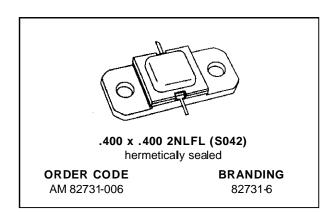


### AM82731-006

# RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 5:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT IMPEDANCE MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P<sub>OUT</sub> = 5.5 W. MIN. WITH 5.6 dB GAIN
- BANDWIDTH = 400 MHz

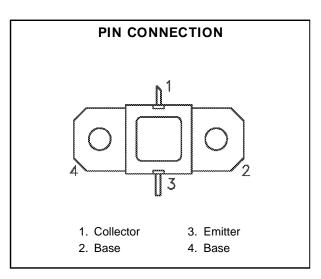


#### **DESCRIPTION**

The AM82731-006 device is a medium power silicon bipolar NPN transistor specifically designed for S-Band radar pulsed driver applications.

This device is capable of operation over a wide range of pulse widths, duty cycles, and temperatures and can withstand a 5:1 output VSWR. Low RF thermal resistance, refractory/gold metallization, and automatic wire bonding techniques ensure high reliability and product consistency.

The AM82731-006 is supplied in the hermetic metal/ceramic package with internal input/output impedance matching circuitry, and is intended for military and other high reliability applications.



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

| Symbol            | Parameter                                  | Value        | Unit |  |
|-------------------|--|--------------|------|--|
| P <sub>DISS</sub> | Power Dissipation* (T <sub>C</sub> ≤100°C) | 40           | W    |  |
| lc                | Device Current*                            | 1.8          | А    |  |
| Vcc               | Collector-Supply Voltage*                  | 34           | V    |  |
| ΤJ                | Junction Temperature (Pulsed RF Operation) | 250          | °C   |  |
| T <sub>STG</sub>  | Storage Temperature                        | - 65 to +200 | °C   |  |

#### THERMAL DATA

| R <sub>TH</sub> (j-c) Junction-Case Thermal Resistance | 3.75 | °C/W |
|--|------|------|
|--|------|------|

<sup>\*</sup>Applies only to rated RF amplifier operation

August 1992 1/4

#### **ELECTRICAL SPECIFICATIONS** $(T_{case} = 25^{\circ}C)$

#### **STATIC**

|                   |                       |                     | Value |      |      |          |
|-------------------|-----------------------|---------------------|-------|------|------|----------|
| Symbol            |                       | Test Conditions     | Min.  | Тур. | Max. | Unit     |
| BV <sub>CBO</sub> | I <sub>C</sub> = 5mA  | $I_E = 0mA$         | 50    | _    | _    | >        |
| BV <sub>EBO</sub> | I <sub>E</sub> = 1mA  | $I_C = 0mA$         | 3.5   | _    | _    | <b>V</b> |
| BV <sub>CER</sub> | I <sub>C</sub> = 5mA  | $R_{BE} = 10\Omega$ | 50    | _    | _    | V        |
| I <sub>CES</sub>  | V <sub>CE</sub> = 30V |                     | _     | _    | 4    | mA       |
| hFE               | V <sub>CE</sub> = 5V  | $I_C = 500mA$       | 10    | _    |      | _        |

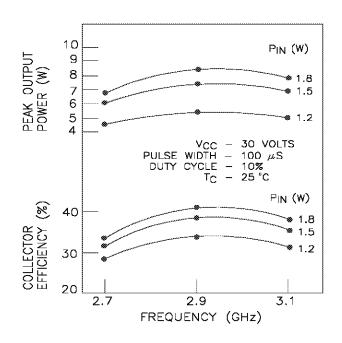
#### **DYNAMIC**

|                 |                  |                        |                | Value |      |      |      |
|-----------------|------------------|------------------------|----------------|-------|------|------|------|
| Symbol          |                  | Test Conditions        |                | Min.  | Тур. | Max. | Unit |
| Pout            | f = 2.7 — 3.1GHz | $P_{IN} = 1.5W$        | $V_{CC} = 30V$ | 5.5   | 6.0  | _    | W    |
| η <sub>C</sub>  | f = 2.7 — 3.1GHz | $P_{IN} = 1.5W$        | $V_{CC} = 30V$ | 27    | 32   | _    | %    |
| G <sub>PB</sub> | f = 2.7 — 3.1GHz | P <sub>IN</sub> = 1.5W | Vcc = 30V      | 5.6   | 6.0  | _    | dB   |

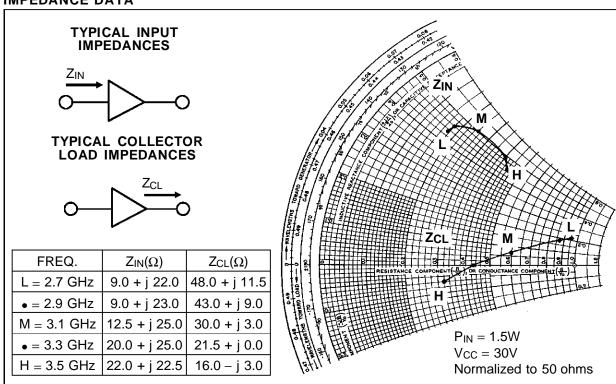
Note: Pulse Width =  $100\mu$ S Duty Cycle = 10%

#### **TYPICAL PERFORMANCE**

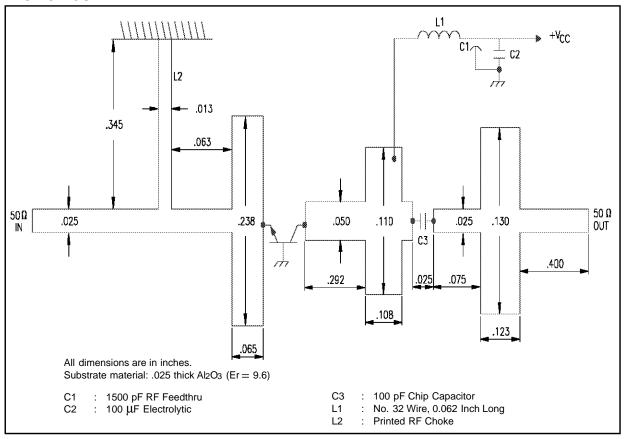
## TYPICAL BROADBAND PERFORMANCE



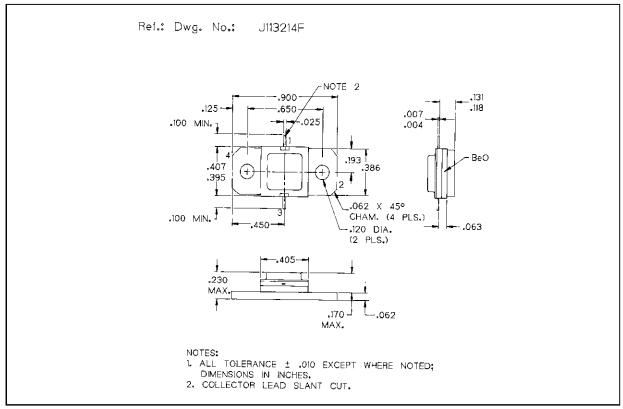
#### **IMPEDANCE DATA**



#### **TEST CIRCUIT**



#### PACKAGE MECHANICAL DATA



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