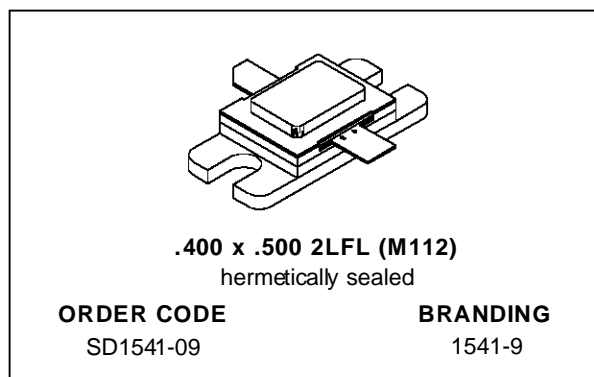
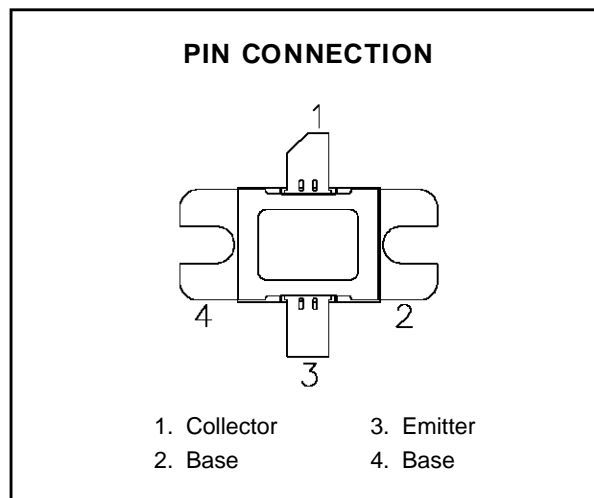


**RF & MICROWAVE TRANSISTORS  
AVIONICS APPLICATIONS**

- DESIGNED FOR HIGH POWER PULSED IFF APPLICATIONS
- 450 WATTS (min.) IFF 1030/1090 MHz
- 7.0 dB MIN. GAIN
- REFRACTORY GOLD METALLIZATION
- BALLASTING AND LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- 30:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- INPUT MATCHED, COMMON BASE CONFIGURATION


**DESCRIPTION**

The SD1541-09 is a gold metallized silicon NPN planar transistor. The SD1541-09 is designed for applications requiring high peak and low duty cycles such as IFF. The SD1541-09 is packaged in a metal/ceramic package with internal input matching, resulting in improved broadband performance and a low thermal resistance.


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

| Symbol     | Parameter                 | Value        | Unit        |
|------------|---------------------------|--------------|-------------|
| $V_{CBO}$  | Collector-Base Voltage    | 65           | V           |
| $V_{CEO}$  | Collector-Emitter Voltage | 65           | V           |
| $V_{EBO}$  | Emitter-Base Voltage      | 3.5          | V           |
| $I_C$      | Device Current            | 22           | A           |
| $P_{DISS}$ | Power Dissipation         | 1458         | W           |
| $T_J$      | Junction Temperature      | +200         | $^{\circ}C$ |
| $T_{STG}$  | Storage Temperature       | - 65 to +150 | $^{\circ}C$ |

**THERMAL DATA**

|               |                                  |      |               |
|---------------|----------------------------------|------|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 0.12 | $^{\circ}C/W$ |
|---------------|----------------------------------|------|---------------|

## SD1541-09

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

#### STATIC

| Symbol     | Test Conditions |              | Value |      |      | Unit |
|------------|-----------------|--------------|-------|------|------|------|
|            |                 |              | Min.  | Typ. | Max. |      |
| $BV_{CBO}$ | $I_C = 25mA$    | $I_E = 0mA$  | 65    | —    | —    | V    |
| $BV_{CES}$ | $I_C = 50mA$    | $I_B = 0mA$  | 65    | —    | —    | V    |
| $BV_{EBO}$ | $I_E = 10mA$    | $I_C = 0mA$  | 3.5   | —    | —    | V    |
| $I_{CES}$  | $V_{CE} = 50V$  | $I_E = 0mA$  | —     | —    | 25   | mA   |
| $h_{FE}$   | $V_{CE} = 5V$   | $I_C = .25A$ | 5     | —    | 200  | —    |

