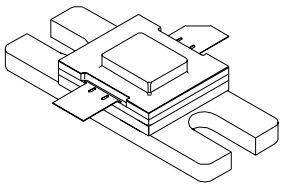
SD1541-01

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

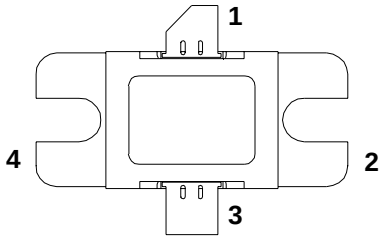
- DESIGNED FOR HIGH POWER PULSED IFF AND DME APPLICATIONS
- 400 W (min.) DME 1025 - 1150 MHz
- 6.5 dB min. GAIN
- REFRACTORY GOLD METALLIZATION
- EMITTER BALLASTING AND LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- 30:1 LOAD VSWR CAPABILITY AT SPECIFICIED OPERATING CONDITIONS
- INPUT/OUTPUT 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 SPECIFICATION (T_{CASE} = 25 °C)

STATIC

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
BV_{CBO}	I_C = 25mA I_E = 0mA	65			V
BV_{EBO}	I_E = 10mA I_C = 0mA	3.5			V
BV_{CES}	I_C = 50mA V_{BE} = 0V	65			V
I_{CES}	V_{CE} = 50V I_E = 0mA			25	mA
h_{FE}	V_{CE} = 5V I_C = 0.25A	5		200	

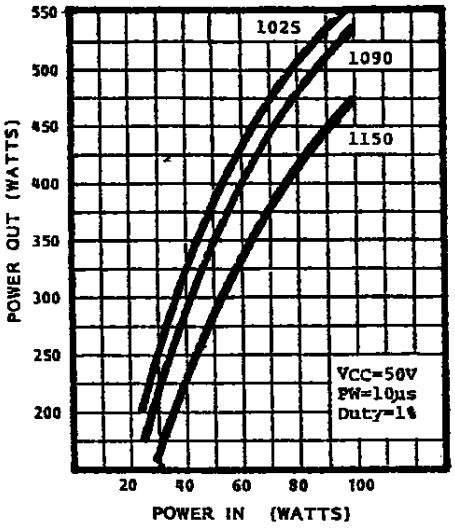
DYNAMIC

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

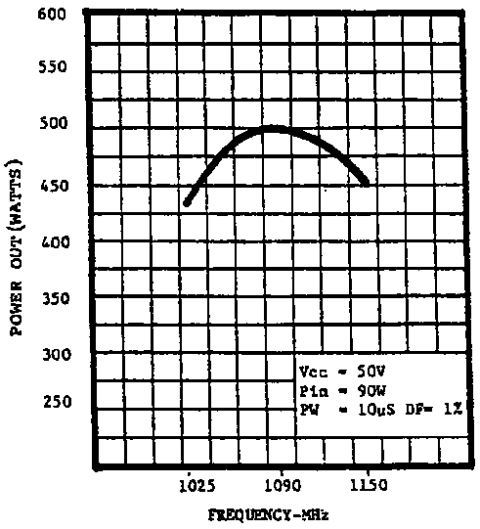
Note: Pulse width = 10 µs, Duty Cycle = 1%
This device is suitable for use under pulse width/duty cycle conditions.
Please contact the factory for specific applications assistance.

TYPICAL PERFORMANCE

Power Output vs. Power Input



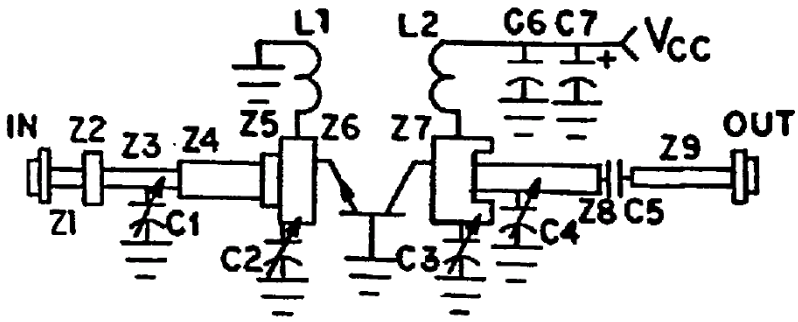
Power Output vs. Frequency



IMPEDANCE DATA

FREQ. MHz	Z_{IN} (Ω)	Z_{CL}(Ω)
1020	2.5 + j 3.2	1.6 - j 2.5
1090	2.2 + j 4.5	1.5 - j 2.7
1150	3.7 + j 2.1	1.3 - j 1.5

