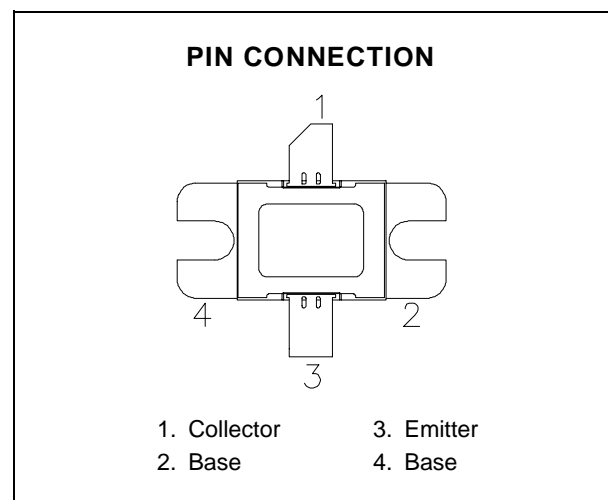
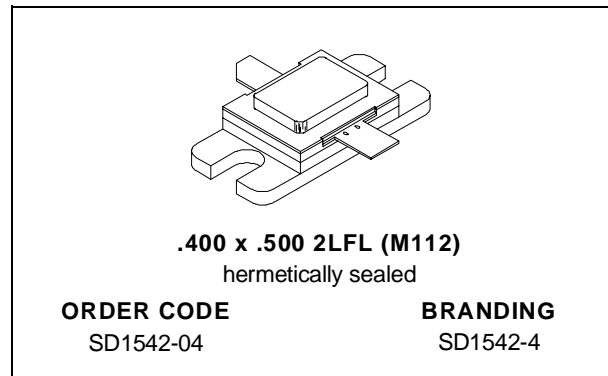


**RF & MICROWAVE TRANSISTORS  
AVIONICS APPLICATIONS**

- 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	$^{\circ}C/W$
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# SD1542-04

## ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV <sub>CBO</sub>	I <sub>C</sub> = 25mA	I <sub>E</sub> = 0mA	65	—	—	V
BV <sub>EBO</sub>	I <sub>E</sub> = 10mA	I <sub>C</sub> = 0mA	3.5	—	—	V
I <sub>CEs</sub>	V <sub>CE</sub> = 50V	I <sub>E</sub> = 0mA	—	—	35	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 1A	5	—	200	—

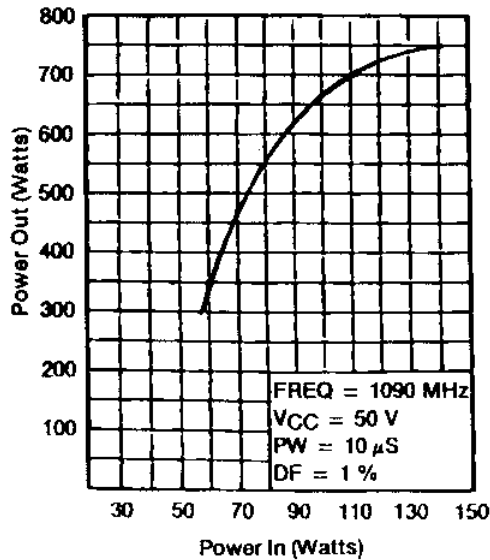
### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 1090 MHz	P <sub>IN</sub> = 150 W	V <sub>CE</sub> = 50 V	600	—	—	W
G <sub>P</sub>	f = 1090 MHz	P <sub>IN</sub> = 150 W	V <sub>CE</sub> = 50 V	6.0	—	—	dB

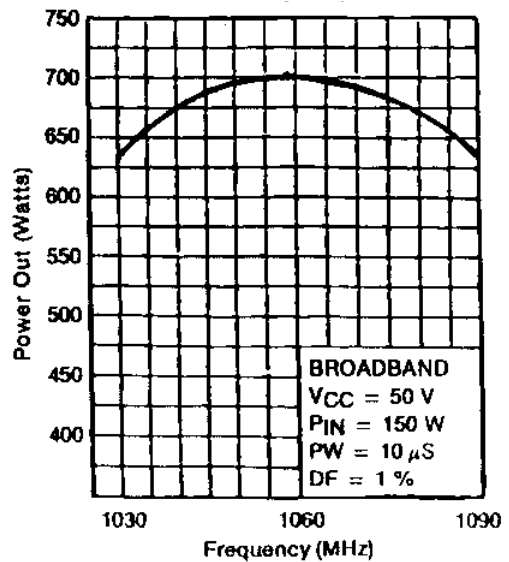
Note: Pulse Width = 10μSec, Duty Cycle = 1%

