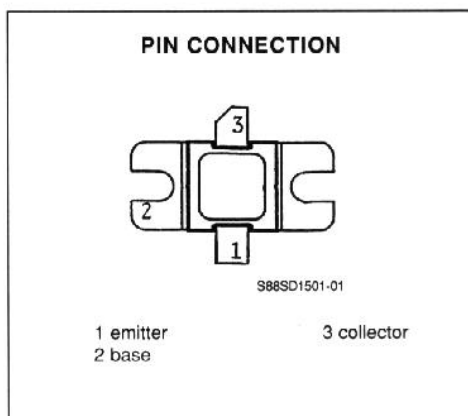
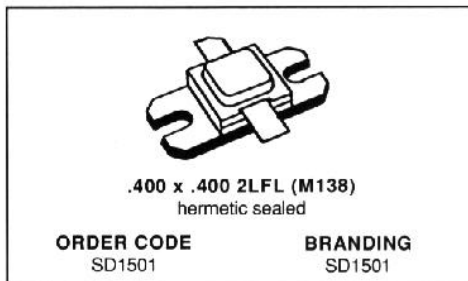


**RF & MICROWAVE TRANSISTORS  
L BAND RADAR APPLICATIONS**

- FREQUENCY 1.2-1.4GHz
- POWER OUT 30W
- POWER GAIN 7.0dB
- VOLTAGE 35V
- PULSE WIDTH 400μs
- DUTY CYCLE 20%
- DESIGNED FOR USE IN LONG PULSE L-BAND APPLICATIONS LIKE RADAR, JTIDS, ETC.
- EXTREMELY RUGGED
- THERMALLY STABLE
- GOLD METALLIZATION
- STRIPLINE, HERMETIC FLANGE PACKAGE



**DESCRIPTION**

The SD1501 is a gold metallized silicon NPN Planar Pulsed Transistor that has been designed for use in extended pulse width and duty cycle applications from 1200 to 1400MHz. This device is extremely rugged, thermally stable, and operates at 400μs pulse width and 20% duty cycle.

**ABSOLUTE MAXIMUM RATINGS** (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector - Base Voltage	65.0	V
V <sub>CES</sub>	Collector - Emitter Voltage	65.0	V
V <sub>EBO</sub>	Emitter - Base Voltage	3.5	V
I <sub>C</sub>	Collector Current (max.)	5.5	A
P <sub>TOT</sub>	Total Device Dissipation at + 25°C	105.0	W
T <sub>STG</sub>	Storage Temperature	- 65 to + 200	°C
T <sub>J</sub>	Junction Temperature	+ 200	°C

**THERMAL DATA**

R <sub>TH(J-C)</sub>	Junction-Case Thermal Resistance	.74	°C/W
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**SD1501****ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$ )

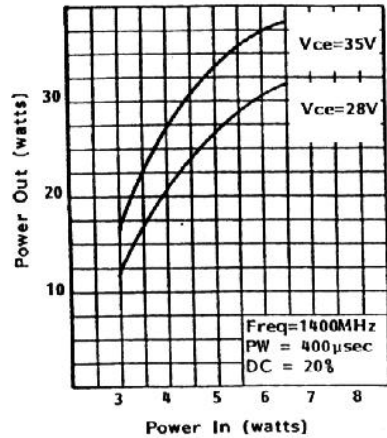
## STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 50mA$	$I_E = 0$	65.0			V
$BV_{CES}$	$I_C = 50mA$	$V_{BE} = 0$	65.0			V
$BV_{EBO}$	$I_E = 5.0mA$	$I_C = 0$	3.5			V
$I_{CES}$	$V_{CE} = 50.0V$	$V_{BE} = 0$			10.0	mA
$h_{FE}$	$V_{CE} = 5.0V$	$I_C = 250.0mA$	20.0			

## DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_D$	$f = 1400MHz$	$V_{CE} = 35.0V$	$PW = 400\mu sec$ $DC = 20\%$	30.0			W
$P_G$	$f = 1400MHz$	$V_{CE} = 35.0V$	$PW = 400\mu sec$ $DC = 20\%$	7.0			dB
$Z_{in}$	$f = 1300MHz$	$V_{CE} = 35.0V$	$P_{in} = 5.0W$		$1.6+j3.1$		$\Omega$
$Z_{cl}$	$f = 1300MHz$	$V_{CE} = 35.0V$	$P_{in} = 5.0W$		$1.5+j2.2$		$\Omega$

POWER OUT vs. POWER IN



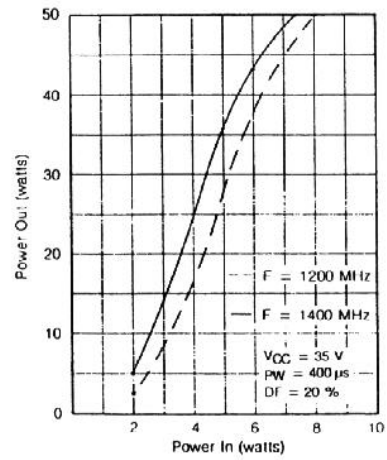
S88SD1501-02

Frequency = 1.3GHz  
 Pulse Width = 400µs at 20%  
 Vcc = 28V

$$Z_{IN} = 1.6 + j3.1\Omega$$

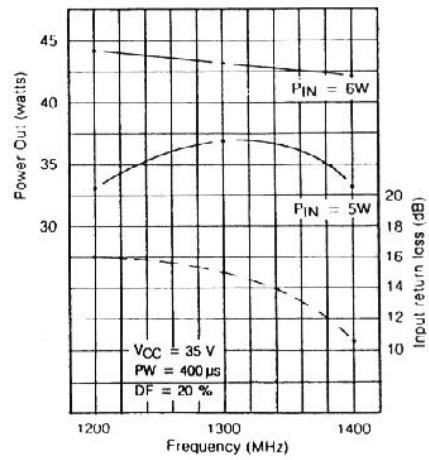
$$Z_{CL} = 1.5 + j2.2\Omega$$

TYPICAL OUTPUT POWER VERSUS INPUT POWER



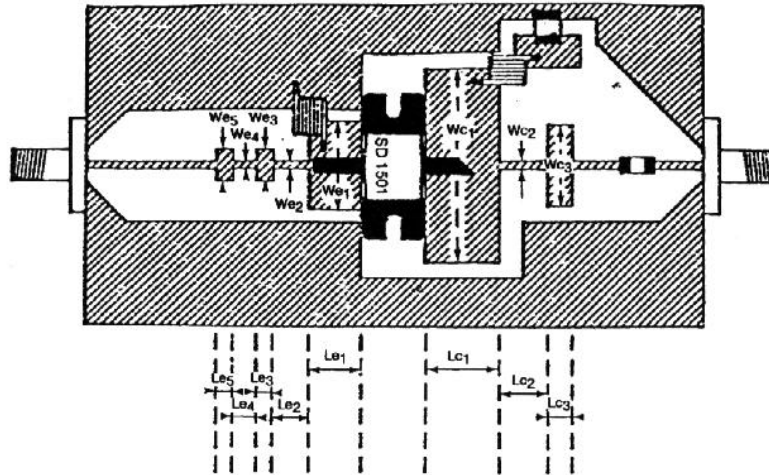
S88SD1501-03

TYPICAL OUTPUT POWER AND INPUT RETURN LOSS VERSUS FREQUENCY



S88S1501-04

TEST FIXTURE DRAWING



S88SD1501-05

**INPUT CIRCUIT**

$We_1 = .535'' = 13.6\text{mm}$   
 $We_2 = .040'' = 1.0\text{mm}$   
 $We_3 = .205'' = 5.2\text{mm}$   
 $We_4 = .040'' = 1.0\text{mm}$   
 $We_5 = .200'' = 5.1\text{mm}$

