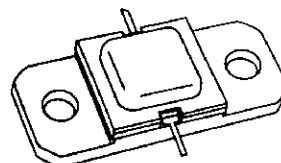


RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

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



.400 x .400 2NLFL (S042)
hermetically sealed

ORDER CODE
AM 82731-006

BRANDING
82731-6

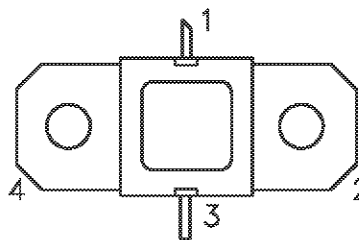
DESCRIPTION

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.

PIN CONNECTION



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

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100^{\circ}C$)	40	W
I_C	Device Current*	1.8	A
V_{CC}	Collector-Supply Voltage*	34	V
T_J	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}C$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	3.75	$^{\circ}C/W$
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*Applies only to rated RF amplifier operation

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

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 5\text{mA}$ $I_E = 0\text{mA}$	50	—	—	V
BV_{EBO}	$I_E = 1\text{mA}$ $I_C = 0\text{mA}$	3.5	—	—	V
BV_{CER}	$I_C = 5\text{mA}$ $R_{BE} = 10\Omega$	50	—	—	V
I_{CES}	$V_{CE} = 30\text{V}$	—	—	4	mA
h_{FE}	$V_{CE} = 5\text{V}$ $I_C = 500\text{mA}$	10	—	—	—

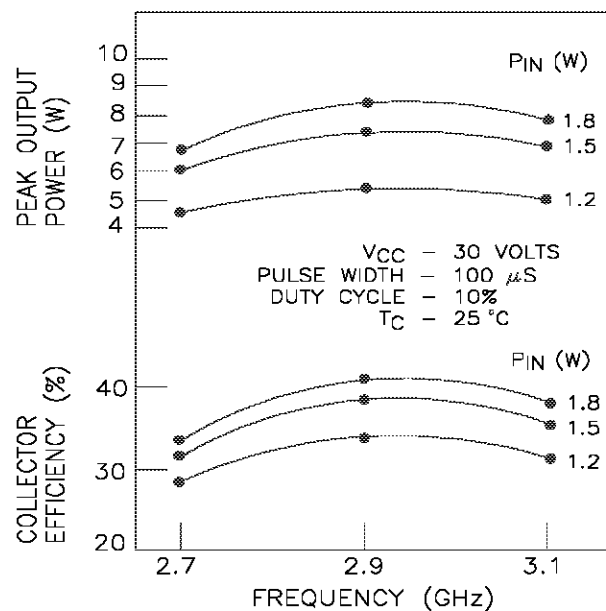
DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 2.7 - 3.1\text{GHz}$ $P_{IN} = 1.5\text{W}$ $V_{CC} = 30\text{V}$	5.5	6.0	—	W
η_C	$f = 2.7 - 3.1\text{GHz}$ $P_{IN} = 1.5\text{W}$ $V_{CC} = 30\text{V}$	27	32	—	%
G_{PB}	$f = 2.7 - 3.1\text{GHz}$ $P_{IN} = 1.5\text{W}$ $V_{CC} = 30\text{V}$	5.6	6.0	—	dB

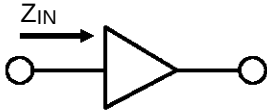
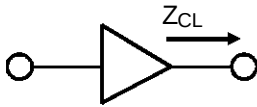
Note: Pulse Width = $100\mu\text{s}$
 Duty Cycle = 10%