### TYPICAL PERFORMANCE

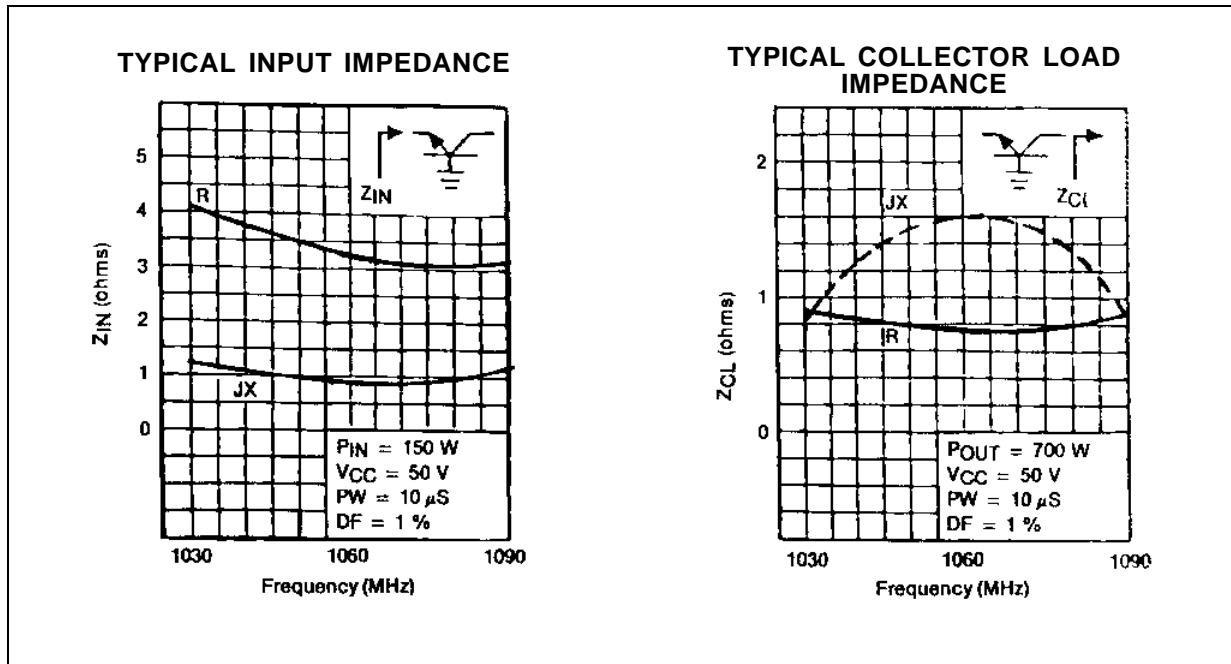
POWER OUTPUT vs POWER INPUT



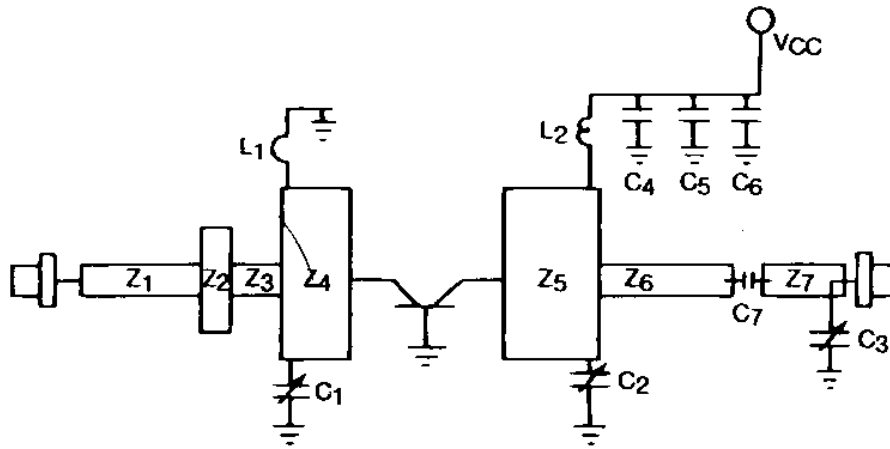
POWER OUTPUT vs FREQUENCY



## IMPEDANCE DATA



TEST CIRCUIT



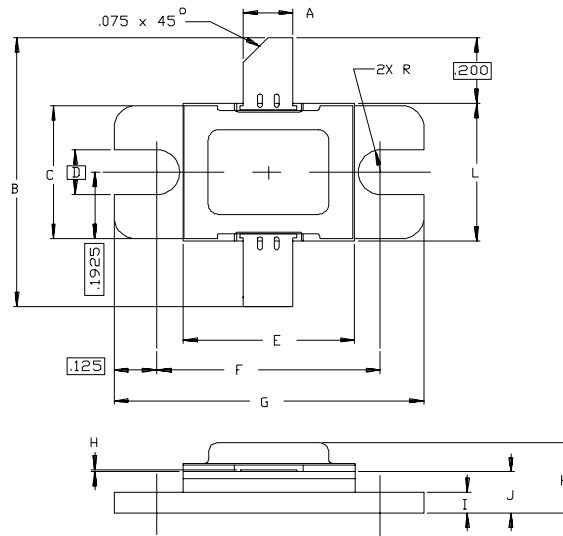
- |                                      |    |                     |
|--------------------------------------|----|---------------------|
| C1, C2,                              | Z1 | : 510 mils x 20mils |
| C3 : .8 - 4.8pF Gigatrim             | Z2 | : 120mils x 380mils |
| C4 : 120pF Chip Capacitor            | Z3 | : 210mils x 20mils  |
| C5 : 680pF Chip Capacitor            | Z4 | : 270mils x 725mils |
| C6 : 1000 $\mu$ 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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