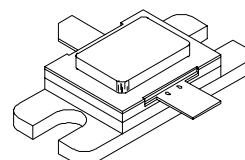


RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- 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



.400 x .500 2LFL (M112)
hermetically sealed

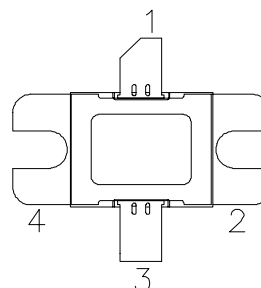
ORDER CODE
SD1541-09

BRANDING
1541-9

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.

PIN CONNECTION



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

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

| Symbol | Parameter | Value | Unit |
|-------------------|---------------------------|--------------|------|
| V _{CB0} | 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 | °C |
| T _{STG} | Storage Temperature | - 65 to +150 | °C |

THERMAL DATA

| | | | |
|----------------------|----------------------------------|------|------|
| R _{TH(j-c)} | Junction-Case Thermal Resistance | 0.12 | °C/W |
|----------------------|----------------------------------|------|------|

ELECTRICAL SPECIFICATIONS (T_{case} = 25°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 | — |

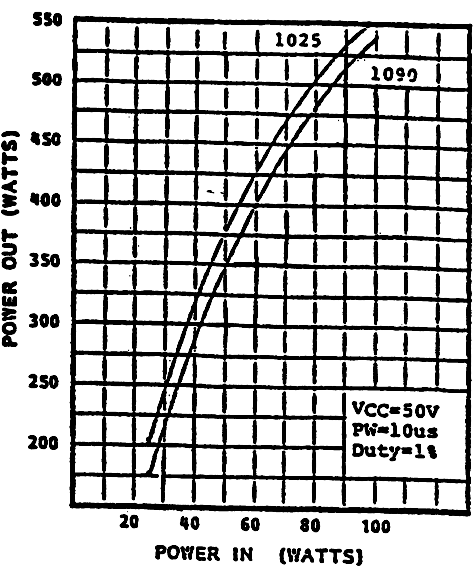
DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|------------------|-----------------|------------------------|------------------------|-------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P _{OUT} | f = 1090 MHz | P _{IN} = 90 W | V _{CE} = 50 V | 450 | — | — | W |
| G _P | f = 1090 MHz | P _{IN} = 90 W | V _{CE} = 50 V | 7.0 | — | — | dB |

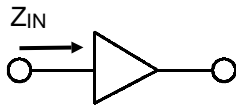
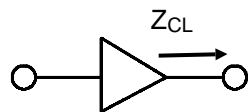
Note: Pulse Width = 10μSec, Duty Cycle = 1%

