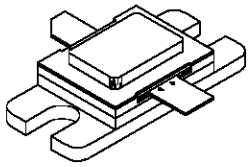
SGS-THOMSON MICROELECTRONICS

SD1541-01

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

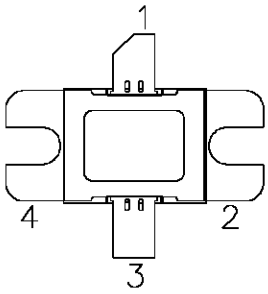
- DESIGNED FOR HIGH POWER PULSED IFF AND DME APPLICATIONS
- 400 (min.) DME 1025 - 1150 MHz
- 6.5 dB MIN. GAIN
- REFRACTORY GOLD METALLIZATION
- EMITTER BALLASTING AND LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- 30:1 LOAD VSWR CAPABILITY AT SPECIFICIED OPERATING CONDITIONS
- INPUT/OUTPUT MATCHED, COMMON BASE CONFIGURATION



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

ORDER CODE	BRANDING
SD1541-01	SD1541-1

PIN CONNECTION



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

DESCRIPTION

The SD1541-01 is a hermetically sealed, gold metallized, silicon NPN power transistor. The SD1541-01 is designed for applications requiring high peak power and low duty cycles such as DME. The SD1541-01 is packaged in a hermetic metal/ceramic package with internal input/output 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_{CES}	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	V_{BE} = 0V	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	—

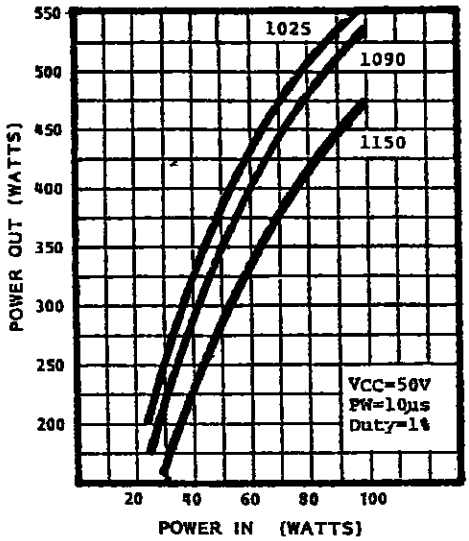
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1025 — 1150MHz	P_{IN} = 90 W	V_{CE} = 50 V	400	—	—	W
G_P	f = 1025 — 1150MHz	P_{IN} = 90 W	V_{CE} = 50 V	6.5	—	—	dB

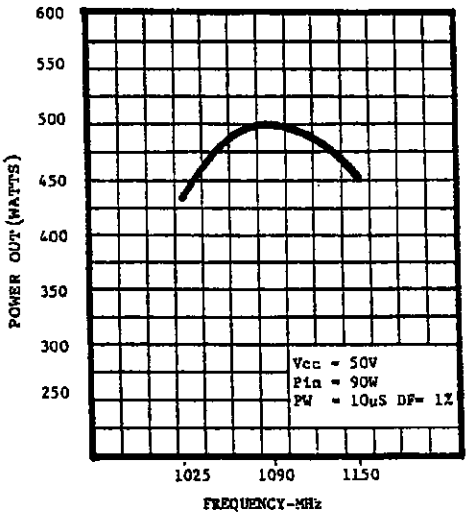
Note: Pulse Width = 10µSec, Duty Cycle = 1%
This device is suitable for use under other pulse width/duty cycle conditions.
Please contact the factory for specific applications assistance.

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT



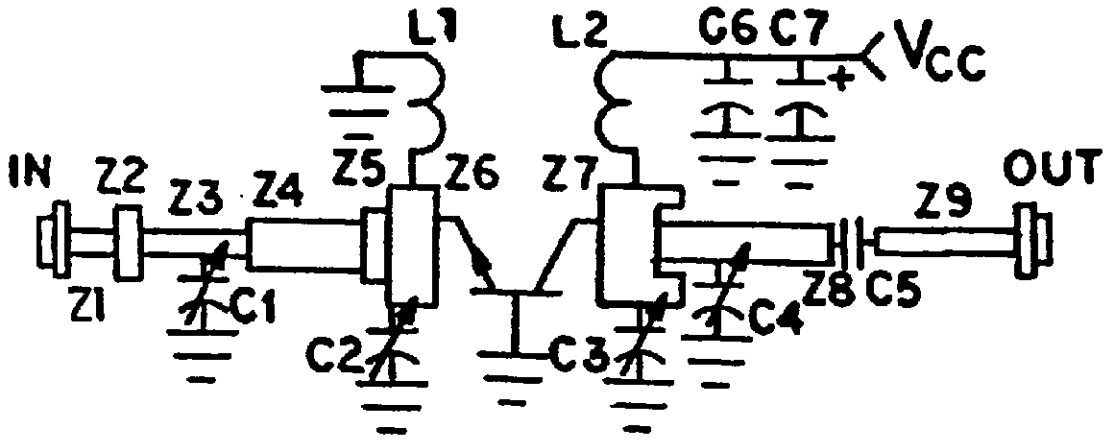
POWER OUTPUT vs FREQUENCY



IMPEDANCE DATA

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
1020 MHz	2.898 + j 4.1	1.382 – j 3.2
1090 MHz	2.325 + j 3.4	1.338 – j 2.8
1150 MHz	1.994 + j 2.8	1.269 – j 2.5

