



Spectrum Devices Corporation

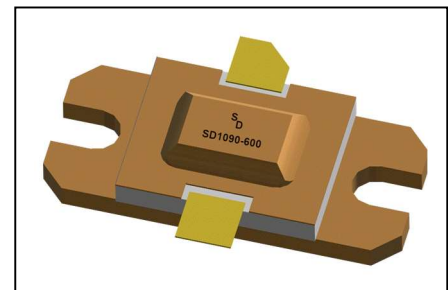
Semiconductor Engineering and Manufacturing

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

SD1090-600

FEATURES:

- Refractory/Gold Metallization
- Emitter Site Ballasted
- 15:1 VSWR Capability
- Low Thermal Resistance
- Input/Output Matching
- Metal/Ceramic Hermetic Package
- $P_{out} = 600$ W Min. with 7.0 dB Gain



0.4" x 0.5" Hermetic Package

DESCRIPTION:

The SD1090-600 Avionics power transistor is a high peak pulse power device specifically designed for avionics applications requiring broad bandwidth with moderate duty cycle and pulse width constraints such as ground or ship based DME/TACAN.

The SD1090-600 is also designed for specialized applications where reduced power is provided under pulse formats utilizing short pulse widths and high burst or overall duty cycles.

This device is capable of withstanding 15:1 VSWR mismatch load condition at any phase angle under full rated conditions.

The SD1090-600 is housed in a hermetic package with internal input and output matching.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C):

Symbol	Parameter	Value	Unit
P _{DISS}	Power Dissipation* (T _C ≤ 100°C)	1350	W
I _C	Device Current*	40	A
V _{CC}	Collector-Supply Voltage*	50	V
T _J	Junction Temperature	200	°C
T _{STG}	Storage Temperature	-65 to 200	°C

THERMAL DATA:

R _{TH(J-C)}	Junction-Case Thermal Resistance*	0.06	°C/W
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NOTE: *Applies only to rated RF amplifier operation.

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

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV _{CB0}	I _C = 50 mA I _E = 0 mA	65	80	--	V
BV _{EB0}	I _E = 15 mA I _C = 0 mA	3.5	--	--	V
BV _{CES}	I _C = 50 mA V _{BE} = 0	65	--	--	V
ICES	V _{CE} = 50 V	--	--	30	mA
h _{FE}	V _{CE} = 5 V I _C = 5A	10	--	200	--

RF CHARACTERISTICS

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P _{OUT}	f = 1025-1150 MHz P _{IN} = 150W V _{CC} = 50 V	600	650	--	W
η _C	f = 1025-1150 MHz P _{IN} = 150W V _{CC} = 50 V	35	45	--	%
G _P	f = 1025-1150 MHz P _{IN} = 150W V _{CC} = 50 V	6.0	6.4	--	dB

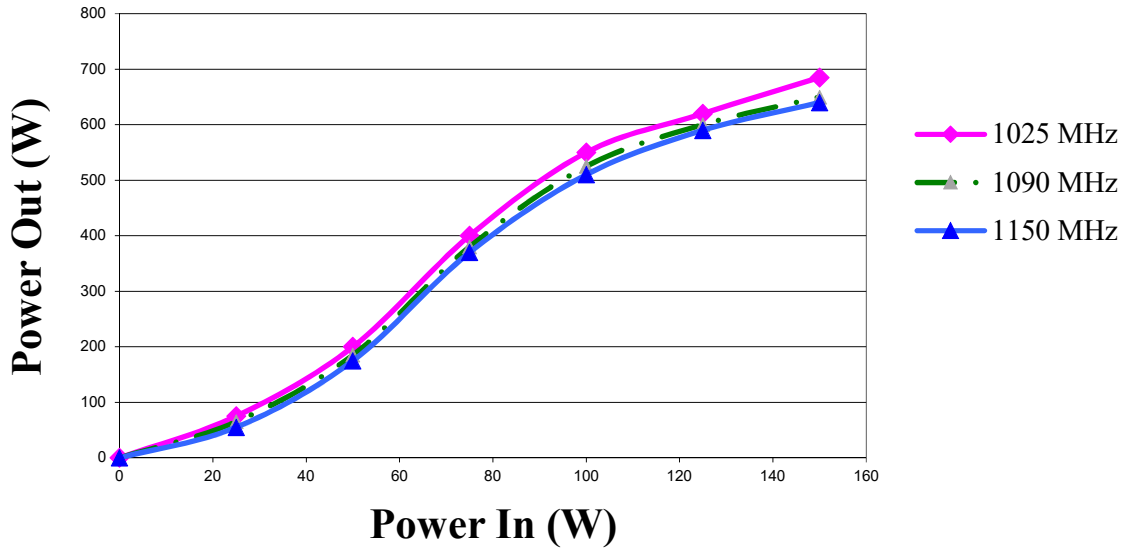
NOTE: Pulse Format: 10μS
 Duty Cycle: 1%

