RF Products
Microsemi
Progress Powered by Technology

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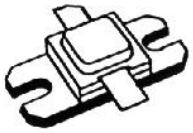
SD1501

RF & MICROWAVE TRANSISTORS
L BAND RADAR APPLICATIONS

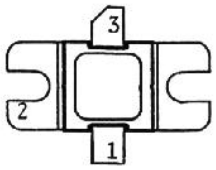
- FREQUENCY 1.2-1.4GHz
- POWER OUT 30W
- POWER GAIN 7.0dB
- VOLTAGE 35V
- PULSE WIDTH 400µs
- DUTY CYCLE 20%
- DESIGNED FOR USE IN LONG PULSE L-BAND APPLICATIONS LIKE RADAR, JTIDS, ETC.
- EXTREMELY RUGGED
- THERMALLY STABLE
- GOLD METALLIZATION
- STRIPLINE, HERMETIC FLANGE PACKAGE



.400 x .400 2LFL (M138)
hermetic sealed

ORDER CODE	BRANDING
SD1501	SD1501

PIN CONNECTION



S88SD1501-01

1 emitter
2 base
3 collector

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_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector - Base Voltage	65.0	V
V_{CES}	Collector - Emitter Voltage	65.0	V
V_{EBO}	Emitter - Base Voltage	3.5	V
I_C	Collector Current (max.)	5.5	A
P_{TOT}	Total Device Dissipation at + 25°C	105.0	W
T_{STG}	Storage Temperature	− 65 to + 200	°C
T_J	Junction Temperature	+ 200	°C

THERMAL DATA

$R_{TH(J-C)}$	Junction-Case Thermal Resistance	.74	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C)

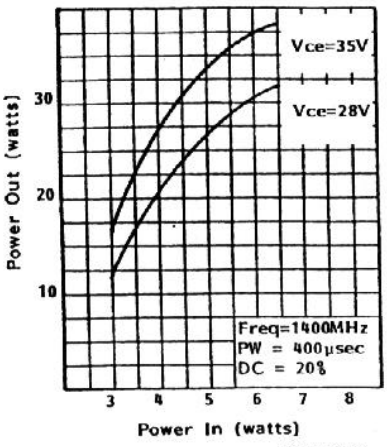
STATIC

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_O	f = 1400MHz	V_{CE} = 35.0V	PW = 400µsec DC = 20%	30.0			W
P_G	f = 1400MHz	V_{CE} = 35.0V	PW = 400µsec DC = 20%	7.0			dB
Z_{in}	f = 1300MHz	V_{CE} = 35.0V	P_{in} = 5.0W		1.6+j3.1		Ω
Z_{cl}	f = 1300MHz	V_{CE} = 35.0V	P_{in} = 5.0W		1.5+j2.2		Ω

POWER OUT vs. POWER IN

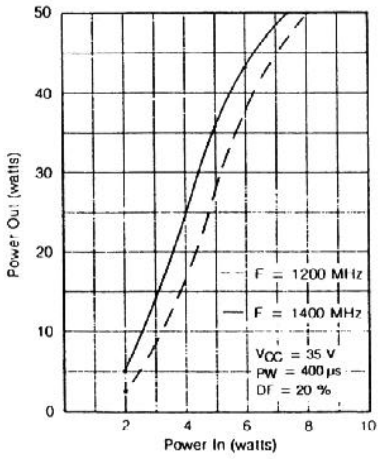


S88SD1501-02

Frequency = 1.3GHz
Pulse Width = 400µs at 20%
V_{CC} = 28V

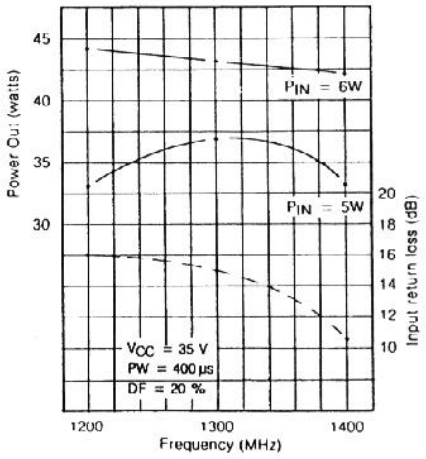
Z_{IN} = 1.6 + j3.1Ω
Z_{CL} = 1.5 + j2.2Ω