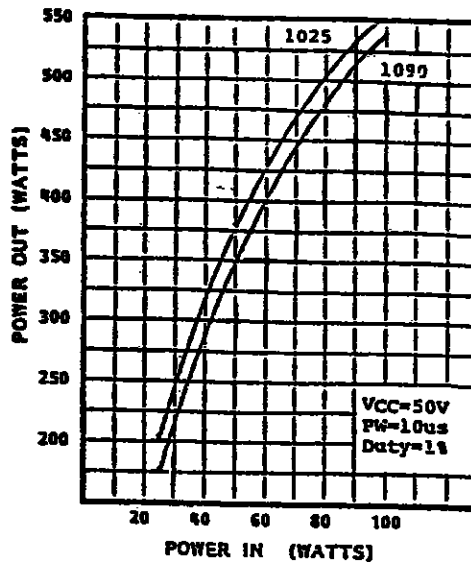
#### DYNAMIC

| Symbol    | Test Conditions       |                        |                        | Value |      |      | Unit |
|-----------|-----------------------|------------------------|------------------------|-------|------|------|------|
|           |                       |                        |                        | Min.  | Typ. | Max. |      |
| $P_{OUT}$ | $f = 1090\text{ MHz}$ | $P_{IN} = 90\text{ W}$ | $V_{CE} = 50\text{ V}$ | 450   | —    | —    | W    |
| $G_P$     | $f = 1090\text{ MHz}$ | $P_{IN} = 90\text{ W}$ | $V_{CE} = 50\text{ V}$ | 7.0   | —    | —    | dB   |

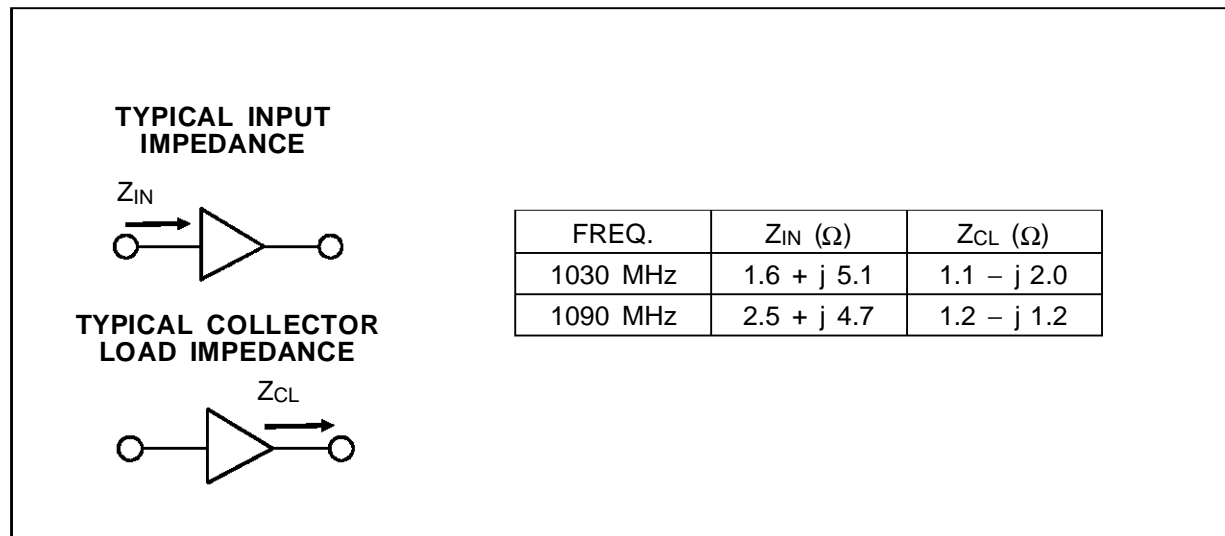
Note: Pulse Width =  $10\mu\text{Sec}$ , Duty Cycle = 1%

