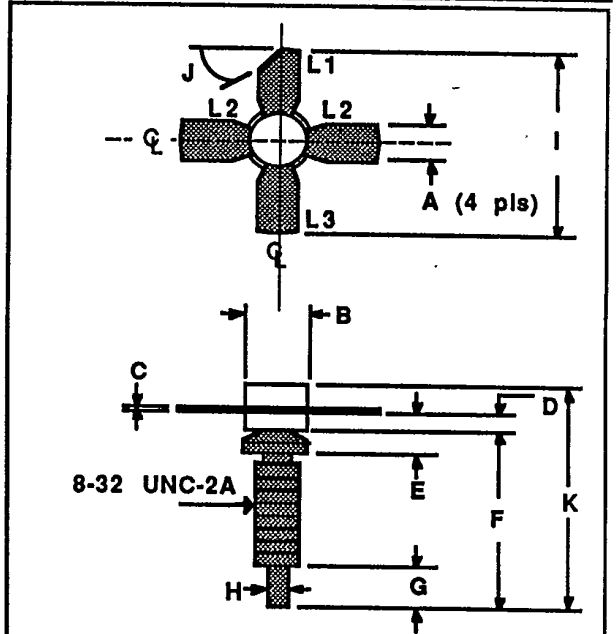
Maximum Power Dissipation @ 25°C Case Temperature 5.6 W

**Maximum Voltage and Current**

BVces Collector to Emitter Voltage 50 V  
 BVebo Emitter to Base Voltage 3.5 V  
 Ic Collector Current 0.3 A

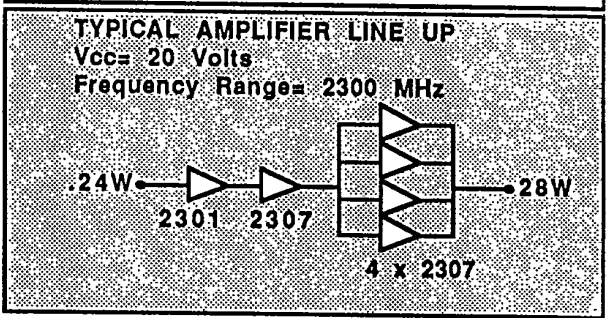
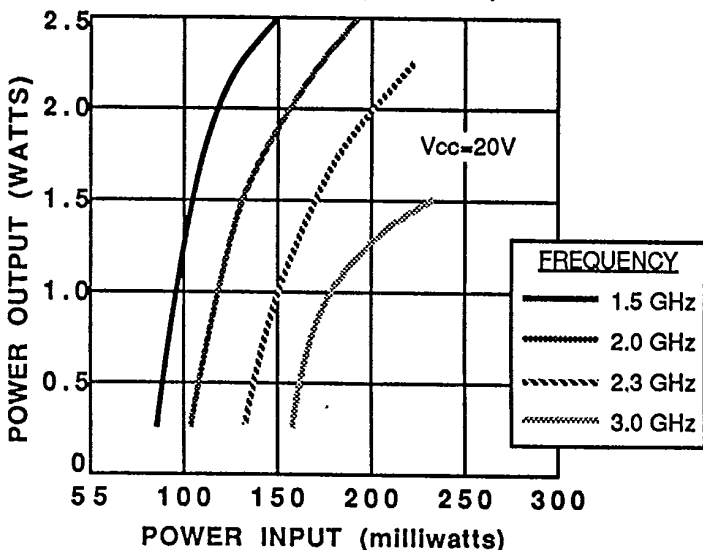
**Maximum Temperatures**

Storage Temperature -65 to +150°C  
 Operating Junction Temperature +200°C



| DIM    | Millimeter | TOL | Inches   | TOL  |
|--------|------------|-----|----------|------|
| L1 : C |            |     |          |      |
| L2 : E | A          | .13 | .225     | .005 |
| L3 : B | B          | .13 | .375 DIA | .005 |
|        | C          | .02 | .005     | .001 |
|        | D          | .13 | .070     | .005 |
|        | E          | .13 | .160     | .005 |
|        | F          | .25 | .585     | .010 |
|        | G          | .13 | .130     | .005 |
|        | H          | .13 | .060     | .005 |
|        | I          | .25 | 1.000    | .010 |
|        | J          | 5°  | 45°      | 5°   |
|        | K          | REF | .748     | REF  |