TYPICAL OUTPUT POWER VERSUS INPUT POWER



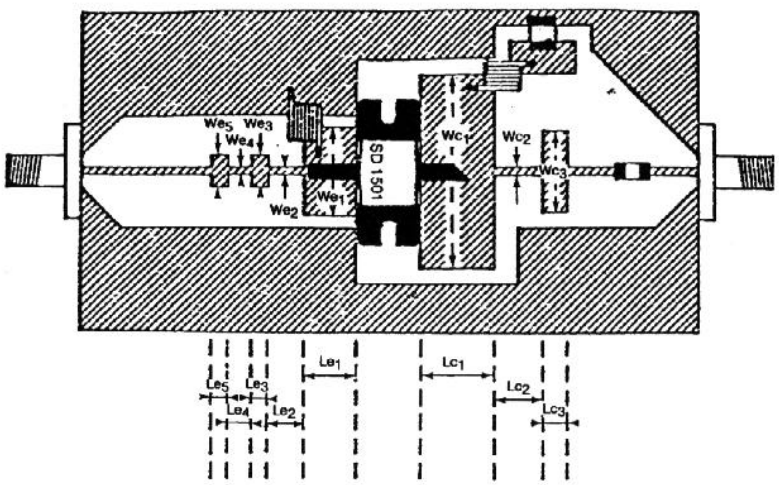
S88SD1501-03

TYPICAL OUTPUT POWER AND IMPUT RETURN LOSS VERSUS FREQUENCY



S88S1501-04

TEST FIXTURE DRAWING



S88SD1501-05

INPUT CIRCUIT

We_1 = .535" = 13.6mm
We_2 = .040" = 1.0mm
We_3 = .205" = 5.2mm
We_4 = .040" = 1.0mm
We_5 = .200" = 5.1mm

Le_1 = .320" = 8.1mm
Le_2 = .215" = 5.5mm
Le_3 = .110" = 2.8mm
Le_4 = .160" = 4.1mm
Le_5 = .105" = 2.7mm

OUTPUT CIRCUIT

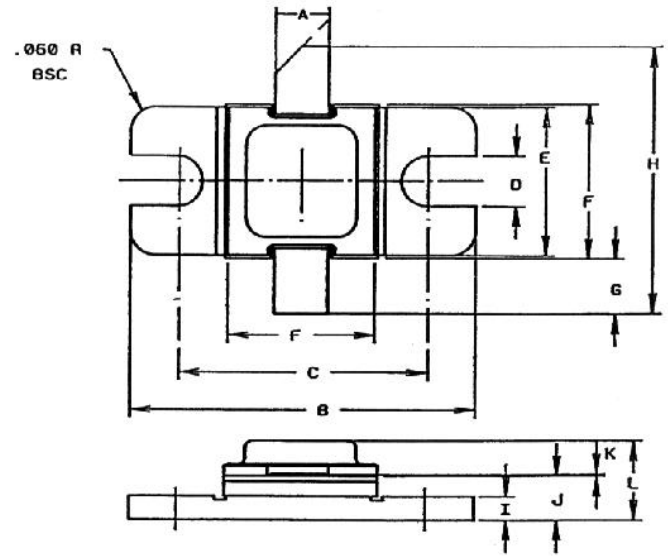
Wc_1 = 1.225" = 31.1mm
Wc_2 = .055" = 1.4mm
Wc_3 = .510" = 13.mm

Lc_1 = .445" = 11.3mm
Lc_2 = .285" = 7.2mm
Lc_3 = .150" = 3.8mm

EPSILAM 6 : Er ≈ 6
THICKNESS : .030" = .762mm

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