$Le_1 = .320'' = 8.1\text{mm}$   
 $Le_2 = .215'' = 5.5\text{mm}$   
 $Le_3 = .110'' = 2.8\text{mm}$   
 $Le_4 = .160'' = 4.1\text{mm}$   
 $Le_5 = .105'' = 2.7\text{mm}$

**OUTPUT CIRCUIT**

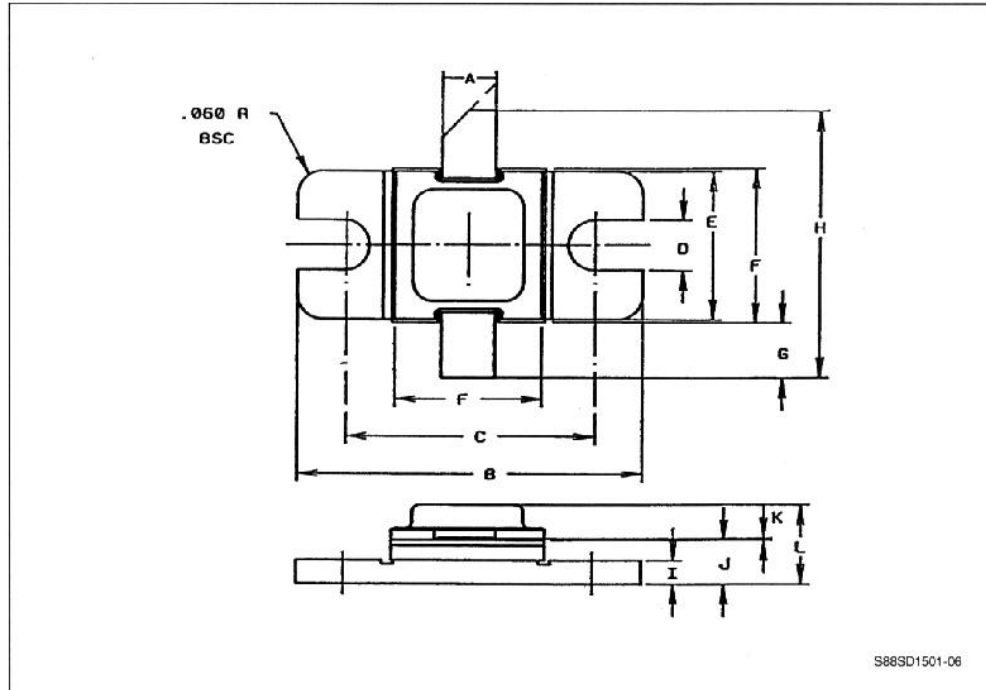
$Wc_1 = 1.225'' = 31.1\text{mm}$   
 $Wc_2 = .055'' = 1.4\text{mm}$   
 $Wc_3 = .510'' = 13.0\text{mm}$

$Lc_1 = .445'' = 11.3\text{mm}$   
 $Lc_2 = .285'' = 7.2\text{mm}$   
 $Lc_3 = .150'' = 3.8\text{mm}$

**EPSILAM 6 :  $\epsilon_r = 6$**   
**THICKNESS :  $.030'' = .762\text{mm}$**

## PACKAGE MECHANICAL DATA

.400 x .400 2LFL



	Minimum Inches/mm	Maximum Inches/mm
A	.090/2.29	.105/2.67
B	.890/22.61	.910/23.11
C	.640/16.26	.660/16.76
D	.120/3.05	.130/3.30
E	.380/9.65	.390/9.91
F	.395/10.03	.405/10.29

	Minimum Inches/mm	Maximum Inches/mm
G	.240/6.10	.260/6.60
H	.885/22.48	
I	.055/1.40	.065/1.65
J	.110/2.79	.130/3.30
K	.002/0.05	.006/0.15
L		.230/5.84