

### GENERAL DESCRIPTION

The 2307 is a common base transistor capable of providing 7 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.

### ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C Case Temperature 20.5 W

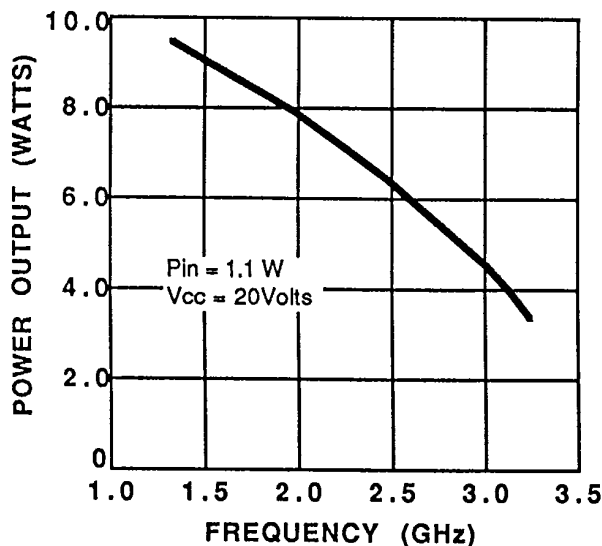
#### Maximum Voltage and Current

|       |                              |       |
|-------|------------------------------|-------|
| BVces | Collector to Emitter Voltage | 42 V  |
| BVebo | Emitter to Base Voltage      | 3.5 V |
| Ic    | Collector Current            | 1.0 A |

#### Maximum Temperatures

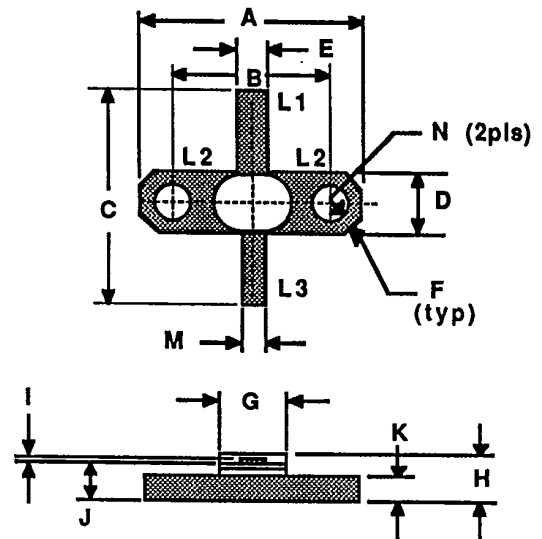
|                                |                |
|--------------------------------|----------------|
| Storage Temperature            | -65 to +200 °C |
| Operating Junction Temperature | +200 °C        |

POWER OUTPUT VS FREQUENCY  
(TYPICAL)



**2307**  
7.0 WATTS - 20 VOLTS  
2300 MHz

### MICROWAVE CW BIPOLAR

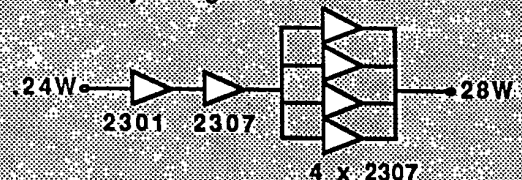


| DIM    | Millimeter | TOL | Inches | TOL  |
|--------|------------|-----|--------|------|
| L1 : B |            |     |        |      |
| L2 : E |            |     |        |      |
| L3 : C |            |     |        |      |
| A      | 20.32      | .13 | .800   | .005 |
| B      | 14.27      | .13 | .562   | .005 |
| C      | 18.03      | MIN | .710   | MIN  |
| D      | 5.84       | .13 | .230   | .005 |
| E      | 3.05       | .13 | .120   | .005 |
| F      | 45°        | 5°  | 45°    | 5°   |
| G      | 5.84       | .13 | .230   | .005 |
| H      | 4.57       | REF | .180   | REF  |
| I      | 0.13       | .02 | .005   | .001 |
| J      | 3.81       | .13 | .150   | .005 |
| K      | 1.52       | .13 | .060   | .005 |
| M      | 1.27       | .13 | .050   | .005 |
| N      | 3.30       | .13 | .130   | .005 |

