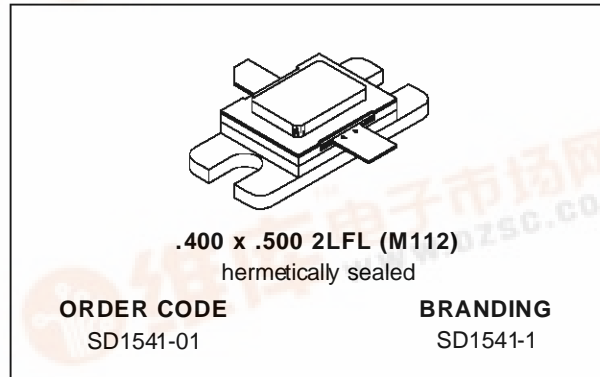




**SD1541-01**

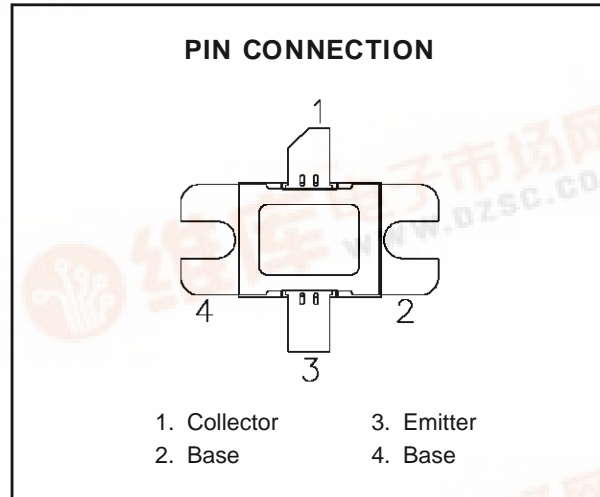
**RF & MICROWAVE TRANSISTORS  
AVIONICS APPLICATIONS**

- 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



**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<sub>case</sub> = 25°C)**

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	65	V
V <sub>CES</sub>	Collector-Emitter Voltage	65	V
V <sub>EBO</sub>	Emitter-Base Voltage	3.5	V
I <sub>c</sub>	Device Current	22	A
P <sub>DISS</sub>	Power Dissipation	1458	W
T <sub>J</sub>	Junction Temperature	+200	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +150	°C

**THERMAL DATA**

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance	0.12	°C/W
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# SD1541-01

## 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>CES</sub>	I <sub>C</sub> = 50mA	V <sub>BE</sub> = 0V	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	—	—	25	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = .25A	5	—	200	—

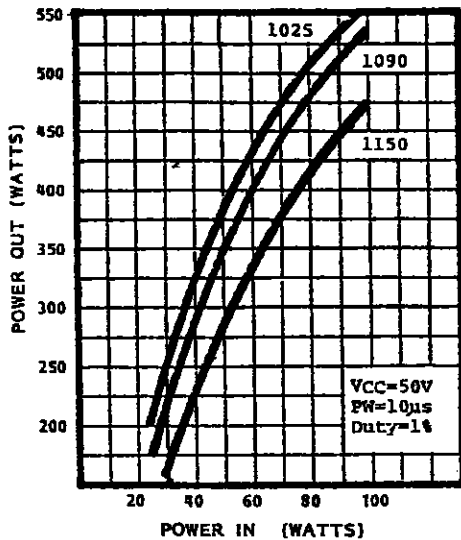
### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 1025 — 1150MHz	P <sub>IN</sub> = 90 W	V <sub>CE</sub> = 50 V	400	—	—	W
G <sub>P</sub>	f = 1025 — 1150MHz	P <sub>IN</sub> = 90 W	V <sub>CE</sub> = 50 V	6.5	—	—	dB

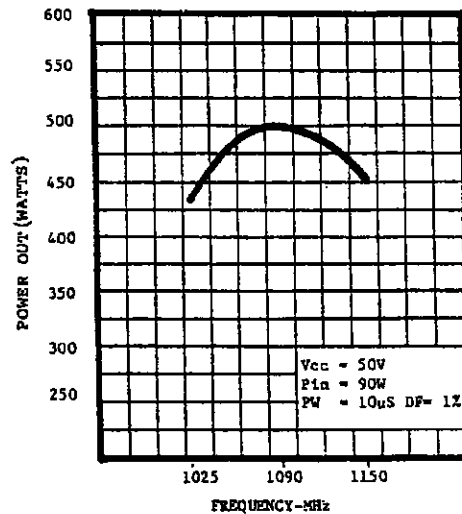
Note: Pulse Width = 10μSec, Duty Cycle = 1%  
 This device is suitable for use under other pulse width/duty cycle conditions.  
 Please contact the factory for specific applications assistance.

## TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT



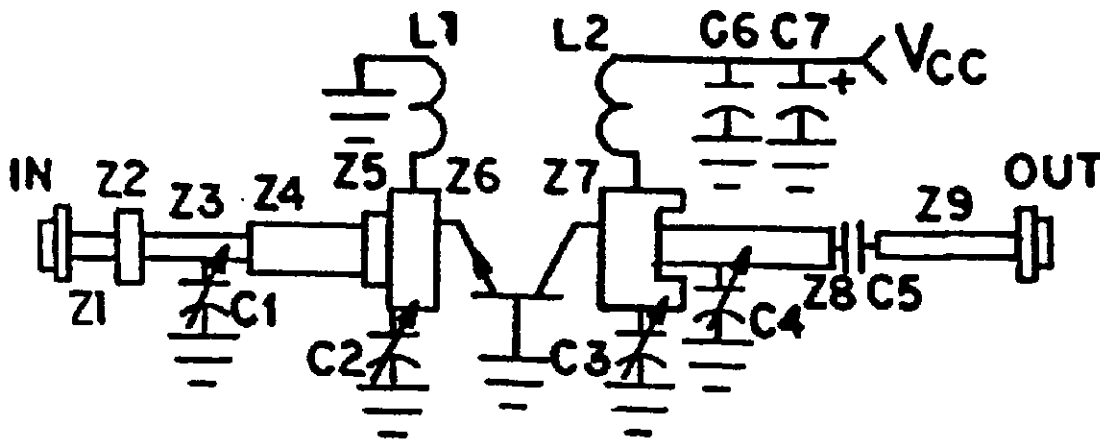
POWER OUTPUT vs FREQUENCY



## IMPEDANCE DATA

FREQ.	$Z_{IN}$ ( $\Omega$ )	$Z_{CL}$ ( $\Omega$ )
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 : 50 $\Omega$  (.02 Wide)

Z2 : .250 x .120

Z3 : 50 $\Omega$  .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

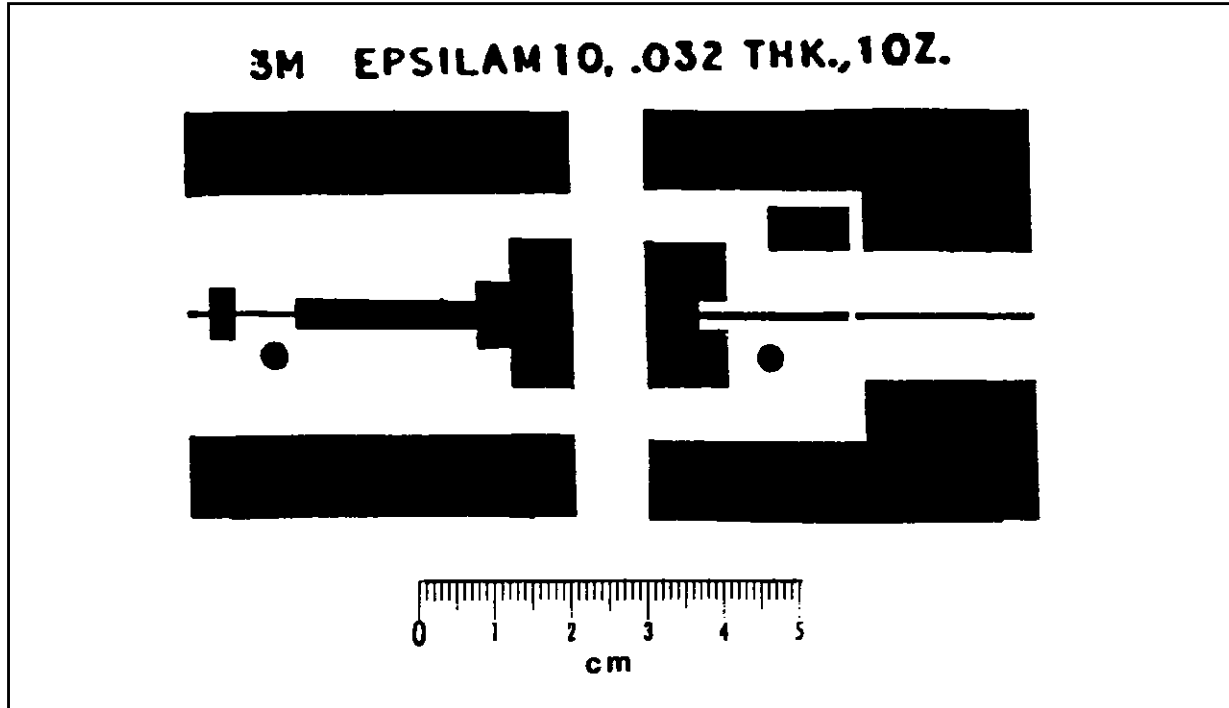
Z8 : .35 x .780; C4 Tapped .36 from Cen

Z9 : 50 $\Omega$

C1, C4 : Cold End Terminated Through Eyelet.

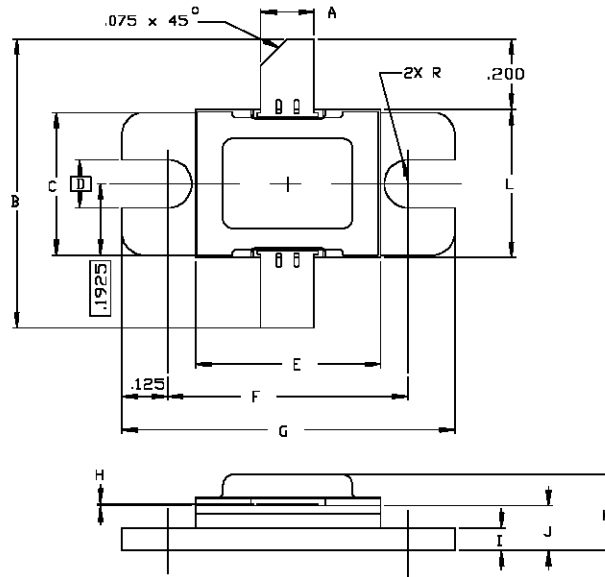
SD1541-01

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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