**TRANSFER CHARACTERISTICS VS FREQUENCY (TYPICAL)**



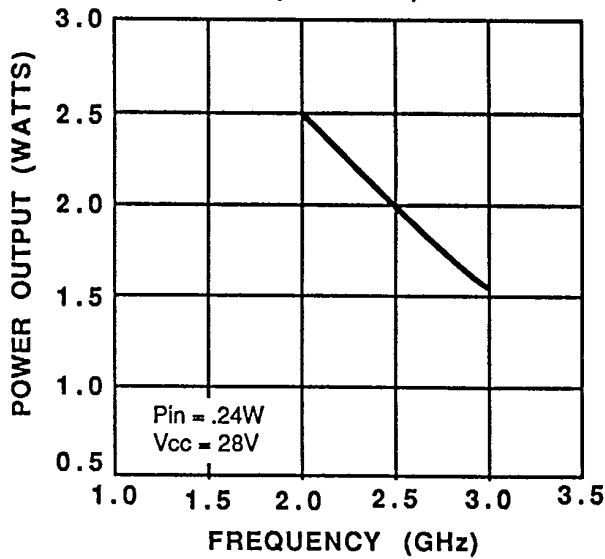
2301-2

ELECTRICAL CHARACTERISTICS<sup>1</sup>

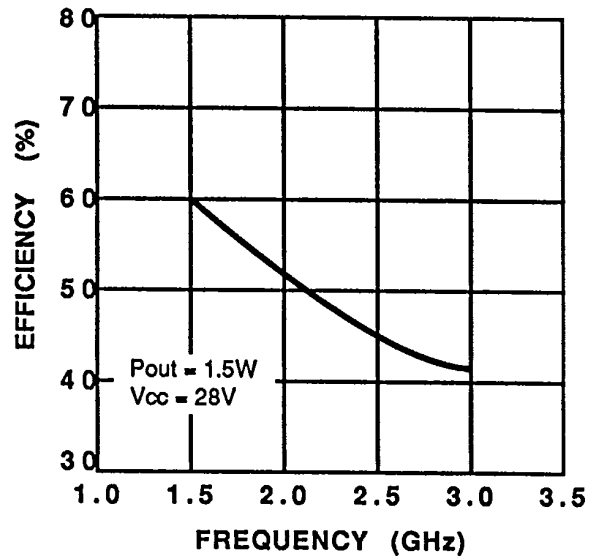
| SYMBOL            | CHARACTERISTICS                          | TEST CONDITIONS                              | MIN. | TYP. | MAX. | UNITS |
|-------------------|--|--|------|------|------|-------|
| P <sub>out</sub>  | Power Output                             | f = 2.3GHz<br>V <sub>cc</sub> = 20V          | 1.5  |      |      | Watts |
| P <sub>in</sub>   | Power Input                              |  |      |      | 0.24 | Watts |
| P <sub>g</sub>    | Power Gain                               |  | 8.0  |      |      | dB    |
| η <sub>c</sub>    | Collector Efficiency                     |  | 40   |      |      | %     |
| VSWR              | Load Mismatch Tolerance                  |  |      |      | ∞:1  |       |
| BV <sub>ebo</sub> | Breakdown Voltage (Emitter to Base)      | I <sub>c</sub> = 0A, I <sub>e</sub> = 1.0mA  | 3.5  |      |      | Volts |
| BV <sub>ces</sub> | Breakdown Voltage (Collector to Emitter) | V <sub>be</sub> = 0A, I <sub>c</sub> = 10mA  | 50   |      |      | Volts |
| C <sub>ob</sub>   | Capacitance-Collector to Base            | f = 1.0MHz, V <sub>cb</sub> = 28V            |      | 4.0  |      | pF    |
| h <sub>FE</sub>   | DC-Current Gain                          | V <sub>ce</sub> = 5V, I <sub>c</sub> = 100mA | 10   |      |      |       |
| θ <sub>jc</sub>   | Thermal Resistance                       | T <sub>c</sub> = 35°C                        |      |      | 31   | °C/W  |

