



# Spectrum Devices Corporation

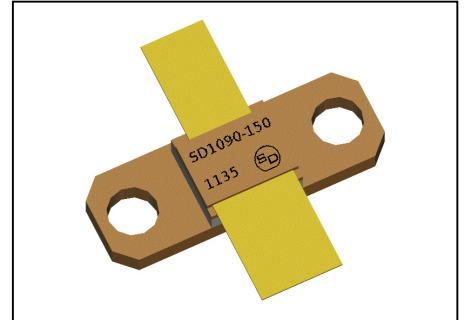
Semiconductor Engineering and Manufacturing

## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

**SD1090-150**

### FEATURES:

- Refractory/Gold Metallization
- Common Base
- Low Thermal Resistance
- Metal/Ceramic Hermetic Package
- $P_{out} = 150$  W Min.
- $P_G = 8.75$  dB



### Case Outline

**0.250" Square Hermetic Package**

### DESCRIPTION:

The SD1090-150 Avionics power transistor is a Common Base bipolar transistor designed for specialized avionics IFF transponder applications. It is designed for pulsed systems that require low duty cycles and high peak power in the 1030 - 1090 MHz frequency band.

The SD1090-150 is housed in the 0.250" square Hermetic package using gold metallization, which provides an optimized low thermal resistance.

**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)	430	W
I <sub>C</sub>	Device Current*	11	A