### TYPICAL AMPLIFIER LINE UP

Vcc = 20 Volts

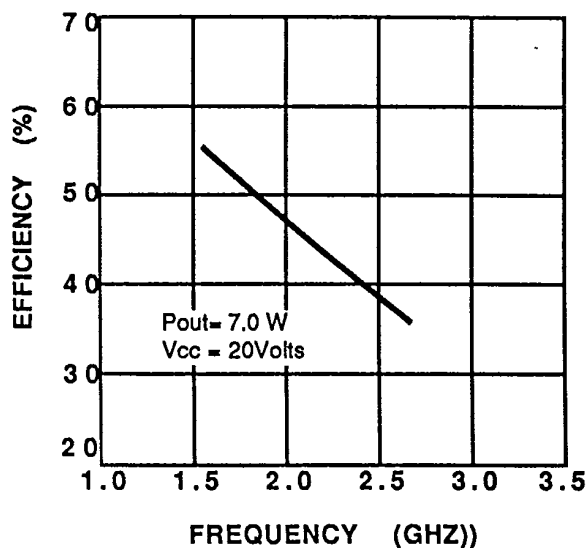
Frequency Range = 2300 MHz



2307-2

ELECTRICAL CHARACTERISTICS<sup>1</sup>

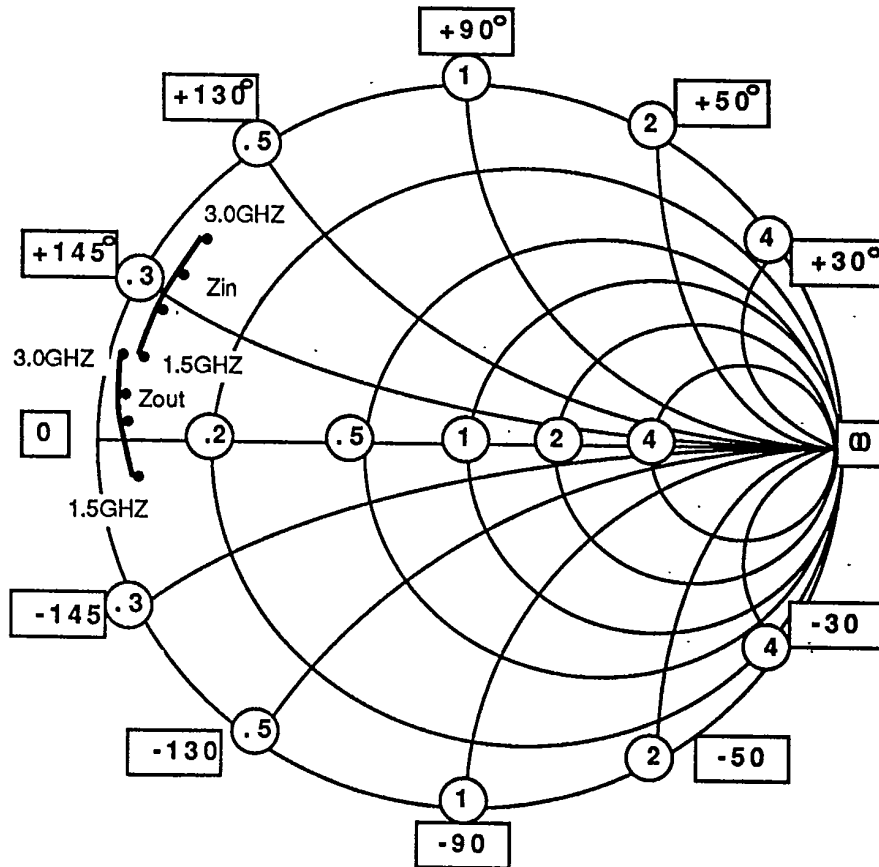
| SYMBOL            | CHARACTERISTICS                             | TEST CONDITIONS                                               | MIN. | TYP. | MAX.       | UNITS |
|-------------------|---------------------------------------------|---------------------------------------------------------------|------|------|------------|-------|
| P <sub>out</sub>  | Power Output                                | f = 2.3GHz<br>V <sub>cb</sub> = 20V<br>P <sub>in</sub> = 1.1W | 7.0  |      |            | Watts |
| P <sub>in</sub>   | Power Input                                 |                                                               |      |      | 1.1        | Watts |
| P <sub>g</sub>    | Power Gain                                  |                                                               | 8.0  |      |            | dB    |
| $\eta_c$          | Collector Efficiency                        |                                                               | 35   |      |            | %     |
| VSWR              | Load Mismatch Tolerance                     |                                                               |      |      | $\infty:1$ |       |
| BV <sub>ebo</sub> | Breakdown Voltage<br>(Emitter to Base)      | I <sub>c</sub> = 0A, I <sub>e</sub> = 5.0mA                   | 3.5  |      |            | Volts |
| BV <sub>ces</sub> | Breakdown Voltage<br>(Collector to Emitter) | V <sub>be</sub> = 0A, I <sub>c</sub> = 50mA                   | 42   |      |            | Volts |
| I <sub>cbo</sub>  | Collector Leakage Current                   | I <sub>e</sub> = 0A, V <sub>cb</sub> = 22V                    |      |      | 2.5        | mA    |
| C <sub>ob</sub>   | Capacitance-<br>Collector to Base           | f = 1.0MHz, V <sub>cb</sub> = 22V                             |      | 10   |            | pF    |
| h <sub>FE</sub>   | DC-Current Gain                             | V <sub>ce</sub> = 5V, I <sub>c</sub> = 500mA                  | 10   |      |            |       |
| $\theta_{jc}$     | Thermal Resistance                          | T <sub>c</sub> = 25°C                                         |      |      | 8.5        | °C/W  |

Note 1: T<sub>c</sub> = +25°C unless otherwise specifiedEFFICIENCY VS FREQUENCY  
(TYPICAL)

SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE

# SMITH CHART 2307

NORMALIZED IMPEDANCE AND ADMITTANCE COORDINATES



NORMALIZED TO A 50 OHM SYSTEM.

| FREQUENCY<br>MHz | R | Zin  | JX | FREQUENCY<br>MHz | R   | Zload | JX   |
|------------------|---|------|----|------------------|-----|-------|------|
| 1500             |   | 2    | 8  | 1500             | 2.1 |       | 5    |
| 2000             |   | 1.9  | 14 | 2000             | 1.9 |       | -3   |
| 2300             |   | 1.85 | 17 | 2300             | 1.8 |       | -5   |
| 3000             |   | 1.8  | 20 | 3000             | 1.5 |       | -7.5 |