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

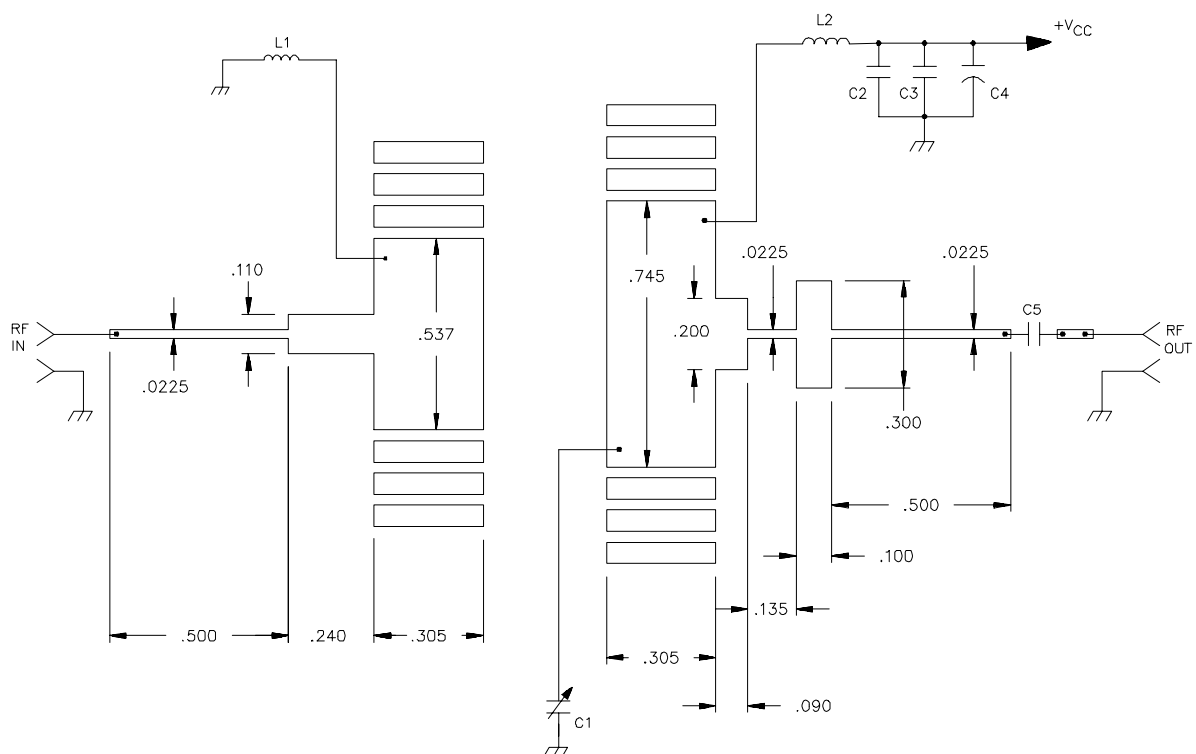


IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCETYPICAL COLLECTOR
LOAD IMPEDANCE

| FREQ. | $Z_{IN} (\Omega)$ | $Z_{CL} (\Omega)$ |
|----------|-------------------|-------------------|
| 1030 MHz | $1.6 + j 5.1$ | $1.1 - j 2.0$ |
| 1090 MHz | $2.5 + j 4.7$ | $1.2 - j 1.2$ |

TEST CIRCUIT LAYOUT



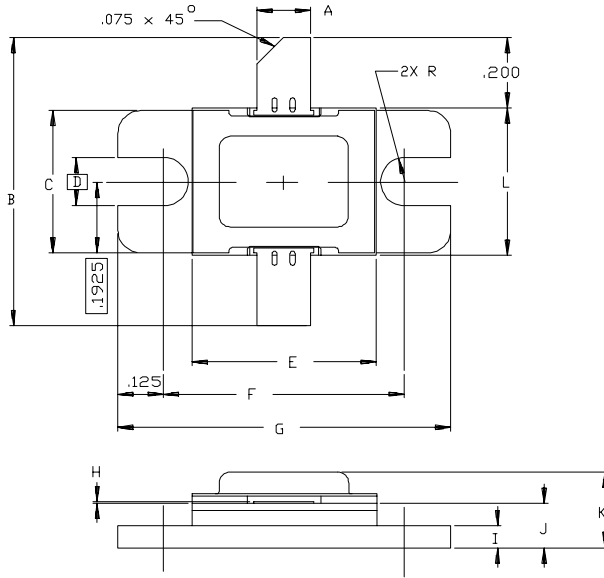
C1 : .4 - 2.5pF Johanson Gigatrim
 C2 : 100pF Chip Capacitor
 C3 : .01 μ F CK05BX103K
 C4 : 1000 μ F Electrolytic 63V
 C5 : 100pF Chip Capacitor

L1 : 1/2 Turn .026" Diameter Wire
 Loop = .170" Width x .320" Height
 L2 : 1 Turn .026" Diameter Wire I.D. .130"

All Dimensions are in Inches
 Board Er = 10.2, Height .025"

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0112



| SGS-THOMSON MICROELECTRONICS | | |
|------------------------------|----------------------|----------------------|
| | MINIMUM Inches/mm | MAXIMUM 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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