TYPICAL PERFORMANCE

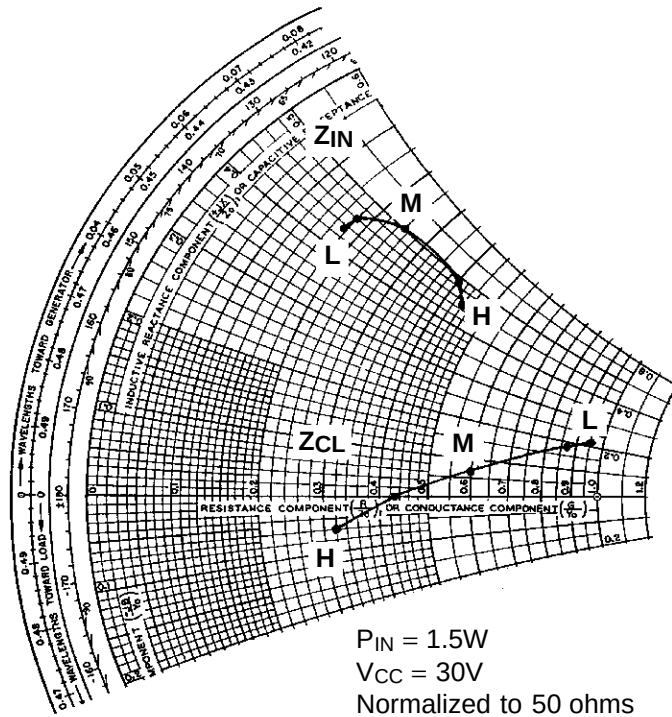
TYPICAL BROADBAND PERFORMANCE



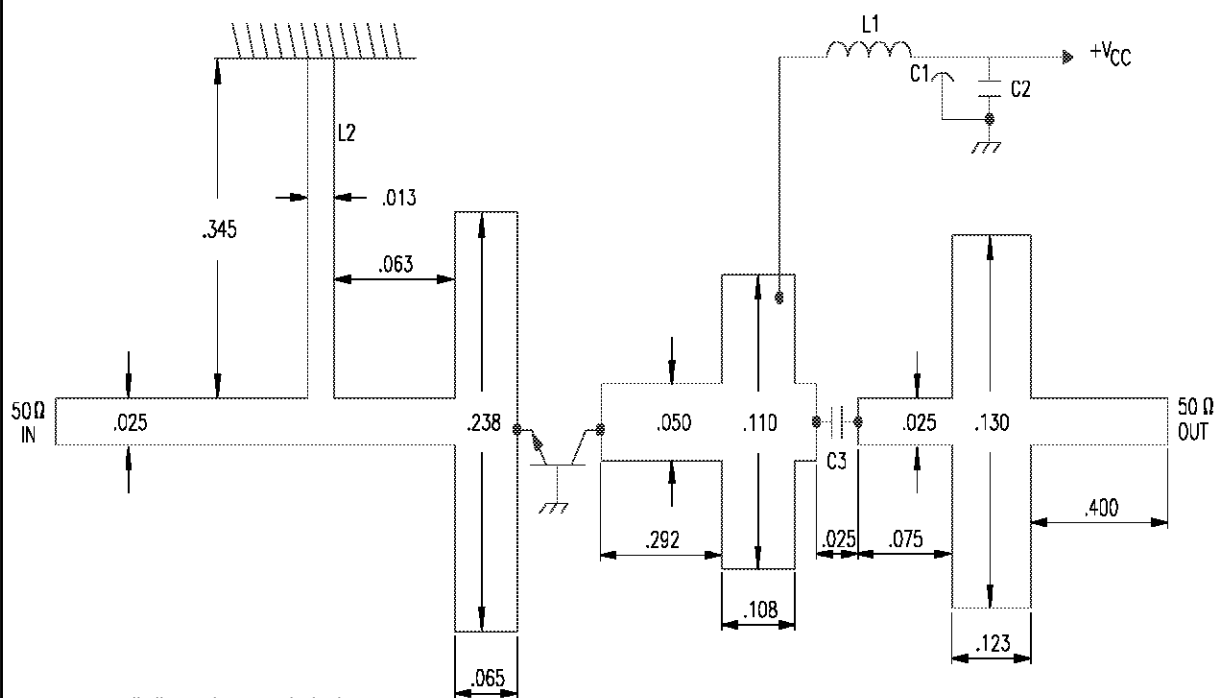
IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCESTYPICAL COLLECTOR
LOAD IMPEDANCES

FREQ.	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
L = 2.7 GHz	$9.0 + j 22.0$	$48.0 + j 11.5$
• = 2.9 GHz	$9.0 + j 23.0$	$43.0 + j 9.0$
M = 3.1 GHz	$12.5 + j 25.0$	$30.0 + j 3.0$
• = 3.3 GHz	$20.0 + j 25.0$	$21.5 + j 0.0$
H = 3.5 GHz	$22.0 + j 22.5$	$16.0 - j 3.0$



TEST CIRCUIT

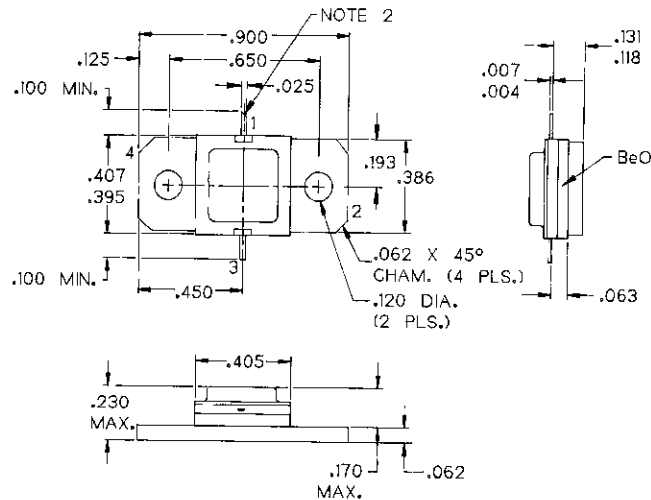


C1 : 1500 pF RF Feedthru
 C2 : 100 μF Electrolytic

C3 : 100 pF Chip Capacitor
 L1 : No. 32 Wire, 0.062 Inch Long
 L2 : Printed RF Choke

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J113214F



NOTES:

1. ALL TOLERANCE $\pm .010$ EXCEPT WHERE NOTED;
DIMENSIONS IN INCHES.
2. COLLECTOR LEAD SLANT CUT.

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