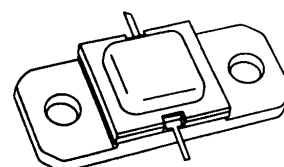


RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 10:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT IMPEDANCE MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 3.0$ W. MIN. WITH 5.7 dB GAIN
- BANDWIDTH = 400 MHz



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

ORDER CODE
AM 82731-003

BRANDING
82731-3

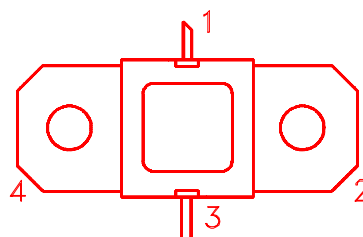
DESCRIPTION

The AM82731-003 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 10:1 output VSWR. Low RF thermal resistance, refractory/gold metallization, and automatic wire bonding techniques ensure high reliability and product consistency.

The AM82731-003 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* ($T_C \leq 100^{\circ}C$)	23	W
I_C	Device Current*	0.9	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	6.5	$^{\circ}C/W$
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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}	$I_{\text{C}} = 2\text{mA}$ $I_{\text{E}} = 0\text{mA}$	50	—	—	V
BV_{EBO}	$I_{\text{E}} = 1\text{mA}$ $I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
BV_{CER}	$I_{\text{C}} = 2\text{mA}$ $R_{\text{BE}} = 10\Omega$	50	—	—	V
I_{CES}	$V_{\text{CE}} = 30\text{V}$	—	—	2.0	mA
h_{FE}	$V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 200\text{mA}$	10	—	—	—

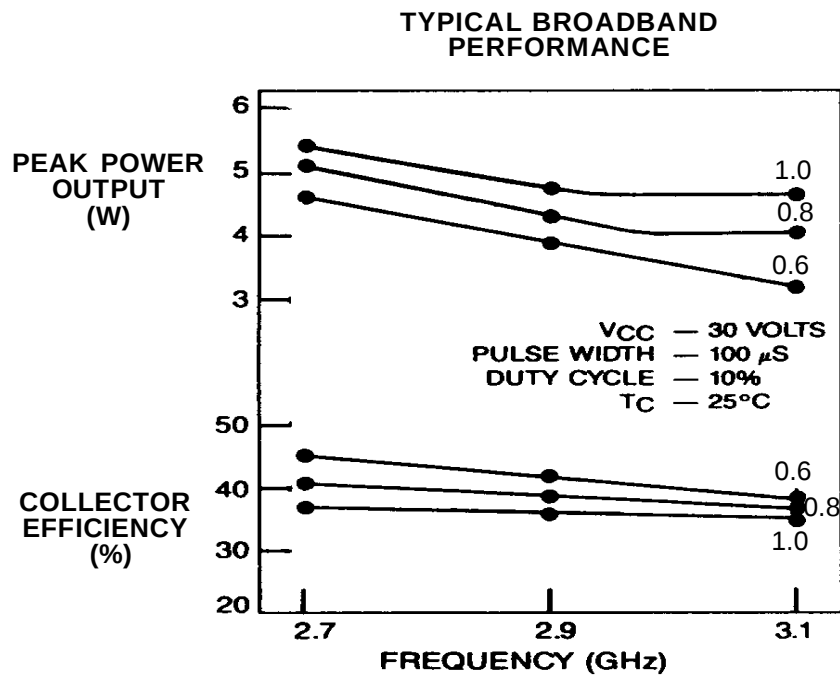
DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 2.7 - 3.1\text{GHz}$ $P_{\text{IN}} = 0.8\text{W}$ $V_{\text{CC}} = 30\text{V}$	3.0	4.0	—	W
η_{C}	$f = 2.7 - 3.1\text{GHz}$ $P_{\text{IN}} = 0.8\text{W}$ $V_{\text{CC}} = 30\text{V}$	27	37	—	%
G_{PB}	$f = 2.7 - 3.1\text{GHz}$ $P_{\text{IN}} = 0.8\text{W}$ $V_{\text{CC}} = 30\text{V}$	5.7	7.0	—	dB

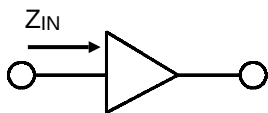
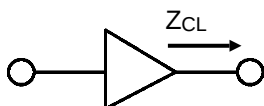
Note: Pulse Width = $100\mu\text{s}$

