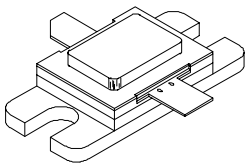
SGS-THOMSON MICROELECTRONICS

SD1542-04

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

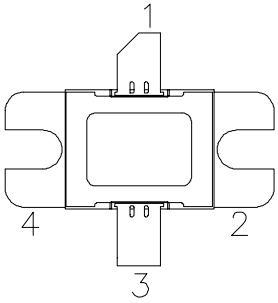
- DESIGNED FOR HIGH POWER PULSED IFF
- 600 WATTS (min.) IFF 1030/1090 MHz
- REFRACTORY GOLD METALLIZATION
- 6.0 dB MIN. GAIN
- BALLASTING AND LOW THERMAL REISTANCE FOR RELIABILITY AND RUGGEDNESS
- 30:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- INPUT MATCHED, COMMON BASE CONFIGURATION



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

ORDER CODE	BRANDING
SD1542-04	SD1542-4

PIN CONNECTION



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

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°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	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.06	°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_{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	—

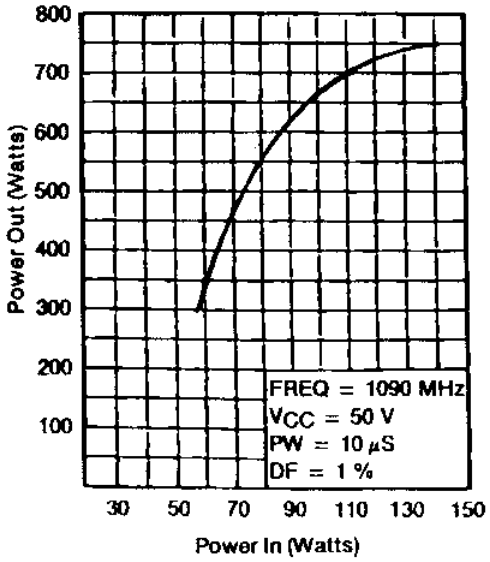
DYNAMIC

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

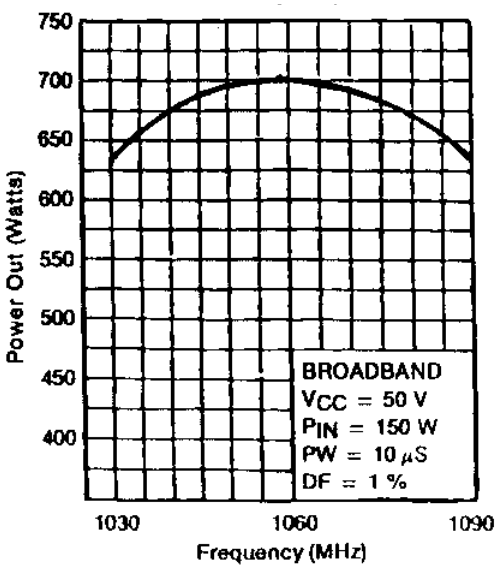
Note: Pulse Width = 10μSec, Duty Cyle = 1%

