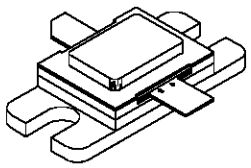
SGS-THOMSON MICROELECTRONICS

SD1541-09

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

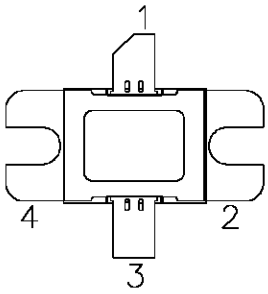
- DESIGNED FOR HIGH POWER PULSED IFF APPLICATIONS
- 450 WATTS (min.) IFF 1030/1090 MHz
- 7.0 dB MIN. GAIN
- REFRACTORY GOLD METALLIZATION
- BALLASTING AND LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- 30:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- INPUT MATCHED, COMMON BASE CONFIGURATION



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

ORDER CODE	BRANDING
SD1541-09	1541-9

PIN CONNECTION



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

DESCRIPTION

The SD1541-09 is a gold metallized silicon NPN planar transistor. The SD1541-09 is designedfor 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°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	°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	—

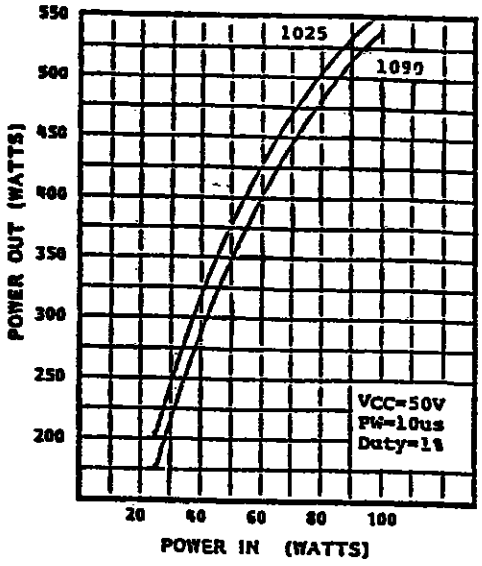
DYNAMIC

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%

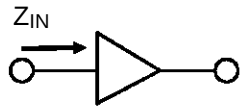
TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

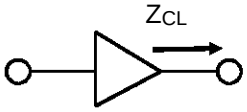


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

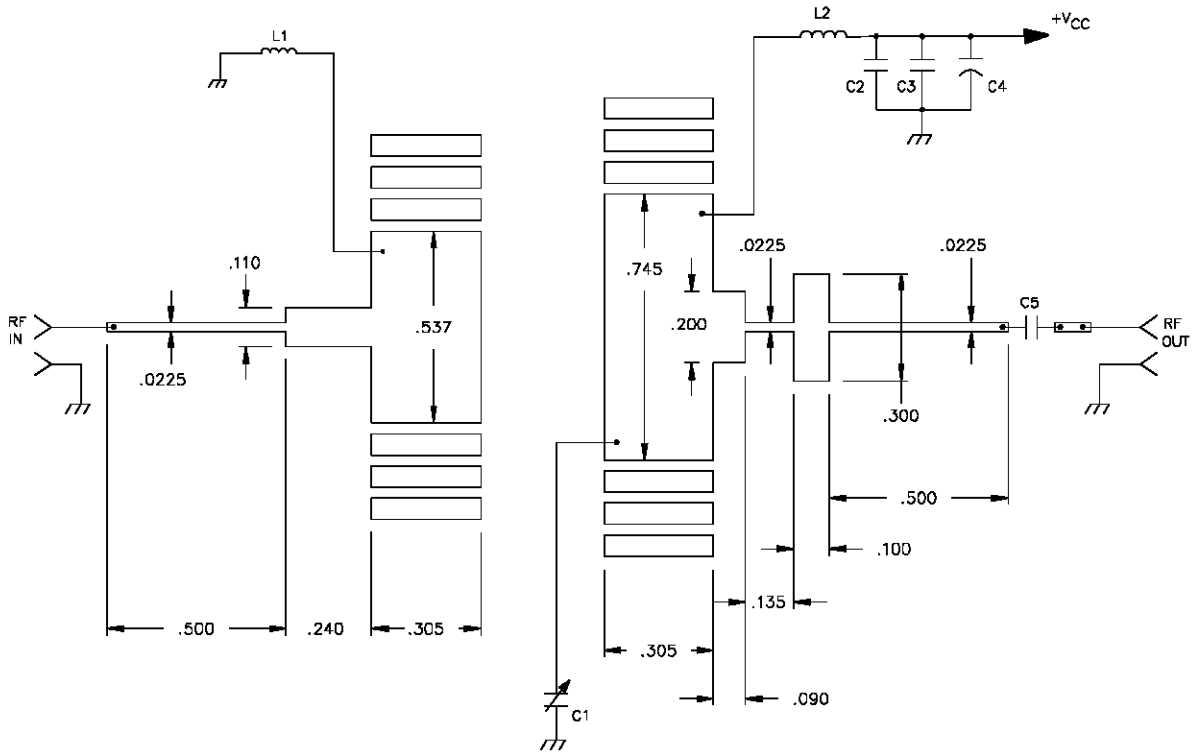


TYPICAL COLLECTOR LOAD IMPEDANCE



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
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



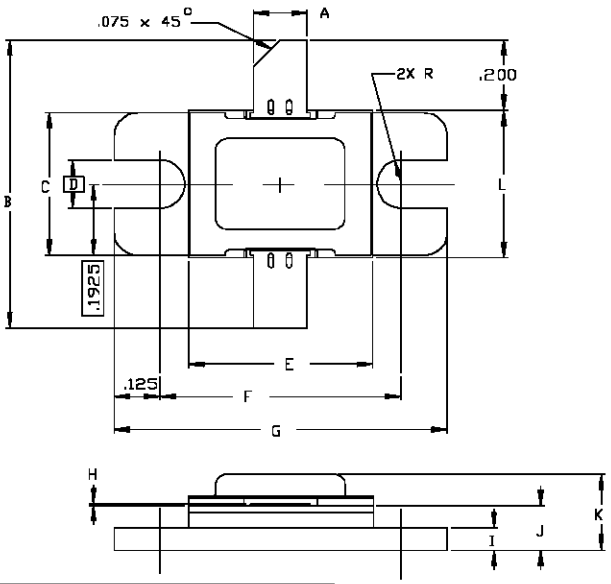
C1 : .4 - 2.5pF Johanson Gigatrim
C2 : 100pF Chip Capacitor
C3 : .01µfD CK05BX103K
C4 : 1000µfD Electrolytic 63V
C5 : 100pF Chip Capacitor

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