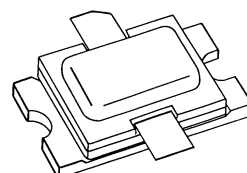


## RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 3:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 105\text{ W MIN. WITH } 6.2\text{ dB GAIN}$



**.400 x .500 2L SFL (S138)**  
hermetically sealed

**ORDER CODE**  
AM2931-110

**BRANDING**  
2931-110

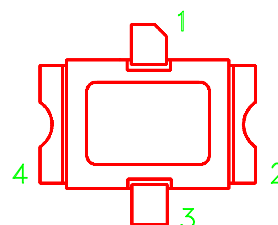
### DESCRIPTION

The AM2931-110 is a high power silicon bipolar NPN transistor specifically designed for S-Band radar pulsed output and driver applications.

This device is capable of operation over a wide range of pulse widths, duty cycles and temperatures and can withstand a 3:1 output VSWR. Low RF thermal resistance, refractory/gold metallization, and computerized automatic wire bonding techniques ensure high reliability and product consistency (including phase characteristics).

The AM2931-110 is supplied in the BIGPAC™ Hermetic Metal/Ceramic package with internal Input/Output 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 ( $T_{case} = 25^{\circ}\text{C}$ )

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation* ( $T_C \leq 100^{\circ}\text{C}$ )	375	W
$I_C$	Device Current*	12	A
$V_{CC}$	Collector-Supply Voltage*	48	V
$T_J$	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature	- 65 to +200	$^{\circ}\text{C}$

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.40	$^{\circ}\text{C/W}$
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\*Applies only to rated RF amplifier operation

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

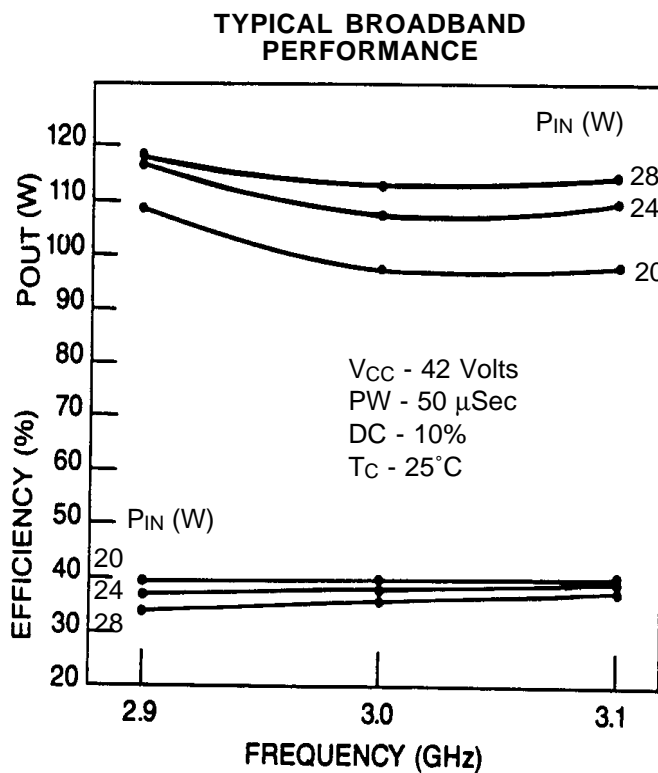
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 40mA$	$I_E = 0mA$	55	—	—	V
$BV_{EBO}$	$I_E = 8mA$	$I_C = 0mA$	3.5	—	—	V
$BV_{CER}$	$I_C = 40mA$	$R_{BE} = 10\Omega$	55	—	—	V
$I_{CES}$	$V_{BE} = 0V$	$V_{CE} = 42V$	—	—	30	mA
$h_{FE}$	$V_{CE} = 5V$	$I_C = 4A$	30	—	—	—