V <sub>CC</sub>	Collector-Supply Voltage*	55	V
T <sub>J</sub>	Junction Temperature (Pulsed RF Operation)	250	°C
T <sub>STG</sub>	Storage Temperature	-65 to +200	°C

**THERMAL DATA:**

R <sub>TH(J-C)</sub>	Junction-Case Thermal Resistance*	0.41	°C/W
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NOTE: \*Applies only to rated RF amplifier operation.

**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)****DC CHARACTERISTICS**

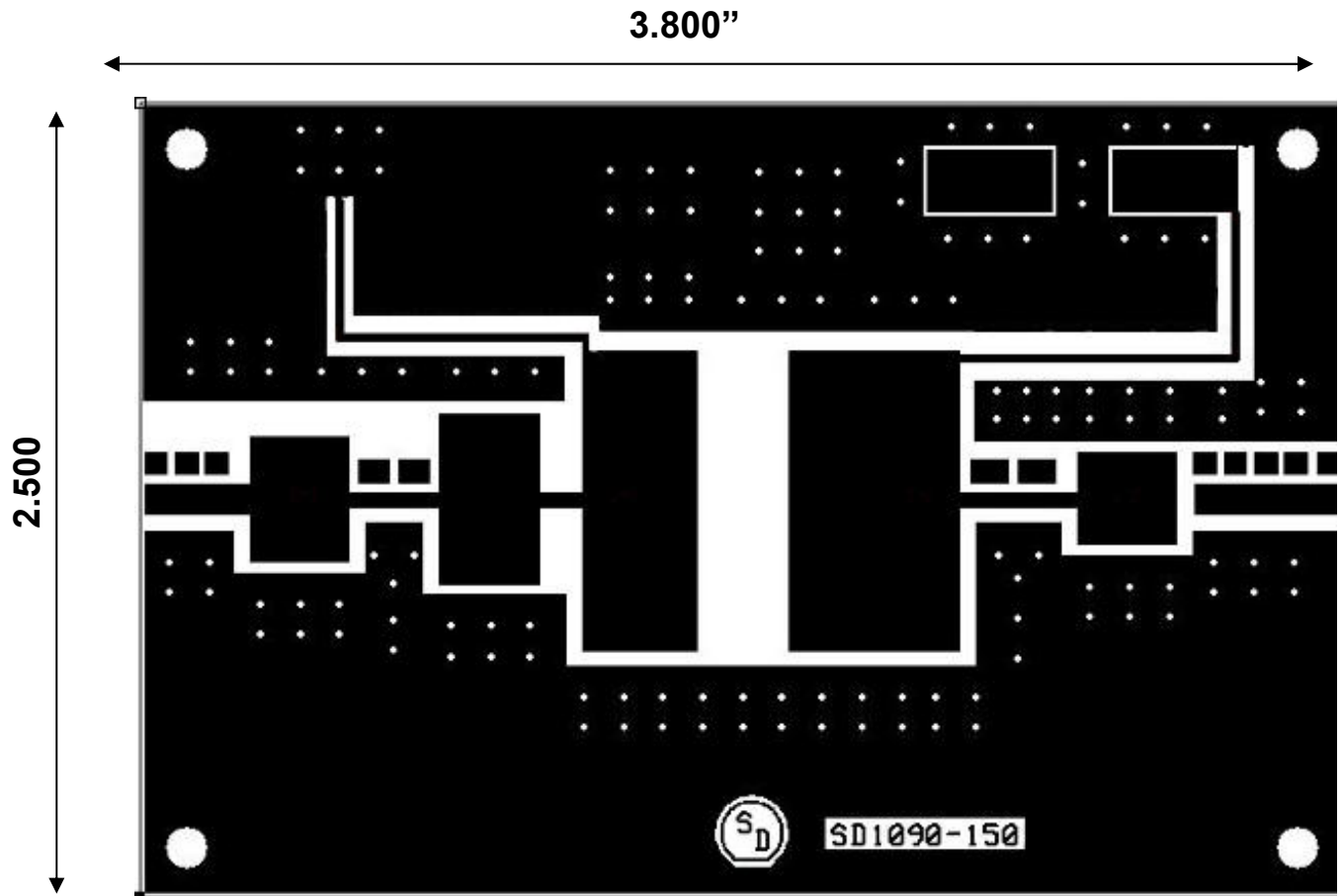
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV <sub>EBO</sub>	I <sub>E</sub> = 5 mA	3.5	--	--	V
BV <sub>CB0</sub>	I <sub>C</sub> = 10 mA	65	--	--	V
V <sub>BE</sub>	I <sub>B</sub> = 4 A	1.3	--	--	V
COB	V <sub>CB</sub> = 50V      f = 1 MHz	--	--	50	pf
I <sub>CES</sub>	V <sub>CE</sub> = 50V      EB Shorted	--	--	40	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5 V      I <sub>C</sub> = 4 A	20	--	200	--

