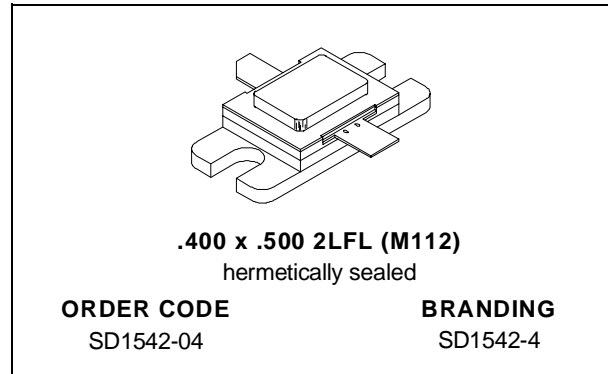
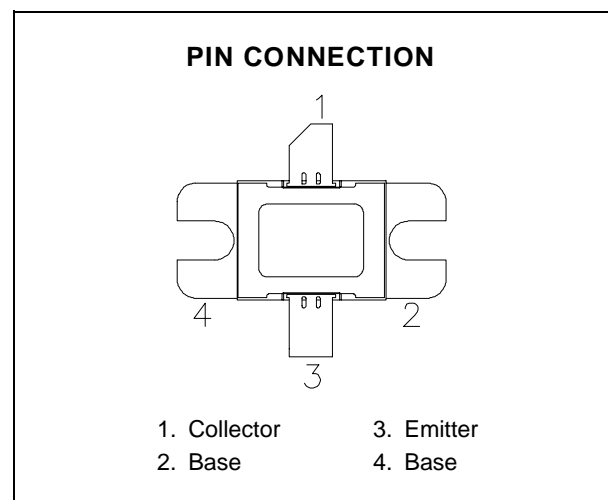


**RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS**

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


DESCRIPTION

The SD1542-04 is a hermetically sealed, gold metallized, silicon NPN power transistor. The SD1542-04 is designed for applications requiring high peak power and low duty cycles such as IFF. The SD1542-04 is packaged in a hermetic metal/ceramic package with internal input matching, resulting in improved broadband performance and low thermal reistance.


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

| Symbol | Parameter | Value | Unit |
|------------|---------------------------|--------------|-------------|
| V_{CBO} | Collector-Base Voltage | 65 | V |
| V_{CES} | Collector-Emitter Voltage | 65 | V |
| V_{EBO} | Emitter-Base Voltage | 3.5 | V |
| I_C | Device Current | 40 | A |
| P_{DISS} | Power Dissipation | 1350 | 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 | 0.06 | $^{\circ}C/W$ |
|---------------|----------------------------------|------|---------------|

SD1542-04

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 _{EBO} | I _E = 10mA | I _C = 0mA | 3.5 | — | — | V |
| I _{CEs} | V _{CE} = 50V | I _E = 0mA | — | — | 35 | mA |
| h _{FE} | V _{CE} = 5V | I _C = 1A | 5 | — | 200 | — |

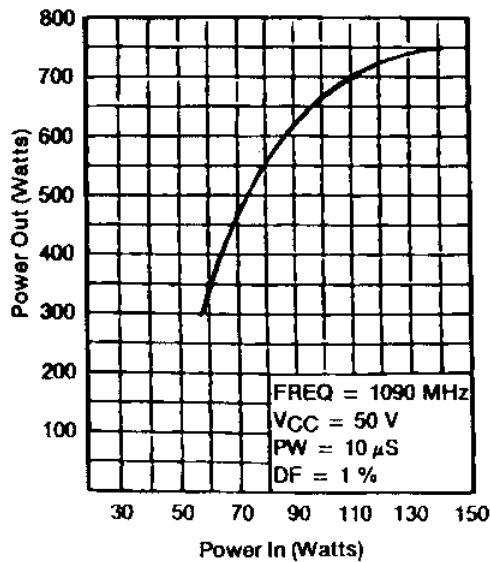
DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|------------------|-----------------|-------------------------|------------------------|-------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P _{OUT} | f = 1090 MHz | P _{IN} = 150 W | V _{CE} = 50 V | 600 | — | — | W |
| G _P | f = 1090 MHz | P _{IN} = 150 W | V _{CE} = 50 V | 6.0 | — | — | dB |

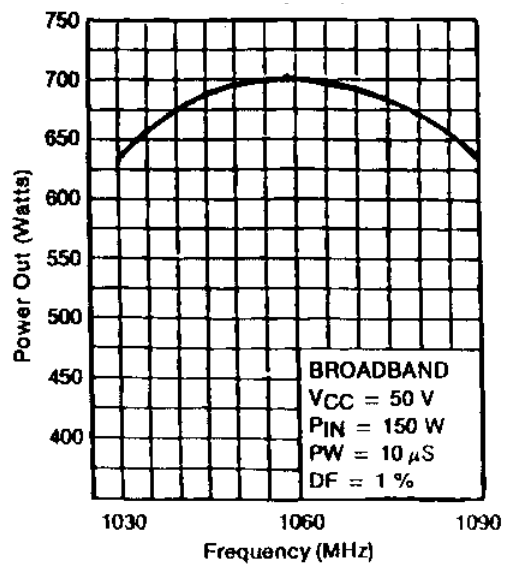
Note: Pulse Width = 10μSec, Duty Cycle = 1%