**DYNAMIC**

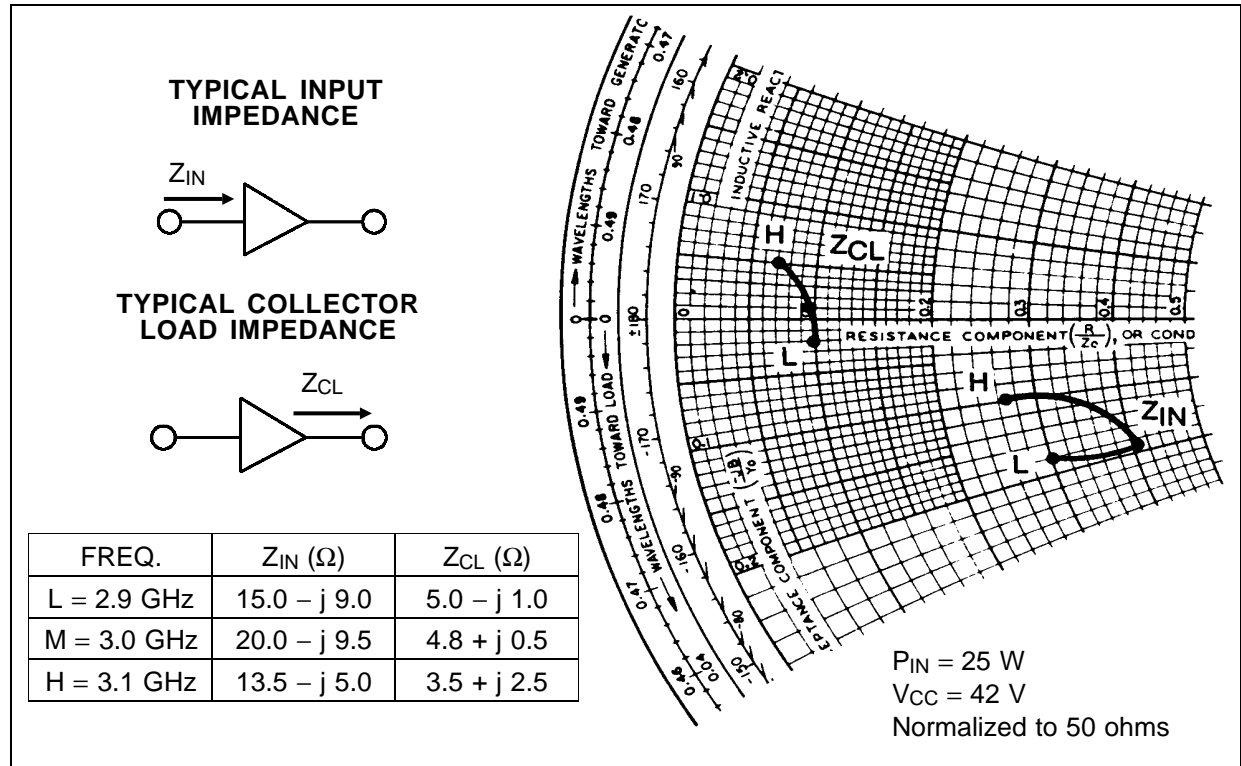
Symbol	Test Conditions				Value			Unit
					Min.	Typ.	Max.	
$P_{OUT}$	$f = 2900 - 3100MHz$	$P_{IN} = 25W$	$V_{CC} = 42V$		105	115	—	W
$\eta_c$	$f = 2900 - 3100MHz$	$P_{IN} = 25W$	$V_{CC} = 42V$		32	40	—	%
$G_P$	$f = 2900 - 3100MHz$	$P_{IN} = 25W$	$V_{CC} = 42V$		6.2	6.6	—	dB