Duty Cycle = 10%

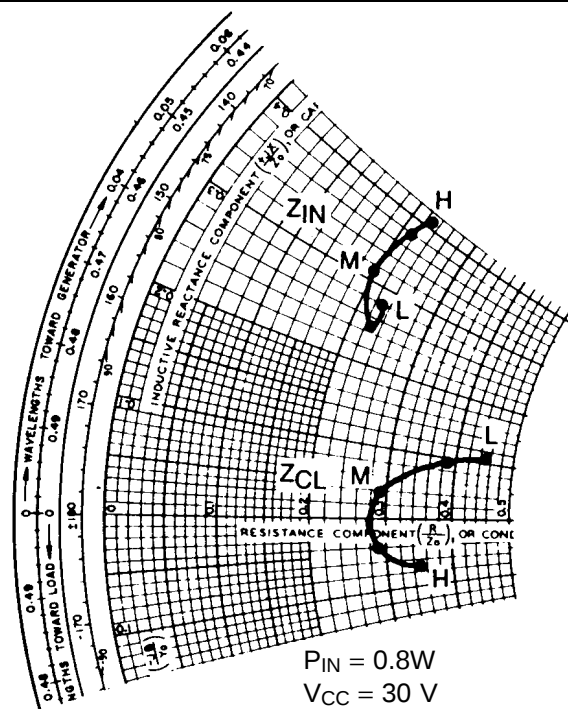
TYPICAL PERFORMANCE



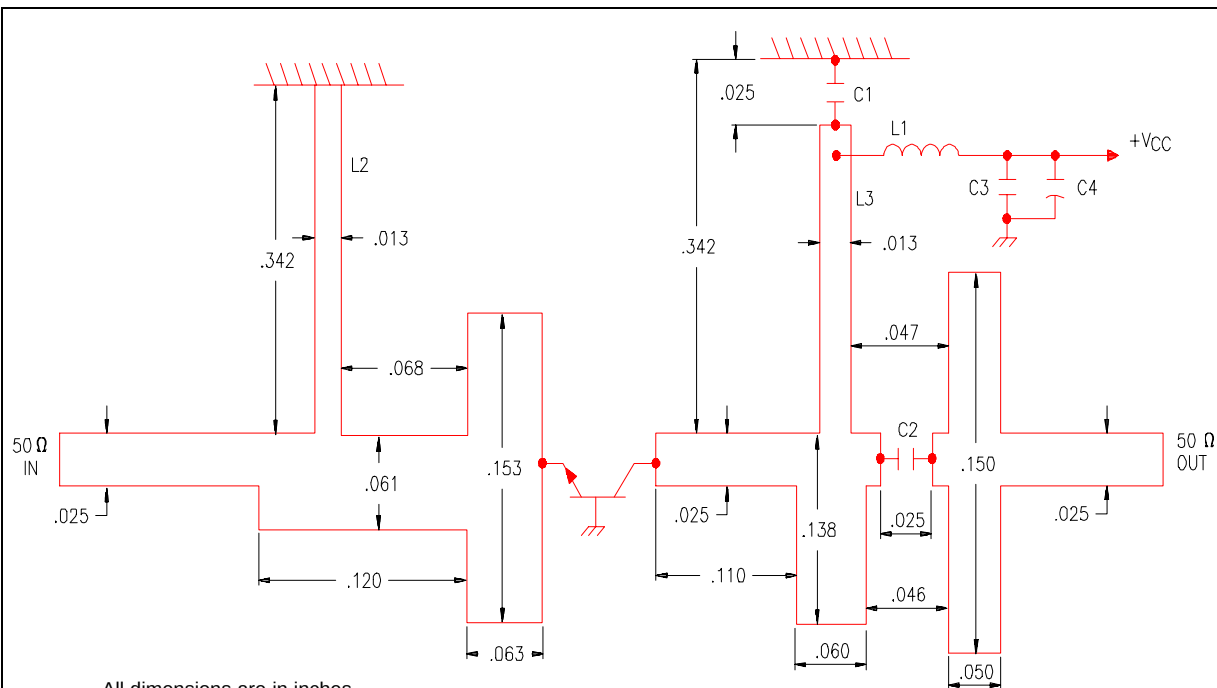
IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCESTYPICAL COLLECTOR
LOAD IMPEDANCES

FREQ.	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
L = 2.7 GHz	$11.5 + j 14.0$	$22.5 + j 5.5$
• = 2.9 GHz	$11.5 + j 12.5$	$19.5 + j 5.0$
M = 3.1 GHz	$10.0 + j 15.5$	$14.5 + j 2.0$
• = 3.3 GHz	$11.0 + j 19.0$	$14.5 - j 2.0$
H = 3.5 GHz	$11.0 + j 20.5$	$17.5 - j 3.5$



TEST CIRCUIT

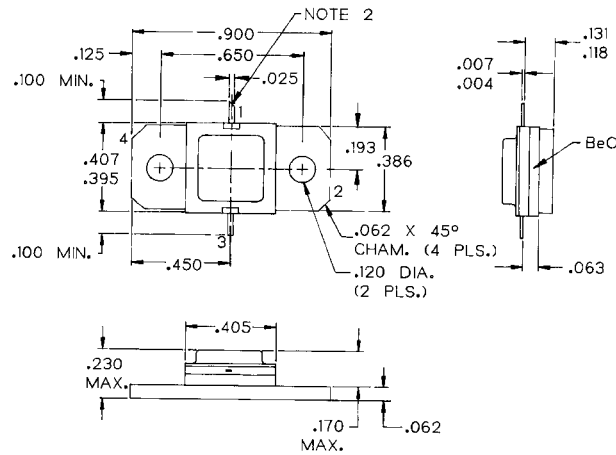


- C1 : 100 pF Microwave Chip Capacitor
 C2 : 100 pF Microwave Chip Capacitor
 (Note: Capacitor is mounted on its thin side)
 C3 : 1500 pF, RF Feedthru

- C4 : 100 μF , Electrolytic Capacitor
 L1 : No. 32 Wire, 0.500 Inch Long
 L2 : Printed RF Choke
 L3 : 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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