Note 1: T<sub>c</sub> = +25°C unless otherwise specified

POWER OUTPUT VS FREQUENCY (TYPICAL)



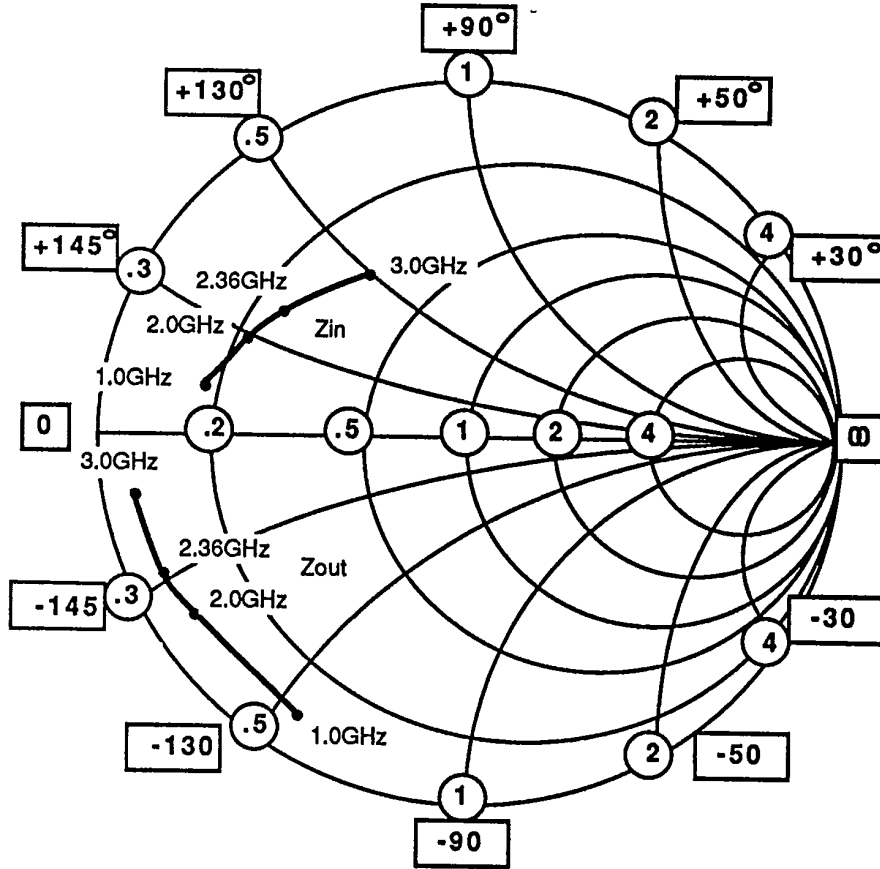
EFFICIENCY VS FREQUENCY (TYPICAL)



SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE

**SMITH CHART  
2301**

**NORMALIZED IMPEDANCE AND ADMITTANCE COORDINATES**



**NORMALIZED TO A 50 OHM SYSTEM.**

| FREQUENCY<br>MHz | R   | Zin<br>+jX | FREQUENCY<br>MHz | R   | Zload<br>+jX |
|------------------|-----|------------|------------------|-----|--------------|
| 1000             | 8.5 | 7.5        | 1000             | 5   | 22           |
| 2000             | 11  | 15         | 2000             | 4   | 17           |
| 2300             | 13  | 18         | 2300             | 3.7 | 14           |
| 3000             | 16  | 20         | 3000             | 2.8 | 6.5          |