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

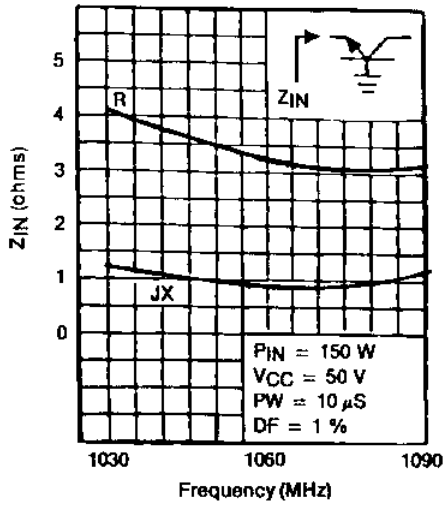


POWER OUTPUT vs FREQUENCY

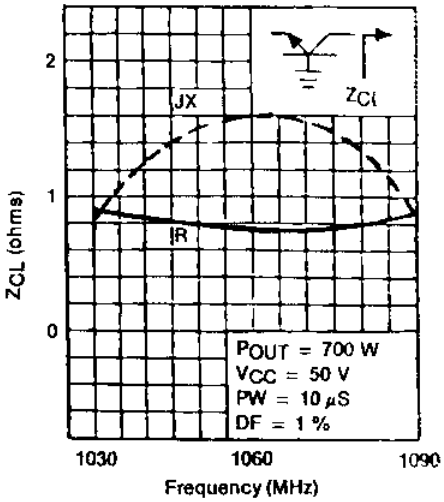


IMPEDANCE DATA

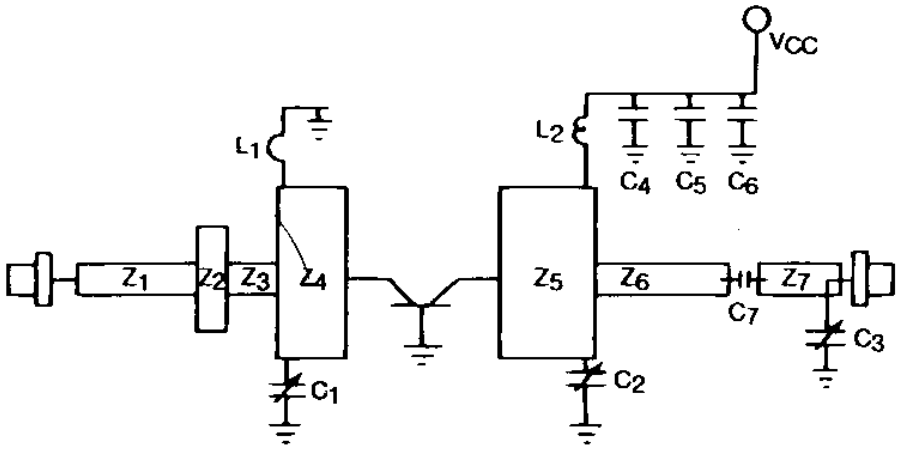
TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE



TEST CIRCUIT

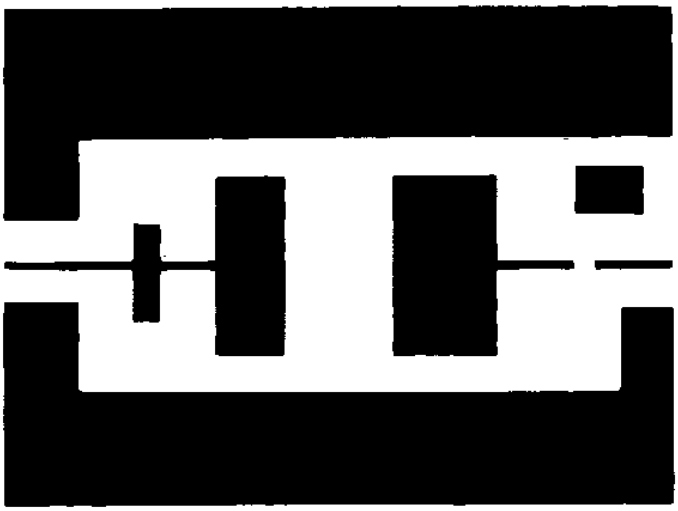


C1, C2, C3 : .8 - 4.8pF Gigatrim
C4 : 120pF Chip Capacitor
C5 : 680pF Chip Capacitor
C6 : 1000µF 63Vdc Electrolytic
C7 : 56pF Chip Capacitor

L1 : 100mils Wide Brass Strip
L2 : #18 AWG Wire

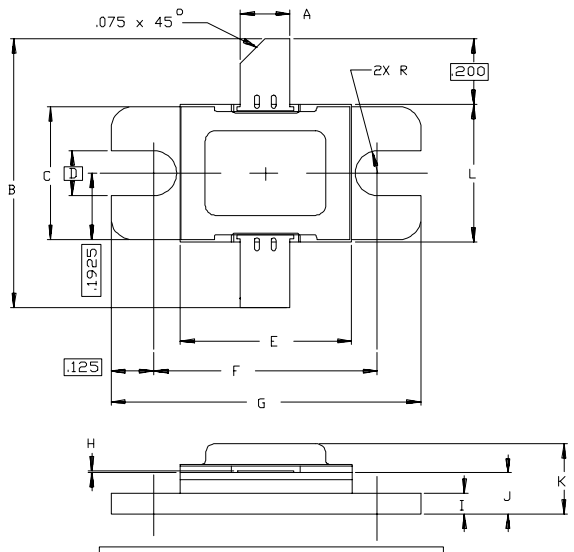
Z1 : 510 mils x 20mils
Z2 : 120mils x 380mils
Z3 : 210mils x 20mils
Z4 : 270mils x 725mils
Z5 : 400mils x 720mils
Z6 : 340mils x 20 mils
Z7 : 245mils x 20 mils

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