**RF CHARACTERISTICS**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 1090 MHz      P <sub>IN</sub> = 20W      V <sub>CC</sub> = 50V	150	--	--	W
η <sub>C</sub>	f = 1090 MHz      P <sub>IN</sub> = 20W      V <sub>CC</sub> = 50V	35	--	--	%
G <sub>P</sub>	f = 1090 MHz      P <sub>IN</sub> = 20W      V <sub>CC</sub> = 50V	8.75	--	--	dB

NOTE: RF tests performed with a Pulse Width at 1us and a duty cycle of 1%

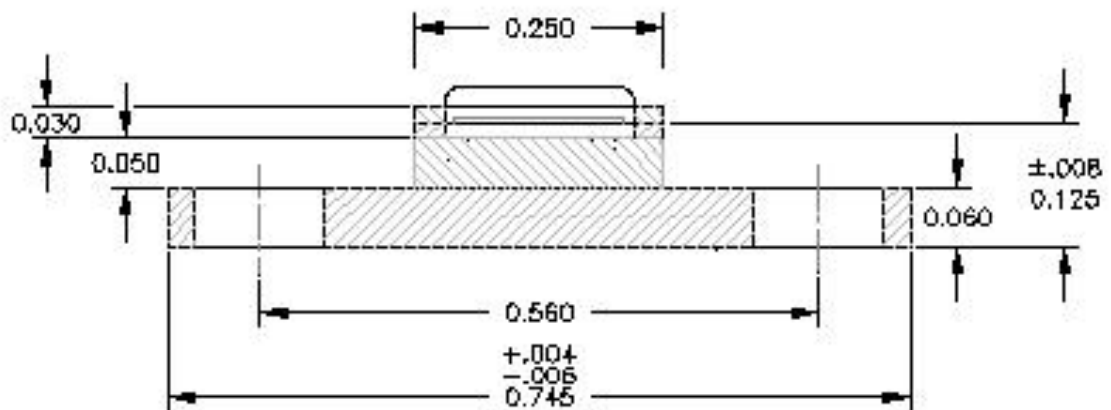
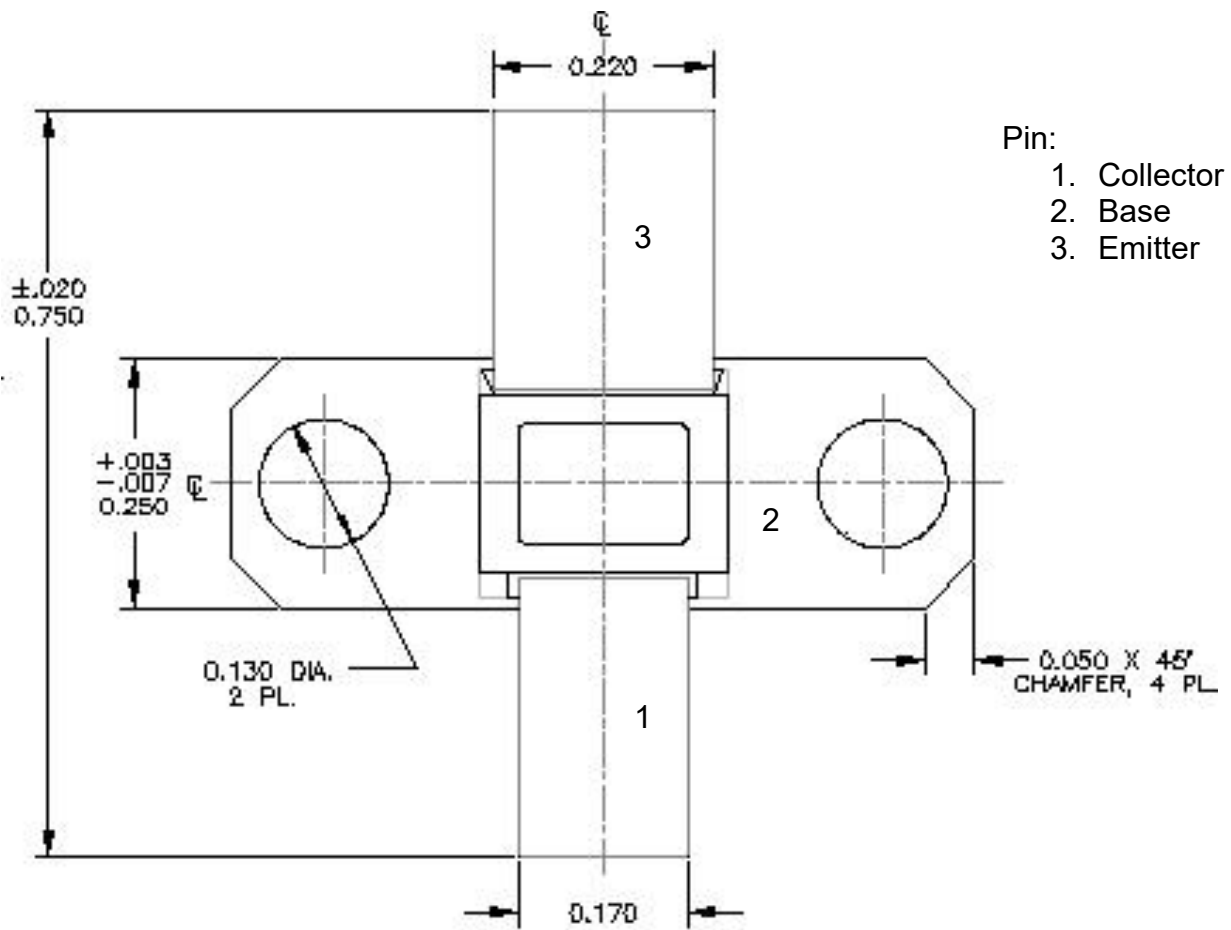
# TEST CIRCUIT



## NOTES:

Board Material – FR4, 0.062" thick. For actual board layout, please consult factory

# PACKAGE MECHANICAL DATA



## **DISCLAIMER**

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### **Life Support Applications**

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