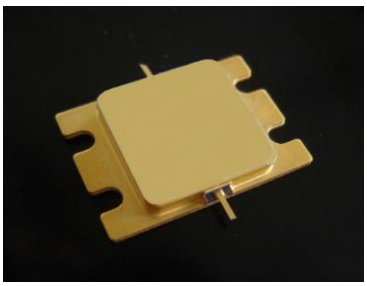
NoleTec
Microwave Electronics

Preliminary Datasheet NGN9396H1S-M150

NGN9396H1S-M170 is Gallium Nitride RF power transistor internally matched to 50Ω. It is developed primarily for use in high power pulsed radar amplifiers at 9.3-9.6GHz. This transistor has a hermetically sealed package to enable use in applications with high reliability requirements.



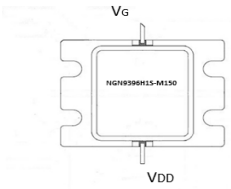
Features
- 150W peak power
- 9.5dB power gain
- 50Ω input and output impedance
- 35% peak efficiency

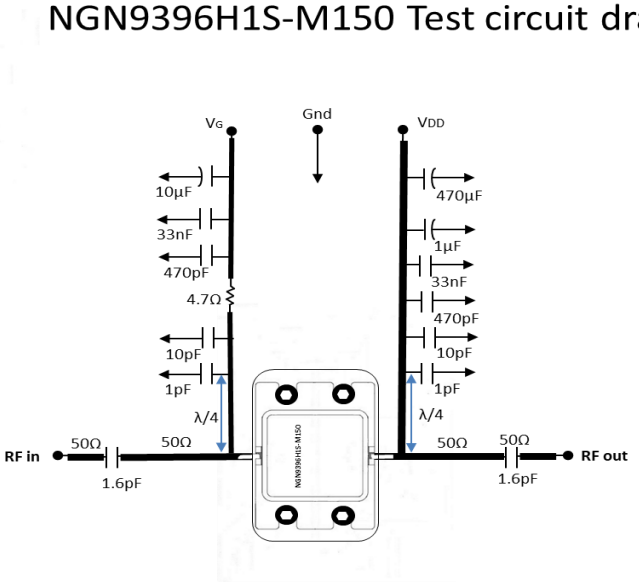
Characteristics	Symbol	Min.	Typ.	Max.	Units	Conditions
DC Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$		-3.0		V_{DC}	V_{DS} = 10 V, I_D = 31 mA
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.7		V_{DC}	V_{DS} = 50 V, I_D = 300 mA
Saturated Drain Current	I_{DS}		31		A	V_{DS} = 6.0 V, V_{GS} = 2.0 V
Drain-Source Breakdown Voltage	V_{BR}	150			V_{DC}	V_{GS} = -8 V, I_D = 31 mA
RF Characteristics	(V_{DD}= 50V, Tc = 25˚C, F = 9.3-9.6 GHz, 10% duty cycle, 200µs, I_{DQ} = 300 mA)					
Power Gain	S21		9.5		dB	P_{in}= 42.5 dBm
Output Power	P_{SAT}		150		W	P_{in}= 42.5 dBm
Output Return Loss	S22		-10		dB	
Input Return Loss	S11		-10		dB	P_{in}= 10 dBm
Drain Efficiency	η		35		%	P_{in}= 42.5 dBm
Output Mismatch	VSWR			5:1	ψ	

Maximum Ratings	Symbol	Rating	Units	Conditions
Parameter				
Drain-Source Voltage	V_{DSS}	150	V_{DC}	25°C
Gate-Source Voltage	V_{GS}	-10, +2	V_{DC}	25°C
Storage temperature	T_{STG}	150	°C	
Operating Junction Temperature	T_J	225	°C	
Maximum Drain Current	I_{DMAX}	19	A	25°C
Maximum Forwad Gate Current	I_{GMAX}	31	mA	25°C
Operating Case Temperature	T_{MAX}	-40 - +85	°C	
Pulse Width	PW	1	ms	
Duty cycle	DC	10	%	

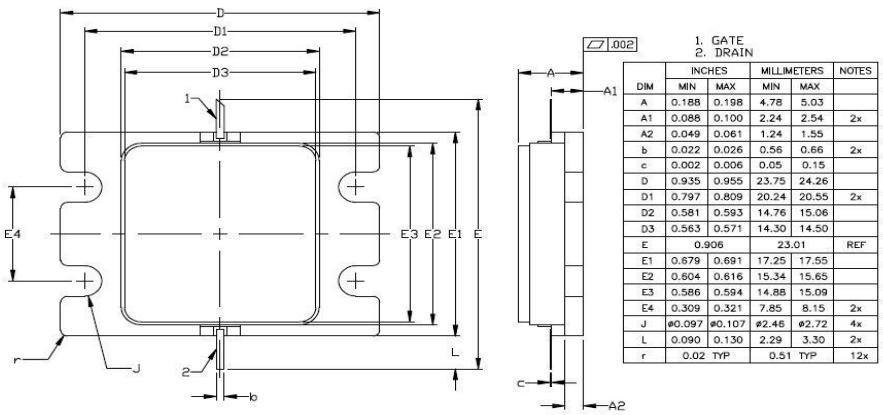
Subject to change without notice.

Test Circuit Drawing





Package outline



DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
A	0.188	0.198	4.78	5.03	
A1	0.088	0.100	2.24	2.54	2x
A2	0.049	0.061	1.24	1.55	
b	0.022	0.026	0.56	0.66	2x
c	0.002	0.006	0.05	0.15	
D	0.935	0.955	23.75	24.26	
D1	0.797	0.809	20.24	20.55	2x
D2	0.581	0.593	14.76	15.06	
D3	0.563	0.571	14.30	14.50	
E	0.906		23.01		REF
E1	0.679	0.691	17.25	17.55	
E2	0.604	0.616	15.34	15.65	
E3	0.586	0.594	14.88	15.09	
E4	0.309	0.321	7.85	8.15	2x
J	ø0.097	ø0.107	ø2.46	ø2.72	4x
L	0.090	0.130	2.29	3.30	2x
r	0.02 TYP		0.51 TYP		12x

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