TEST CIRCUIT

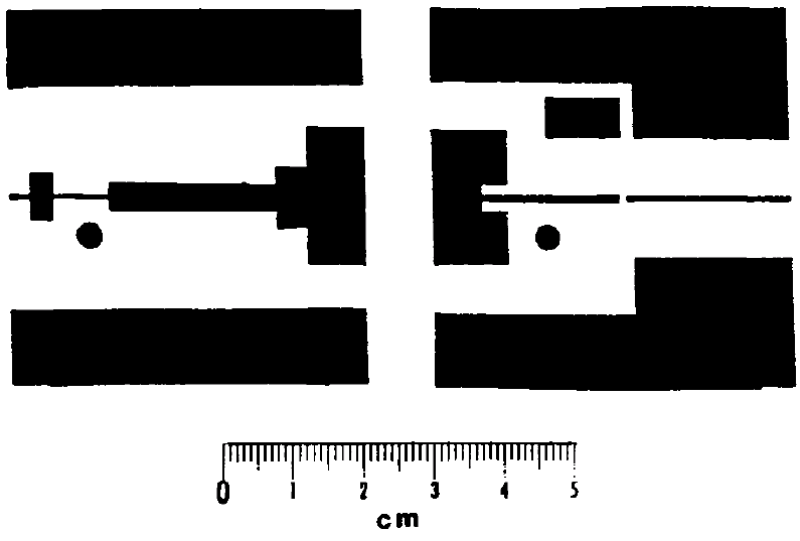


COMPONENT PART LIST

COMPONENT	DESCRIPTION
C1	0.4 - 2.5pF Johanson Gigatrim
C2, C3, C4	0.6 - 4.5pF Johanson Gigatrim
C5	82pF Chip Capacitor, 0.055 Sq.
L1	Loop, #18 Tinned, 0.36 Wide x 0.27 above Circuit
L2	4 3/4 Turns, #24 Enameled, Close Wound, 0.075 I.D.
Z1	50 Ω (0.02 Wide)
Z2	0.250 x 0.120
Z3	50 Ω 0.020 x 0.330; C1 tapped 0.15 from Load
Z4	0.145 x 0.920
Z5	0.325 x 0.180
Z6	0.730 x 0.315
Z7	0.710 x 0.425 with 0.140 x 0.150 cutout
Z8	0.035 x 0.780; C4 Tapped 0.36 from Cen
Z9	50 Ω
BOARD	3M EPSILAM10, 0.032 THK., 1 OZ

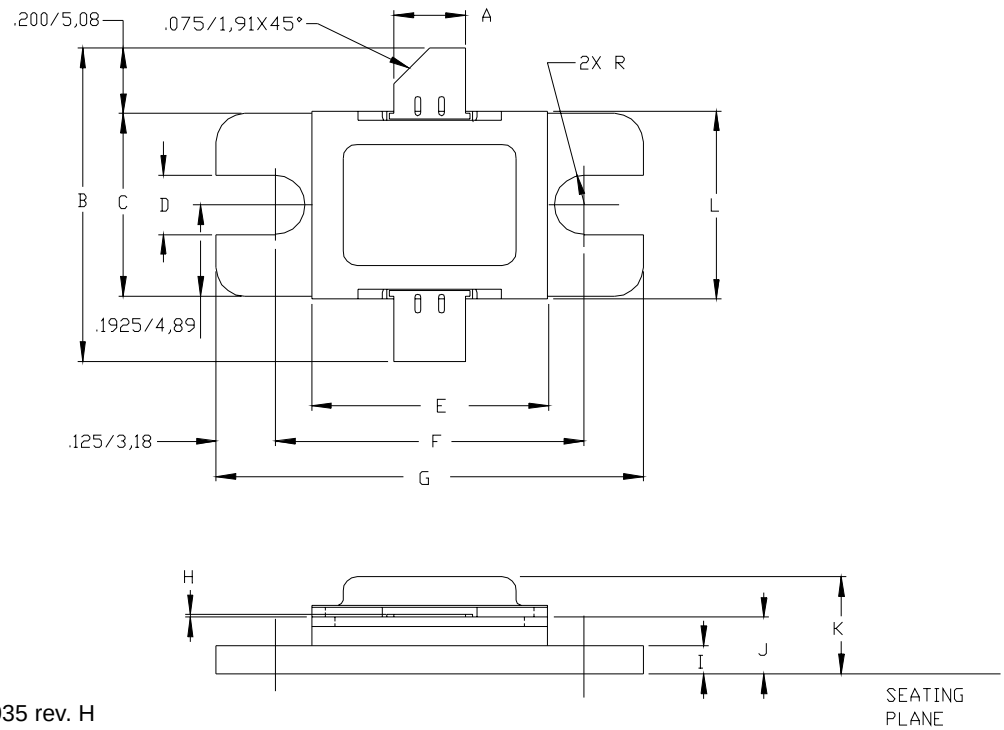
Note: All Dimensions in Inches Unless Otherwise specified
C1, C4 Cold End Terminated Through Eyelet.

PC BOARD LAYOUT



M112 (.400 x .500 2LFL) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	3.68		3.93	0.145		0.155
B	19.56		21.08	0.770		0.830
C	9.65		9.91	0.380		0.390
D	3.05		3.43	0.120		0.135
E	12.57		12.88	0.495		0.507
F	16.26		16.64	0.640		0.655
G	22.73		22.99	0.895		0.905
H	0.05		0.15	0.002		0.006
I	1.40		1.65	0.055		0.065
J	2.79		3.30	0.110		0.130
K			5.84			0.230
L	10.03		10.34	0.395		0.407



Ref. 1010935 rev. H