Note: Pulse Width = 50  $\mu$ Sec

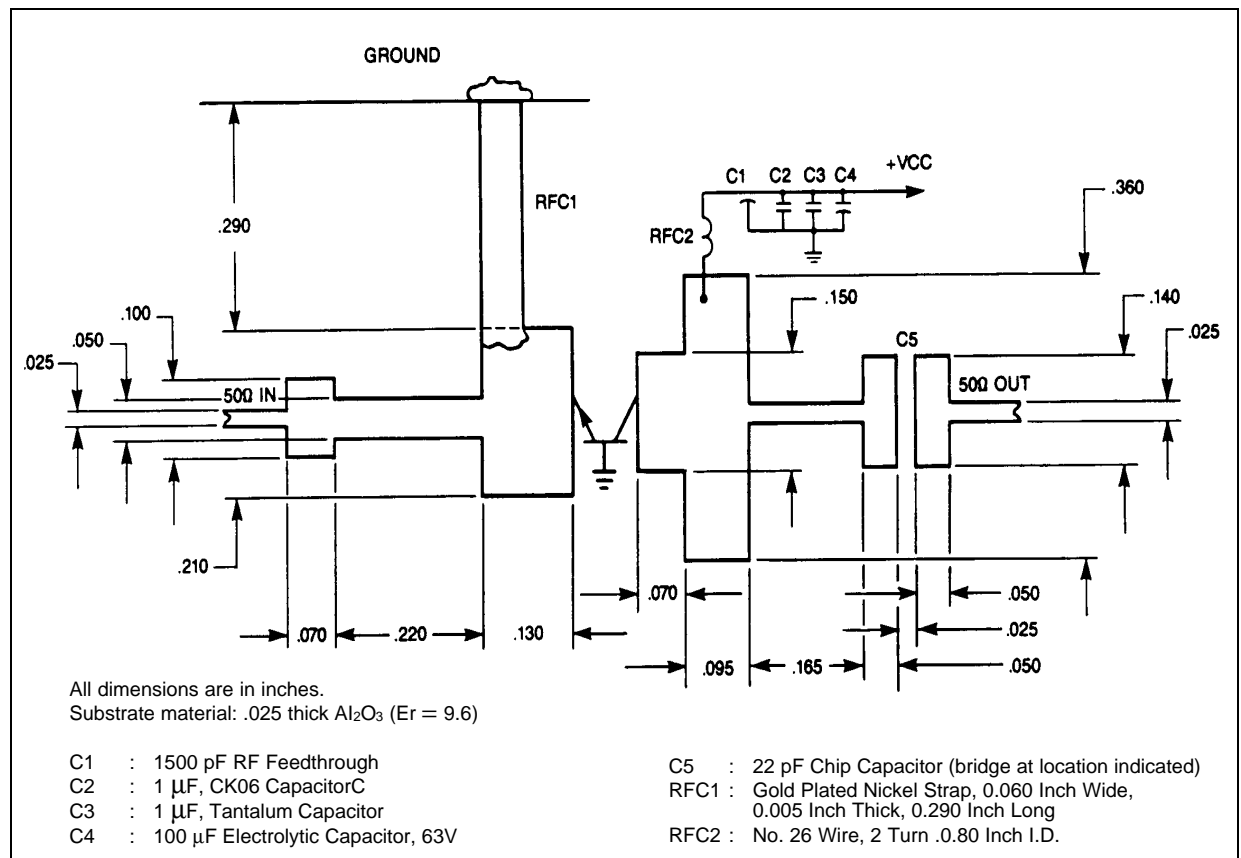
Duty Cycle = 10%

**TYPICAL PERFORMANCE**

## IMPEDANCE DATA

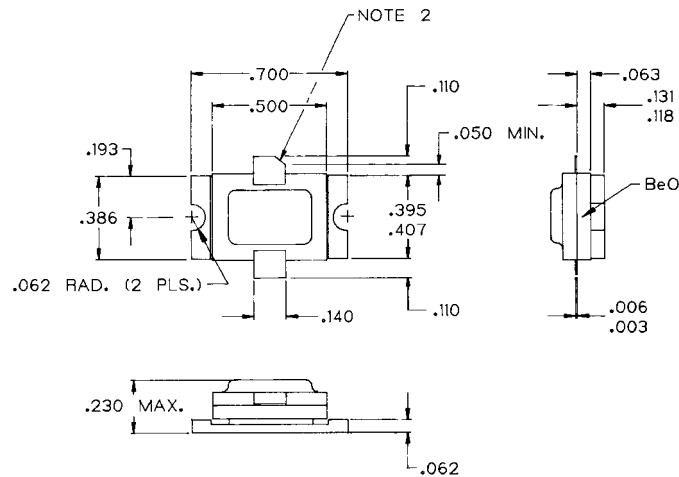


## TEST CIRCUIT



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: 103-000737A



NOTES:

1. ALL TOLERANCES  $\pm .010$  EXCEPT WHERE NOTED;  
DIMENSIONS IN INCHES.
2. COLLECTOR LEAD CHAMFER  $45^\circ$  NOM. X  $.040$  NOM.

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