TYPICAL PERFORMANCE

$V_{CC} = 50V$

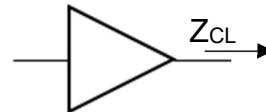
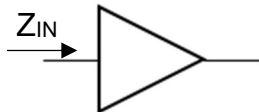
Pulse Width = 10 μS , Duty Cycle = 1%

Typical Power Out vs. Power In

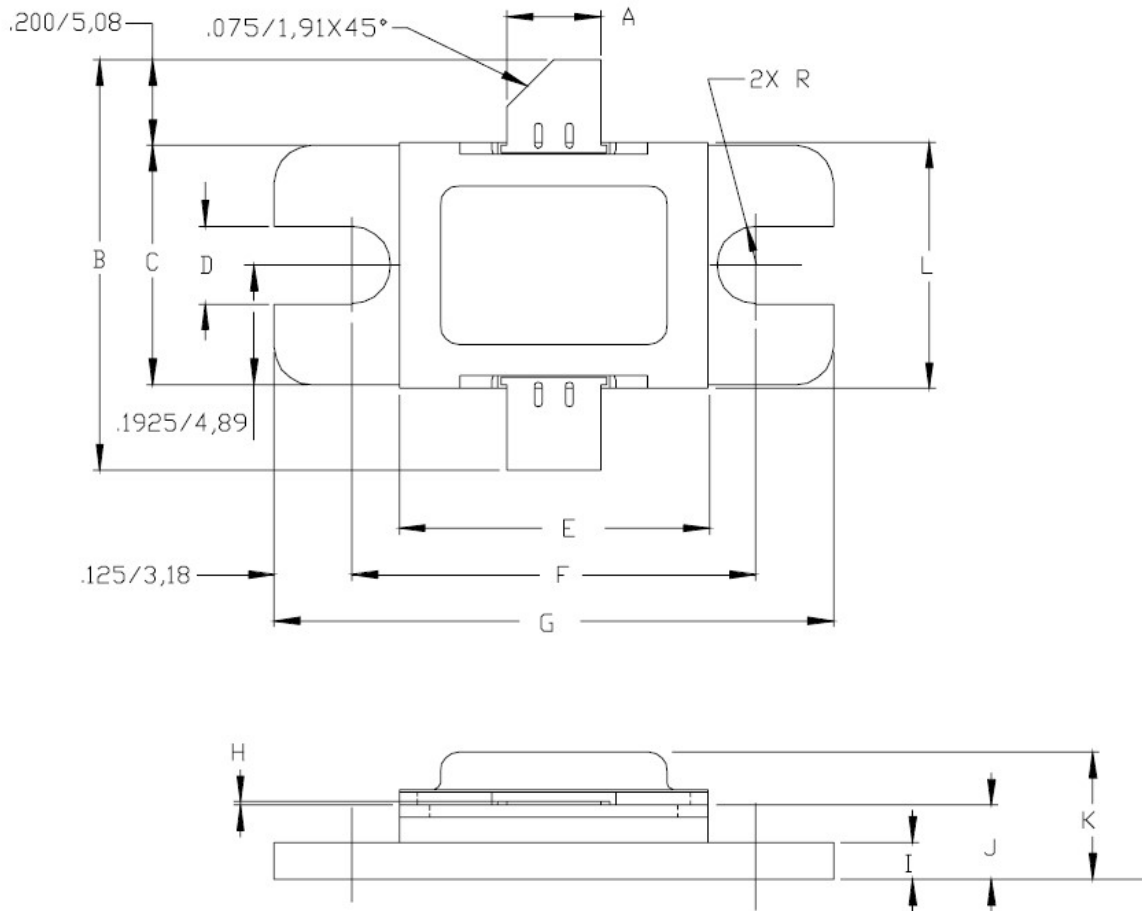


TYPICAL IMPEDANCE DATA

FREQ	Z_{IN} (Ω)	Z_{CL} (Ω)
1025 MHz	$2.5 + j2.7$	$1.6 - j2.2$
1090 MHz	$2.5 + j1.5$	$1.7 - j2.0$
1150 MHz	$1.9 + j0.7$	$1.6 - j1.9$



PACKAGE MECHANICAL DATA



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

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Life Support Applications

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