TEST CIRCUIT



All Dimensions in Inches Unless Otherwise specified

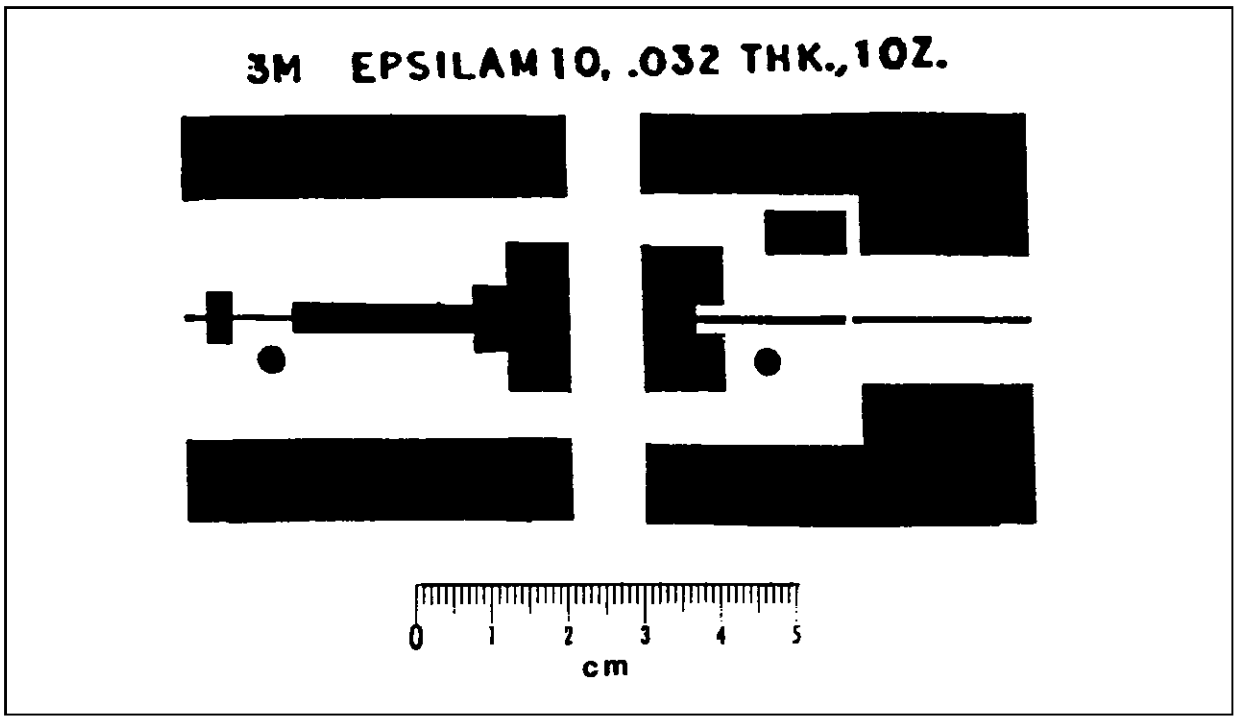
C1 : 0.4 - 2.5pF Johanson Gigatrim
C2, C3,
C4 : 0.6 - 4.5pF Johanson Gigatrim
C5 : 82pF Chip Capacitor, .055 Sq.

L1 : Loop, #18 Tinned, .36 Wide x .27 above Circuit
L2 : 4 3/4 Turns, #24 En., C.W., .075 I.D.

Z1 : 50Ω(.02 Wide)
Z2 : .250 x .120
Z3 : 50Ω .020 x .330; C1 tapped .15 from Load
Z4 : .145 x .920
Z5 : .325 x .180
Z6 : .730 x .315
Z7 : .710 x .425 with .140 x .150 cutout
Z8 : .35 x .780; C4 Tapped .36 from Cen
Z9 : 50Ω

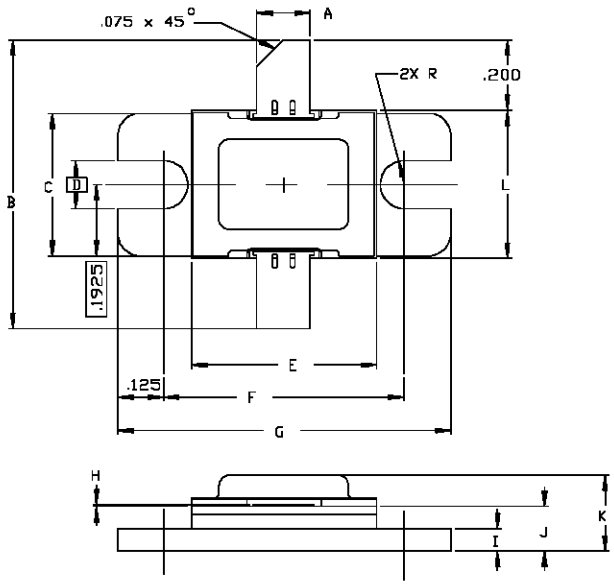
C1, C4 : Cold End Terminated Through Eyelet.

PC 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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