### TYPICAL PERFORMANCE

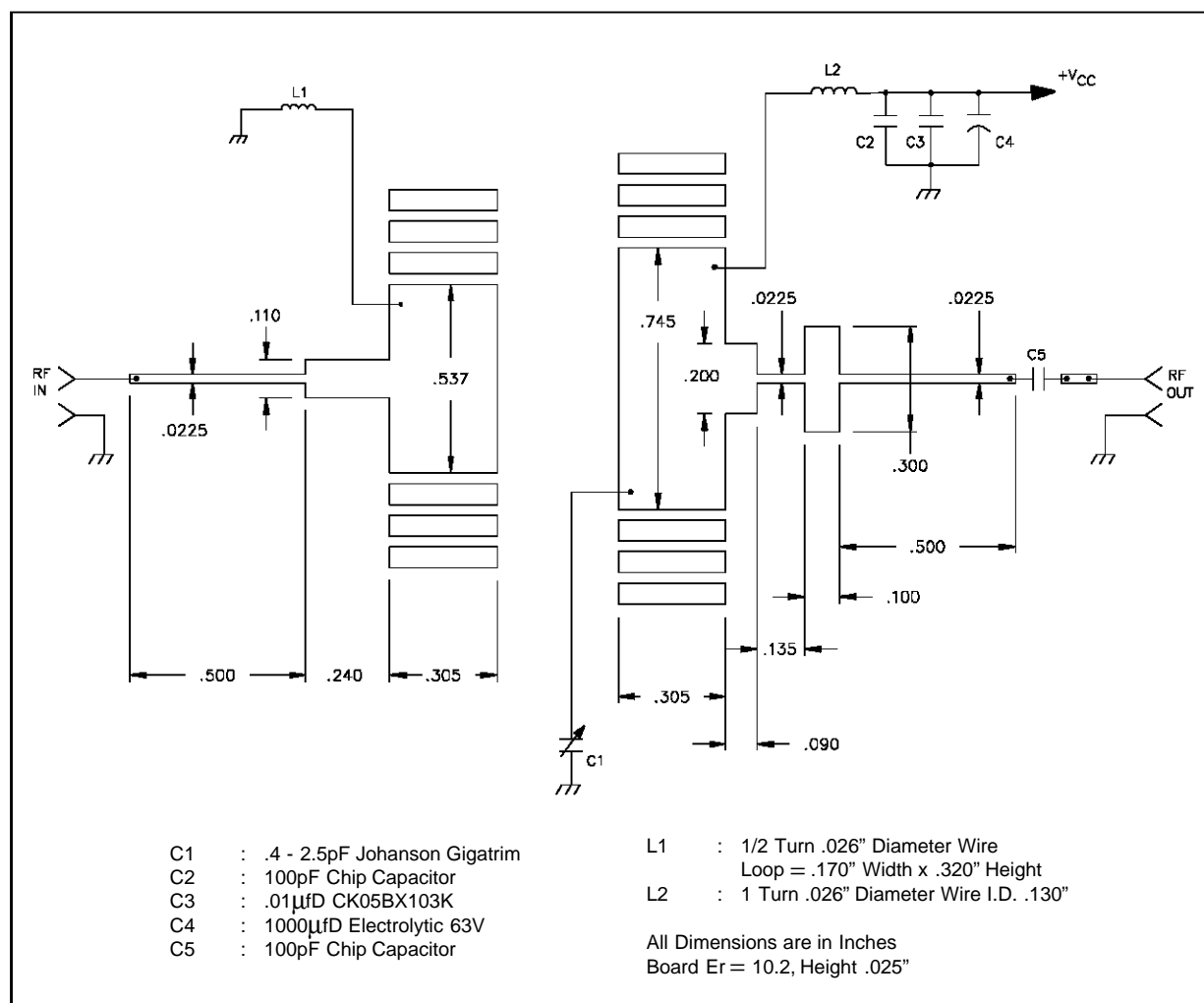
#### POWER OUTPUT vs POWER INPUT



## IMPEDANCE DATA

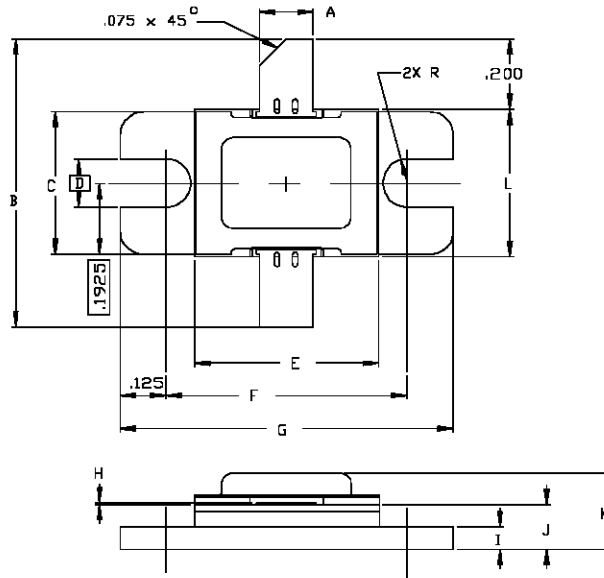


## TEST CIRCUIT LAYOUT



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0112



| SGS-THOMSON MICROELECTRONICS |                      |                      |
|------------------------------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .145/3,68            | .155/3,93            |
| B                            | .750/19,05           |                      |
| C                            | .380/9,65            | .390/9,91            |
| D                            | .130/3,30            |                      |
| E                            | .495/12,57           | .507/12,88           |
| F                            | .640/16,26           | .655/16,64           |
| G                            | .890/22,61           | .910/23,11           |
| H                            | .002/0,05            | .006/0,15            |
| I                            | .055/1,40            | .065/1,65            |
| J                            | .115/2,92            | .135/3,43            |
| K                            |                      | .230/5,84            |
| L                            | .395/10,03           | .407/10,34           |

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