TYPICAL PERFORMANCE

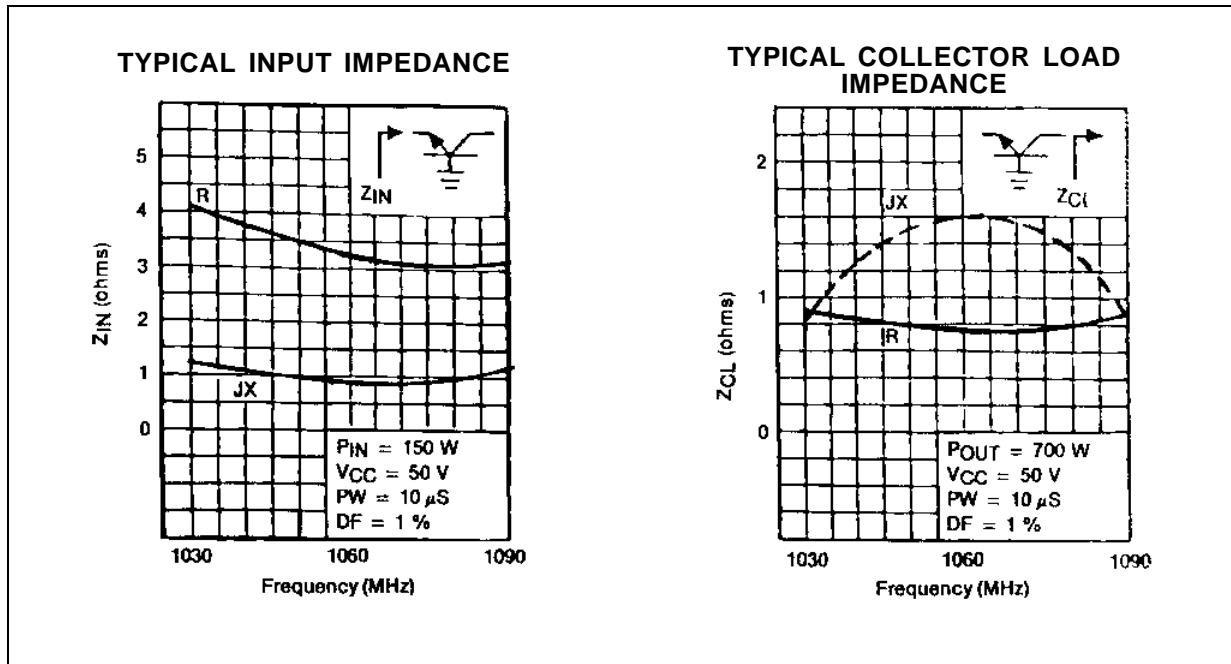
POWER OUTPUT vs POWER INPUT



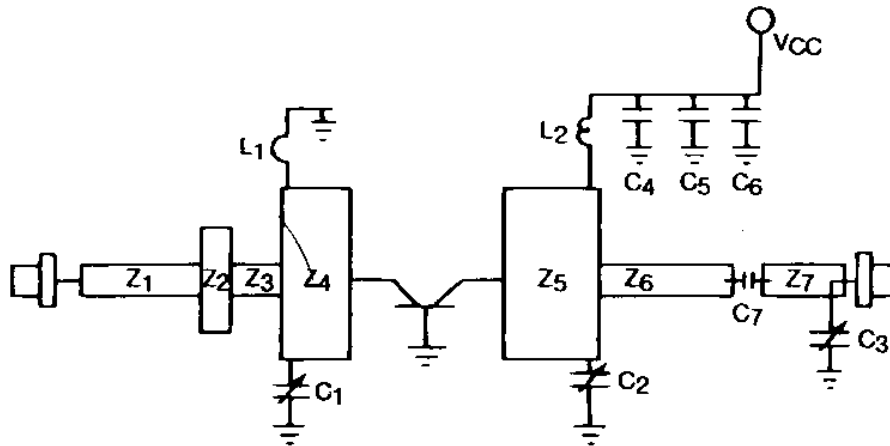
POWER OUTPUT vs FREQUENCY



IMPEDANCE DATA



TEST CIRCUIT



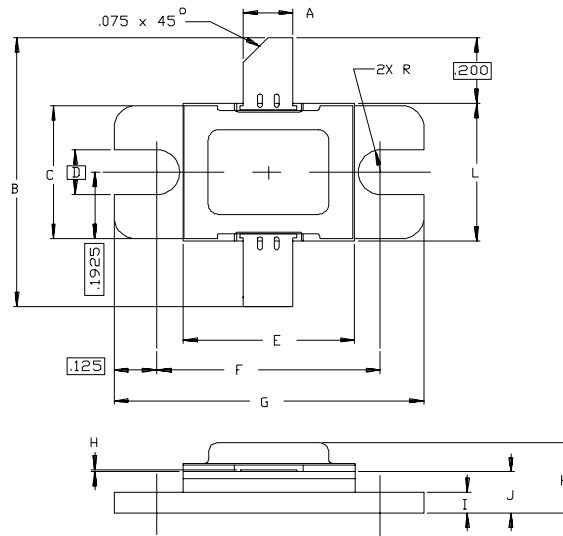
- | | | | |
|---------|-----------------------------------|----|---------------------|
| C1, C2, | | Z1 | : 510 mils x 20mils |
| C3 | : .8 - 4.8pF Gigatrim | Z2 | : 120mils x 380mils |
| C4 | : 120pF Chip Capacitor | Z3 | : 210mils x 20mils |
| C5 | : 680pF Chip Capacitor | Z4 | : 270mils x 725mils |
| C6 | : 1000 μ F 63Vdc Electrolytic | Z5 | : 400mils x 720mils |
| C7 | : 56pF Chip Capacitor | Z6 | : 340mils x 20 mils |
| L1 | : 100mils Wide Brass Strip | Z7 | : 245mils x 20 mils |
| L2 | : #18 AWG Wire | | |

CIRCUIT BOARD LAYOUT



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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